

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
CENTRAL VALLEY REGION

ORDER NO. R5-2006-0009

NPDES NO. CA0078034

WASTE DISCHARGE REQUIREMENTS  
FOR  
CITY OF WILLOWS AND ECO RESOURCES, INC.  
WILLOWS WASTEWATER TREATMENT PLANT  
GLENN COUNTY

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

*BACKGROUND*

1. The City of Willows and ECO Resources, Inc. (hereafter collectively referred to as Discharger) submitted a Report of Waste Discharge, dated 22 September 2005, and applied for permit renewal to discharge waste under the National Pollutant Discharge Elimination System (NPDES) from the Willows Wastewater Treatment Plant (WWTP).
2. The City of Willows owns a wastewater collection, treatment, and disposal system, and provides sewerage service to the City of Willows and the Northeast Willows Community Service District. ECO Resources, Inc. operates the WWTP. The treatment plant is in Sections 15 and 22, Township 19 North, Range 3 West of the Mt. Diablo Base Line and Meridian, as shown on Attachment A, which is a part of this Order. Treated municipal wastewater is currently discharged, at Discharge Point 001, to Agricultural Drain C, which is tributary to Logan Creek, then to the Colusa Basin Drain, a water of the United States. The plant is currently being upgraded and will have the ability to discharge, at Discharge Point 002 (a new discharge point), to the Glenn-Colusa Irrigation District (GCID) Lateral 26-2, a tributary to the Colusa Basin Drain. The latitude and longitude of the discharge points is as follows:

<u>Discharge Point</u>	<u>Latitude</u>	<u>Longitude</u>
001 (Agricultural Drain C)	39° 29' 34"	122° 11' 16"
002 (GCID Lateral 26-2)	39° 30' 08"	122° 11' 28"

3. The current treatment system consists of a comminutor, primary aeration ponds, stabilization ponds, and disinfection. The Report of Waste Discharge characterizes the discharge as follows:

Average Monthly Flow	1.22 million gallons per day (mgd)
Maximum Daily Flow	2.62 mgd
Design Flow (current plant)	1.12 mgd Average dry weather flow (ADWF)
Design Flow (upgrade)	1.2 mgd ADWF

<u>Constituent</u>	<u>Average Daily Concentration</u>	<u>Maximum Daily Concentration</u>
BOD <sub>5</sub> <sup>a</sup>	16 mg/L	52 mg/L
Total Suspended Solids (TSS)	63 mg/L	110 mg/L
Coliform Bacteria	39 MPN/100 mL	350 MPN/100 mL

<sup>a</sup> 5-day, 20°C biochemical oxygen demand

4. The City is currently constructing plant improvements to upgrade the processes to meet requirements included in the existing NPDES permit. Upon completion of the plant upgrades, the treatment system is planned to consist of influent screening, extended aeration activated sludge with secondary clarifiers, continuous backwash filters, disinfection with sodium hypochlorite, dechlorination using calcium thiosulfate, equalization and emergency storage ponds, and sludge storage lagoons.
5. The Central Valley Water Board adopted a *Water Quality Control Plan, Fourth Edition, for the Sacramento and San Joaquin River Basins* (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. The requirements of this Order implement the Basin Plan.
6. The U.S. Environmental Protection Agency (USEPA) adopted the *National Toxics Rule* (NTR) on 22 December 1992, which was amended on 4 May 1995, and 9 November 1999, and the *California Toxics Rule* (CTR) on 18 May 2000, which was amended on 13 February 2001. These rules contain water quality criteria applicable to this discharge. The State Water Resources Control Board (State Water Board) adopted the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (known as the State Implementation Policy or SIP) on 2 March 2000, which contains guidance on implementation of the NTR and the CTR.

#### *BENEFICIAL USES OF THE RECEIVING STREAM*

7. 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 . The beneficial uses of any specifically identified water body generally apply to its tributary streams.” Agricultural Drain C and GCID Lateral 26-2 are in the Colusa Trough Hydrologic Sub Area (520.21) of the Glenn Colusa Hydrologic Area in the Colusa Basin Hydrologic Unit. The Basin Plan does not specifically identify beneficial uses for Agricultural Drain C or GCID Lateral 26-2. GCID Lateral 26-2 is used for irrigation of crops and at times to supply water to the Sacramento Wildlife Refuge. Agricultural Drain C and GCID Lateral 26-2 are tributary to the Colusa Basin Drain. The Colusa Basin Drain is the first body of water downstream of Agricultural Drain C and GCID Lateral 26-2 for which the Basin Plan has identified existing and potential beneficial uses. The beneficial uses of the Colusa Basin Drain, as identified in Table II-1 of the Basin Plan, are agricultural irrigation and stock watering (AGR); water contact recreation, including canoeing and rafting (REC-1); warm and potential cold freshwater aquatic habitat

(WARM and COLD); warm water fish migration habitat (MIGR); warm water spawning, reproduction, and/or early development habitat (SPWN); and wildlife habitat (WILD). Other beneficial uses identified in the Basin Plan apply to Agricultural Drain C, including groundwater recharge and freshwater replenishment. 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 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."

Upon review of the flow conditions, habitat values, and beneficial uses of Agricultural Drain C and GCID Lateral 26-2, and based on hydraulic continuity, and aquatic life migration, the Regional Board finds that the beneficial uses identified in the Basin Plan for the Colusa Basin Drain, are applicable to Agricultural Drain C and GCID Lateral 26-2.

8. The Basin Plan states that "Water Bodies within the basins that do not have beneficial uses designated in Table II-1 are assigned MUN designations in accordance with the provisions of State Water Board Resolution No. 88-63 which is, by reference, a part of this Basin Plan." State Water Resources Control Board Resolution No. 88-63 "Sources of Drinking Water" provides that "All surface and ground waters of the State are considered to be suitable, or potentially suitable, for municipal or domestic water supply and should be so designated by the Regional Boards with the exception of: ...2.b. The water is in systems designed or modified for the primary purpose of conveying or holding agricultural drainage waters...". Agricultural Drain C and GCID Lateral 26-2 meet the criteria for an exemption from the beneficial use of municipal and domestic supply.
9. The Regional Board finds that the beneficial uses identified in the Basin Plan for the Colusa Basin Drain are applicable to Agricultural Drain C and GCID Lateral 26-2 based upon the following:

- a. *Agricultural Supply*

Water from Agricultural Drain C is periodically transferred via Agricultural Drain B-1 to GCID Lateral 25-1 for use as irrigation supply water. GCID Lateral 26-2 is used for irrigation of crops.

- b. *Water Contact Recreation (including canoeing, rafting)*

The Regional Board finds that the discharge flows through areas where there is limited public access to Agricultural Drain C and GCID Lateral 26-2; however, exclusion of adjoining property owners and the public is unrealistic.

- c. *Warm and Cold Freshwater Habitats (including preservation or enhancement of fish and invertebrates), Warm Water Fish Migration Habitat, Warm Water Spawning, Reproduction, and/or Early Development and Wildlife Habitat*

Agricultural Drain C and GCID Lateral 26-2 flow to the Colusa Basin Drain and at times to the Sacramento Wildlife Refuge Area. The Basin Plan (Table II-1) designates the Colusa Basin Drain as being a warm and potentially cold freshwater habitat. Pursuant to the Basin Plan tributary rule, the warm and cold freshwater habitat designations applied to the Colusa Basin Drain also apply to Agricultural Drain C and GCID Lateral 26-2. California Department of Fish and Game (DFG) staff have confirmed the area streams as supporting warm water fisheries, and that salmonids are generally not present. Because of the tributary rule in the Basin Plan, it is required to apply the beneficial uses of the downstream water body. The COLD or SPWN designation necessitates that the in-stream dissolved oxygen concentration be maintained at, or above, 7.0 mg/L. The WARM designation requires the in-stream dissolved oxygen concentration be maintained at, or above, 5.0 mg/L. There are times when the dissolved oxygen level in Agricultural Drain C is below 7.0 mg/L upstream of the discharge. This approach recognizes that, if the naturally occurring in-stream dissolved oxygen concentration is below 7.0 mg/L, the Discharger is not required to improve the naturally occurring level. To make changes to the beneficial uses of COLD or SPWN designated by the Basin Plan, a Use Attainability Analysis and subsequent site-specific Basin Plan amendment are required. The required studies have not been performed, therefore, the Regional Board cannot change the designated beneficial uses of the receiving water.

- d. *Groundwater Recharge*

In areas where groundwater elevations are below the stream bottom, water from the stream will percolate to groundwater. During dry weather in many places in California, flowing streams experience these conditions, thus providing groundwater recharge. Groundwater provides a source of municipal and irrigation water supply.

- e. *Freshwater Replenishment*

When water is present in Agricultural Drain C and GCID Lateral 26-2, there is hydraulic continuity between these waters and the Colusa Basin Drain. Agricultural Drain C and GCID Lateral 26-2 contributes to the quantity and impacts the quality of the water in the Colusa Basin Drain.

The Regional Board also finds that, based on the available information and on the Discharger's application, that Agricultural Drain C, absent the discharge from the wastewater treatment plant, is a low-flow stream. The low-flow nature of Agricultural Drain C and the lack of receiving water quality data mean that the designated beneficial uses must be protected, but that no credit for receiving water assimilative capacity is available. The lack of significant

dilution results in more stringent effluent limitations to protect contact recreational uses and aquatic life and to meet agricultural water quality goals.

*EFFLUENT LIMITATIONS AND REASONABLE POTENTIAL*

10. Effluent limitations, and toxic and pretreatment effluent standards established pursuant to Sections 301 (Effluent Limitations), 302 (Water Quality Related Effluent Limitations), 304 (Information and Guidelines), and 307 (Toxic and Pretreatment Effluent Standards) of the *Clean Water Act* (CWA) and amendments thereto are applicable to the discharge.
11. Section 303 (d) of the CWA requires states to identify waters for which implementation of technology-based effluent limitations have not been stringent enough to attain water quality standards for those waters. On 25 July 2003 the USEPA approved the State's updated list of 303 (d) impaired waters, which lists the Colusa Basin Drain as impaired for azinphos-methyl, carbofuran/furandian, diaznon, Group A pesticides, malathion, methylparathion, molinate/odram, and unknown toxicity.
12. Federal regulations require effluent limitations for all pollutants that are or may be discharged at a level that will cause or have the reasonable potential to cause, or contribute to an in-stream excursion above a narrative or numerical water quality standard. Because the WWTP upgrades will produce a much higher quality effluent (activated sludge followed by filtration), the previous CTR sampling is not representative of the effluent from the new plant. The Central Valley Water Board finds that there is not sufficient information to determine if the discharge has a reasonable potential to cause or contribute to in-stream excursions above applicable water quality standards, and therefore, water quality based effluent limitations are not included in this Order for pollutants that were not already regulated by Order No. R5-01-066. This Order requires additional sampling to make this determination.
13. Section 13263.6(a), California Water Code, requires that "*the regional board shall prescribe effluent limitations as part of the waste discharge requirements of a POTW for all substances that the most recent toxic chemical release data reported to the state emergency response commission pursuant to Section 313 of the Emergency Planning and Community Right to Know Act of 1986 (42 U.S.C. Sec. 11023) (EPCRA) indicate as discharged into the POTW, for which the state board or the regional board has established numeric water quality objectives, and has determined that the discharge is or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to, an excursion above any numeric water quality objective.*"
14. The USEPA Toxics Release Inventory database does not list any toxic constituents as being discharged to the Willows WWTP, and therefore, effluent limitations for these metals are not included in this permit pursuant to California Water Code (CWC) Section 13263.6 (a).
15. Chlorine is commonly used as a disinfection agent in the treatment of wastewater. Proper disinfection ensures destruction of pathogens prior to discharge to surface waters. The

Discharger uses chlorine for disinfection of the wastewater at the treatment plant. Because chlorine poses a threat to human health and is especially harmful to aquatic organisms, a dechlorination process is necessary for the removal of chlorine. For dechlorination, the Discharger plans to use calcium thiosulfate, which combines with chlorine, to render it relatively unreactive and thus removes it from the waste stream. Inadequate dechlorination may result in the discharge of chlorine to the receiving stream and cause toxicity to aquatic life. The Basin Plan prohibits the discharge of toxic substances in toxic concentrations.

The USEPA has developed Ambient Water Quality Criteria for the protection of freshwater aquatic life. The recommended maximum one-hour average and four-day average concentrations for chlorine are 0.02 mg/L and 0.01 mg/L, respectively. Effluent limitations for chlorine are included in this Order and are based on the Basin Plan narrative toxicity objective.

16. The existing permit established evidence of a reasonable potential for the plant effluent to exceed the USEPA Water Quality Criteria for ammonia and set limits based on effluent pH and temperature. Domestic wastewater contains ammonia concentrations at approximately 30 mg/l, if this ammonia is not removed the discharge could be toxic. If the wastewater is not treated to remove ammonia, the discharge would present a reasonable potential cause toxicity to aquatic life. The Basin Plan prohibits the discharge of toxic materials in toxic concentrations. This permit includes effluent limitations for ammonia.
17. The beneficial uses of Agricultural Drain C, Logan Creek and GCID Lateral 26-2 include contact recreational uses and irrigation. To protect these beneficial uses, the Central Valley Water Board finds that the wastewater must be disinfected and adequately treated to prevent disease. The California Department of Health Services (DHS) has developed reclamation criteria, California Code of Regulations, Title 22, Division 4, Chapter 3, (Title 22) for the reuse of wastewater. Title 22 requires that for spray irrigation of food crops, parks, playgrounds, school yards and other areas of similar public access, that wastewater be adequately disinfected, oxidized, coagulated, clarified and filtered and that the effluent total coliform levels not exceed 2.2 MPN/100 mL as a 7-day median. Title 22 is not directly applicable to surface waters, however the Central Valley Water Board finds that it is appropriate to apply the DHS reclamation criteria because Agricultural Drain C, Logan Creek and GCID Lateral 26-2 may be used for agriculture and contact recreation purposes. The stringent disinfection criteria of Title 22 are appropriate since the undiluted effluent may be used for the irrigation of food crops. The application of tertiary treatment processes results in the ability to achieve lower BOD and TSS concentrations than the equivalent to secondary standards prescribed in the existing permit. The BOD and TSS limitations have been revised to tertiary standards beginning on 1 March 2007 when the new treatment processes will be operational. The establishment of tertiary limits has not been previously required for this discharge, therefore, a revised schedule for compliance with the tertiary treatment requirement is included as a provision in this Order. This revised schedule allows an additional year over the existing schedule, but is still less than 5 years.

18. The permitted discharge is consistent with the antidegradation provisions of 40 CFR 131.12 and State Water 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.
19. As stated in General Provisions, No. 13 of *Standard Provisions and Reporting Requirements, For Waste Discharge Requirement* (February 2004), this Order prohibits bypass from any portion of the treatment facility. The USEPA, at 40 CFR 122.41 (m), defines bypass as the intentional diversion of waste streams from any portion of a treatment facility and at 40 CFR 122.41 (m) (4) prohibits bypass unless it is unavoidable to prevent loss of life, personal injury, or severe property damage. The State Water Board has adopted Order No. WQO-2002-0015, which cites these regulations as allowing bypass only for essential maintenance to assure efficient operation. In United States v. City of Toledo, Ohio (63 F. Supp 2d 834, N.D. Ohio 1999) a federal district court in Ohio required construction when greater plant capacity was needed to avoid bypasses.

Section 301 of the CWA requires, not later than 1 July 1977, that publicly owned wastewater treatment works meet effluent limitations based on secondary treatment or any more stringent limitation necessary to meet water quality standards. At 40 CFR 133, the USEPA establishes the minimum level of effluent quality attainable by secondary treatment for BOD, TSS, and pH. BOD is a measure of the amount of oxygen used in the biochemical oxidation of organic matter. The suspended solids content is also an important characteristic of wastewater. The secondary treatment standards for BOD and TSS are indicators of the effectiveness of the treatment processes. The principal infectious agents that may be present in raw sewage may be classified into three broad groups: bacteria, parasites, and viruses. Secondary treatment has been shown to be effective for pathogen removal.

A wet weather influent waste stream may contain significantly diluted levels of BOD and TSS. A bypassed diluted waste stream may have BOD and TSS levels that meet the secondary objectives, either alone or when blended with treated wastewater. However, the bypassed waste stream would not have been treated to reduce pathogens or other individual pollutants. The indicator parameters of BOD and TSS cannot be diluted to a level that may indicate the adequate treatment has occurred as an alternative to providing appropriate treatment.

20. CWA Sections 303 (a-c), require states to adopt numeric water quality criteria where they are necessary to protect designated uses. The Central Valley Water 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 Water Board Resolution No. 68-16, Statement of Policy with Respect to Maintaining High Quality of Waters in California, 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 minimum standards that the Central Valley Water Board will apply to regional waters in order to protect the beneficial uses." 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, radioactivity, salinity, sediment, settleable material, suspended material, tastes and odors, temperature, toxicity and turbidity.

*PRETREATMENT*

21. The design flow of the Willows WWTP is less than 5 mgd, and the facility does not receive discharges from industrial users, and therefore, the Discharger is not required to develop a pretreatment program pursuant to USEPA regulations at 40 CFR 403.

*GROUNDWATER*

22. Unless otherwise designated by the Central Valley Water Board, the beneficial uses of all groundwaters of the Central Valley Region are municipal and domestic water supply, agricultural supply, and industrial service and process supply. Discharges authorized by this Order may not cause or contribute to degradation of groundwater or interfere with beneficial uses.

*COLLECTION SYSTEM*

23. The Discharger's sanitary sewer system collects wastewater using sewers, pipes, pumps, and/or other conveyance systems and directs this raw sewage to the wastewater treatment plant. A "sanitary sewer overflow" is defined as a discharge to ground or surface water from the sanitary sewer system at any point upstream of the wastewater treatment plant. Temporary storage and conveyance facilities (such as wet wells, regulated impoundments, tanks, highlines, etc.) may be part of a sanitary sewer system and discharges to these facilities are not considered sanitary sewer overflows, provided that the waste is fully contained within these temporary storage/conveyance facilities.
24. Sanitary sewer overflows consist of varying mixtures of domestic sewage, industrial wastewater, and commercial wastewater. This mixture depends on the pattern of land use in the sewage collection system tributary to the overflow. The chief causes of sanitary sewer overflows include grease blockages, root blockages, debris blockages, sewer line flood damage, manhole structure failures, vandalism, pump station mechanical failures, power outages, storm or groundwater inflow/infiltration, lack of capacity, and contractor caused blockages.
25. Sanitary sewer overflows often contain high levels of suspended solids, pathogenic organisms, toxic pollutants, nutrients, oxygen demanding organic compounds, oil and grease, and other pollutants. Sanitary sewer overflows can cause temporary exceedances of applicable water quality objectives, pose a threat to public health, adversely affect aquatic life, and impair the public recreational use and aesthetic enjoyment of surface waters in the area.



26. The Discharger is expected to take all necessary steps to adequately maintain and operate its sanitary sewer collection system. This Order requires the Discharger to prepare and implement a Sanitary Sewer System Operation, Maintenance, Overflow Prevention, and Response Plan.
27. The City of Willows is currently developing a capital improvements program for the collection system that will address repairs to the collection system both in the public right-of-way and on private property. Implementation of this program will begin in 2006.

#### *STORMWATER*

28. The USEPA promulgated Federal Regulations for storm water on 16 November 1990 in 40 CFR Parts 122, 123, and 124. The NPDES Industrial Storm Water Program regulates storm water discharges from municipal sanitary sewer systems. Wastewater Treatment Plants are applicable industries under the storm water program and are obligated to comply with the Federal Regulations. Storm water discharges from the WWTP are regulated under the General Permit for Discharges of Storm Water Associated with Industrial Activities (State Water Resources Control Board, Water Quality Order No. 97-03-DWQ, NPDES General Permit No. CAS000001). This facility is covered under the general storm water permit, therefore this Order does not include storm water provisions.

#### *GENERAL*

29. 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 effluent limitations.
30. California Water Code Section 13267 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... discharges... waste...that could affect the quality of waters within its region shall furnish, under penalty of perjury, technical or monitoring program reports which the Regional Board requires." The accompanying Monitoring and Reporting Program is issued pursuant to CWC Section 13267 and is necessary to assure compliance with these Waste Discharge Requirements. The City of Willows and ECO Resources, Inc. are responsible for the discharges, which are subject to this Order.
31. The Central Valley Water Board has considered the information in the attached Information Sheet in developing the Findings of this Order. The Information Sheet, Monitoring and Reporting Program No. R5-2006-0009, and Attachment A are a part of this Order.
32. The discharge is presently governed by Waste Discharge Requirements Order No. R5-01-066, adopted by the Central Valley Water Board on 16 March 2001.
33. The USEPA and the Central Valley Water Board have classified this discharge as a major discharge.

34. The action to adopt an NPDES permit is exempt from the provisions of Chapter 3 of the California Environmental Quality Act (Public Resources Code Section 21000, et seq.), requiring preparation of an environmental impact report or negative declaration in accordance with CWC Section 13389.
35. The Central Valley Water 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.
36. The Central Valley Water Board, in a public meeting, heard and considered all comments pertaining to the discharge.
37. This Order shall serve as an NPDES permit pursuant to CWA Section 402, and amendments thereto, and shall take effect upon the date of hearing, provided USEPA has no objections.

**IT IS HEREBY ORDERED** that Order No. R5-01-066 is rescinded and the City of Willows and ECO Resources, Inc., their agents, successors and assigns, in order to meet the provisions contained in CWC Division 7 and regulations adopted thereunder, and the provisions of the CWA and regulations and guidelines adopted thereunder, shall comply with the following:

**A. Discharge Prohibitions:**

1. Discharge of wastewater at a location or in a manner different from that described in the Findings of this Order is prohibited.
2. The by-pass or overflow of wastes to surface waters or surface water drainage is prohibited, except as allowed by Standard Provision A.13. [See attached “Standard Provisions and Reporting Requirements for Waste Discharge Requirements (NPDES)”].
3. Neither the discharge nor its treatment shall create a nuisance as defined in Section 13050 of the California Water Code.

**B. Effluent Limitations:**

1. Effluent discharged at Discharge Point 001 shall not exceed the following limitations:

<u>Constituent</u>	<u>Units</u>	<u>Monthly Average</u>	<u>Weekly Average</u>	<u>Daily Maximum</u>	<u>4-Day Average</u>
BOD <sub>5</sub> <sup>a</sup>	mg/L	60 <sup>b</sup>	90 <sup>b</sup>	120 <sup>b</sup>	
	lbs/day <sup>c</sup>	560	840	1,120	
TSS	mg/L	110 <sup>b</sup>	165 <sup>b</sup>	220 <sup>b</sup>	
	lbs/day <sup>c</sup>	1,030	1,540	2,060	
Chlorine	mg/L			0.02 <sup>d</sup>	0.01

<u>Constituent</u>	<u>Units</u>	<u>Monthly Average</u>	<u>Weekly Average</u>	<u>Daily Maximum</u>	<u>4-Day Average</u>
Total Coliform Bacteria	MPN/100 mL	23 (median)		500	
Ammonia <sup>e</sup>	mg/L	1.1		2.1	
	lbs/day <sup>c</sup>	11		21	
Ammonia <sup>f</sup>	mg/L	1.9		3.8	
	lbs/day <sup>c</sup>	19		38	

<sup>a</sup> Five-day biochemical oxygen demand at 20° C

<sup>b</sup> To be ascertained by a 24-hour composite

<sup>c</sup> Based upon a design treatment capacity of 1.12 mgd

<sup>d</sup> 1-hour average

<sup>e</sup> For the period of May 1 through October 31

<sup>f</sup> For the period of November 1 through April 30

2. Effluent discharged at Discharge Points 001 and 002 shall not exceed the following limitations once the upgraded treatment facility is in operation, but no later than 1 March 2007:

<u>Constituent</u>	<u>Units</u>	<u>Monthly Average</u>	<u>Weekly Average</u>	<u>Daily Maximum</u>	<u>4-Day Average</u>	<u>7-Day Median</u>
BOD <sub>5</sub> <sup>a</sup>	mg/L	10 <sup>b</sup>	15 <sup>b</sup>	30 <sup>b</sup>		
	lbs/day <sup>c</sup>	100	150	300		
TSS	mg/L	10 <sup>b</sup>	15 <sup>b</sup>	30 <sup>b</sup>		
	lbs/day <sup>c</sup>	100	150	300		
Chlorine	mg/L			0.02 <sup>d</sup>	0.01	
Total Coliform Bacteria	MPN/100 mL			23		2.2
Turbidity	NTU			5 <sup>e</sup>		
Ammonia <sup>f</sup>	mg/L	1.1		2.1		
	lbs/day <sup>c</sup>	11		21		
Ammonia <sup>g</sup>	mg/L	1.9		3.8		
	lbs/day <sup>c</sup>	19		38		

<sup>a</sup> Five-day biochemical oxygen demand at 20° C

<sup>b</sup> To be ascertained by a 24-hour composite

<sup>c</sup> Based upon a design treatment capacity of 1.2 mgd

<sup>d</sup> 1-hour average

<sup>e</sup> The daily maximum limit is 5 NTU, the daily average shall not exceed 2 NTU

<sup>f</sup> For the period of May 1 through October 31

<sup>g</sup> For the period of November 1 through April 30

3. The arithmetic mean of 20°C BOD (five-day) and total suspended solids in effluent samples collected over a monthly period shall not exceed 15 percent of the arithmetic

mean of the values for influent samples collected at approximately the same times during the same period (85 percent removal) after 1 March 2007.

4. The discharge shall not have a pH less than 6 nor greater than 9.
5. The average dry weather discharge flow shall not exceed 1.12 million gallons until 1 March 2007, after which it shall not exceed 1.2 mgd.

**C. Toxicity Limitation**

Survival of aquatic organisms in 96-hour bioassays of undiluted waste shall be no less than:

Minimum for any one bioassay.....70 %  
Median for any three or more consecutive bioassays .....90 %

**D. Discharge Specifications (Land Disposal)**

1. Objectionable odors originating at this facility shall not be perceivable beyond the limits of the wastewater treatment and disposal areas or property owned by the Discharger.
2. The dissolved oxygen content in the upper zone (1 foot) of the equalization and storage ponds shall not be less than 1.0 mg/L.
3. The equalization and storage ponds and sludge lagoons shall not have a pH less than 6 or greater than 9.
4. The equalization and storage ponds and sludge lagoons shall be managed to prevent breeding of mosquitoes. In particular,
  - a. Weeds shall be minimized.
  - b. Dead algae, vegetation, and debris shall not accumulate on the water surface.
5. Public contact with the wastewater shall be precluded through such means as fences, signs, or other acceptable alternatives.
6. The equalization and storage ponds and sludge lagoons shall have sufficient capacity to accommodate allowable wastewater flow and design seasonal precipitation and ancillary inflow and infiltration during the non-irrigation season. Design seasonal precipitation shall be based on total annual precipitation using a return period of 100 years, distributed monthly in accordance with historical rainfall patterns. Freeboard shall never be less than two feet (measured vertically to the lowest point of overflow).

**E. Sludge Disposal:**

1. Collected screenings, sludges, and other solids removed from liquid wastes shall be disposed of in a manner approved by the Executive Officer and consistent with *Consolidated Regulations for Treatment, Storage, Processing, or Disposal of Solid Waste*, as set forth in Title 27, CCR, Division 2, Subdivision 1, Section 20005, et seq.
2. Any proposed change in sludge use or disposal practice from a previously approved practice shall be reported to the Executive Officer and USEPA Regional Administrator at least 90 days in advance of the change.
3. Use and disposal of sewage sludge shall comply with existing Federal and State laws and regulations, including permitting requirements and technical standards included in 40 CFR 503.
4. If the State Water Board and the Central Valley Water Board become authorized to implement regulations contained in 40 CFR 503, this Order may be reopened to incorporate appropriate time schedules and technical standards. The Discharger must comply with the standards and time schedules contained in 40 CFR 503 whether or not they have been incorporated into this Order.
5. The Discharger is encouraged to comply with the *Manual of Good Practice for Agricultural Land Application of Biosolids* developed by the California Water Environment Association.
6. Within the Annual Report of each year, the Discharger shall report the volume of sludge generated and its disposition in the previous calendar year.

**F. Receiving Water Limitations:**

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

The discharge shall not cause the following in the receiving water:

1. Concentrations of dissolved oxygen to fall below 7.0 mg/L.
2. Oils, greases, waxes, or other materials in concentrations that cause nuisance, result in a visible film or coating on the water surface or on objects in the water, or otherwise adversely affect beneficial uses.
3. Discoloration that causes nuisance or adversely affects beneficial uses.
4. Ambient pH to be depressed below 6.5, nor raised above 8.5, nor changes in normal ambient pH levels to be exceeded by more than 0.5 units.

5. Biostimulatory substances which promote aquatic growths in concentrations that cause nuisance or adversely affect beneficial uses.
6. Floating material in amounts that cause nuisance or adversely affect beneficial uses.
7. Suspended sediment load and suspended sediment discharge rate altered in such a manner to cause nuisance or adversely affect beneficial uses.
8. Suspended sediment concentrations that cause nuisance or adversely affect beneficial uses.
9. Taste or odor-producing substances to impart undesirable tastes or odors to fish flesh or other edible products of aquatic origin or to cause nuisance or adversely affect beneficial uses.
10. 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
11. The ambient temperature in the receiving water to increase more than 5° F above natural receiving water temperature, nor to increase above 56° F, when such an increase will be detrimental to the fishery – whichever is more restrictive.
12. Deposition of material that causes nuisance or adversely affects beneficial uses.
13. Radionuclides to be present in concentrations that exceed maximum contaminant levels specified in the California Code of Regulations, Title 22; that harm human, plant, animal or aquatic life; or that result in the accumulation of radionuclides in the food web to an extent that presents a hazard to human, plant, animal, or aquatic life.
14. Toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life. This applies regardless of whether toxicity is caused by a single substance or the interactive effect of multiple substances.
15. Violation of any applicable water quality standard for receiving waters adopted by the Central Valley Water Board or the State Water Board pursuant to the CWA and regulations adopted thereunder.

16. Aquatic communities and populations, including vertebrate, invertebrate, and plant species, to be degraded.
17. 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.
18. Electrical conductivity to exceed 230 umhos/cm (50 percentile) or 235 umhos/cm (90 percentile) at Knights Landing above Colusa Basin Drain; or 240 umhos/cm (50 percentile) or 340 umhos/cm (90 percentile) at I Street Bridge, based upon previous 10 years of record.
19. Upon adoption of any applicable water quality standard for receiving waters by the Central Valley Water Board or the State Water Board pursuant to the CWA or regulations adopted thereunder, this permit may be reopened and receiving water limitations added.

**G. Ground Water Limitations:**

The discharge shall not cause the groundwater to exceed water quality objectives, unreasonably affect beneficial uses, or cause a condition of pollution or nuisance. The applicable groundwater objective for coliform bacteria is 2.2 MPN/100 mL (maximum) over any seven day period.

**H. Pretreatment Program Provisions**

1. The Discharger shall implement, as more completely set forth in 40 CFR 403.5, the necessary legal authorities, programs, and controls to ensure that the following incompatible wastes are not introduced to the treatment system where incompatible wastes are:
  - a. Wastes which create a fire or explosion hazard in the treatment works;
  - b. Wastes which will cause corrosive structural damage to treatment works, but in no case wastes with a pH lower than 5.0, unless the works is specially designed to accommodate such wastes;
  - c. Solid or viscous waste in amounts which cause obstruction to flow in sewers, or which cause other interference with proper operation or treatment works;
  - d. Any waste, including oxygen demanding pollutants (BOD, etc.), released in such volume or strength as to cause inhibition or disruption in the treatment works, and subsequent treatment process upset and loss of treatment efficiency;

- e. Heat in amounts that inhibit or disrupt biological activity in the treatment works, or that raise influent temperatures above 40°C (104°F), unless the treatment works is designed to accommodate such heat;
  - f. Petroleum oil, non-biodegradable cutting oil, or products of mineral oil origin in amounts that will cause interference or pass through;
  - g. Pollutants which result in the presence of toxic gases, vapors, or fumes within the treatment works in a quantity that may cause acute worker health and safety problems; and
  - h. Any trucked or hauled pollutants, except at points predesignated by the Discharger.
2. The Discharger shall implement, as more completely set forth in 40 CFR 403.5, the legal authorities, programs, and controls necessary to ensure that indirect discharges do not introduce pollutants into the sewage system that either alone or in conjunction with a discharge or discharges from other sources:
    - a. Flow through the system to the receiving water in quantities or concentrations that cause a violation of this Order, or
    - b. Inhibit or disrupt treatment processes, treatment system operations, or sludge processes, use, or disposal and either cause a violation of this Order or prevent sludge use or disposal in accordance with this Order.
  3. The Discharger shall notify industrial users, subject to Categorical Pretreatment Standards under 40 CFR 403.6 and 40 CFR Chapter I, Subchapter N, of their discharge effluent limitations. The limitations must be at least as stringent as the pretreatment standards contained in the applicable federal category. The Discharger may develop more stringent technically based local limitations if it can show cause. The Discharger shall notify the Regional Board if an industrial user violates its discharge effluent limitations to the collection system.

**I. Provisions:**

1. Treatment facilities shall be located and operated to prevent inundation or washout due to floods with a 100-year return frequency.
2. The existing permit included a compliance schedule for achieving compliance with the tertiary treatment requirements and associated Effluent Limitations of that order. The compliance schedule is revised to have the following time schedule:



<u>Task</u>	<u>Report Due Date</u>	<u>Compliance Due</u>
Submit Annual Status Report Full Compliance	<b>15 April, annually</b>	<b>1 March 2007</b>

The Discharger shall submit to the Central Valley Water Board on or before each compliance report due date, the specified document or, if appropriate, a written report detailing compliance or noncompliance with the specific schedule date and task. If noncompliance is being reported, the reasons for such noncompliance shall be stated, plus an estimate of the date when the Discharger will be in compliance.

3. The Discharger shall not allow pollutant-free wastewater to be discharged into the collection, treatment, and disposal system in amounts that significantly diminish the system's capability to comply with this Order. Pollutant-free wastewater means rainfall, groundwater, cooling waters, and condensates that are essentially free of pollutants.
4. **Within one year of the adoption date of this order** the Discharger shall submit to the Central Valley Water Board a Sanitary Sewer System Operation, Maintenance, Overflow Prevention, and Overflow Response Plan (SSO Plan) that describes the actions designed to prevent or minimize the potential for sanitary sewer overflows. The Discharger shall amend the SSO Plan as necessary. The Discharger shall ensure that the up-to-date SSO Plan is readily available to maintenance personnel at all times and that personnel are familiar with the plan.
5. At a minimum, the Operation and Maintenance portion of the SSO Plan shall contain or describe the following:
  - a. Plans of the sewer system, identifying sewer mains, manholes, cleanouts, any air relief valves, and any other specific critical equipment or infrastructure;
  - b. A listing of equipment and elements to be inspected, a description of inspection procedures and inspection frequency, and sample inspection forms;
  - c. A schedule for routine inspection and testing of manholes, sewer system piping, valves, and other key system components, and rehabilitation procedures to be followed in the case that such rehabilitation is necessary;
6. At a minimum, the Overflow Prevention and Response portion of the SSO Plan shall contain or describe the following:
  - a. Response procedures for sanitary sewer overflows. Procedures shall minimize the volume of sewage that may enter surface waters, and minimize the adverse effects of sewer overflows on water quality and public health. Procedures shall also ensure that all overflows are properly identified, responded to and reported; and

- b. A plan to notify the Glenn County Environmental Health Department and a public notification plan, in which any posting of areas contaminated with sewage is performed at the direction of the Glenn County Environmental Health Department. All parties with a reasonable potential for exposure to an overflow event shall be notified. Any spill in excess of 1,000 (one thousand) gallons to a surface water must also be immediately reported to the State of California Office of Emergency Services. Failure to report such a spill in accordance with the above laws and regulations is a misdemeanor punishable by fine and imprisonment.
7. The SSO Plan shall include a description of the specific steps that will be taken over the lifetime of this Order to further reduce I&I to the Willows WWTP and a schedule for achieving the steps described in that document.
8. Within **180 days** of receipt of the 12<sup>th</sup> effluent sample results analyzed for priority pollutants, but no later than 1 October 2008, (see Monitoring and Reporting Program No. R5-2006-0009), the Discharger shall submit a report summarizing the results and detailing whether any priority pollutant has a reasonable potential to cause or contribute to an in-stream excursion above a water quality standard, including Basin Plan numeric and narrative objectives or NTR and CTR criteria. If such reasonable potential is determined, the Central Valley Water Board will reopen this Order and include effluent limits for those pollutants.
9. The Discharger shall conduct the chronic toxicity testing specified in the Monitoring and Reporting Program. If the testing indicates that the discharge causes, has the reasonable potential to cause, or contributes to an in-stream excursion above effluent toxicity limitations established by this Order, the Discharger shall initiate a Toxicity Identification Evaluation (TIE) to identify the causes of toxicity. Upon completion of the TIE, the Discharger shall submit a workplan to conduct a Toxicity Reduction Evaluation (TRE) and, after Central Valley Water Board evaluation, conduct the TRE. This Order will be reopened and a chronic toxicity limitation included and/or a limitation for the specific toxicant identified in the TRE included.
10. The Discharger shall use the best practicable treatment or control technique currently available to limit mineralization to no more than a reasonable increment.
11. The Discharger shall report to the Central Valley Water Board any toxic chemical release data it reports to the State Emergency Response Commission within 15 days of reporting the data to the Commission pursuant to section 313 of the Emergency Planning and Community Right to Know Act of 1986.
12. 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."

13. The Discharger shall comply with Monitoring and Reporting Program No. R5-2006-0009, which is part of this Order, and any revisions thereto as ordered by the Executive Officer.

When requested by USEPA, 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. DMRs must be signed and certified as required by the standard provisions. The Discharge shall submit the original DMR and one copy of the DMR to the address listed below:

State Water Resources Control Board  
Discharge Monitoring Report Processing Center  
Post Office Box 671  
Sacramento, CA 95812

14. This Order expires on **1 January 2011**, 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.
15. Prior to making any change in the discharge point, place of use, or purpose of use of the wastewater, the Discharger shall obtain approval of, or clearance from, the State Water Board (Division of Water Rights).
16. In the event of any change in operation, 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.

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 Central Valley Water 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 CWC. Transfer shall be approved or disapproved in writing by the Executive Officer.

WASTE DISCHARGE REQUIREMENTS ORDER NO. R5-2006-0009  
NPDES NO. CA0078034  
CITY OF WILLOWS AND ECO RESOURCES, INC.  
WILLOWS WASTEWATER TREATMENT PLANT  
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I, KENNETH D. LANDAU, Acting 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 26 January 2006.

ORIGINAL SIGNED BY  
KENNETH D. LANDAU, Acting Executive Officer

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
CENTRAL VALLEY REGION

NPDES NO. CA0078034

MONITORING AND REPORTING PROGRAM NO. R5-2006-0009  
FOR  
CITY OF WILLOWS AND ECO RESOURCES, INC.  
WILLOWS WASTEWATER TREATMENT PLANT  
GLENN COUNTY

The Code of Federal Regulations (CFR) at 40 CFR Section 122.48 requires that all NPDES permits specify monitoring and reporting requirements. California Water Code sections 13267 and 13383 also authorize the Central Valley Regional Water Quality Control Board (Central Valley Water Board) to require technical and monitoring reports. This Monitoring and Reporting Program establishes monitoring and reporting requirements, which implement the federal and California regulations.

**INFLUENT MONITORING**

A sampling station shall be established where representative samples of influent can be collected. Samples shall be collected at the influent sampling station at approximately the same time as effluent samples and should be representative of the influent flow for the period sampled. Influent samples shall be analyzed according to the following schedule.

<u>Constituent</u>	<u>Units</u>	<u>Type of Sample</u>	<u>Sampling Frequency</u>
Flow	mgd	Continuous	Daily
BOD <sub>5</sub>	mg/L	24-hr Composite	Monthly
Total Suspended Solids	mg/L	24-hr Composite	Monthly

**EFFLUENT MONITORING**

Effluent samples shall be collected at Discharge Point 001 and 002 downstream of the last connection through which wastes can be admitted to the outfall. Effluent samples shall be representative of the volume and nature of the discharge. Composite samples may be collected by a proportional sampling device approved by the Executive Officer or by grab samples composited proportionately to flow. When compositing grab samples, the sampling interval shall not exceed one hour. The time of collection of grab samples shall be recorded. Effluent samples shall be analyzed according to the following schedule.

<u>Constituent</u>	<u>Units</u>	<u>Type of Sample</u>	<u>Sample Frequency</u>
Flow	mgd	Continuous	Daily
Total Residual Chlorine	mg/L	Continuous	Daily
Turbidity	NTU	Grab	Daily
BOD <sub>5</sub>	mg/L	24-hr Composite <sup>d</sup>	Weekly
Total Suspended Solids	mg/L	24-hr Composite <sup>d</sup>	Weekly

pH	pH units	Grab	Weekly
Electrical Conductivity @ 25°C	umhos/cm	Grab	Weekly
Total Coliform Bacteria	MPN/100 mL	Grab	Weekly
Temperature	°C	Grab	Weekly
Ammonia	mg/L	Grab	Weekly
Priority Pollutants <sup>a</sup>	ug/L	24-hr Composite	Monthly <sup>b</sup>
Acute Toxicity <sup>c</sup>	% survival	Grab	Quarterly
Total Dissolved Solids	mg/L	Grab	Quarterly
Chronic Toxicity	To be done once during permit cycle. See requirements below.		

<sup>a</sup> Samples shall be analyzed for the toxic priority pollutants identified by the California Toxics Rule at 40 CFR 131.38. Effluent samples shall be collected simultaneously with receiving water samples to be analyzed for the Priority pollutants. See requirements below under section “Priority Pollutant Monitoring”.

<sup>b</sup> Priority pollutant sampling shall be performed monthly for the first year (12 months) following the start of operation of the new treatment system (starting no later than 1 March 2007), and then annually thereafter.

<sup>c</sup> All acute toxicity bioassays shall be performed according to EPA-821-R-02-012 *Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms, Fifth Edition*, October 2002 (or latest edition) using *Pimephales promelas* with no pH adjustment, with exceptions granted to the Discharger by the Executive Officer and the Environmental Laboratory Accreditation Program (ELAP). Temperature and pH shall be recorded at the time of bioassay sample collection.

<sup>d</sup> These samples do not need to be 24-hr composites until after the start of operation of the new treatment system (starting no later than 1 March 2007).

## RECEIVING WATER MONITORING

All receiving water samples shall be grab samples. Receiving water samples shall be taken from the following stations during periods of discharge to that receiving water.

<u>Station</u>	<u>Station Description</u>
R-1	1500 feet upstream from the point of discharge when discharging to Agricultural Drain C
R-2	100 feet downstream from the point of discharge when discharging to Agricultural Drain C
R-3	100 feet upstream from the point of discharge when discharging to GCID Lateral 26-2
R-4	100 feet downstream from the point of discharge when discharging to GCID Lateral 26-2

Receiving water samples shall be analyzed according to the following schedule.

<u>Constituent</u>	<u>Units</u>	<u>Station</u>	<u>Sampling Frequency</u>
Dissolved Oxygen	mg/L	R-1, R-2, R-3, R-4	Biweekly
pH	pH units	R-1, R-2, R-3, R-4	Biweekly
Turbidity	NTU	R-1, R-2, R-3, R-4	Biweekly
Temperature	°C	R-1, R-2, R-3, R-4	Biweekly
Electrical Conductivity @ 25°C	umhos/cm	R-1, R-2, R-3, R-4	Biweekly
Priority Pollutants <sup>a</sup>	ug/L	R-3	Monthly <sup>b</sup>
Fecal Coliform Bacteria	MPN/100 mL	R-1, R-2, R-3, R-4	Quarterly
Ammonia <sup>c</sup>	mg/L	R-1, R-2, R-3, R-4	Quarterly
Priority Pollutants <sup>a</sup>	ug/L	R-1	Annually

<sup>a</sup> Samples shall be analyzed for the toxic priority pollutants identified by the California Toxics Rule at 40 CFR 131.38. Receiving water samples shall be collected simultaneously with effluent samples to be analyzed for the priority pollutants. Monitoring shall be conducted in accordance with procedures described below under section "Priority Pollutant Monitoring".

<sup>b</sup> Priority pollutant sampling shall be performed monthly for the first year (12 months) following the start of operation of the upgraded treatment plant (starting no later than 1 March 2007), and then annually thereafter.

<sup>c</sup> Temperature and pH shall be determined at the same time of sample collection for ammonia.

Whenever receiving water samples are collected, the Discharger shall observe receiving water conditions throughout the reach bounded by Stations R-1, R-2, R-3 and R-4 and record observations pertaining to:

Floating or suspended matter	Films, sheens, and coatings
Discoloration	Algae, fungi, and slime growth
Aquatic life	Potential nuisance conditions
Bottom deposits	

### CHRONIC TOXICITY MONITORING

Chronic toxicity monitoring shall be conducted to determine whether the effluent is contributing toxicity to the receiving water. The testing shall be conducted as specified in EPA-821-R-02-013, *Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms*, Fourth Edition, October 2002. Composite samples shall be collected at the discharge of the plant prior to its entering the unnamed agricultural drain. Twenty-four hour composite samples shall be representative of the volume and quality of the discharge. If at the time of sampling the discharge is not continuous the sample shall be a composite over the entire discharge time for the day. Time of sample collection shall be recorded. The chronic toxicity

monitoring shall be performed on the undiluted effluent samples. The sensitivity of the test organisms to a reference toxicant shall be determined concurrently with each bioassay and reported with the test results. Both the reference toxicant and effluent test must meet all test acceptability criteria as specified in the chronic manual. If the test acceptability criteria are not achieved, then the Discharger must re-sample and re-test within 14 days. Chronic toxicity monitoring shall include the following:

Species: *Pimephales promelas*, *Ceriodaphnia dubia* and *Selenastrum capricornutum*

Frequency: One time no more than 365 days and no less than 180 days prior to expiration of this Order

### **PRIORITY POLLUTANT MONITORING**

The State Water Resources Control Board (State Water Board) adopted the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (known as the State Implementation Policy or SIP). The SIP states that the Regional Boards will require periodic monitoring (at least once prior to issuance and reissuance of a permit) for pollutants for which criteria or objectives apply and for which no effluent limitations have been established.

Receiving water samples shall be collected upstream at receiving water station R-1 and R-3. Receiving water and effluent samples shall be collected simultaneously, and analyzed for the CTR pollutants (identified in Attachment E) plus pH and hardness. The Discharger is not required to perform asbestos monitoring or additional dioxin congener monitoring. All analyses shall be performed at a laboratory certified by the California Department of Health Services. The laboratory is required to submit the Minimum Level (ML) and the Method Detection Limit (MDL) with the reported results for each of the analytes. Laboratory methods and limits shall be as described in the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (2000), unless a variance has been approved by the Executive Officer. If, after a review of the monitoring results, it is determined that the discharge causes, has the reasonable potential to cause, or contributes to in-stream excursions above water quality objectives, this Order will be reopened and limitations based on those objectives will be included. Additionally, if pollutants are detected, but insufficient information exists to establish an effluent limit or determine if an effluent limit is necessary, then additional monitoring will be required to provide sufficient information.

All organic analyses shall be by Gas Chromatography/Mass Spectrometry (GCMS), Method 8260B for volatiles and Method 8270C for semi-volatiles. Pesticides shall be analyzed by Method 8081A. Dioxins shall be analyzed by Method 1613/8290. If organic analyses are run by Gas Chromatography (GC) methods, any detectable concentrations are to be confirmed by GCMS. Inorganics shall be analyzed by the following Methods.



Metals shall be analyzed by the USEPA methods listed below. Alternative analytical procedures may be used with approval by the Central Valley Water Board if the alternative method has the same or better detection level than the method listed.

Method Description	EPA Method	Constituents
Inductively Coupled Plasma/Mass Spectrometry (ICP/MS)	1638	Antimony, Beryllium, Cadmium, Copper, Lead, Nickel, Selenium, Silver, Thallium, Total Chromium, Zinc
Cold Vapor Atomic Absorption (CVAA)	1631	Mercury
Gaseous Hydride Atomic Absorption (HYDRIDE)	206.3	Arsenic
Flame Atomic Absorption (FAA)	218.4	Chromium VI
Colorimetric	335./ 2 or 3	Cyanide

All priority pollutant metal analyses shall be performed at a laboratory certified by the California Department of Health Services. The laboratory is required to submit the Minimum Level (ML) and the Method Detection Limit (MDL) with the reported results for each constituent. The MDL should be as close as practicable to the USEPA MDL determined by the procedure found in 40 CFR Part 136. The results of analytical determinations for the presence of chemical constituents in a sample shall use the following reporting protocols:

- a. Sample results greater than or equal to the reported ML shall be reported as measured by the laboratory.
- b. Sample results less than the reported ML, but greater than or equal to the laboratory's MDL, shall be reported as "Detected but Not Quantified," or DNQ. The estimated chemical concentration of the sample shall also be reported.
- c. For the purposes of data collection, the laboratory shall write the estimated chemical concentration next to DNQ as well as the words "Estimated Concentration." Numerical estimates of data quality may be by percent accuracy (+ or – a percentage of the reported value), numerical ranges (low to high), or any other means considered appropriate by the laboratory.
- d. Sample results that are less than the laboratory's MDL shall be reported as "Not Detected" or ND.

## SLUDGE

If offsite sludge disposal occurs in a given year, then a composite sample of sludge shall be collected in accordance with the USEPA POTW Sludge Sampling and Analysis Guidance Document, August 1989, and tested for the following metals:

Cadmium	Lead
Chromium	Nickel
Copper	Zinc

Sampling records shall be retained for a minimum of five years. A log shall be kept of sludge quantities generated, and of handling and disposal activities. The frequency of entries is discretionary; however, the log should be complete enough to serve as a basis for part of the annual report. The Discharger shall submit annually by 30 January:

1. Annual sludge production in dry tons and percent solids.
2. A schematic diagram showing sludge-handling facilities and a solids flow diagram.
3. A description of disposal methods, including the following information related to the disposal methods used at the facility. If more than one method is used, include the percentage of annual sludge production disposed by each method.
  - a. For landfill disposal, include: (1) the Central Valley Water Board's waste discharge requirement Order numbers that regulate the landfill(s) used; (2) the present classifications of the landfill(s) used; and (3) the names and locations of the facilities receiving sludge.
  - b. For land application, include: (1) the location of the site(s); (2) the Central Valley Water Board's waste discharge requirement numbers that regulate the site(s); (3) the application rate in lbs/acre/year (specify wet or dry); and (4) subsequent uses of the land.
  - c. For other disposal methods, include: (1) the location of the site(s); and (2) the Central Valley Water Board's waste discharge requirement numbers that regulate the site(s).

## GROUNDWATER MONITORING

Prior to construction, plans and specifications for groundwater monitoring wells shall be submitted to Central Valley Water Board staff for review and approval. Wells shall comply with requirements of the Department of Water Resources. Quarterly samples shall be collected from the three existing monitoring wells and analyzed for the following:

<u>Constituent</u>	<u>Units</u>
Nitrate (N)	mg/L
Electrical Conductivity	µmhos/cm
Chemical Oxygen Demand	mg/L
pH	pH units
Elevation <sup>1</sup>	feet, hundredths

<sup>1</sup> The groundwater elevation shall be measured prior to purging the wells. The elevation shall be measured to the nearest one-hundredth of a foot from mean sea level. The groundwater elevation shall be used to calculate the direction of groundwater flow, which must be reported with the monitoring reports.

### REPORTING

Unless otherwise specified, monitoring results shall be submitted to the Central Valley Water Board by the first day of the second month following sample collection (i.e., the January report is due by 1 March). Effective in January 2004, any NPDES effluent monitoring report received more than 30 days after its due date is subject to a \$3000 Mandatory Minimum Penalty [Water Code Section 13385]. An additional \$3000 penalty is required for each 30 days a report is late. If you have no discharge, you must still submit a report indicating that no discharge occurred, or you will be subject to the \$3000 Penalties.

In reporting the monitoring data, the Discharger shall arrange the data in tabular form so that the date, the constituents, and the concentrations are readily discernible. The data shall be summarized in such a manner to illustrate clearly whether the discharge complies with the waste discharge requirements.

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 Reports.

Upon written request of the Central Valley Water Board, the Discharger shall submit an Annual Report (calendar year) with both tabular and graphical summaries of the monitoring data obtained during the previous year. The report shall discuss the facility's 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. The Annual Report shall be submitted by **1 February of the subsequent year** and shall address all aspects of the waste discharge requirements (effluent limitations, compliance schedules, storm water, sludge handling and disposal, etc.)

At any time during the term of this permit, the State Water Board or Central Valley Water Board may notify the Discharger to electronically submit self-monitoring reports. Until such notification is

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given, the Discharger shall submit self-monitoring reports in accordance with the requirements described above.

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

The Discharger shall implement the Monitoring and Reporting Program beginning on the effective date of this Order.

Ordered by: \_\_\_\_\_ *ORIGINAL SIGNED BY* \_\_\_\_\_  
KENNETH D. LANDAU, Acting Executive Officer

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## INFORMATION SHEET

ORDER NO. R5-2006-0009  
NPDES NO. CA0078034  
CITY OF WILLOWS AND ECO RESOURCES, INC.  
WILLOWS WASTEWATER TREATMENT PLANT  
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### **GENERAL INFORMATION**

The City of Willows and ECO Resources, Inc. (hereafter collectively referred to as Discharger) submitted a Report of Waste Discharge dated 22 September 2005, and applied to renew its permit to discharge waste under the National Pollutant Discharge Elimination System (NPDES) from the Willows Wastewater Treatment Plant to Agricultural Drain C, which is tributary to Logan Creek and to Glenn-Colusa Irrigation District (GCID) Lateral 26-2, both of which are tributary to the Colusa Basin Drain. The Discharger is currently regulated under Waste Discharge Requirements Order No. R5-01-066 (NPDES No. CA0078034), adopted by the Central Valley Water Board on 16 March 2001.

The City of Willows owns a wastewater collection, treatment, and disposal system, and provides sewerage service to the City of Willows and Northeast Willows Community Service District in Glenn County. ECO Resources, Inc. operates the WWTP. The treatment plant is in Section 15, Township 19 North, Range 3 West of the Mt. Diablo Base Line and Meridian. Treated municipal wastewater is discharged to Agricultural Drain C and may discharge to GCID Lateral 26-2, waters of the United States.

The current treatment system consists of a comminutor, primary aeration ponds, stabilization ponds, and disinfection.

The City of Willows is currently constructing plant improvements to upgrade the processes to meet the requirements included in the existing NPDES permit. Upon completion of the plant upgrades the treatment system will consist of influent screening, extended aeration activated sludge with secondary clarifiers, continuous backwash filters, disinfection with sodium hypochlorite, dechlorination using calcium thiosulfate, equalization and emergency storage ponds, and sludge storage lagoons.

The facility is in the Colusa Trough Hydrologic Sub Area No. 520.21, as depicted on interagency hydrologic maps prepared by the California Department of Water Resources in August 1986.

### **BENEFICIAL USES**

The receiving streams are Agricultural Drain C and GCID Lateral 26-2, which are tributary to the Colusa Basin Drain. Based on the available information, the worst-case dilution is assumed to be zero to provide protection for the receiving water beneficial uses. The impact of assuming zero dilution within the receiving water is that discharge limitations based on acute and chronic toxicity are end-of-pipe limits with no allowance for dilution within the receiving water.

The beneficial uses of Agricultural Drain C and GCID Lateral 26-2 are not individually identified in the Basin Plan. However, the Basin Plan requires that the beneficial uses of any specifically identified water body apply to its tributary streams. GCID Lateral 26-2 is used for irrigation of crops and is used at times to supply water to the Sacramento Wildlife Refuge. Upon review of the flow conditions, habitat values, and beneficial uses of Agricultural Drain C and GCID Lateral 26-2, the Central Valley Water Board finds that the beneficial uses identified in the Basin Plan for the Colusa Basin Drain are applicable to Agricultural Drain C and GCID Lateral 26-2. The Basin Plan identifies the following beneficial uses for the Colusa Basin Drain: agricultural irrigation and stock watering; water contact recreation, including canoeing and rafting; warm and potential cold freshwater aquatic habitat; warm water fish migration habitat; warm water spawning, reproduction, and/or early development habitat; and wildlife habitat.

State Water Resources Control Board Resolution 88-63 "Sources of Drinking Water" provides that "All surface and ground waters of the State are considered to be suitable, or potentially suitable, for municipal or domestic water supply and should be so designated by the Regional Boards with the exception of: ...2.b. The water is in systems designed or modified for the primary purpose of conveying or holding agricultural drainage waters...". Agricultural Drain C and GCID Lateral 26-2 meet the criteria for an exemption from the beneficial use of municipal and domestic supply.

The beneficial uses of groundwater in the area of the Willows Wastewater Treatment Plant are municipal and domestic water supply, agricultural supply, and industrial service and process supply.

## **BASIS FOR PERMIT REQUIREMENTS**

The Discharger operates a publicly owned wastewater treatment facility, and therefore, is subject to the USEPA secondary treatment regulations at 40 CFR 133.

### **Discharge Prohibitions**

Prohibitions on bypass, nuisance, and discharges that occur in a manner different than described by the Order are retained from Order No. R5-01-066 and/or are consistent with objectives of the Basin Plan, as required by the California Water Code and the Clean Water Act (CWA), to protect the beneficial uses of waters of the State.

### **Establishment of Mass-Based Effluent Limits and Effluent Flow Limit**

This Order establishes concentration-based and mass-based effluent limits. The mass-based effluent limits are calculated using the concentration-based limits and the design effluent flow rate for the facility as provided by the Discharger (1.12 mgd currently, 1.2 mgd after upgrade).

### **Dilution Considerations for Effluent Limit Calculations**

In determining effluent limits, the Central Valley Water Board did not allow credit for effluent dilution by the receiving water. Effluent limits, therefore, have been established to attain all

applicable water quality criteria/objectives at the point of discharge. The Central Valley Water Board may grant a dilution credit and a mixing zone only following independent study and demonstration by the Discharger that a dilution credit is appropriate.

### **Determination of Effluent Limits for CTR Constituents and Toxicity**

#### *Reasonable Potential Analysis*

USEPA regulations at 40 CFR 122.4 (d) require effluent limitations for all pollutants that are or may be discharged at a level that will cause or have the reasonable potential to cause or contribute to an in-stream excursion above a narrative or numerical water quality standard. The *National Toxics Rule* (NTR) establishes water quality criteria for toxic pollutants applicable to the Discharger at 40 CFR Part 131.36. On May 18, 2000, water quality criteria of the NTR were supplemented by criteria of the *California Toxics Rule* (CTR) at 40 CFR 131.38. The NTR, CTR, and the Basin Plan contain water quality standards applicable to the discharge. The State Water Board adopted the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (the State Implementation Policy or SIP), which contains guidance on implementation for the NTR and CTR.

From October 2001 through November 2002, the Discharger collected effluent and receiving water samples for analysis of the NTR/CTR toxic priority pollutants. Analyses were performed and reported in accordance with procedures established by the SIP. Analytical results were generated for volatile and semi-volatile substances, metals, 2,3,7,8-TCDD dioxin, and sixteen dioxin congeners. Because the upgraded treatment system will produce a much higher quality effluent (activated sludge followed by filtration) the previous CTR sampling is not representative of the effluent from the new plant. This Order requires the Discharger to sample for CTR constituents again once the new treatment system is operational so that a determination can be made as to whether additional effluent limits are required. The results of sampling the receiving water in Agricultural Drain C is still valid and is not required to be repeated.

#### *Acute and Chronic Toxicity*

The Basin Plan includes a narrative water quality objective for toxicity that requires receiving waters to be free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life. The Basin Plan also requires, at a minimum, 96-hour bioassays to evaluate compliance with the narrative objective, and, where appropriate, acute toxicity limitations and monitoring must be required. Section 4 of the SIP requires chronic toxicity monitoring to be conducted to demonstrate compliance with narrative toxicity objectives. This Order implements both the Basin Plan and SIP toxicity requirements.

The State has listed the Colusa Basin Drain on the State's 303 (d) list as impaired for toxicity and several pesticides with the potential source listed as agriculture. The Central Valley Water Board has determined that the Willows WWTP (once ammonia is removed) is an unlikely contributor of toxicity or pesticides to the Colusa Basin Drain because it treats strictly domestic and commercial

type wastewater, and does not have any industrial discharges to its treatment plant. The Central Valley Water Board, therefore, is proposing to require acute and chronic toxicity monitoring to determine the need for acute and/or chronic toxicity effluent limitations and to determine compliance with the narrative objective for toxicity.

### **Determination of Effluent Limits for non-CTR Constituents**

#### *Chlorine*

The Basin Plan prohibits the discharge of toxic materials in toxic concentrations. Chlorine is used for disinfection of the effluent waste stream. Chlorine can cause toxicity to aquatic organisms when discharged to surface waters. USEPA recommends, in their Ambient Water Quality Criteria for the Protection of Fresh Water Aquatic Life, that chlorine concentrations not exceed 0.02 mg/L as a 1-hour average and 0.01 mg/L as a 4 day average. The use of chlorine as a disinfectant in the wastewater treatment process presents a reasonable potential that it could be discharged in toxic concentrations. An effluent limitation for chlorine has been included in the Order to protect the receiving stream aquatic life beneficial uses. The effluent limitation has been established at the USEPA recommended ambient water quality criteria for chlorine. The one-hour average limitation, rather than an instantaneous or daily maximum, will be applied for compliance determinations. A one-hour average limitation allows for continuous monitoring anomalies while protecting aquatic organisms against toxicity.

#### *Biochemical Oxygen Demand (BOD), Total Suspended Solids (TSS) and Coliform*

The beneficial uses of Agricultural Drain C, Logan Creek and GCID Lateral 26-2 include contact recreational uses and irrigation. To protect these beneficial uses, the Central Valley Water Board finds that the wastewater must be disinfected and adequately treated to prevent disease. The principal infectious agents (pathogens) that may be present in raw sewage may be classified into three broad groups; bacteria, parasites and viruses. Tertiary treatment, consisting of chemical coagulation, sedimentation and filtration, has been found to remove approximately 99.5% of viruses. Filtration is an effective means of reducing viruses and parasites from the waste stream. The wastewater must be treated to tertiary standards (filtered) to protect contact recreational uses when a 20-to-1 dilution of secondary effluent is not provided in the receiving stream. DHS has developed reclamation criteria, California Code of Regulations, Title 22, Division 4, Chapter 3, (Title 22) for the reuse of wastewater. Title 22 requires that for spray irrigation of food crops, parks, playgrounds, school yards and other areas of similar public access, that wastewater be adequately disinfected, oxidized, coagulated, clarified and filtered and that the effluent total coliform levels not exceed 2.2 MPN/100 mL as a 7-day median. Title 22 is not directly applicable to surface waters, however the Central Valley Water Board finds that it is appropriate to apply the DHS reclamation criteria because Agricultural Drain C, Logan Creek and GCID Lateral 26-2 may be used for agriculture, and contact recreation purposes. The stringent disinfection criteria of Title 22 are appropriate since the undiluted effluent may be used for the irrigation of food crops. Coliform organisms are intended as an indicator of the effectiveness of the entire treatment train and the effectiveness of removing other pathogens. The method of treatment is not prescribed by this



Order, but must meet the level of treatment, or equivalent, as specified in the DHS regulations and recommendations. In addition to coliform testing, a turbidity effluent limitation has been included as a second indicator of the effectiveness of the treatment process and to assure compliance with the required level of treatment. The tertiary treatment process, or equivalent, is also capable of reliably meeting a reduced turbidity limitation of 2 NTU as a daily average. Failure of the filtration system such that virus removal is impaired would normally result in increased particles in the effluent, which result in higher effluent turbidity. Turbidity has a major advantage for monitoring filter performance, allowing immediate detection of filter failure and rapid corrective action. Coliform testing, by comparison, is not conducted continuously and requires several hours, to days, to identify high coliform concentrations. The application of tertiary treatment processes results in the ability to achieve lower levels for BOD and TSS than the equivalent to secondary standards prescribed in the existing permit, the BOD and TSS limitations have been revised to tertiary standards beginning on 1 March 2007 when the new treatment processes will be operational. The establishment of tertiary limits has not been previously required for this discharge, therefore, a revised schedule for compliance with the tertiary treatment requirement is included as a Provision in this Order. This revised schedule allows an additional year over the existing schedule, but is still less than 5 years. Limits from the existing permit are continued until the plant upgrade is operational.

In accordance with 40 CFR 122.45, mass limitations for BOD and TSS, based on the facility's design flow of 1.2 mgd (1.12 mgd for current design flow), are included in the permit to prevent dilution as a means of complying with concentration based effluent limitations.

#### *Settleable Solids*

The existing permit contained monthly average and daily maximum settleable solids limits of 0.1 mL/L and 0.2 mL/L, respectively. Suspended solids limits are in place and measure a similar parameter that is of greater concern in relation to water quality. This Order eliminates the settleable solids limits. With TSS limits in place, the settleable solids limits can be eliminated and still protect water quality objectives in the receiving water.

#### *pH*

The Basin Plan provides that the pH of surface waters shall not be depressed below 6.5 nor raised above 8.5 nor shall the discharge alter pH of the receiving water more than 0.5 units. Federal regulations at 40 CFR 133.102(c) describes the minimum level of effluent quality to be attained by secondary treatment facilities for pH to be within 6.0 and 9.0 units. This Order requires the pH of the effluent to be maintained within the limits of 6.0 and 9.0 pH units.

#### *Ammonia*

Untreated domestic wastewater contains ammonia. Nitrification is a biological process that converts ammonia to nitrate, and denitrification is a process that converts nitrate to nitrogen gas, which is then released to the atmosphere. The existing permit established evidence of a reasonable

potential for the plant effluent to exceed the USEPA Water Quality Criteria for ammonia and contains a limit for ammonia based on effluent pH and temperature. The Basin Plan prohibits the discharge of toxic materials in toxic concentrations. This order also includes limitations for ammonia. The effluent limitations for ammonia in the existing permit varied based on temperature and pH. Recent State Water Board decisions have determined that it is preferable to establish fixed or seasonal effluent limitations, as provided in the SIP, rather than floating limitations. Therefore, the draft permit establishes seasonal effluent limitations for ammonia based on the following:

#### Toxic Criteria

For protection of the Basin Plan's narrative toxicity objective, the USEPA 1999 Update of Ambient Water Quality Criteria for Ammonia provides the applicable water quality criteria. The most stringent acute ammonia criteria are applied when salmonids are present within the water column. Acute and chronic ammonia toxicity are based on the assumption that salmonids are not present and early life stages of fishes are present in the receiving water. (Note that at the temperatures of the receiving stream, the chronic criteria for early life stages present are the same as without early life stages.)

#### Acute Toxicity

The acute criterion, or criterion maximum concentrations (CMC), for ammonia is a function of pH, and is stated as a 1-hour average concentration. A worst-case scenario occurs when there is little to no dilution of the effluent by the receiving water. Therefore, for the acute criterion, water quality objectives need to be achieved in the effluent at the end-of-pipe. As allowed by the USEPA *Technical Support Document for Water Quality-based Toxics Control* (TSD), this Order calculates the CMC using critical conditions that are a combination of worst-case observations. The receiving water and effluent pH were evaluated to determine the critical pH for calculation of the acute criterion.

Forty nine receiving water pH observations from November 2003 through October 2005 were evaluated to determine the acute design pH. The maximum pH observation during this time was 8.3 pH units. However, due to the variability of pH sampling, using the maximum pH may be over protective. Therefore, the 90th percentile of pH readings was used to determine the acute design pH. The 90th percentile was chosen for acute toxicity since it would be protective of the short-term spikes in ammonia concentration, for which the acute criterion is designed to protect. The 90th percentile of receiving water pH was 8.0 units. In evaluating the effluent, the 90<sup>th</sup> percentile pH of 113 samples is 8.3 pH units. There are time when there is minimal dilution in the receiving water. Therefore, the acute criterion for ammonia was determined by using a pH of 8.3 units, resulting in a CMC of 4.71 mg/L, ammonia as nitrogen, calculated with salmonids absent.

#### Chronic Toxicity

The chronic criterion, or criterion continuous concentration (CCC), for ammonia is a function of both pH and temperature. For ammonia, the CCC is stated as a 30-day average concentration, with the highest 4-day average within the 30-day average not to exceed 2.5 times the CCC. As allowed by the TSD, the CCC is calculated using critical conditions that are a combination of worst-case observations. A worst-case scenario occurs when there is little to no dilution of the effluent by the

receiving water. The receiving water and effluent pH and temperature were evaluated to determine the critical pH for calculation of the chronic criterion.

Forty nine receiving water pH observations from November 2003 through October 2005 were evaluated to determine the chronic design pH. For the chronic criterion, the median pH observations were used. The median was chosen for chronic toxicity, because over a period of time receptors would be exposed to a more or less average ammonia concentration. Using this approach, the chronic design pH was calculated as 7.8 pH units, median pH of the receiving water. This exceeds the median effluent pH, which was calculated as 7.6 pH units, based on 113 measurements from November 2003 through October 2005. Therefore, the critical pH for calculation of the chronic criterion is 7.8 pH units.

The chronic criterion decreases as temperature increases. Since the effluent and receiving water temperatures vary seasonally, a chronic criterion was calculated for both winter (November 1 – April 30) and summer (May 1 – October 31). The effluent temperature exceeds the receiving water temperature. Therefore, the 30-day average effluent temperature was used in the calculation of the chronic criterion. Based on 53 effluent temperature measurements, the maximum winter 30-day average effluent temperature was 19.6°C and based on 53 temperature measurements the maximum summer 30-day average effluent temperature was 28.5°C. Using the chronic design pH of 7.8 units, this results in a summer chronic criterion of 1.29 mg/L, ammonia as nitrogen, and a winter chronic criterion of 2.29 mg/L, ammonia as nitrogen.

#### Effluent Limitations

Applying 40 CFR 122.44(d)(1)(vi)(B), effluent limitations for ammonia are included in this Order and are based on the USEPA Ambient Water Quality Criteria for the protection of the beneficial use of freshwater aquatic habitat. This Order contains final summer average monthly effluent limitation (AMEL) and maximum daily effluent limitation (MDEL) for ammonia of 1.1 mg/L and 2.1 mg/L, respectively and a winter AMEL and MDEL of 1.6 mg/L and 3.1 mg/L, respectively. Due to periods of minimal flow in the receiving water, a dilution credit cannot be granted. Following are the steps to calculate the effluent limits for ammonia:

#### Step 1: Applicable water quality criteria (C)

The USEPA Ambient Water Quality Criteria are a function of pH and temperature and are given by the following equations for criterion continuous concentration (CCC) and criterion maximum concentration (CMC):

$$CCC = \left( \frac{0.0577}{1 + 10^{7.688 - pH}} + \frac{2.487}{1 + 10^{pH - 7.688}} \right) \times \min(2.85 \text{ or } 1.45 \times 10^{0.028 \times (25 - T)}) \text{ mg/L}$$

$$CMC = \frac{0.411}{1 + 10^{7.204 - pH}} + \frac{58.4}{1 + 10^{pH - 7.204}} \text{ mg/L}$$

Substituting the pH and temperature conditions selected above for summer condition gives the following criteria:

$$(1.45 \times 10^{0.028 \times (25 - 28.5)}) = 1.16 < 2.85, \text{ therefore}$$

$$CCC = \left( \frac{0.0577}{1 + 10^{7.688 - 7.8}} + \frac{2.487}{1 + 10^{7.8 - 7.688}} \right) \times (1.45 \times 10^{0.028 \times (25 - 28.5)})$$

$$CCC = 1.29 \text{ mg/L}$$

$$CMC = \frac{0.411}{1 + 10^{7.204 - 8.3}} + \frac{58.4}{1 + 10^{8.3 - 7.204}}$$

$$CMC = 4.71 \text{ mg/L}$$

Step 2: Calculate the ECA

$$ECA = \text{Effluent Concentration Allowance} = C + D * (C - B)$$

Where D = dilution credit and B = background

$$D = 0, \text{ therefore } ECA = C$$

$$ECA_{CCC} = 1.29 \text{ mg/L}$$

$$ECA_{CMC} = 4.71 \text{ mg/L}$$

Step 3: Determine long-term average (LTA)

$$C_v = 0.6 \text{ (actual effluent variability is unknown for the new treatment system)}$$

$$ECA \text{ multiplier}_{\text{chronic99}} = 0.527$$

$$ECA \text{ multiplier}_{\text{acute99}} = 0.321$$

$$LTA_{CCC} = 1.29 * 0.527 = 0.680 \text{ mg/L}$$

$$LTA_{CMC} = 4.71 * 0.321 = 1.51 \text{ mg/L}$$

Step 4: Select lowest LTA

$$LTA_{CMC} = 0.680 \text{ mg/L}$$

Step 5: Calculate water quality based effluent limits

$$C_v = 0.6; \text{AMEL multiplier}_{95} = 1.55 \text{ (n=4)}$$

$$\text{MDEL multiplier}_{99} = 3.11$$

$$\text{Average Monthly Effluent Limit} = 0.680 * 1.55 = 1.1 \text{ mg/L}$$

$$\text{Maximum Daily Effluent Limit} = 0.680 * 3.11 = 2.1 \text{ mg/L}$$

The above calculations are for the summer condition. The following table summarizes the calculations for both summer and winter conditions:

**Table F-1**  
**Summary of WQBEL Calculations for Ammonia**

	May 1 to October 31		November 1 to April 30	
	Acute	Chronic	Acute	Chronic
pH <sup>(1)</sup>	8.3	7.8	8.3	7.8
Temperature (°C) <sup>(2)</sup>	N/A	28.5	N/A	19.6
Criteria (mg/L) <sup>(3)</sup>	4.71	1.29	4.71	2.29
Dilution Credit	No Dilution	No Dilution	No Dilution	No Dilution
ECA	4.71	1.29	4.71	2.29
ECA Multiplier	0.321	0.527	0.321	0.527
LTA <sup>(4)</sup>	1.51	0.680	1.51	1.21
AMEL Multiplier (95 <sup>th</sup> %)	<sup>(5)</sup>	1.55	<sup>(5)</sup>	1.55
<b>AMEL (mg/L)</b>	<sup>(5)</sup>	<b>1.1</b>	<sup>(5)</sup>	<b>1.9</b>
MDEL Multiplier (99 <sup>th</sup> %)	<sup>(5)</sup>	3.11	<sup>(5)</sup>	3.11
<b>MDEL (mg/L)</b>	<sup>(5)</sup>	<b>2.1</b>	<sup>(5)</sup>	<b>3.8</b>

<sup>(1)</sup> Acute design pH = 8.3 (90<sup>th</sup> percentile effluent pH), Chronic design pH = median receiving stream pH

<sup>(2)</sup> Temperature = Maximum 30-day average seasonal effluent temperature

<sup>(3)</sup> USEPA Ambient Water Quality Criteria

<sup>(4)</sup> LTA developed based on Acute and Chronic ECA Multipliers calculated at 99<sup>th</sup> percentile level per sections 5.4.1 and 5.5.4 of TSD.

<sup>(5)</sup> Limitations based on chronic LTA ( $LTA_{\text{chronic}} < LTA_{\text{acute}}$ )

Time Schedule

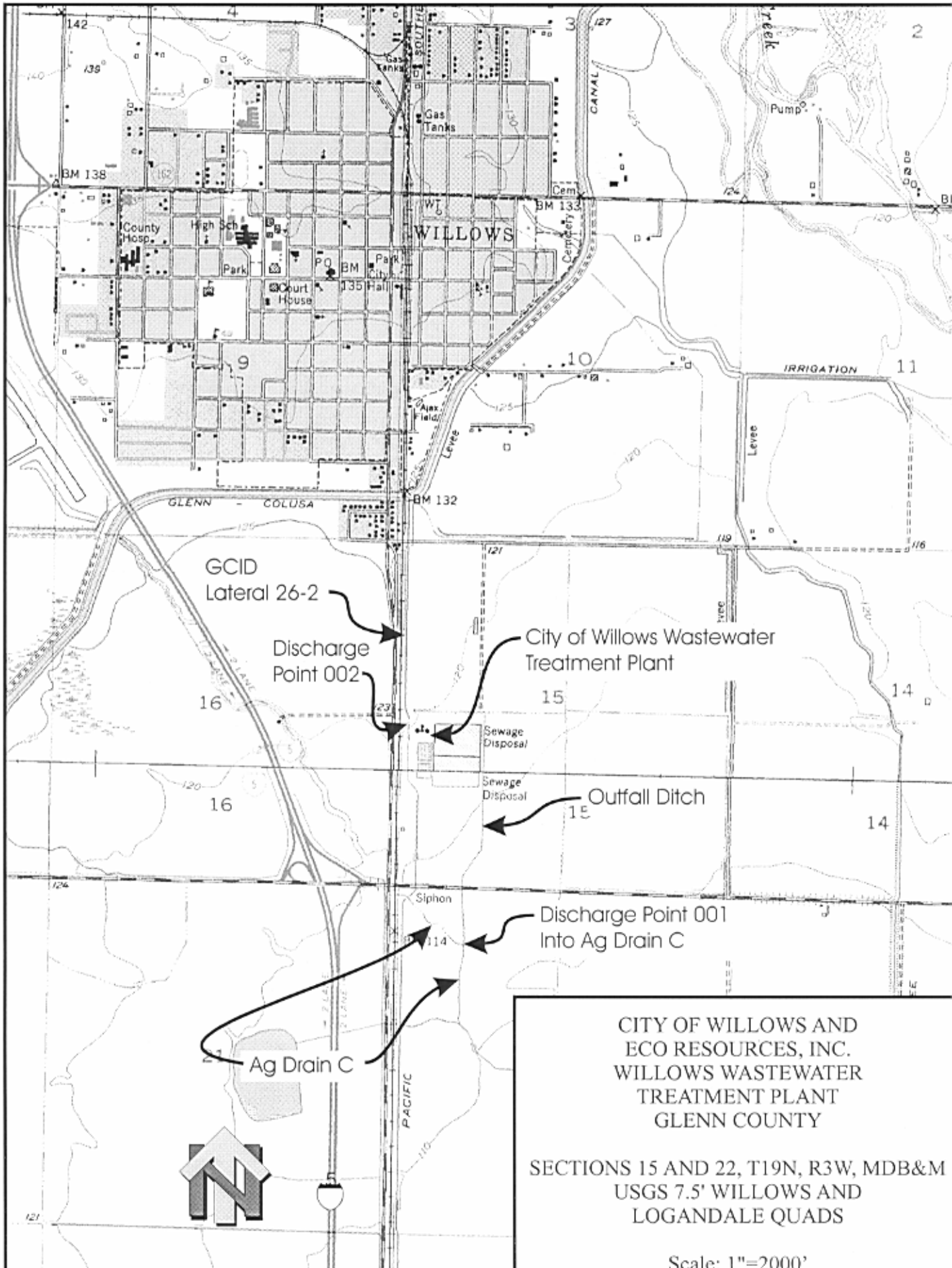
Based on sample results in the effluent, the limitations appear to put the Discharger in immediate non-compliance. A compliance schedule was included in the existing permit. This schedule required the Discharger to obtain compliance by 1 March 2006. The required improvements have been designed and are currently under construction. Due to difficulties in securing funding for this project, the schedule has slipped slightly and the Discharger has requested additional time to meet these requirements. The Discharger is currently on schedule to assure compliance with the ammonia limits by 1 January 2007. The current treatment processes typically meet the effluent limits during the time period of April through October and in some years into November. This Order extends the date for achieving compliance with the effluent ammonia limits by one year to 1 March 2007. The total compliance schedule does not exceed 5 years.

## **MONITORING AND REPORTING**

Section 308 of the CWA and USEPA regulation 40 CFR 122.44 (i) require monitoring in permits to determine compliance with effluent limitations. Monitoring may also be required to gather data for future effluent limitations or to monitor effluent impacts on receiving water quality. The Discharger is responsible for conducting monitoring and for reporting the results to the USEPA using Discharge Monitoring Reports. The self-monitoring program requires monitoring of receiving water, influent and effluent, storm water, and sludge.

The Monitoring and Reporting Program retains influent monitoring for BOD and suspended solids to allow determination of removal efficiencies for these wastewater characteristics through treatment steps. Receiving water sampling stations and monitoring requirements are also retained from Order No. R5-01-066; however the proposed Order includes a requirement for sampling and analysis of the CTR pollutants in receiving water to coincide with similar monitoring of effluent.

Effluent monitoring requirements for flow, pH, chlorine, total suspended solids, BOD<sub>5</sub>, coliform bacteria, and chronic toxicity are retained from Order No. R5-01-066. Acute and chronic toxicity testing are required to be conducted to determine compliance with the receiving water narrative objective for toxicity. Monitoring for CTR pollutants is required to be done for one year after the new plant processes are placed into operation, coinciding with receiving water monitoring (at Discharge Point 002) for the CTR pollutants to allow assessment of the need for effluent limitations for the priority pollutants.



CITY OF WILLOWS AND  
 ECO RESOURCES, INC.  
 WILLOWS WASTEWATER  
 TREATMENT PLANT  
 GLENN COUNTY

SECTIONS 15 AND 22, T19N, R3W, MDB&M  
 USGS 7.5' WILLOWS AND  
 LOGANDALE QUADS

Scale: 1"=2000'