

APPENDIX

Appendix A – Existing Waste Discharge Requirements

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LAHONTAN REGION

BOARD ORDER NO. 6-00-56
WDID NO. 6B150116001

REVISED WASTE DISCHARGE REQUIREMENTS

FOR

CITY OF RIDGECREST AND U.S. DEPARTMENT OF DEFENSE, CHINA LAKE
NAVAL AIR WEAPONS STATION; WASTEWATER TREATMENT FACILITY

Kern County

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

1. Discharger

For the purposes of this Regional Board Order (Order), the City of Ridgecrest China Lake Naval Air Weapons Station (CLNAWS) is referred to as the "Discharger". The US Government, Department of the Navy, (landowner) is referred to as the Primary User". Other offsite uses are regulated in accordance with separate Orders. The Discharger is responsible for compliance with this Permit, and the Primary User is responsible for public access restrictions to the water recycling site.

2. Facility

The City of Ridgecrest Wastewater Treatment Facility collects, treats and disposes domestic wastewater from the City of Ridgecrest and the CLNAWS. For the purposes of this Order, the City of Ridgecrest Wastewater Treatment Facility is referred to as the "Facility." The Facility discharges treated domestic wastewater.

3. Permit History

The Regional Board previously established Waste Discharge Requirements (WDRs) for the Facility under Board Order No. 6-93-85, which was adopted on August 12, 1993. Additionally, treated domestic wastewater recycling requirements are established under separate WDRs for the CLNAWS Golf Course (Board Order No. 6-84-36) and the City of Ridgecrest irrigation site (Board Order No. 6-93-85).

4. Reason for Action

The Regional Board is revising these WDRs as part of a statewide program to update backlogged WDRs and incorporate changes in the monitoring program.

5. Facility Location

The Facility is located approximately three miles northeast of the City of Ridgecrest, Kern County, within the CLNAWS. The Facility is located within Sections 13, 14, and 23, T26S, R49E, MDB&M, as shown on Attachment "A" which is made a part of this Order.

6. Description of Facility and Discharge

The treatment design capacity of the Facility is 3.6 million gallons per day (mgd). The Discharger collects, treats, and disposes of an average of 2.6 (mgd) of domestic wastewater generated by the City of Ridgecrest and the CLNAWS (a population of 26,000). After grit removal and primary treatment in three rectangular clarifiers (with a backup fourth circular clarifier) wastewater receives secondary treatment in two parallel series of bentonite clay lined oxidation ponds. Series A consists of ponds 1, 2 and 4. Series B consists of ponds 5, 6 and 7. Wastewater from ponds 4 and 7 is further treated in lined pond 3. Pond 3 has two pump stations. One pump station delivers disinfected secondary effluent to the CLNAWS Golf course for irrigation. Backwash from an installed filter system is discharged into pond 1. Another pump delivers undisinfected secondary effluent to the City of Ridgecrest irrigation site. Water recycling requirements are separately established under Board Order No. 6-84-36 for the CLNAWS Golf Course and Board Order No. 6-93-85 for the City of Ridgecrest irrigation site. Wastewater from pond 3 is disposed in unlined oxidation/percolation/evaporation ponds 8 and 11.

7. Authorized Disposal Sites

The evaporation/percolation ponds are the only authorized disposal sites for wastewater in addition to the recycling sites regulated under separate Board Orders. The ponds specified in Finding No. 6, above, are located on land owned by the Department of the Navy.

8. Sludge Treatment and Disposal

Sludge from the Discharger's primary clarifiers is treated by two anaerobic digesters and discharged to drying beds. The dried sludge is currently stockpiled onsite prior to disposal.

10. Site Geology

The wastewater treatment Facility overlies layers of recent alluvium consisting of silt, sand and freshwater marl cemented with calcareous tufa. The alluvium comprises the upper portion of the valley fill, which extends to a depth of at least 1,350 feet.

11. Site Hydrology

Depth to ground water at the treatment and disposal pond site is less than 20 feet. Ground water encountered in the vicinity of the treatment and disposal ponds is of marginal to poor quality for most beneficial uses. The ground waters in these areas have total dissolved solids concentration which range from 1,000 to 10,000 mg/L and the ground water is very high in boron. The wastewater discharge does not directly discharge to surface water but may have some effect on surface water flow at Lark Seep, one-mile northeast of the Facility, which contains the endangered Mojave Tui Chub fish.

12. Receiving Water

The receiving waters are the ground waters of the Indian Wells Valley Ground water Basin (DWR Ground Water Basin No.6-54).

13. Compliance History

The Board adopted Cease and Desist Order (CDO) No. 6-89-119 for the Discharger on May 11, 1989. The CDO was amended on March 14, 1991. The CDO was adopted in response to the ponding of wastewater on the ground surface adjacent to the Facility percolation ponds and the formation of a ground water mound. The Discharger has implemented recycling projects as part of a phased long-term compliance plan required in the CDO and repaired ponds 8 and 11 which were causing the localized ground water mounding. The CDO was rescinded with Board Order No. 6-93-85.

14. Lahontan Basin Plan

The Regional Board adopted the Water Quality Control Plan for the Lahontan Region (Basin Plan) which became effective on March 31, 1995. This Order implements the Basin Plan, as amended.

15. Ground Water Beneficial Uses

The beneficial uses of the ground waters of the Indian Wells Valley ground water basin (DWR # 6-54) as set forth and defined in the Basin Plan.

- i. Municipal and Domestic Supply (MUN);
- ii. Agricultural Supply (AGR);
- iii. Industrial Service Supply (IND); and
- iv. Freshwater Replenishment (FRSH).

16. California Environmental Quality Act (CEQA) Compliance

These revised WDRs apply to an existing discharge resulting from an existing Facility and are therefore exempt from the provisions of the CEQA (Public Resources Code Section 21000 et seq.) in accordance with Section 15301 of the CEQA Guidelines.

17. Notification of Interested Parties

The Regional Board has notified the Discharger and interested parties of its intent to revise WDRs for the discharge.

18. Consideration of Comments

The Regional Board, in a public meeting, heard and considered all comments pertaining to the discharge.

IT IS HEREBY ORDERED that the Discharger shall comply with the following:

I. DISCHARGE SPECIFICATIONS

A. Effluent/Discharge Limitations

1. The total effluent flow of wastewater during a 24-hour period shall not exceed 3.6 million gallons.
2. All wastewater discharged to the authorized disposal/recycling sites shall not contain concentrations of parameters in excess of the following limits:

<u>Parameter</u>	<u>Units</u>	<u>Mean</u> ¹	<u>Maximum</u>
BOD ²	mg/l	30	45
Methylene Blue Active Substances	mg/l	1.0	2.0

3. All wastewater made available to the authorized disposal/recycling sites shall have a pH of not less the 6.0 pH units nor more the 9.0 pH units
4. All wastewater discharged to the authorized disposal/recycling sites shall have a dissolved oxygen concentration not less than 1.0 mg/l.

¹ The arithmetic mean of lab results for effluent samples collected in a period of 30 consecutive days.

² Biochemical Oxygen Demand (5 day, 20° C) of a filtered sample using a No.1 Whatman filter or equivalent and reseeded with an unfiltered sample.

B. Receiving Water Limitations

This discharge shall not cause a violation of any applicable water quality standard for receiving water adopted by the Regional Board or the State Water Resources Control Board (SWRCB) as required by the Federal Water Pollution Control Act and regulations adopted thereunder. If more stringent applicable water quality standards are promulgated or approved pursuant to Section 303 of the Federal Clean Water Act or amendments thereto, the Regional Board will revise and modify this Order in accordance with such more stringent standards. The discharge shall not cause the presence of the following substances or conditions in ground or surface waters or wetlands of the China Lake Hydrologic Area of the Indian Wells Hydrologic Unit.

1. Nondegradation

SWRCB Resolution No. 68-16 "Statement of Policy With Respect to Maintaining High Quality of Waters In California", known as the Nondegradation objective, requires maintenance of existing high quality in surface waters, ground waters, or wetlands. Whenever the existing quality of water is better than the quality of water established in the Basin Plan, such existing quality shall be maintained unless appropriate findings are made under Resolution No. 68-16.

2. Ground Waters

a. Bacteria - In Ground waters, the median concentration of coliform organisms over any seven day period shall be less than 1.1/100 milliliter.

b. Chemical Constituents

Ground waters shall not contain concentrations of chemical constituents in excess of the maximum contaminant level (MCL) or secondary maximum contaminant level (SMCL) based upon drinking water standards specified in the following provisions of Title 22 of the California Code of Regulations: Table 64431-A of Section 64431 (Inorganic Chemicals), Table 64431-B of Section 64431 (Fluoride), Table 6444-A of Section 64444 (Organic Chemicals), Table 64449-A of Section 64449 (Secondary Maximum Contaminant Levels-Consumer Acceptance Limits), and Table 64449-B of Section 64449 (Secondary Maximum Contaminant Levels-Ranges). This incorporation-by-reference is prospective including future changes to the incorporated provisions as the changes take effect.

Waters designated as AGR shall not contain concentrations of chemical constituents in amounts that adversely affect the water for beneficial uses (i.e., agricultural purposes).

Ground waters shall not contain concentrations of chemical constituents that adversely affect the water for beneficial uses.

- c. Radioactivity - Radionuclides shall not be present in concentrations that are deleterious to human, plant, animal, or aquatic life, or that result in the accumulation of radionuclides in the food chain to an extent that it presents a hazard to human, plant, animal, or aquatic life. Waters shall not contain concentrations of radionuclides in excess of limits specified in the California Code of Regulations, Title 22, Chapter 15, Article 5, Section 64443.
- d. Taste and Odors - Ground waters shall not contain taste or odor-producing substances in concentrations that cause nuisance or that adversely affect beneficial uses. For ground waters a minimum, concentrations shall not exceed adopted secondary maximum contaminant levels specified in Table 64449-A of Section 64449 (Secondary Maximum Contaminant Levels-Ranges), and Table 64449-B of Section 64449 (Secondary Maximum Contaminant Levels-Ranges) of Title 22 of the California Code of Regulations, including future changes as the changes take effect.

C. General Requirements and Prohibitions

- 1. There shall be no discharge, bypass, or diversion of raw or partially treated sewage, sewage sludge, grease, or oils from the collection, transport, treatment, or disposal facilities to adjacent land areas or surface waters.
- 2. Surface flow or visible discharge of sewage or sewage effluent from the authorized disposal sites to adjacent land areas or surface waters is prohibited.
- 3. The vertical distance between the liquid surface elevation and the lowest point of a pond dike or the invert of an overflow structure shall not be less than 1.0 foot in ponds one through seven, 2.0 feet in pond eight, and not less than 2.0 feet in ponds nine through 11, in accordance with the Discharger's Pond Management Plan.
- 4. The discharge shall not cause a pollution as defined in Section 13050(l) of the California Water Code, or a threatened pollution.

5. The collection, transport, treatment, storage, or discharge of waste shall not cause a nuisance as defined in Section 13050(m) of the California Water Code.
6. The disposal of waste residue, including biosolids, shall be in a manner approved by the Regional Board Executive Officer and in compliance with all local, state, and federal requirements. Waste biosolids shall be discharged only at a legal point of disposal in accordance with the provisions of Title 23 of the California Code of Regulations, Division 3, Chapter 15, and in accordance with 40 CFR Part 503.
7. Flow into sewerage facilities due to infiltration/inflow shall be minimized to the maximum practicable extent.
8. The discharge of wastewater except to the authorized disposal sites are prohibited.
9. The City of Ridgecrest operator of the Facility also operates the Facility in accordance with the General Industrial Storm Water Permit, Order No. 97-03-DWQ, NPDES Permit No. CAS000001, adopted by the SWRCB on April 17, 1997. The storm water permit is administered separately from this Order.

II. PROVISIONS

A. Rescission of Waste Discharge Requirements

Board Order No. 6-93-85 is hereby rescinded.

B. Operator Certificates

The Facility shall be supervised by persons processing a wastewater treatment plant operator certificate of appropriate grade, pursuant to Chapter 3, Subchapter 14, Title 23, California Code of Regulations.

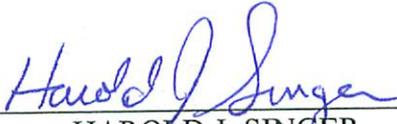
C. Standard Provisions

The Discharger shall comply with the "Standard Provisions for Waste Discharge Requirements," dated September 1, 1994, in Attachment "B", which is made part of this Order.

D. Monitoring and Reporting

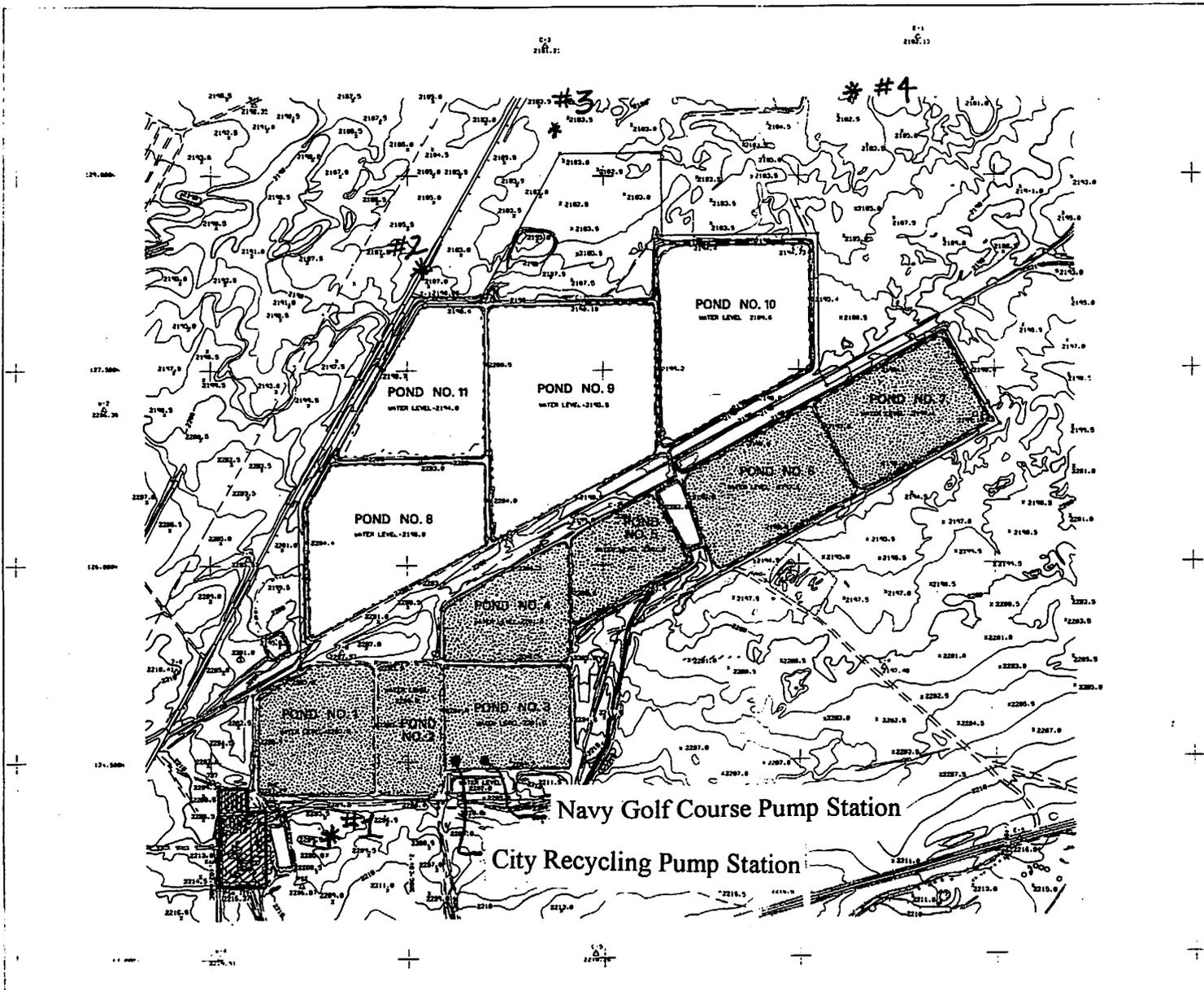
1. Pursuant to Section 13267(b) of the California Water Code, the Discharger shall comply with Monitoring and Reporting Program No. 00-56 as specified by the Executive Officer.
2. The Discharger shall comply with the "General Provisions for Monitoring and Reporting," dated September 1, 1994, which is attached to and made a part of the Monitoring and Reporting Program.

I, Harold J. Singer, Executive Officer, do hereby certify that the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, Lahontan Region, on June 14, 2000.



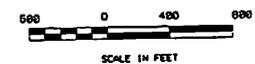
HAROLD J. SINGER
EXECUTIVE OFFICER

- Attachments: A. Site Location Map
B. Standard Provisions for Waste Discharge



Legend

-  Lease Line
-  Facultative Treatment Pond
-  Evaporation/Storage Pond
-  Primary Treatment Plant Site



CITY OF RIDGECREST
WASTEWATER TREATMENT FACILITIES
MASTER PLAN

**Existing Treatment Plant
Site Plan
Figure 3-1**

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD

STANDARD PROVISIONS FOR WASTE DISCHARGE REQUIREMENTS

1. Inspection and Entry

The Discharger shall permit Regional Board staff:

- a. to enter upon premises in which an effluent source is located or in which any required records are kept;
- b. to copy any records relating to the discharge or relating to compliance with the Waste Discharge Requirements;
- c. to inspect monitoring equipment or records; and
- d. to sample any discharge.

2. Reporting Requirements

- a. Pursuant to California Water Code 13267(b), the Discharger shall immediately notify the Regional Board by telephone whenever an adverse condition occurred as a result of this discharge; written confirmation shall follow within two weeks. An adverse condition includes, but is not limited to, spills of petroleum products or toxic chemicals, or damage to control facilities that could affect compliance.
- b. Pursuant to California Water Code Section 13260(c), any proposed material change in the character of the waste, manner or method of treatment or disposal, increase of discharge, or location of discharge, shall be reported to the Regional Board at least 120 days in advance of implementation of any such proposal. This shall include, but not limited to, all significant soil disturbances.
- c. The Owners/Discharger of property subject to Waste Discharge Requirements shall be considered to have a continuing responsibility for ensuring compliance with applicable Waste Discharge Requirements in the operations or use of the owned property. Pursuant to California Water Code Section 13260(c), any change in the ownership and/or operation of property subject to the Waste Discharge Requirements shall be reported to the Regional Board. Notification of applicable Waste Discharge Requirements shall be furnished in writing to the new owners and/or operators and a copy of such notification shall be sent to the Regional Board.
- d. If a Discharger becomes aware that any information submitted to the Regional Board is incorrect, the Discharger shall immediately notify the Regional Board, in writing and correct that information.
- e. Reports required by the Waste Discharge Requirements, and other information requested by the Regional Board, must be signed by a duly authorized representative of the Discharger. Under Section 13268 of the California Water Code, any person failing or refusing to furnish technical or monitoring reports, or falsifying any information provided therein, is guilty of a misdemeanor and may be liable civilly in an amount of up to one thousand dollars (\$1,000) for each day of violation.

- f. If the Discharger becomes aware that their Waste Discharge Requirements (or permit) is no longer needed (because the project will not be built or the discharge will cease) the Discharger shall notify the Regional Board in writing and request that their Waste Discharge Requirements (or permit) be rescinded.

3. Right to Revise Waste Discharge Requirements

The Regional Board reserves the privilege of changing all or any portion of the Waste Discharge Requirements upon legal notice to and after opportunity to be heard is given to all concerned parties.

4. Duty to Comply

Failure to comply with the Waste Discharge Requirements may constitute a violation of the California Water Code and is grounds for enforcement action or for permit termination, revocation and reissuance, or modification.

5. Duty to Mitigate

The Discharger shall take all reasonable steps to minimize or prevent any discharge in violation of the Waste Discharge Requirements which has a reasonable likelihood of adversely affecting human health or the environment.

6. Proper Operation and Maintenance

The Discharger shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) that are installed or used by the Discharger to achieve compliance with the Waste Discharge Requirements. Proper operation and maintenance includes adequate laboratory control, where appropriate, and appropriate quality assurance procedures. This provision requires the operation of backup or auxiliary facilities or similar systems that are installed by the Discharger, when necessary to achieve compliance with the conditions of the Waste Discharge Requirements.

7. Waste Discharge Requirement Actions

The Waste Discharge Requirements may be modified, revoked and reissued, or terminated for cause. The filing of a request by the Discharger for waste discharge requirement modification, revocation and reissuance, termination, or a notification of planned changes or anticipated noncompliance, does not stay any of the Waste Discharge Requirements conditions.

8. Property Rights

The Waste Discharge Requirements do not convey any property rights of any sort, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations.

9. Enforcement

The California Water Code provides for civil liability and criminal penalties for violations or threatened violations of the Waste Discharge Requirements including imposition of civil liability or referral to the Attorney General.

10. Availability

A copy of the Waste Discharge Requirements shall be kept and maintained by the Discharger and be available at all times to operating personnel.

11. Severability

Provisions of the Waste Discharge Requirements are severable. If any provision of the requirements is found invalid, the remainder of the requirements shall not be affected.

12. Public Access

General public access shall be effectively excluded from disposal/treatment facilities.

13. Transfers

Providing there is no material change in the operation of the facility, this Order may be transferred to a new owner or operator. The owner/operator must request the transfer in writing and receive written approval from the Regional Board's Executive Officer.

14. Definitions

- a. "Surface waters" as used in this Order, include, but are not limited to, live streams, either perennial or ephemeral, which flow in natural or artificial water courses and natural lakes and artificial impoundments of waters. "Surface waters" does not include artificial water courses or impoundments used exclusively for wastewater disposal.
- b. "Ground waters" as used in this Order, include, but are not limited to, all subsurface waters being above atmospheric pressure and the capillary fringe of these waters.

15. Storm Protection

- a. All facilities used for collection, transport, treatment, storage, or disposal of waste shall be adequately protected against overflow, washout, inundation, structural damage or a significant reduction in efficiency resulting from a storm or flood having a recurrence interval of once in 100 years.

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LAHONTAN REGION

REVISED MONITORING AND REPORTING PROGRAM NO. 00-56
WDID NO. 6B150116001

FOR

CITY OF RIDGECREST AND U.S. DEPARTMENT OF DEFENSE, CHINA LAKE NAVAL
AIR WEAPONS STATION; WASTEWATER TREATMENT FACILITY

Kern County

I. MONITORING

A. Flow Monitoring

The Discharger shall monitor and report the following:

1. The total volume, in million gallons, of wastewater flow to the Facility for each day.
2. The total volume in million gallons, of wastewater flow to the Facility calculated for each month.
3. The maximum instantaneous flow rate, in million gallons per day (mgd) of wastewater to the treatment Facility that occurs each day.
4. The average flow rate, in mgd, of wastewater flow to the Facility to the calculated for each month.
5. The freeboard (distance from the top of the lowest part of the dike to the wastewater surface in a pond) measured each month in each pond when the pond is accessible. If the pond does not contain wastewater, indicate that it is empty. If the ponds are inaccessible, indicate so and provide an explanation why they are inaccessible.

B. Facility Effluent Monitoring

Grab samples from the oxidation treatment pond three effluent (the last pond from which treatment occurs prior to percolation) shall be collected and analyzed to determine the magnitude of the following parameters:

<u>Parameter</u>	<u>Units</u>	<u>Frequency</u>
BOD ¹	mg/l	Twice per month
COD ²	mg/l	Twice per month

<u>Parameter</u>	<u>Units</u>	<u>Frequency</u>
Dissolved Oxygen	mg/l	Twice per month
pH	pH units	Twice per month
Methylene Blue Active Substances ³	mg/l	monthly
Oil & Grease ³	mg/l	monthly
Kjeldahl Nitrogen ³	mg/l as N	Monthly
Nitrate Nitrogen ³	mg/l as N	Monthly
Ammonia Nitrogen ³	mg/l as N	Monthly
Total Dissolved Solids ³ (TDS)	mg/l	Semi-annually
Chloride	mg/l	Semi-annually
Sodium	mg/l	Semi-annually
Sulfate	mg/l	Semi-annually
Total Hardness	mg/l as CaCO ₃	Semi-annually
Boron	mg/l	Semi-annually
Fluoride	mg/l	Semi-annually
Chemical Oxygen Demand	mg/l	Semi-annually
Oil & Grease	mg/l	Semi-annually
Methyl tertiary Butyl Ether	ug/L	Semi-annually
Purgeable Organics ⁴	ug/L	Annually
Base/Neutral		
Extractables Organics ⁴	ug/L	Annually
Acid Extractable Organics ⁴	ug/L	Annually
Heavy Metals ⁴	ug/L	Annually

C. Ground Water Monitoring

Beginning immediately, grab samples from monitoring wells 1, 2, 3 and 4 shall be collected from the entire thickness or the upper 20 feet, whichever is less, of the uppermost ground water bearing zone and analyzed to determine the magnitude of the following parameters:

<u>Parameter</u>	<u>Units</u>	<u>Frequency</u>
Methylene Blue Active Substances	mg/l	Semiannually
Total Dissolved Solids	mg/l	Semiannually
Kjeldahl Nitrogen	mg/l as N	Semiannually
Nitrate Nitrogen	mg/l as N	Semiannually
Ammonia Nitrogen	mg/l as N	Semiannually
Chloride	mg/l	Semiannually
Purgeable Halocarbons	mg/l	Annually
Base/Neutral/Acid Extractable Organics	mg/l	Annually
Purgeable Aromatic Hydrocarbons	mg/l	Annually
Arsenic	mg/l	Annually

<u>Parameter</u>	<u>Units</u>	<u>Frequency</u>
Silver	mg/l	Annually
Cadmium	mg/l	Annually
Copper	mg/l	Annually
Chromium	mg/l	Annually
Lead	mg/l	Annually
Mercury	mg/l	Annually
Molybdenum	mg/l	Annually
Nickel	mg/l	Annually
Selenium	mg/l	Annually
Zinc	mg/l	Annually

1. Field Parameters - Each time a ground water monitoring well is sampled the following field parameters shall be monitored and reported.

Table 1

<u>Parameter</u>	<u>Units</u>
Standing Water Level (SWL)	Feet above msl
Electrical Conductivity (E _c)	μmhos/cm
Turbidity	NTU
pH	0-14
Temperature (T)	F° or C°

2. For each ground water sampling event submit a map showing well locations and groundwater contours. Include elevations from adjacent wells that are sampled by the US Navy Installation Restoration Program.

D. Sludge Monitoring

1. The Discharger shall submit a Sludge Management Plan (Plan) 90 days prior to any planned cleaning operation of the sludge drying bed. The Plan shall outline actions necessary for the Discharger to be in compliance with all local, state and federal laws and regulations. Copies of reports submitted to other agencies regarding sludge disposal operations shall be included in the Plan.
2. Date and quantity of sludge removed off site, location of use, recipient (including name and address) and sludge disposal method (including crops grown if appropriate) for all sludge removed off site.
3. Cumulative total quantity of sludge currently stockpiled on site including the quantity of sludge added to the stockpile during this monitoring period.

4. For sewage sludge removed to an authorized disposal site a representative sample shall be collected and analyzed for the following constituents:
 - a. total kjeldahl nitrogen (as N);
 - b. nitrate nitrogen (as N);
 - c. ammonia nitrogen (as N);
 - d. total phosphate as P; and
 - e. parameters listed in Section 66261.24, Chapter 30, Division 4, Title 22 of the California Code of Regulations or 40 CFR 261.31.

The Discharger shall make a determination whether the analyses indicate that the sludge shall be considered a hazardous material.

E. Pretreatment

1. A summary of activities undertaken to monitor and regulate industrial wastewater sources shall be prepared and submitted with each annual report.
 - a. an inventory of significant industrial users, including names, address, categories, industrial pollutants, and volumes. A significant industrial user is either:
 - (1) an industrial user discharging more than 25,000 gallons per day to the Facility,
 - (2) is a categorical industrial user as defined in 40 CFR 400-471, or
 - (3) can pass through or cause interference to the Facility.
 - b. A discussion of upset, interference, or pass through incidents, if any, at the Facility which the Discharger knows or suspects was caused by industrial users.
 - c. A discussion of enforcement actions taken or proposed.
2. A summary of the pretreatment functions including, but not limited to:
 - a. necessary legal authorities
 - b. pretreatment requirements, and
 - c. status of funding and personnel to implement the pretreatment program.

F. Off-site Disposal

The Discharger shall include in each monitoring report the volume and type of all waste hauled off site for disposal. The person or company doing the hauling and the legal point of disposal shall also be recorded.

G. Operation and Maintenance

A brief summary of any operational problems and maintenance activities shall be submitted to the Board with each monitoring report.

This summary shall discuss:

1. Any modifications or additions to the wastewater conveyance system, treatment facilities, or disposal facilities.
2. Any major maintenance conducted on the wastewater conveyance system, treatment facilities, or disposal facilities.
3. Any major problems occurring in wastewater conveyance system, treatment facilities, or disposal facilities.
4. The calibration of any wastewater flow measuring devices.

II. REPORTING

A. General Provisions

1. The Discharger shall comply with the "General Provisions for Monitoring and Reporting," (GPMR) dated September 1, 1994, which is attached to and made part of this Monitoring and Reporting Program.
2. Pursuant to General Provisions 1.d of the GPMR, the Discharger shall submit by **July 30, 2000**, a Sampling and Analysis Plan (SAP) to the Regional Board for approval. The SAP shall define methods for sample collection, monitoring well purging, preservation and analysis shipment protocol, field procedures, laboratory Quality Assurance/Quality Control and data quality for all constituents listed in this order.

B. Submittal Periods

1. Beginning on **August 1, 2000**, monthly monitoring reports including the preceding information shall be submitted to the Regional Board by the first day of the second month following each monthly monitoring period.
2. Beginning on **February 1, 2001**, annual monitoring reports shall be submitted on the first day of the second month after the 12-month period. The annual report shall contain tabular and graphical summaries of all the above information, summary of violations, the compliance status indicating corrective actions taken for each violation, and the names and grades of all the certified operators.

Ordered by:



HAROLD J. SINGER
EXECUTIVE OFFICER

Dated: **June 14, 2000**

Attachments: A. General Provisions for Monitoring and Reporting
B. Priority Pollutant List

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- 1 Biochemical Oxygen Demand (5 day, 20° C) of a filtered sample. Using a No. 1 Whatman filter or equivalent and reseeded with an unfiltered sample.
 - 2 Chemical Oxygen Demand of a Filtered sample.
 - 3 Grab Samples
 - 4 Analysis shall be conducted for those substances included on the USEPA list of priority pollutants and all other toxic substances known to be discharged to the sewer system.

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LAHONTAN REGION

GENERAL PROVISIONS
FOR MONITORING AND REPORTING

1. SAMPLING AND ANALYSIS

- a. All analyses shall be performed in accordance with the current edition(s) of the following documents:
 - i. Standard Methods for the Examination of Water and Wastewater
 - ii. Methods for Chemical Analysis of Water and Wastes, EPA
- b. All analyses shall be performed in a laboratory certified to perform such analyses by the California State Department of Health Services or a laboratory approved by the Regional Board. Specific methods of analysis must be identified on each laboratory report.
- c. Any modifications to the above methods to eliminate known interferences shall be reported with the sample results. The method used shall also be reported. If methods other than USEPA approved methods or Standard Methods are used, the exact methodology must be submitted for review and must be approved by the Regional Board prior to use.
- d. The Discharger shall establish chain-of-custody procedures to ensure that specific individuals are responsible for sample integrity from commencement of sample collection through delivery to an approved laboratory. Sample collection, storage and analysis shall be conducted in accordance with an approved Sampling and Analysis Plan (SAP). The most recent version of the approved SAP shall be kept at the facility.
- e. The Discharger shall calibrate and perform maintenance procedures on all monitoring instruments and equipment to ensure accuracy of measurements, or shall ensure that both activities will be conducted. The calibration of any wastewater flow measuring device shall be recorded and maintained in the permanent log book described in 2.b, below.
- f. A grab sample is defined as an individual sample collected in fewer than 15 minutes.
- g. A composite sample is defined as a combination of no fewer than eight individual samples obtained over the specified sampling period at equal intervals. The volume of each individual sample shall be proportional to the discharge flow rate at the time of sampling. The sampling period shall equal the discharge period, or 24 hours, whichever period is shorter.

2. OPERATIONAL REQUIREMENTS

a. Sample Results

Pursuant to California Water Code Section 13267(b), the Discharger shall maintain all sampling and analytical results including: strip charts; date, exact place, and time of sampling; date analyses were performed; sample collector's name; analyst's name; analytical techniques used; and results of all analyses. Such records shall be obtained for a minimum of three years. This period of retention shall be extended during the course of any unresolved litigation regarding this discharge, or when requested by the Regional Board.

b. Operational Log

Pursuant to California Water Code Section 13267(b), an operation and maintenance log shall be maintained at the facility. All monitoring and reporting data shall be recorded in a permanent log book.

3. REPORTING

- a. For every item where the requirements are not met, the Discharger shall submit a statement of the actions undertaken or proposed which will bring the discharge into full compliance with requirements at the earliest time and submit a timetable for correction.
- b. Pursuant to California Water Code Section 13267(b), all sampling shall be made available to the Regional Board upon request. Results shall be retained for a minimum of three years. This period of retention shall be extended during the course of any unresolved litigation regarding this discharge, or when requested by the Regional Board.
- c. The Discharger shall provide a brief summary of any operational problems and maintenance activities to the Regional Board with each monitoring report. Any modifications or additions to, or any major maintenance conducted on, or any major problems occurring to the wastewater conveyance system, treatment facilities, or disposal facilities shall be included in this summary.
- d. Monitoring reports shall be signed by:
 - i. In the case of a corporation, by a principal executive officer at least of the level of vice-president or his duly authorized representative, if such representative is responsible for the overall operation of the facility from which the discharge originates;
 - ii. In the case of a partnership, by a general partner;

- iii. In the case of a sole proprietorship, by the proprietor;
 - iv. In the case of a municipal, state or other public facility, by either a principal executive officer, ranking elected official, or other duly authorized employee.
- e. Monitoring reports are to include the following:
- i. Name and telephone number of individual who can answer questions about the report.
 - ii. The Monitoring and Reporting Program Number.
 - iii. WDID Number.
- f. Modifications

This Monitoring and Reporting Program may be modified at the discretion of the Regional Board Executive Officer.

4. NONCOMPLIANCE

Under Section 13268 of the Water Code, any person failing or refusing to furnish technical or monitoring reports or falsifying any information provided therein, is guilty of a misdemeanor and may be liable civilly in an amount of up to one thousand dollars (\$1,000) for each day of violation under Section 13268 of the Water Code.

126 Priority Pollutants

A. Chlorinated Benzenes

- Chlorobenzene
- 1,2-dichlorobenzene
- 1,3-dichlorobenzene
- 1,4-dichlorobenzene
- 1,2,4-trichlorobenzene
- Hexachlorobenzene

B. Chlorinated Ethanes

- Chloroethane
- 1,1-dichloroethane
- 1,2-dichloroethane
- 1,1,1-trichloroethane
- 1,1,2-trichloroethane
- 1,1,2,2-tetrachloroethane
- Hexachloroethane

C. Chlorinated Phenols

- 2-chlorophenol
- 2,4-dichlorophenol
- 2,4,6-trichlorophenol
- Parametachlorocresol (4-chloro-3-methyl phenol)

D. Other Chlorinated Organics

- Chloroform (trichloromethane)
- Carbon tetrachloride (tetrachloromethane)
- Bis(2-chloroethoxy)methane
- Bis(2-chloroethyl)ether
- 2-chloroethyl vinyl ether (mixed)
- 2-chloronaphthalene
- 3,3-dichlorobenzidine
- 1,1-dichloroethylene
- 1,2-trans-dichloroethylene
- 1,2-dichloropropane
- 1,2-dichloropropylene (1,3-dichloropropene)
- Tetrachloroethylene
- Trichloroethylene
- Vinyl chloride (chloroethylene)
- Hexachlorobutadiene
- Hexachlorocyclopentadiene
- 2,3,7,8-tetrachloro-dibenzo-p-dioxin (TCDD)

E. Haloethers

- 4-chlorophenyl phenyl ether
- 2-bromophenyl phenyl ether
- Bis(2-chloroisopropyl) ether

F. Halomethanes

- Methylene chloride (dichloromethane)
- Methyl chloride (chloromethane)

Methyl Bromide (bromomethane)
Bromoform (tribromomethane)
Dichlorobromomethane
Chlorodibromomethane

G. Nitrosamines

N-nitrosodimethylamine
N-nitrosodiphenylamine
N-nitrosodi-n-propylamine

H. Phenols (other than chlorinated)

2-nitrophenol
4-nitrophenol
2,4-dinitrophenol
4,6-dinitro-o-cresol (4,6-dinitro-2-methylphenol)
Pentachlorophenol
Phenol
2,4-dimethylphenol

I. Phthalate Esters

Bis(2-ethylhexyl)phthalate
Butyl benzyl phthalate
Di-N-butyl phthalate
Di-n-octyl phthalate
Diethyl phthalate
Dimethyl phthalate

J. Polynuclear Aromatic Hydrocarbons (PAHs)

Acenaphthene
1,2-benzanthracene (benzo(a) anthracene)
Benzo(a)pyrene (3,4-benzo-pyrene)
3,4-benzofluoranthene (benzo(b) fluoranthene)
11,12-benzofluoranthene (benzo(k) fluoranthene)
Chrysene
Acenaphthalene
Anthracene
1,12-benzoperylene (benzo(ghi) perylene)
Fluorene
Fluoranthene
Phenanthrene
1,2,5,6-bibenzanthracene (dibenzo(ah) anthracene)
Indeno (1,2,3-cd) pyrene (2,3-o-phenylene pyrene)
Pyrene

K. Pesticides and Metabolites

Aldrin
Dieldrin
Chlordane (technical mixture and metabolites)
Alpha-endosulfan
Beta-endosulfan
Endosulfan sulfate
Endrin
Endrin aldehyde
Heptachlor
Heptachlor epoxide (BHC-hexachlorocyclohexane)

Alpha-BHC
Beta-BHC
Gamma-BHC (Lindane)
Delta-BHC
Toxaphene

L. DDT and Metabolites

4,4-DDT
4,4-DDE (p,p-DDX)
4,4-DDD (p,p-TDE)

M. Polychlorinated Biphenyls (PCBs)

PCB-1242 (Arochlor 1242)
PCB-1254 (Arochlor 1254)
PCB-1221 (Arochlor 1221)
PCB-1232 (Arochlor 1232)
PCB-1248 (Arochlor 1248)
PCB-1260 (Arochlor 1260)
PCB-1016 (Arochlor 1016)

N. Other Organics

Acrolein
Acrylonitrile
Benzene
Benzidine
2,4-dinitrotoluene
2,6-dinitrotoluene
1,2-diphenylhydrazine
Ethylbenzene
Isophorone
Naphthalene
Nitrobenzene
Toluene

O. Inorganics

Antimony
Arsenic
Asbestos
Beryllium
Cadmium
Chromium
Copper
Cyanide, total
Lead
Mercury
Nickel
Selenium
Silver
Thallium
Zinc

Appendix B - Water Balance Calculations

**City of Ridgecrest
Wastewater Treatment Plant Disposal
Normal Year Rainfall
Current Disposal Capacity based on 0.1 in/day Percolation**

DATA:

Month	Number of Days per Month	Working Days per Month	Normal Year		ET_c
			Rainfall (in/month)	Evaporation (in/month)	Alfalfa (in/month)
January	31	31	0.74	3.14	2.57
February	28	28	0.97	4.30	4.03
March	31	31	0.56	7.28	4.40
April	30	30	0.17	10.40	5.91
May	31	31	0.07	13.41	7.85
June	30	30	0.02	15.29	9.11
July	31	31	0.15	16.78	9.08
August	31	31	0.23	15.09	8.24
September	30	30	0.21	11.16	5.83
October	31	31	0.10	7.82	4.01
November	30	30	0.40	4.43	2.31
December	31	31	0.51	3.00	1.07
Total	365	365	4.13	112.11	64.40

STORAGE POND CALCULATIONS:

Effluent Production =	2,300,000	gpd
NAWS Ponds 1-7 Wet Area =	114	acres
Approx. Storage Volume =	597	ac-ft
Approx. Storage Volume =	194,600,000	gal
Pond Percolation Rate =	0.00	in/day
NAWS Ponds 8,11 Wet Area =	0	acres
Approx. Storage Volume =	0	ac-ft
Approx. Storage Volume =	0	gal
Pond Percolation Rate =	0.00	in/day
NAWS Ponds 9-10 Wet Area =	72	acres
Approx. Storage Volume =	432	ac-ft
Approx. Storage Volume =	140,800,000	gal
Pond Percolation Rate =	0.10	in/day
City Ponds Wet Area =	7	acres
Approx. Storage Volume =	90	ac-ft
Approx. Storage Volume =	29,300,000	gal
Pond Percolation Rate =	0.10	in/day
Alfalfa Area =	33	acres
Alfalfa Rootzone AWHC =	3.00	inch

Month	Effluent Produced (gal/month)	Effluent to Golf Course (gal/month)	Effluent to Alfalfa (gal/month)	Effluent to Ponds (gal/month)	Surface Rainfall (gal/month)	Surface Evaporation (gal/month)	Pond Percolation (gal/month)	Monthly Available (gal/month)	Cumulative Available (gal/month)
January	71,300,000	2,141,000	1,360,000	67,799,000	3,880,185	16,485,542	6,668,604	48,525,039	144,185,541
February	64,400,000	2,341,000	1,785,000	60,274,000	5,086,188	22,567,994	6,023,255	36,768,939	180,954,480
March	71,300,000	9,707,000	2,205,000	59,388,000	2,936,356	38,172,629	6,668,604	17,483,123	198,437,603
April	69,000,000	16,747,000	3,788,500	48,464,500	891,394	54,532,327	6,453,488	-11,629,921	186,807,682
May	71,300,000	21,472,000	3,790,000	46,038,000	367,045	70,304,753	6,668,604	-30,568,312	156,239,370
June	69,000,000	22,072,000	6,195,000	40,733,000	104,870	80,162,520	6,453,488	-45,778,138	110,461,232
July	71,300,000	26,770,000	7,935,000	36,595,000	786,524	88,006,785	6,668,604	-57,293,865	53,167,367
August	71,300,000	24,369,000	6,160,000	40,771,000	1,206,003	79,113,821	6,668,604	-43,805,422	9,361,945
September	69,000,000	21,522,000	3,460,000	44,018,000	1,101,134	54,481,079	0	-9,361,945	0
October	71,300,000	12,853,000	3,930,000	54,517,000	524,349	41,025,089	6,668,604	7,347,656	7,347,656*
November	69,000,000	1,884,000	1,770,000	65,346,000	2,097,397	23,239,161	6,453,488	37,750,748	45,098,404
December	71,300,000	65,000	948,000	70,287,000	2,674,181	15,730,479	6,668,604	50,562,098	95,660,502
Total	839,500,000	161,943,000	43,326,500	634,230,500	21,655,626	583,822,179	72,063,947	0	0
ac-ft	2,576	497	133	1,946	66	1,792	221		

* Start at 0 Stored October 1st

RECLAMATION AREA:

Month	Alfalfa		Irrigation		Gross Crop Need (in)	Soil Moisture Start (in)	Soil Moisture End (in)	Percolation & Leaching > 3.00 in
	Effluent Applied (gal/month)	Effluent Applied (in)	Effective Rainfall (in)	Fresh Irrigation (in)				
January	1,360,000	1.50	0.16	0.00	3.43	0.44	-1.33	0.00
February	1,785,000	1.97	0.37	0.00	5.37	-1.33	-4.36	0.00
March	2,205,000	2.44	-0.60	0.00	5.87	-4.36	-8.39	0.00
April	3,788,500	4.19	0.00	0.00	7.88	-8.39	-12.08	0.00
May	3,790,000	4.19	0.00	0.00	10.46	-12.08	-18.35	0.00
June	6,195,000	6.85	0.00	0.00	12.14	-18.35	-23.64	0.00
July	7,935,000	8.78	0.00	0.00	12.10	-23.64	-26.96	0.00
August	6,160,000	6.81	0.00	0.00	10.98	-26.96	-31.13	0.00
September	3,460,000	3.83	0.00	0.00	7.77	-31.13	-35.07	0.00
October	3,930,000	4.35	0.00	0.00	5.35	3.00	2.00	0.00
November	1,770,000	1.96	0.00	0.00	3.08	2.00	0.88	0.00
December	948,000	1.05	-0.06	0.00	1.43	0.88	0.44	0.00
Total	43,326,500	47.92	-0.13	0.00	85.86			0.00
Percent of Total =	133.0	ac-ft	-0.4	0.0	238.3	ac-ft		0.0
	100%		0%	0%				

* Effluent to Golf Course based on 2009-2010 flow records
 ** Effluent applied for alfalfa based on 2009-2010 records
 *** Effluent to City ponds based on 2009-2010 flow records

Assumptions:

NAWS Ponds 8 and 11 not currently suitable for use (53 ac)
 Minimal (zero) percolation from Facultative ponds
 Max flow to former site (for Alfalfa) is 500,000 gpd (approx. 15 mil gal per month)

Total Pond Storage Available (gal) 260,900,000
Cumulative Storage Needed (gal) 198,437,603
Check **OK**



City of Ridgecrest
Wastewater Treatment Plant Disposal
Normal Year Rainfall
Percolation Rate based on Current Ponds in use and Current AAD Flow

DATA:

Month	Number of Days per Month	Working Days per Month	Normal Year		ET_c (in/month)
			Rainfall (in/month)	Evaporation (in/month)	
January	31	31	0.74	3.14	2.57
February	28	28	0.97	4.30	4.03
March	31	31	0.56	7.28	4.40
April	30	30	0.17	10.40	5.91
May	31	31	0.07	13.41	7.85
June	30	30	0.02	15.29	9.11
July	31	31	0.15	16.78	9.08
August	31	31	0.23	15.09	8.24
September	30	30	0.21	11.16	5.83
October	31	31	0.10	7.82	4.01
November	30	30	0.40	4.43	2.31
December	31	31	0.51	3.00	1.07
Total	365	365	4.13	112.11	64.40

STORAGE POND CALCULATIONS:

Effluent Production =	2,600,000	gpd
NAWS Ponds 1-7 Wet Area =	114	acres
Approx. Storage Volume =	597	ac-ft
Approx. Storage Volume =	194,600,000	gal
Pond Percolation Rate =	0.00	in/day
NAWS Ponds 8,11 Wet Area =	0	acres
Approx. Storage Volume =	0	ac-ft
Approx. Storage Volume =	0	gal
Pond Percolation Rate =	0.00	in/day
NAWS Ponds 9-10 Wet Area =	72	acres
Approx. Storage Volume =	432	ac-ft
Approx. Storage Volume =	140,800,000	gal
Pond Percolation Rate =	0.23	in/day
City Ponds Wet Area =	7	acres
Approx. Storage Volume =	90	ac-ft
Approx. Storage Volume =	29,300,000	gal
Pond Percolation Rate =	0.23	in/day
Alfalfa Area =	33	acres
Alfalfa Rootzone AWHC =	3.00	inch

Month	Effluent Produced (gal/month)	Effluent to Golf Course (gal/month)	Effluent to Alfalfa (gal/month)	Effluent to Ponds (gal/month)	Surface Rainfall (gal/month)	Surface Evaporation (gal/month)	Pond Percolation (gal/month)	Monthly Available (gal/month)	Cumulative Available (gal/month)
January	80,600,000	2,141,000	1,360,000	77,099,000	3,880,185	16,485,542	15,337,790	49,155,853	146,688,449
February	72,800,000	2,341,000	1,785,000	68,674,000	5,086,188	22,567,994	13,853,488	37,338,706	184,027,155
March	80,600,000	9,707,000	2,205,000	68,688,000	2,936,356	38,172,629	15,337,790	18,113,937	202,141,092
April	78,000,000	16,747,000	3,788,500	57,464,500	891,394	54,532,327	14,843,022	-11,019,455	191,121,637
May	80,600,000	21,472,000	3,790,000	55,338,000	367,045	70,304,753	15,337,790	-29,937,498	161,184,139
June	78,000,000	22,072,000	6,195,000	49,733,000	104,870	80,162,520	14,843,022	-45,167,672	116,016,467
July	80,600,000	26,770,000	7,935,000	45,895,000	786,524	88,006,785	15,337,790	-56,663,051	59,353,416
August	80,600,000	24,369,000	6,160,000	50,071,000	1,206,003	79,113,821	15,337,790	-43,174,608	16,178,808
September	78,000,000	21,522,000	3,460,000	53,018,000	1,101,134	58,517,381	11,780,561	-16,178,808	0
October	80,600,000	12,853,000	3,930,000	63,817,000	524,349	41,025,089	15,337,790	7,978,470	7,978,470*
November	78,000,000	1,884,000	1,770,000	74,346,000	2,097,397	23,239,161	14,843,022	38,361,214	46,339,684
December	80,600,000	65,000	948,000	79,587,000	2,674,181	15,730,479	15,337,790	51,192,912	97,532,596
Total	949,000,000	161,943,000	43,326,500	743,730,500	21,655,626	587,858,481	177,527,645	0	0
ac-ft	2,912	497	133	2,282	66	1,804	545		

* Start at 0 Stored October 1st

RECLAMATION AREA:

Month	Alfalfa		Irrigation		Gross Crop Need (in)	Soil Moisture		Percolation & Leaching
	Applied (gal/month)	Effluent Applied (in)	Effective Rainfall (in)	Fresh Irrigation (in)		Start (in)	End (in)	
January	1,360,000	1.50	0.16	0.00	3.43	0.44	-1.33	0.00
February	1,785,000	1.97	0.37	0.00	5.37	-1.33	-4.36	0.00
March	2,205,000	2.44	-0.60	0.00	5.87	-4.36	-8.39	0.00
April	3,788,500	4.19	0.00	0.00	7.88	-8.39	-12.08	0.00
May	3,790,000	4.19	0.00	0.00	10.46	-12.08	-18.35	0.00
June	6,195,000	6.85	0.00	0.00	12.14	-18.35	-23.64	0.00
July	7,935,000	8.78	0.00	0.00	12.10	-23.64	-26.96	0.00
August	6,160,000	6.81	0.00	0.00	10.98	-26.96	-31.13	0.00
September	3,460,000	3.83	0.00	0.00	7.77	-31.13	-35.07	0.00
October	3,930,000	4.35	0.00	0.00	5.35	3.00	2.00	0.00
November	1,770,000	1.96	0.00	0.00	3.08	2.00	0.88	0.00
December	948,000	1.05	-0.06	0.00	1.43	0.88	0.44	0.00
Total	43,326,500	47.92	-0.13	0.00	85.86			0.00
Percent of Total =	133.0	ac-ft	-0.4	0.0	238.3	ac-ft		0.0
	100%		0%	0%				

* Effluent to Golf Course based on 2009-2010 flow records
 ** Effluent applied for alfalfa based on 2009-2010 records
 *** Effluent to City ponds based on 2009-2010 flow records

Assumptions:

NAWS Ponds 8 and 11 not currently suitable for use (53 ac)
 Minimal (zero) percolation from Facultative ponds
 Max flow to former site (for Alfalfa) is 500,000 gpd (approx. 15 mil gal per month)

Total Pond Storage Available (gal) 260,900,000
Cumulative Storage Needed (gal) 202,141,092
Check **OK**



**City of Ridgecrest
Wastewater Treatment Plant Disposal
Wet Year Rainfall**

Total Capacity of Existing Facilities (not including Ponds 8 and 11)

DATA:

Month	Number of Days per Month	Working Days per Month	Wet Year		ET_c (in/month)
			Rainfall (in/month)	Evaporation (in/month)	
January	31	31	1.71	3.02	2.57
February	28	28	2.23	4.13	4.03
March	31	31	1.30	6.99	4.40
April	30	30	0.38	9.98	5.91
May	31	31	0.16	12.87	7.85
June	30	30	0.05	14.68	9.11
July	31	31	0.35	16.11	9.08
August	31	31	0.53	14.48	8.24
September	30	30	0.48	10.71	5.83
October	31	31	0.23	7.51	4.01
November	30	30	0.90	4.25	2.31
December	31	31	1.16	2.88	1.07
Total	365	365	9.48	107.63	64.40

STORAGE POND CALCULATIONS:

Effluent Production =	2,620,000	gpd
NAWS Ponds 1-7 Wet Area =	114	acres
Approx. Storage Volume =	597	ac-ft
Approx. Storage Volume =	194,600,000	gal
Pond Percolation Rate =	0.00	in/day
NAWS Ponds 8,11 Wet Area =	0	acres
Approx. Storage Volume =	0	ac-ft
Approx. Storage Volume =	0	gal
Pond Percolation Rate =	0.00	in/day
NAWS Ponds 9-10 Wet Area =	72	acres
Approx. Storage Volume =	432	ac-ft
Approx. Storage Volume =	140,800,000	gal
Pond Percolation Rate =	0.23	in/day
City Ponds Wet Area =	11	acres
Approx. Storage Volume =	63	ac-ft
Approx. Storage Volume =	20,500,000	gal
Pond Percolation Rate =	0.23	in/day
Alfalfa Area =	33	acres
Alfalfa Rootzone AWHC =	3.00	inch

Month	Effluent Produced (gal/month)	Effluent to Golf Course (gal/month)	Effluent to Alfalfa (gal/month)	Effluent to Ponds (gal/month)	Surface Rainfall (gal/month)	Surface Evaporation (gal/month)	Pond Percolation (gal/month)	Monthly Available (gal/month)	Cumulative Available (gal/month)
January	81,220,000	2,141,000	3,600,000	75,479,000	9,108,834	16,096,582	15,976,703	52,514,549	153,977,141
February	73,360,000	2,341,000	4,500,000	66,519,000	11,898,100	22,035,525	14,430,570	41,951,005	195,928,146
March	81,220,000	9,707,000	6,000,000	65,513,000	6,909,803	37,271,984	15,976,703	19,174,116	215,102,262
April	78,600,000	16,747,000	7,500,000	54,353,000	2,013,351	53,245,691	15,461,326	-12,340,666	202,761,596
May	81,220,000	21,472,000	9,900,000	49,848,000	876,015	68,645,983	15,976,703	-33,898,671	168,862,925
June	78,600,000	22,072,000	11,400,000	45,128,000	250,141	78,271,166	15,461,326	-48,354,351	120,508,574
July	81,220,000	26,770,000	11,400,000	43,050,000	1,867,541	85,930,354	15,976,703	-56,989,516	63,519,058
August	81,220,000	24,369,000	10,400,000	46,451,000	2,847,587	77,247,210	15,976,703	-43,925,326	19,593,732
September	78,600,000	21,522,000	7,500,000	49,578,000	2,563,243	57,136,722	14,598,253	-19,593,732	0
October	81,220,000	12,853,000	5,500,000	62,867,000	1,246,223	40,057,143	15,976,703	8,079,377	8,079,377*
November	78,600,000	1,884,000	3,800,000	72,916,000	4,803,758	22,690,856	15,461,326	39,567,576	47,646,953
December	81,220,000	65,000	2,200,000	78,955,000	6,196,676	15,359,334	15,976,703	53,815,639	101,462,592
Total	956,300,000	161,943,000	83,700,000	710,657,000	50,581,272	573,988,550	187,249,722	0	0
ac-ft	2,935	497	257	2,181	155	1,762	575		

* Start at 0 Stored October 1st

RECLAMATION AREA:

Month	Alfalfa		Irrigation		Gross Crop Need (in)	Soil Moisture Start (in)	Soil Moisture End (in)	Percolation & Leaching > 3.00 in
	Effluent Applied (gal/month)	Effluent Applied (in)	Effective Rainfall (in)	Fresh Irrigation (in)				
January	3,600,000	3.98	1.07	0.00	3.43	3.00	4.62	1.62
February	4,500,000	4.98	1.56	0.00	5.37	3.00	4.17	1.17
March	6,000,000	6.64	0.01	0.00	5.87	3.00	3.78	0.78
April	7,500,000	8.30	0.00	0.00	7.88	3.00	3.42	0.42
May	9,900,000	10.95	0.00	0.00	10.46	3.00	3.49	0.49
June	11,400,000	12.61	0.00	0.00	12.14	3.00	3.47	0.47
July	11,400,000	12.61	0.00	0.00	12.10	3.00	3.51	0.51
August	10,400,000	11.50	0.00	0.00	10.98	3.00	3.52	0.52
September	7,500,000	8.30	0.00	0.00	7.77	3.00	3.53	0.53
October	5,500,000	6.08	0.09	0.00	5.35	3.00	3.82	0.82
November	3,800,000	4.20	0.31	0.00	3.08	3.00	4.43	1.43
December	2,200,000	2.43	0.55	0.00	1.43	3.00	4.55	1.55
Total	83,700,000	92.58	3.59	0.00	85.86			10.31
Percent of Total =	256.9	ac-ft	10.0	0.0	238.3	ac-ft		28.6
	96%		4%	0%				

* Effluent to Golf Course based on 2009-2010 flow records
 ** Effluent applied for alfalfa based on 2009-2010 records
 *** Effluent to City ponds based on 2009-2010 flow records

Assumptions:

NAWS Ponds 8 and 11 not currently suitable for use (53 ac)
 Minimal (zero) percolation from Facultative ponds
 Max flow to former site (for Alfalfa) is 500,000 gpd (approx. 15 mil gal per month)

Total Pond Storage Available (gal) 252,100,000
Cumulative Storage Needed (gal) 215,102,262
Check **OK**



City of Ridgecrest
Wastewater Treatment Plant Disposal
Wet Year Rainfall
Total Capacity of Existing Facilities (including Ponds 8 and 11)

DATA:

Month	Number of Days per Month	Working Days per Month	Wet Year		ET_c (in/month)
			Rainfall (in/month)	Evaporation (in/month)	
January	31	31	1.71	3.02	2.57
February	28	28	2.23	4.13	4.03
March	31	31	1.30	6.99	4.40
April	30	30	0.38	9.98	5.91
May	31	31	0.16	12.87	7.85
June	30	30	0.05	14.68	9.11
July	31	31	0.35	16.11	9.08
August	31	31	0.53	14.48	8.24
September	30	30	0.48	10.71	5.83
October	31	31	0.23	7.51	4.01
November	30	30	0.90	4.25	2.31
December	31	31	1.16	2.88	1.07
Total	365	365	9.48	107.63	64.40

STORAGE POND CALCULATIONS:

Effluent Production =	3,000,000	gpd
NAWS Ponds 1-7 Wet Area =	114	acres
Approx. Storage Volume =	597	ac-ft
Approx. Storage Volume =	194,600,000	gal
Pond Percolation Rate =	0.00	in/day
NAWS Ponds 8,11 Wet Area =	53	acres
Approx. Storage Volume =	317	ac-ft
Approx. Storage Volume =	103,400,000	gal
Pond Percolation Rate =	0.00	in/day
NAWS Ponds 9-10 Wet Area =	72	acres
Approx. Storage Volume =	432	ac-ft
Approx. Storage Volume =	140,800,000	gal
Pond Percolation Rate =	0.23	in/day
City Ponds Wet Area =	11	acres
Approx. Storage Volume =	63	ac-ft
Approx. Storage Volume =	20,500,000	gal
Pond Percolation Rate =	0.23	in/day
Alfalfa Area =	33	acres
Alfalfa Rootzone AWHC =	3.00	inch

Month	Effluent Produced (gal/month)	Effluent to Golf Course (gal/month)	Effluent to Alfalfa (gal/month)	Effluent to Ponds (gal/month)	Surface Rainfall (gal/month)	Surface Evaporation (gal/month)	Pond Percolation (gal/month)	Monthly Available (gal/month)	Cumulative Available (gal/month)
January	93,000,000	2,141,000	3,600,000	87,259,000	11,561,819	20,431,349	15,976,703	62,412,767	181,099,253
February	84,000,000	2,341,000	4,500,000	77,159,000	15,102,227	27,969,633	14,430,570	49,861,024	230,960,277
March	93,000,000	9,707,000	6,000,000	77,293,000	8,770,595	47,309,230	15,976,703	22,777,662	253,737,939
April	90,000,000	16,747,000	7,500,000	65,753,000	2,555,541	67,584,615	15,461,326	-14,737,400	239,000,539
May	93,000,000	21,472,000	9,900,000	61,628,000	1,111,924	87,132,165	15,976,703	-40,368,944	198,631,595
June	90,000,000	22,072,000	11,400,000	56,528,000	317,504	99,349,384	15,461,326	-57,965,206	140,666,389
July	93,000,000	26,770,000	11,400,000	54,830,000	2,370,464	109,071,171	15,976,703	-67,847,410	72,818,979
August	93,000,000	24,369,000	10,400,000	58,231,000	3,614,435	98,049,680	15,976,703	-52,180,948	20,638,031
September	90,000,000	21,522,000	7,500,000	60,978,000	3,253,518	72,523,491	12,346,058	-20,638,031	0
October	93,000,000	12,853,000	5,500,000	74,647,000	1,581,827	50,844,426	15,976,703	9,407,698	9,407,698*
November	90,000,000	1,884,000	3,800,000	84,316,000	6,097,398	28,801,444	15,461,326	46,150,628	55,558,326
December	93,000,000	65,000	2,200,000	90,735,000	7,865,425	19,495,562	15,976,703	63,128,160	118,686,486
Total	1,095,000,000	161,943,000	83,700,000	849,357,000	64,202,677	728,562,150	184,997,527	0	0
ac-ft	3,360	497	257	2,607	197	2,236	568		

* Start at 0 Stored October 1st

RECLAMATION AREA:

Month	Alfalfa		33.3 acres		Irrigation Application Efficiency = 75%		Soil Moisture Start (in)	Soil Moisture End (in)	Percolation & Leaching > 3.00 in
	Effluent Applied (gal/month)	Effluent Applied (in)	Effective Rainfall (in)	Fresh Irrigation (in)	Gross Crop Need (in)				
January	3,600,000	3.98	1.07	0.00	3.43	3.00	4.62	1.62	
February	4,500,000	4.98	1.56	0.00	5.37	3.00	4.17	1.17	
March	6,000,000	6.64	0.01	0.00	5.87	3.00	3.78	0.78	
April	7,500,000	8.30	0.00	0.00	7.88	3.00	3.42	0.42	
May	9,900,000	10.95	0.00	0.00	10.46	3.00	3.49	0.49	
June	11,400,000	12.61	0.00	0.00	12.14	3.00	3.47	0.47	
July	11,400,000	12.61	0.00	0.00	12.10	3.00	3.51	0.51	
August	10,400,000	11.50	0.00	0.00	10.98	3.00	3.52	0.52	
September	7,500,000	8.30	0.00	0.00	7.77	3.00	3.53	0.53	
October	5,500,000	6.08	0.09	0.00	5.35	3.00	3.82	0.82	
November	3,800,000	4.20	0.31	0.00	3.08	3.00	4.43	1.43	
December	2,200,000	2.43	0.55	0.00	1.43	3.00	4.55	1.55	
Total	83,700,000	92.58	3.59	0.00	85.86			10.31	
Percent of Total =	256.9	ac-ft	10.0	0.0	238.3	ac-ft		28.6	
	96%		4%	0%					

* Effluent to Golf Course based on 2009-2010 flow records
 ** Effluent applied for alfalfa based on 2009-2010 records
 *** Effluent to City ponds based on 2009-2010 flow records

Assumptions:

NAWS Ponds 8 and 11 not currently suitable for use (53 ac) - assumed to be reconditioned.
 Minimal (zero) percolation from Facultative ponds
 Max flow to former site (for Alfalfa) is 500,000 gpd (approx. 15 mil gal per month)

Total Pond Storage Available (gal) 355,500,000
Cumulative Storage Needed (gal) 253,737,939
Check **OK**



**City of Ridgecrest
Wastewater Treatment Plant Disposal
Wet Year Rainfall**

3.3 mgd - Additional Disposal by Recycle of Secondary Effluent

DATA:

Month	Number of Days per Month	Working Days per Month	Wet Year		ET_c (in/month)
			Rainfall (in/month)	Evaporation (in/month)	
January	31	31	1.71	3.02	2.57
February	28	28	2.23	4.13	4.03
March	31	31	1.30	6.99	4.40
April	30	30	0.38	9.98	5.91
May	31	31	0.16	12.87	7.85
June	30	30	0.05	14.68	9.11
July	31	31	0.35	16.11	9.08
August	31	31	0.53	14.48	8.24
September	30	30	0.48	10.71	5.83
October	31	31	0.23	7.51	4.01
November	30	30	0.90	4.25	2.31
December	31	31	1.16	2.88	1.07
Total	365	365	9.48	107.63	64.40

STORAGE POND CALCULATIONS:

Effluent Production =	3,300,000	gpd
NAWS Ponds 1-7 Wet Area =	114	acres
Approx. Storage Volume =	597	ac-ft
Approx. Storage Volume =	194,600,000	gal
Pond Percolation Rate =	0.00	in/day
NAWS Ponds 8,11 Wet Area =	53	acres
Approx. Storage Volume =	317	ac-ft
Approx. Storage Volume =	103,400,000	gal
Pond Percolation Rate =	0.00	in/day
NAWS Ponds 9-10 Wet Area =	72	acres
Approx. Storage Volume =	432	ac-ft
Approx. Storage Volume =	140,800,000	gal
Pond Percolation Rate =	0.23	in/day
City Ponds Wet Area =	11	acres
Approx. Storage Volume =	90	ac-ft
Approx. Storage Volume =	29,300,000	gal
Pond Percolation Rate =	0.23	in/day
Alfalfa Area =	78	acres
Alfalfa Rootzone AWHC =	3.00	inch

Month	Effluent Produced (gal/month)	Effluent to Golf Course (gal/month)	Effluent to Alfalfa (gal/month)	Effluent to Ponds (gal/month)	Surface Rainfall (gal/month)	Surface Evaporation (gal/month)	Pond Percolation (gal/month)	Monthly Available (gal/month)	Cumulative Available (gal/month)
January	102,300,000	2,141,000	7,200,000	92,959,000	11,561,819	20,431,349	15,976,703	68,112,767	200,099,253
February	92,400,000	2,341,000	10,000,000	80,059,000	15,102,227	27,969,633	14,430,570	52,761,024	252,860,277
March	102,300,000	9,707,000	13,800,000	78,793,000	8,770,595	47,309,230	15,976,703	24,277,662	277,137,939
April	99,000,000	16,747,000	17,800,000	64,453,000	2,555,541	67,584,615	15,461,326	-16,037,400	261,100,539
May	102,300,000	21,472,000	23,000,000	57,828,000	1,111,924	87,132,165	15,976,703	-44,168,944	216,931,595
June	99,000,000	22,072,000	26,600,000	50,328,000	317,504	99,349,384	15,461,326	-64,165,206	152,766,389
July	102,300,000	26,770,000	26,500,000	49,030,000	2,370,464	109,071,171	15,976,703	-73,647,410	79,118,979
August	102,300,000	24,369,000	24,200,000	53,731,000	3,614,435	98,049,680	15,976,703	-56,680,948	22,438,031
September	99,000,000	21,522,000	17,500,000	59,978,000	3,253,518	72,523,491	13,146,058	-22,438,031	0
October	102,300,000	12,853,000	12,800,000	76,647,000	1,581,827	50,844,426	15,976,703	11,407,698	11,407,698*
November	99,000,000	1,884,000	8,000,000	89,116,000	6,097,398	28,801,444	15,461,326	50,950,628	62,358,326
December	102,300,000	65,000	5,000,000	97,235,000	7,865,425	19,495,562	15,976,703	69,628,160	131,986,486
Total	1,204,500,000	161,943,000	192,400,000	850,157,000	64,202,677	728,562,150	185,797,527	0	Start at 0 Stored October 1st
ac-ft	3,696	497	590	2,609	197	2,236	570		

RECLAMATION AREA:

Month	Alfalfa		78.0 acres		Irrigation Application Efficiency = 75%			
	Effluent Applied (gal/month)	Effluent Applied (in)	Effective Rainfall (in)	Fresh Irrigation (in)	Gross Crop Need (in)	Soil Moisture Start (in)	Soil Moisture End (in)	Percolation & Leaching > 3.00 in
January	7,200,000	3.40	1.07	0.00	3.43	3.00	4.04	1.04
February	10,000,000	4.72	1.56	0.00	5.37	3.00	3.91	0.91
March	13,800,000	6.52	0.01	0.00	5.87	3.00	3.66	0.66
April	17,800,000	8.41	0.00	0.00	7.88	3.00	3.53	0.53
May	23,000,000	10.86	0.00	0.00	10.46	3.00	3.40	0.40
June	26,600,000	12.56	0.00	0.00	12.14	3.00	3.42	0.42
July	26,500,000	12.51	0.00	0.00	12.10	3.00	3.41	0.41
August	24,200,000	11.43	0.00	0.00	10.98	3.00	3.45	0.45
September	17,500,000	8.26	0.00	0.00	7.77	3.00	3.49	0.49
October	12,800,000	6.04	0.09	0.00	5.35	3.00	3.78	0.78
November	8,000,000	3.78	0.31	0.00	3.08	3.00	4.01	1.01
December	5,000,000	2.36	0.55	0.00	1.43	3.00	4.48	1.48
Total	192,400,000	90.85	3.59	0.00	85.86			8.58
Percent of Total =	590.5	ac-ft	23.4	0.0	558.1	ac-ft		55.8
	96%		4%	0%				

* Effluent to Golf Course based on 2009-2010 flow records
 ** Effluent applied for alfalfa based on 2009-2010 records
 *** Effluent to City ponds based on 2009-2010 flow records

Assumptions: (update as necessary when info comes available)
 NAWS Ponds 8 and 11 not currently suitable for use (53 ac) - assumed to be reconditioned.
 Minimal (zero) percolation from Facultative ponds
 Max flow to former site (for Alfalfa) is 500,000 gpd (approx. 15 mil gal per month)

Total Pond Storage Available (gal) 364,300,000
Cumulative Storage Needed (gal) 277,137,939
Check **OK**



**City of Ridgecrest
Wastewater Treatment Plant Disposal
Wet Year Rainfall**

3.3 mgd - Additional Disposal by Recycle of Tertiary Effluent

DATA:

Month	Number of Days per Month	Working Days per Month	Wet Year		ET_c	ET_o
			Rainfall (in/month)	Evaporation (in/month)	Alfalfa (in/month)	Golf Course (in/month)
January	31	31	1.71	3.02	2.57	2.27
February	28	28	2.23	4.13	4.03	2.63
March	31	31	1.30	6.99	4.40	5.02
April	30	30	0.38	9.98	5.91	7.20
May	31	31	0.16	12.87	7.85	8.36
June	30	30	0.05	14.68	9.11	9.40
July	31	31	0.35	16.11	9.08	9.12
August	31	31	0.53	14.48	8.24	8.35
September	30	30	0.48	10.71	5.83	6.93
October	31	31	0.23	7.51	4.01	5.39
November	30	30	0.90	4.25	2.31	2.90
December	31	31	1.16	2.88	1.07	2.63
Total	365	365	9.48	107.63	64.40	70.20

Effluent Production =	3,300,000	gpd
NAWS Ponds 1-7 Wet Area =	114	acres
Approx. Storage Volume =	597	ac-ft
Approx. Storage Volume =	194,600,000	gal
Pond Percolation Rate =	0.00	in/day
NAWS Ponds 8,11 Wet Area =	53	acres
Approx. Storage Volume =	318	ac-ft
Approx. Storage Volume =	103,600,000	gal
Pond Percolation Rate =	0.00	in/day
NAWS Ponds 9-10 Wet Area =	72	acres
Approx. Storage Volume =	432	ac-ft
Approx. Storage Volume =	140,800,000	gal
Pond Percolation Rate =	0.23	in/day
City Ponds Wet Area =	11	acres
Approx. Storage Volume =	63	ac-ft
Approx. Storage Volume =	20,500,000	gal
Pond Percolation Rate =	0.23	in/day
Alfalfa Area =	33	acres
Alfalfa Rootzone AWHC =	3.00	inch
Golf Course and Landscape Area =	100	acres
Golf Course Rootzone AWHC =	3.00	inch

STORAGE POND CALCULATIONS:

Month	Effluent Produced (gal/month)	Effluent to GC/Landscape (gal/month)	Effluent to Alfalfa (gal/month)	Effluent to Ponds (gal/month)	Surface Rainfall (gal/month)	Surface Evaporation (gal/month)	Pond Percolation (gal/month)	Monthly Available (gal/month)	Cumulative Available (gal/month)
January	102,300,000	8,300,000	3,200,000	90,800,000	11,566,921	20,440,364	15,976,703	65,949,854	182,901,453
February	92,400,000	8,200,000	4,500,000	79,700,000	15,108,891	27,981,975	14,430,570	52,396,346	235,297,799
March	102,300,000	20,200,000	6,000,000	76,100,000	8,774,465	47,330,106	15,976,703	21,567,656	256,865,455
April	99,000,000	28,000,000	7,700,000	63,300,000	2,556,669	67,614,437	15,461,326	-17,219,094	239,646,361
May	102,300,000	32,000,000	10,000,000	60,300,000	1,112,414	87,170,612	15,976,703	-41,734,901	197,911,460
June	99,000,000	35,200,000	11,400,000	52,400,000	317,644	99,393,222	15,461,326	-62,136,904	135,774,556
July	102,300,000	34,200,000	11,400,000	56,700,000	2,371,510	109,119,299	15,976,703	-66,024,492	69,750,064
August	102,300,000	31,500,000	10,400,000	60,400,000	3,616,029	98,092,944	15,976,703	-50,053,618	19,696,446
September	99,000,000	27,000,000	7,500,000	64,500,000	3,254,954	72,555,492	14,895,908	-19,696,446	0
October	102,300,000	21,500,000	5,500,000	75,300,000	1,582,525	50,866,861	15,976,703	10,038,961	10,038,961*
November	99,000,000	12,500,000	3,300,000	83,200,000	6,100,088	28,814,152	15,461,326	45,024,610	55,063,571
December	102,300,000	11,000,000	1,800,000	89,500,000	7,868,895	19,504,164	15,976,703	61,888,028	116,951,599
Total	1,204,500,000	269,600,000	82,700,000	852,200,000	64,231,005	728,883,628	187,547,377	0	0
ac-ft	3,696	827	254	2,615	197	2,237	576		

Total Pond Storage Available (gal) 335,200,000
 Cumulative Storage Needed (gal) 256,865,455
 Check **OK**

* Effluent to Golf Course based on 2009-2010 flow records
 ** Effluent applied for alfalfa based on 2009-2010 records
 *** Effluent to City ponds based on 2009-2010 flow records

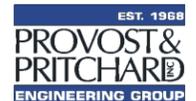
Assumptions: (update as necessary when info comes available)
 NAWS Ponds 8 and 11 not currently suitable for use (53 ac) - assumed to be reconditioned.
 Minimal (zero) percolation from Facultative ponds
 Max flow to former site (for Alfalfa) is 500,000 gpd (approx. 15 mil gal per month)

RECLAMATION AREA:

Month	Alfalfa 33.3 acres		Irrigation Application Efficiency = 75%					
	Effluent Applied (gal/month)	Effluent Applied (in)	Effective Rainfall (in)	Fresh Irrigation (in)	Gross Crop Need (in)	Soil Moisture Start (in)	Soil Moisture End (in)	Percolation & Leaching
January	3,200,000	3.54	1.07	0.00	3.43	3.00	4.18	1.18
February	4,500,000	4.98	1.56	0.00	5.37	3.00	4.17	1.17
March	6,000,000	6.64	0.01	0.00	5.87	3.00	3.78	0.78
April	7,700,000	8.52	0.00	0.00	7.88	3.00	3.64	0.64
May	10,000,000	11.06	0.00	0.00	10.46	3.00	3.60	0.60
June	11,400,000	12.61	0.00	0.00	12.14	3.00	3.47	0.47
July	11,400,000	12.61	0.00	0.00	12.10	3.00	3.51	0.51
August	10,400,000	11.50	0.00	0.00	10.98	3.00	3.52	0.52
September	7,500,000	8.30	0.00	0.00	7.77	3.00	3.53	0.53
October	5,500,000	6.08	0.09	0.00	5.35	3.00	3.82	0.82
November	3,300,000	3.65	0.31	0.00	3.08	3.00	3.88	0.88
December	1,800,000	1.99	0.55	0.00	1.43	3.00	4.11	1.11
Total	82,700,000	91.48	3.59	0.00	85.86			9.21
Percent of Total =	253.8 ac-ft		10.0	0.0	238.3 ac-ft			25.6
	96%		4%	0%				

RECLAMATION AREA:

Month	Golf Course/Landscape 100.0 acres		Irrigation Application Efficiency = 75%					
	Effluent Applied (gal/month)	Effluent Applied (in)	Effective Rainfall (in)	Fresh Irrigation (in)	Gross Crop Need (in)	Soil Moisture Start (in)	Soil Moisture End (in)	Percolation & Leaching
January	8,300,000	3.06	1.07	0.00	3.03	3.00	4.10	1.10
February	8,200,000	3.02	1.56	0.00	3.51	3.00	4.07	1.07
March	20,200,000	7.44	0.01	0.00	6.69	3.00	3.76	0.76
April	28,000,000	10.31	0.00	0.00	9.60	3.00	3.71	0.71
May	32,000,000	11.79	0.00	0.00	11.15	3.00	3.64	0.64
June	35,200,000	12.96	0.00	0.00	12.53	3.00	3.43	0.43
July	34,200,000	12.60	0.00	0.00	12.16	3.00	3.44	0.44
August	31,500,000	11.60	0.00	0.00	11.13	3.00	3.47	0.47
September	27,000,000	9.94	0.00	0.00	9.24	3.00	3.70	0.70
October	21,500,000	7.92	0.09	0.00	7.19	3.00	3.82	0.82
November	12,500,000	4.60	0.31	0.00	3.87	3.00	4.04	1.04
December	11,000,000	4.05	0.55	0.00	3.51	3.00	4.09	1.09
Total	269,600,000	99.29	3.59	0.00	93.61			9.27
Percent of Total =	827.4 ac-ft		30.0	0.0	780.1 ac-ft			77.3
	97%		3%	0%				



**City of Ridgecrest
Wastewater Treatment Plant Disposal
Wet Year Rainfall**

3.3 mgd - Additional Disposal by Percolation / Evaporation Ponds

DATA:

Month	Number of Days per Month	Working Days per Month	Wet Year		ET_c
			Rainfall (in/month)	Evaporation (in/month)	Alfalfa (in/month)
January	31	31	1.71	3.02	2.57
February	28	28	2.23	4.13	4.03
March	31	31	1.30	6.99	4.40
April	30	30	0.38	9.98	5.91
May	31	31	0.16	12.87	7.85
June	30	30	0.05	14.68	9.11
July	31	31	0.35	16.11	9.08
August	31	31	0.53	14.48	8.24
September	30	30	0.48	10.71	5.83
October	31	31	0.23	7.51	4.01
November	30	30	0.90	4.25	2.31
December	31	31	1.16	2.88	1.07
Total	365	365	9.48	107.63	64.40

STORAGE POND CALCULATIONS:

Effluent Production =	3,300,000	gpd
NAWS Ponds 1-7 Wet Area =	114	acres
Approx. Storage Volume =	597	ac-ft
Approx. Storage Volume =	194,600,000	gal
Pond Percolation Rate =	0.00	in/day
NAWS Ponds 8,11 Wet Area =	53	acres
Approx. Storage Volume =	317	ac-ft
Approx. Storage Volume =	103,400,000	gal
Pond Percolation Rate =	0.00	in/day
NAWS Ponds 9-10 Wet Area =	72	acres
Approx. Storage Volume =	432	ac-ft
Approx. Storage Volume =	140,800,000	gal
Pond Percolation Rate =	0.23	in/day
City Ponds Wet Area =	36	acres
Approx. Storage Volume =	186	ac-ft
Approx. Storage Volume =	60,700,000	gal
Pond Percolation Rate =	0.23	in/day
Alfalfa Area =	33	acres
Alfalfa Rootzone AWHC =	3.00	inch

Month	Effluent Produced (gal/month)	Effluent to Golf Course (gal/month)	Effluent to Alfalfa (gal/month)	Effluent to Ponds (gal/month)	Surface Rainfall (gal/month)	Surface Evaporation (gal/month)	Pond Percolation (gal/month)	Monthly Available (gal/month)	Cumulative Available (gal/month)
January	102,300,000	2,141,000	3,600,000	96,559,000	12,753,534	22,537,275	20,951,540	65,823,719	188,729,582
February	92,400,000	2,341,000	4,500,000	85,559,000	16,658,863	30,852,554	18,923,971	52,441,338	241,170,920
March	102,300,000	9,707,000	6,000,000	86,593,000	9,674,608	52,185,547	20,951,540	23,130,521	264,301,441
April	99,000,000	16,747,000	7,500,000	74,753,000	2,818,949	74,550,782	20,275,683	-17,254,516	247,046,925
May	102,300,000	21,472,000	9,900,000	70,928,000	1,226,533	96,113,161	20,951,540	-44,910,168	202,136,757
June	99,000,000	22,072,000	11,400,000	65,528,000	350,230	109,589,649	20,275,683	-63,987,102	138,149,655
July	102,300,000	26,770,000	11,400,000	64,130,000	2,614,796	120,313,492	20,951,540	-74,520,236	63,629,419
August	102,300,000	24,369,000	10,400,000	67,531,000	3,986,986	108,155,980	20,951,540	-57,589,534	6,039,885
September	99,000,000	21,522,000	7,500,000	69,978,000	3,588,869	79,606,754	0	-6,039,885	0
October	102,300,000	12,853,000	5,500,000	83,947,000	1,744,871	56,085,126	20,951,540	8,655,205	8,655,205*
November	99,000,000	1,884,000	3,800,000	93,316,000	6,725,876	31,770,102	20,275,683	47,996,091	56,651,296
December	102,300,000	65,000	2,200,000	100,035,000	8,676,140	21,505,033	20,951,540	66,254,567	122,905,863
Total	1,204,500,000	161,943,000	83,700,000	958,857,000	70,820,255	803,265,455	226,411,800	0	0
ac-ft	3,696	497	257	2,943	217	2,465	695		

* Start at 0 Stored October 1st

RECLAMATION AREA:

Month	Alfalfa		33.3 acres		Irrigation Application Efficiency = 75%		Soil Moisture Start (in)	Soil Moisture End (in)	Percolation & Leaching > 3.00 in
	Effluent Applied (gal/month)	Effluent Applied (in)	Effective Rainfall (in)	Fresh Irrigation (in)	Gross Crop Need (in)				
January	3,600,000	3.98	1.07	0.00	3.43	3.00	4.62	1.62	
February	4,500,000	4.98	1.56	0.00	5.37	3.00	4.17	1.17	
March	6,000,000	6.64	0.01	0.00	5.87	3.00	3.78	0.78	
April	7,500,000	8.30	0.00	0.00	7.88	3.00	3.42	0.42	
May	9,900,000	10.95	0.00	0.00	10.46	3.00	3.49	0.49	
June	11,400,000	12.61	0.00	0.00	12.14	3.00	3.47	0.47	
July	11,400,000	12.61	0.00	0.00	12.10	3.00	3.51	0.51	
August	10,400,000	11.50	0.00	0.00	10.98	3.00	3.52	0.52	
September	7,500,000	8.30	0.00	0.00	7.77	3.00	3.53	0.53	
October	5,500,000	6.08	0.09	0.00	5.35	3.00	3.82	0.82	
November	3,800,000	4.20	0.31	0.00	3.08	3.00	4.43	1.43	
December	2,200,000	2.43	0.55	0.00	1.43	3.00	4.55	1.55	
Total	83,700,000	92.58	3.59	0.00	85.86			10.31	
Percent of Total =	256.9	ac-ft	10.0	0.0	238.3	ac-ft		28.6	
	96%		4%	0%					

* Effluent to Golf Course based on 2009-2010 flow records
 ** Effluent applied for alfalfa based on 2009-2010 records
 *** Effluent to City ponds based on 2009-2010 flow records

Assumptions: (update as necessary when info comes available)
 NAWS Ponds 8 and 11 not currently suitable for use (53 ac) - assumed to be reconditioned.
 Minimal (zero) percolation from Facultative ponds
 Max flow to former site (for Alfalfa) is 500,000 gpd (approx. 15 mil gal per month)

Total Pond Storage Available (gal) 395,700,000
Cumulative Storage Needed (gal) 264,301,441
Check **OK**

