

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
CENTRAL VALLEY REGION

ORDER NO. R5-2005-0016

NPDES NO. CA0083178

WASTE DISCHARGE REQUIREMENTS  
FOR  
UNION PACIFIC RAILROAD COMPANY  
DUNSMUIR RAILYARD  
SISKIYOU COUNTY

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

*BACKGROUND*

1. The Union Pacific Railroad Company, (hereafter Discharger) submitted a Report of Waste Discharge, dated 1 October 2003, and applied for renewal of a permit to discharge waste from the Dunsmuir Railyard under the National Pollutant Discharge Elimination System (NPDES).
2. The facility property (State Board Equalization Map No. 872-47-1A, Parcel 1) is owned by the Discharger and is in Section 25, T39N, R4W, MDB&M, as shown on Attachment A, a part of this Order. The facility lies in the Upper Sacramento Hydrologic Unit, HSA No. 525.21, as depicted on interagency maps prepared by the Department of Water Resources. The Discharger operates a groundwater extraction and treatment system for the removal of petroleum contamination. A maximum of 0.86 mgd (600 gpm) of treated wastewater is discharged to a subsurface infiltration gallery (Discharge 001), constructed in river gravels and fill immediately adjacent to the Sacramento River, a water of the United States, as shown on Attachment B, a part of this Order.
3. The discharge is presently regulated by Waste Discharge Requirements Order No. 99-021, adopted by the Board on 30 April 1999.
4. The Dunsmuir Railyard is underlain by an undetermined quantity of fuel oil which has spilled or leaked from steam and diesel locomotives, storage tanks, and conveyance pipelines since the early 1900s. This oil flows along with groundwater, and if it not intercepted, discharges into the Sacramento River. Southern Pacific Transportation Company (SPTC), the previous owner installed a subsurface oil/water collection system and treatment system, which is currently operated by the Discharger. The contaminated groundwater recovered from the extraction wells contains an insoluble heavy oil phase and dissolved hydrocarbons. Other wastes which may be directed to the treatment system

include oil and fuel which have leaked from locomotives into the turntable pit, water purged from monitoring wells, and drainage from the maintenance drainage pad.

5. The waste stream first enters a slant rib coalescing oil/water separator to remove suspended oil and solid matter, then passes into a media filter to remove suspended sediment and other solids. The waste stream receives a final polish with granular activated carbon to remove dissolved hydrocarbons prior to discharge to the infiltration gallery. Discharge rates will vary depending upon site cleanup strategies and groundwater elevations which are directly affected by precipitation events. The treatment process is shown on Attachment C, a part of this Order.
6. The Report of Waste Discharge describes the discharge as follows:

Parameter	Analysis, (10/02/03)	Reporting Limit	Method
pH	6.5	NA	field
Specific Conductance	254 $\mu$ S	NA	field
Temperature	68 Deg. F	NA	field
TPH, Diesel	ND	50 $\mu$ g/L	EPA 8015M
Benzene	ND	5 $\mu$ g/L	EPA 8021B
Toluene	ND	5 $\mu$ g/L	EPA 8021B
Ethyl Benzene	ND	5 $\mu$ g/L	EPA 8021B
Xylene	ND	5 $\mu$ g/L	EPA 8021B
Chromium	ND	2 $\mu$ g/L	EPA 200.8
Lead	ND	1 $\mu$ g/L	EPA 200.8

7. The mean annual rainfall is approximately 55 inches and the 10-year 24-hour storm is 6.30 inches. The pan evaporation rate is approximately 55 inches per year, based on information obtained from DWR Bulletin 73-79 (November 1979).
8. Petroleum storage at the site consists of two 500 gallon diesel tanks and one 300 gallon tank for storage of oil recovered from extraction wells. The Discharger had previously installed a 15,000-gallon aboveground diesel storage tank for fueling locomotives. This tank has been emptied, cleaned and removed. Locomotives are no longer fueled at this site. Since total petroleum storage at the site is less than 1320 gallons the Discharger is no longer required to seek coverage under the Aboveground Petroleum Storage Tank Act.
9. Domestic wastewater is discharged to the City of Dunsmuir Wastewater Treatment Plant.
10. The Regional Board adopted a Water Quality Control Plan, Fourth Edition, for the Sacramento and San Joaquin River Basins (hereafter Basin Plan). The Basin Plan

designates beneficial uses, establishes water quality objectives, and describes an implementation program and policies to achieve water quality objectives for all waters of the Basin. This includes plans and policies adopted by the State Water Resources Control Board (SWRCB) and incorporated by reference, such as Resolution No. 68-16, Statement of Policy with Respect to Maintaining High Quality of Waters in California. These requirements implement the Basin Plan.

#### *BENEFICIAL USES*

11. The Basin Plan identifies the following beneficial uses for the Sacramento River from Box Canyon Dam to Shasta Lake: agricultural supply (AGR); water contact (REC-1) and noncontact (REC-2) recreation; cold freshwater habitat (COLD); spawning, reproduction, and/or early development of fish (SPWN); and wildlife habitat (WILD).
12. The beneficial uses of groundwater are municipal and domestic supply, industrial service supply, industrial process supply, and agricultural supply.

#### *STORMWATER*

13. Federal Regulations for storm water discharges were promulgated by U.S. Environmental Protection Agency (USEPA), on 16 November 1990 (40 CFR Parts 122,123, and 124). The regulations require specific categories of facilities, which discharge storm water associated with industrial activity (storm water), to obtain NPDES permits and to implement Best Available Technology Economically Achievable and Best Conventional Pollutant Control Technology to reduce or eliminate industrial storm water pollution.
14. The SWRCB Order No. 97-03-DWQ (General Permit) specifies storm water waste discharge requirements associated with industrial activities, excluding construction activities, and requires either coverage under the General Permit or an individual permit adopted for storm water runoff. The existing NPDES permit regulates discharges of industrial storm water. To be consistent with regulation of other discharges, this Order's Provisions require the Discharger to obtain coverage under the General Permit **by 30 March 2005**.

#### *REASONABLE POTENTIAL ANALYSIS AND EFFLUENT LIMITATIONS*

15. 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.
16. 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 standards applicable to this discharge. The SWRCB 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 policies and procedures for implementation of the NTR and the CTR.

17. Federal regulations contained in 40CFR 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. On 11 December 2000, the Discharger was issued a letter under the authority of California Water Code, Section 13267 requesting effluent and receiving water monitoring to meet the requirements of the SIP. The Discharger sampled Discharge 001 and the receiving water once to determine if the priority pollutants established in the CTR and NTR were detected. Analytical results were submitted for volatile substances, semi-volatile substances, pesticide compounds, metals, asbestos, 2,3,7,8 TCDD and its congeners, and seventy-four priority pollutant organic substances.
18. Waste Discharge Requirements Order No. 99-021 contained effluent limits for Total Semivolatile Petroleum Hydrocarbons (USEPA Method 8270), total chromium, lead, benzene, toluene, ethylbenzene and xylene (benzene, toluene, ethylbenzene and xylene are hereafter referred to as BTEX). Monitoring and Reporting Program No. 99-021 required monthly monitoring of all these potential pollutants in both influent and effluent. No BTEX constituents have been detected in the influent or effluent in the last three years of monitoring. These constituents were not detected in the CTR sampling and analysis conducted by the Discharger on 12 January 2001. Therefore, effluent limitations for BTEX constituents have been eliminated in this order.

Total chromium has occasionally been detected in both influent and effluent. Levels in both influent and effluent are approximately equal and when detected, range from approximately 1.4 to 7.4 ug/L. Water quality criteria for chromium are specified for chromium III and Chromium VI, but not total chromium. The lowest applicable criterion for chromium is the chronic criterion for protection of freshwater aquatic life for chromium VI and is 11.61 µg/L after application of the SIP conversion factor. The criteria for chromium III are considerably higher. Chromium III is the more common oxidation state for chromium under most conditions, and the limited information from the Discharger's CTR results indicate that this is the case for their discharge. Chromium has not been detected in the receiving water and based on the procedures in Section 1.3 of the SIP there is no reasonable potential for chromium III, chromium VI or total chromium to exceed an applicable water quality criteria.

Both effluent samples analyzed for zinc had concentrations above reporting limits, 19 ug/L (12 December 2001) and 7 ug/L (5 December 2003). Zinc was also detected

above the reporting limit for both receiving water samples analyzed, 20 ug/L (2 April 2002) and 2 ug/L (5 December 2003). The Regional Board finds that, at this time, there is insufficient information to determine if an effluent limitation for zinc is appropriate. Therefore, the Discharger is required to conduct additional monitoring and reporting for zinc, as specified in the attached Monitoring and Reporting Program, to provide sufficient information. When sufficient data are collected it is the intent of the Regional Board to include final water quality-based effluent limitations for zinc as enforceable limitations.

19. Based on information submitted as part of the application, in studies, CTR sampling and as directed by monitoring and reporting programs the Regional Board finds that the discharge does have a reasonable potential to cause or contribute to an in-stream excursion above a water quality objective for acute toxicity, lead, pH and total semivolatile petroleum hydrocarbons. Effluent limitations for these constituents are included in this Order.

***Acute Toxicity***

The Basin Plan states that, "All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal or aquatic life. . . . In addition effluent limits based upon acute biotoxicity tests of effluents will be prescribed where appropriate." The effluent limits for acute toxicity in this Order are consistent with the Basin Plan and the previous Order.

***Lead***

According to SIP Section 1.3, effluent limitations must be established when a reasonable potential exists for a constituent to an excursion above a numeric water quality objective. The CTR includes hardness-dependent criteria for the protection of freshwater aquatic life for lead. Freshwater aquatic is a beneficial use of the receiving water. USEPA recommends conversion factors (translators) to translate dissolved concentrations of certain metals to total recoverable concentrations. The conversion factor for lead in freshwater is, itself, hardness dependent. At a hardness of 46 mg/L as CaCO<sub>3</sub>, the translator for lead is equal to 0.904. Using a water hardness of 46 mg/L as CaCO<sub>3</sub> (the lowest hardness value observed in the receiving water), the most stringent applicable water quality standards for lead are 1.2 µg/L and 30.4 µg/L (dissolved) based on the CTR chronic and acute criteria, respectively.

To determine if an effluent limitation for lead is required, SIP Section 1.3 requires that the lowest freshwater criterion, 1.2 ug/L in this case, be compared to the maximum effluent concentration, which is 10.9 ug/L. Since the maximum effluent concentration exceeds the lowest freshwater criterion, an effluent limitation for lead must be established.

Section 1.4 of the SIP establishes procedures for calculating effluent limitations. Included in the procedures is a determination of a dilution credit, which the Regional Board may approve, disapprove, or modify at its discretion. But the Discharger has not developed the information needed to determine a dilution credit. Consequently, this Order establishes final effluent limitations for lead based on zero dilution. The final effluent limitations are calculated as shown in the Information Sheet, a part of this Order. The maximum daily effluent limitation is 1.94 ug/L and the average monthly effluent limitation is 0.97 ug/L.

### ***pH***

The Basin Plan states that, "The pH shall not be depressed below 6.5 nor raised above 8.5. Changes in normal pH levels shall not exceed 0.5 in fresh waters with designated COLD or WARM beneficial uses." This Order requires the effluent pH to remain between 6.5 and 8.5 units. These limits are consistent with the limits in the previous Order.

### ***Total Semivolatile Petroleum Hydrocarbons***

The effluent limitation for total semivolatile petroleum hydrocarbons in this Permit, (USEPA Method 8015M), is consistent with Order No. 5-00-119, (General Order for Discharge to Surface Waters from Cleanup of Groundwater from Cleanup of Petroleum Fuel Pollution).

## ***COMPLIANCE SCHEDULE AND INTERIM LIMITS***

20. Section 2.1 of the SIP provides that: "*Based on an existing discharger's request and demonstration that it is infeasible for the discharger to achieve immediate compliance with a CTR criterion, or with an effluent limitation based on a CTR criterion, the RWQCB may establish a compliance schedule in an NPDES permit.*" Section 2.1, further states that compliance schedules may be included in NPDES permits provided that the following justification has been submitted: ... "*(a) documentation that diligent efforts have been made to quantify pollutant levels in the discharge and the sources of the pollutant in the waste stream; (b) documentation of source control measures and/or pollution minimization measures efforts currently underway or completed; (c) a proposal for additional or future source control measures, pollutant minimization actions, or waste treatment (i.e., facility upgrades); and (d) a demonstration that the proposed schedule is as short as practicable.*" This Order requires the Discharger to provide this information. The final water quality based effluent limitations for lead become effective **120 days** after adoption of this Order unless an acceptable compliance schedule justification meeting the requirements of Section 2.1 of the SIP is completed and submitted by the Discharger. If an acceptable compliance schedule justification is submitted, the interim effluent limits described in this Order for lead will supercede the final effluent limits until **60 months** after adoption of this Order. At that time the final

effluent limits will be fully applicable. As this schedule is greater than one year, the Discharger shall submit semiannual progress reports on **1 January** and **1 July** of each year until the Discharger achieves compliance with the final water quality based effluent limitations for lead.

21. The SIP, Section 2.2.1, requires that if a compliance schedule is granted for a CTR or NTR constituent, the Regional Board shall establish interim limitations and dates for their achievement in the NPDES permit. The interim limitations must: be based on current treatment plant performance or existing permit limitations, whichever is more stringent; include interim compliance dates separated by no more than one year, and; be included in the Provisions. The interim limitations for lead in this Order are technology based limits based on the current treatment plant performance. The objective of these limits is to maintain, at a minimum, the current plant performance level. The *Technical Support Document for Water Quality Based Toxics Control* (EPA/505/2-90-001)(TSD) discusses uncertainty in effluent characterization in Section 3.3.2. Section 3.3.2 describes how to project an estimated maximum concentration for effluent taking into account the sample variability. The estimated maximum concentration is calculated as the upper bound of the expected lognormal distribution of effluent concentrations at a high confidence level. This statistical approach has two parts: The first is a characterization of the highest measured effluent concentration based on the desired confidence level. The second part of the approach is a relationship between the percentile described above and the selected upper bound of the lognormal effluent distribution. (EPA's database suggests that the lognormal distribution well characterizes effluent concentrations.) Tables 3-1 and 3-2 of the TSD show the combined effects of both parts for 99<sup>th</sup> and 95<sup>th</sup> percentiles respectively. The factors shown in the tables are multiplied by the highest concentration in an effluent sample to estimate the maximum expected concentration in the population. The TSD states a minimum of ten data points is required for a valid statistical analysis and recommends a value of 0.6 as a default CV, if the regulatory authority does not have more accurate information on the CV for the pollutant or pollutant parameter. The Discharger's data set for lead contains 35 individual analyses, however, 70% of these are recorded as not detected (ND) at 1.0 ug/L. Under these circumstances, the calculation of a standard deviation and CV may not be appropriate. For this reason we have assumed the default value for CV of 0.6. A histogram of the transformed data has been plotted and the distribution approximates lognormal. The highest value of the 35 samples in the set, 10.9 ug/L, is greater than the 88th percentile (99% confidence level). The appropriate multiplier from Table 3.1 of the TSD is 2.1, which when multiplied by the highest value in the data set, 10.9 ug/L, gives a maximum daily effluent limit of 22.9 ug/L. The long-term average objective is to maintain the current level of pollutant concentrations or better. Therefore, the monthly average interim limitation for lead cannot exceed the maximum detected concentration, which is 10.9 ug/L. The Regional Board finds that the Discharger may be able to undertake source control and treatment plant measures to maintain compliance with the interim limitations included in this Order. Interim limitations are established when compliance with NTR- and CTR-based

Effluent Limitations cannot be achieved by the existing discharge. Discharge of constituents in concentrations in excess of the final Effluent Limitations, but in compliance with the interim Effluent Limitations, can significantly degrade water quality and adversely affect the beneficial uses of the receiving stream on a long-term basis.

*GENERAL*

22. The USEPA and the Regional Board have classified this discharge as a minor discharge.
23. The discharge as permitted herein is consistent with the provisions of SWRCB Resolution No. 68-16. Consistency with the resolution is based on the fact that domestic waste from this facility is discharged to the City of Dunsmuir Wastewater Treatment Plant, and the industrial wastewater regulated by this order is not a significant threat to water quality, as compliance with these requirements will result in the use of best practicable treatment and control of the waste.
24. The action to adopt an NPDES permit is exempt from the provisions of Chapter 3 of the California Environmental Quality Act (CEQA) (Public Resources Code Section 21100, et seq.), in accordance with Section 13389 of the California Water Code.
25. The Regional Board has considered the information in the attached Information Sheet in developing the findings in this Order. The attached Information Sheet is part of this Order.
26. The Regional Board has notified the Discharger and interested agencies and persons of its intent to prescribe waste discharge requirements for this discharge and has provided them an opportunity for a public hearing and an opportunity to submit their written views and recommendations.
27. The Regional Board, in a public meeting, heard and considered all comments pertaining to the discharge.
28. This Order shall serve as an NPDES permit pursuant to Section 402 of the CWA, and amendments thereto, and shall take effect 10 days from the date of hearing, provided USEPA has no objections.

**IT IS HEREBY ORDERED** that Order No. 99-021 is rescinded and the Union Pacific Railroad Company, its agents, successors, and assigns, in order to meet the provisions contained in Division 7 of the California Water Code and regulations adopted thereunder, and the provisions of the Clean Water Act and regulations and guidelines adopted thereunder, shall comply with the following:

**A. Discharge Prohibitions**

1. Discharge of wastewater at locations or in a manner different from that described in the findings is prohibited.
2. The by-pass or overflow of wastes to surface waters is prohibited, except as allowed by Standard Provision A.13. (See attached “Standard Provisions and Reporting Requirements for Waste Discharge Requirements (NPDES)”).
3. Discharge of waste classified as “hazardous” as defined in Section 2521(a) of Title 23, California Code of Regulations (CCR), Section 2510, et seq., (hereafter Chapter 15) or “designated”, as defined in Section 13173 of the California Water Code, is prohibited.
4. Neither the discharge nor its treatment shall create a nuisance as defined in Section 13050 of the California Water Code.

**B. Effluent Limitations (Discharge 001)**

1. The discharge of wastewater to the Sacramento River in excess of the following limitations is prohibited:

<u>Parameter</u>	<u>Unit</u>	<u>30-DayAverage</u>	<u>Daily Maximum</u>
Lead (total)	µg/L	0.97	1.94
	lbs/day	0.007	0.014
Total Semivolatile Petroleum Hydrocarbons (USEPA 8015 M)	µg/L	50	100
	lbs/day	0.36	0.72

2. Interim effluent limitations have been established for the following constituents. These interim effluent limitations may supercede the above final effluent limits as described in this Order. The interim discharge of wastewater to the infiltration gallery adjacent to the Sacramento River in excess of the following is prohibited:

<u>Parameter</u>	<u>Unit</u>	<u>30-DayAverage</u>	<u>Daily Maximum</u>
Lead (total)	µg/L	10.9	22.9
	lbs/day	0.079	0.165

3. The discharge from the treatment system to the infiltration gallery, (Discharge 001), shall not have a pH less than 6.5 or greater than 8.5,
4. The discharge from the treatment system to the infiltration gallery, (Discharge 001), shall not exceed 0.86 million gallons per day, (mgd).

5. 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%

**C. Discharge Specifications**

The discharge shall not cause degradation of any water supply.

**D. Sludge Disposal**

1. Collected screenings, sludge, spent sand, spent carbon and other solids removed from liquid wastes or generated by the treatment process 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, California Code of Regulations (CCR), Division 2, Subdivision 1, Section 20005, et seq.
2. Any proposed change in sludge disposal practice shall be reported to the Executive Officer at least **30 days** in advance of the change.

**E. Receiving Water Limitations**

Receiving water limitations are based upon water quality objectives contained in the Basin Plan. As such, they are a required part of this permit. The discharge shall not cause the following in the Sacramento River:

1. The turbidity of receiving waters to increase over background levels by more than:
  - a. 1 NTU when background turbidity is between 0 and 5 NTUs;
  - b. 20 percent when background turbidity is between 5 and 50 NTUs;
  - c. 10 NTUs when background turbidity is between 50 and 100 NTUs; and
  - d. 10 percent when background turbidity is greater than 100 NTUs.

In determining compliance with the above limits, appropriate averaging periods may be applied upon approval by the Executive Officer.

2. Suspended material in concentrations that cause nuisance or adversely affect beneficial uses.
3. Deposition of material that causes nuisance or adversely affects beneficial uses.
4. The normal ambient pH to fall below 6.5, exceed 8.5, or change by more than 0.5 units. In determining compliance with these limits, appropriate averaging periods may be applied upon approval by the Executive Officer.
5. Increase the normal ambient temperature of waters by more than 5°F (3°C). In determining compliance with these limits, appropriate averaging periods may be applied upon approval by the Executive Officer.
6. Oils, greases, waxes, or other materials to form a visible film or coating on the water surface or on the stream bottom.
7. Oils, greases, waxes, floating material (liquids, solids, foams, and scum), or suspended materials to create a nuisance or adversely affect beneficial uses.
8. Aesthetically undesirable discoloration.
9. Fungi, slimes, or other objectionable growths.
10. Concentration of dissolved oxygen to fall below 9.0 mg/L. When natural conditions lower dissolved oxygen below this level, the concentrations shall be maintained at or above 95 percent of saturation.
11. Taste or odor-producing substances to impact undesirable tastes or odors to fish flesh or other edible products of aquatic origin, or to cause nuisance or adversely affect beneficial uses.
12. Aquatic communities and populations, including vertebrate, invertebrate, and plant species, to be degraded.
13. Toxic pollutants to be present in the water column, sediments, or biota in concentrations that adverse affect beneficial uses; that product detrimental response in human, plant, animal, or aquatic life; or that bioaccumulate in aquatic resources at levels which are harmful to human health.

14. Violations of any applicable water quality standard for receiving waters adopted by the Board or the SWRCB pursuant to the CWA and regulations adopted thereunder.

**F. Groundwater Limitation**

The discharge, in combination with other sources, shall not cause usable groundwater underlying the facility to contain waste constituents statistically greater than background water quality.

**G. Provisions**

1. The Discharger shall comply with all items of the “Standard Provisions and Reporting Requirements for Waste Discharge Requirements (NPDES),” dated 1 February 2004, which are part of this Order. This attachment and its individual paragraphs are referred to as “Standard Provision(s).”
2. The Discharger shall comply with the attached Monitoring and Reporting Program No. R5-2005-0016, which is a part of this Order, and any revisions thereto as ordered by the Executive Officer.
3. The Discharger shall conduct chronic toxicity testing as specified in Monitoring and Reporting Program No. R5-2005-0016. If the testing indicates that the discharge causes, has the reasonable potential to cause, or contributes to an in-stream excursion above the water quality objective for toxicity, 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 work plan to conduct a toxicity reduction evaluation (TRE), and upon approval conduct the TRE. This Order will be reopened to include a chronic toxicity limitation and/or a limitation for the specific toxicant identified in the TRE. Additionally, if a chronic toxicity water quality objective is adopted by the SWRCB, this Order may be reopened and a limitation based on that objective included.
4. The Discharger shall immediately report to the Regional Board any spill that potentially impacts surface waters.
5. By **30 March 2005**, the Discharger shall obtain coverage under SWRCB Order No. 97-03-DWQ for storm water discharges associated with industrial activities, excluding construction activities.
6. **Within 60 days** after adoption of this Order, the Discharger shall complete and submit a compliance time schedule justification for lead. The compliance schedule justification shall include all items specified by the SIP Section 2.1,

Paragraph 3 (items (a) through (d)). The final water quality based effluent limitations for lead become effective **60 days** after adoption of this Order unless an acceptable compliance schedule justification meeting the requirements of Section 2.1 of the SIP is completed and submitted by the Discharger. If an acceptable compliance schedule justification is submitted, the interim effluent limits described in this Order for lead will supercede the final effluent limits until **60 months** after adoption of this Order. At that time the final effluent limits will be fully applicable. As this schedule is greater than one year, the Discharger shall submit semi annual progress reports on **1 January** and **1 July** each year until the Discharger achieves compliance with the final water quality based effluent limitations for lead. Within **12 months** of adoption of this Order, the Discharger shall either (1) submit a workplan for reducing the concentrations of pollutants in the discharge to levels that will comply with the final effluent limits, (2) demonstrate that excursions above the final effluent limitations are not occurring and that there is, therefore, no reasonable potential for exceeding the applicable receiving water criteria, or (3) submit a workplan(s) for studies that will prove that the final effluent limits should be modified based on site-specific conditions. The Discharger must take such actions necessary to comply with the final effluent limits. The Regional Board may reopen this Order and modify the final effluent limits if appropriate, based on results of studies the Discharger may conduct.

7. Zinc has been detected in two effluent and two receiving water samples at levels above the reporting limit. There is insufficient effluent and receiving water data for proper calculation of final effluent limits. The Discharger shall comply with monitoring for zinc as specified in Monitoring and Reporting Program No. R5-2005-0016 in order to collect sufficient information for the calculation of reasonable potential and effluent limitations for discharge to the Sacramento River. If subsequent sampling and analysis indicates that effluent and receiving water concentrations of zinc are sufficiently high to demonstrate that a reasonable potential exists for an applicable water quality criteria to be exceeded, this Order may be reopened to include an interim or final effluent limitation for zinc. If changes in sampling and/or analytical procedures and equipment indicate that zinc is not truly present in the effluent and/or receiving water at levels that would require effluent limitations, the monitoring requirements for zinc may be reduced or eliminated and the permit would not be reopened to prescribe effluent limitations for zinc.
8. The Discharger shall comply with all conditions of this Order, including timely submittal of technical and monitoring reports as directed by the Executive Officer. Violations may result in enforcement action, including Regional Board or court orders requiring corrective action or imposing civil monetary liability, or in revision or rescission of this Order.

9. The Discharger shall report promptly to the Board any material change or proposed change in the character, location, or volume of the discharge.
10. The Discharger shall use the best practicable cost-effective control techniques(s) currently available to comply with discharge limits specified in this order.
11. A copy of this Order shall be kept at the discharge facility for reference by operating personnel. Key operating personnel shall be familiar with its contents.
12. This Order expires on **1 January 2010**, and the Discharger must file a Report of Waste Discharge in accordance with Title 23, CCR, not later than **180 days** in advance of such date in application for renewal of waste discharge requirements if it wishes to continue the discharge.
13. In the event of any change in control or ownership of land or waste discharge facilities presently owned or controlled by the Discharger, the Discharger shall notify the succeeding owner or operator of the existence of this Order by letter, a copy of which shall be immediately forwarded to this office.

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, the name, address, and the telephone number of the persons responsible for contact with the Board, and a statement. The statement shall comply with the signatory paragraph of Standard Provision D.6 and state that the new owner or operator assumes full responsibility for compliance with this Order. Failure to submit the request shall be considered a discharge without requirements, a violation of the California Water Code. Transfer shall be approved or disapproved in writing by the Executive Officer.

I, THOMAS R. PINKOS, Executive Officer, do hereby certify the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, Central Valley Region, on 27 January 2005.

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THOMAS R. PINKOS, Executive Officer

JFR:

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM NO. R5-2005-0016

NPDES NO. CA0083178

FOR  
UNION PACIFIC RAILROAD COMPANY  
DUNSMUIR RAIL YARD  
SISKIYOU COUNTY

This Monitoring and Reporting Program (MRP) is issued pursuant to California Water Code Sections 13267 and 13383 and describes requirements for monitoring effluent and receiving water. The Discharger shall not implement any changes to this MRP unless and until the Regional Board or Executive Officer approves such changes. Regional Board staff shall approve specific sample station locations prior to implementation of sampling activities.

All samples shall be representative of the volume and nature of the discharge or material sampled. The time, date, and location of each sample shall be recorded on a chain of custody form for the sample.

All water quality sampling and analyses shall be performed in accordance with the Monitoring and Reporting Requirements as outlined in the Standard Provisions of this Order. Water quality sample collection, storage, and analyses shall be performed according to 40 CFR Part 136, or other methods approved and specified by the Executive Officer. Water and waste analyses shall be performed by a laboratory approved for these analyses by the State Department of Health Services (DHS), except when a certified laboratory is not reasonably available to the Discharger, in which case a non-certified laboratory operating in compliance with an approved Quality Assurance-Quality Control program may be used.

### INFLUENT MONITORING

Influent samples shall be collected after the last connection before the waste enters the treatment process. Influent samples should be representative of the volume and nature of influent. Time and date of collection of the grab samples shall be recorded. The following shall constitute the influent monitoring program:

<u>Constituent</u>	<u>Unit</u>	<u>Type of Sample</u>	<u>Sampling Frequency</u>
Total Semivolatile Petroleum Hydrocarbons <sup>1</sup>	µg/L	Grab	Monthly
Lead, total	µg/L	Grab	Monthly
Zinc, total	µg/L	Grab	Quarterly
Hardness	mg/L	Grab	Monthly <sup>2</sup>

<u>Constituent</u>	<u>Unit</u>	<u>Type of Sample</u>	<u>Sampling Frequency</u>
Benzene	µg/L	Grab	Annually <sup>2</sup>
Toluene	µg/L	Grab	Annually <sup>2</sup>
Ethylbenzene	µg/L	Grab	Annually <sup>2</sup>
Xylene	µg/L	Grab	Annually <sup>2</sup>

<sup>1</sup> Analyses shall be by EPA Method 8015M.

<sup>2</sup> To be sampled in December each year and submitted with the January monitoring.

### EFFLUENT MONITORING

Effluent samples shall be collected downstream from the last connection through which wastes can be admitted into the outfall. Effluent samples should be representative of the volume and nature of the effluent. Time and date of collection of grab samples shall be recorded. The following shall constitute the effluent monitoring program.

<u>Constituent</u>	<u>Unit</u>	<u>Type of Sample</u>	<u>Sampling Frequency</u>
Flow (Total)	gallons	Cumulative	Daily
Flow (Instantaneous)	gpm	Grab	Daily
pH	pH units	Grab	Monthly
Specific Conductance	µmhos/cm	Grab	Monthly
Total Semivolatile Petroleum Hydrocarbons <sup>1</sup>	µg/L	Grab	Monthly
Zinc, total	µg/L	Grab	Monthly <sup>2</sup>
Lead, total	µg/L	Grab	Monthly <sup>2</sup>
Hardness	mg/L	Grab	Monthly <sup>2</sup>
Benzene	µg/L	Grab	Annually <sup>3</sup>
Toluene	µg/L	Grab	Annually <sup>3</sup>
Ethylbenzene	µg/L	Grab	Annually <sup>3</sup>
Xylene	µg/L	Grab	Annually <sup>3</sup>

<u>Constituent</u>	<u>Unit</u>	<u>Type of Sample</u>	<u>Sampling Frequency</u>
Bioassay	% Survival	Grab	Annually <sup>4</sup>
CTR Priority Pollutants	µg/L	Grab	Once during life of permit
Chronic Three Species Bioassay	-	Grab	Once during life of permit

<sup>1</sup> Analyses shall be by EPA Method 8015M.

<sup>2</sup> May be relaxed after one year of sampling.

<sup>3</sup> To be sampled in December each year and submitted with the January monitoring.

<sup>4</sup> Acute bioassays shall be performed using rainbow trout in accordance with methods described in EPA's manual for measuring acute toxicity of effluents (EPA/600/4-90/027 and subsequent amendments).

In addition, effluent samples shall be collected monthly from between the carbon filter columns. These samples shall be analyzed for total semivolatile hydrocarbons by EPA method 8015M with a maximum detection limit of 50 µg/L.

### RECEIVING WATER MONITORING

Receiving water samples shall be collected from the Sacramento River at the following stations:

<u>Station</u>	<u>Description</u>
R-1	Adjacent to the northern most module of the train crew quarters.
R-2	500 feet downstream from the point of discharge

The following shall constitute the receiving water monitoring for Station R-1 and R-2:

<u>Constituent</u>	<u>Unit</u>	<u>Type of Sample</u>	<u>Sampling Frequency</u>
Total Semivolatile Petroleum Hydrocarbons <sup>1</sup>	mg/l	Grab	Quarterly
Zinc, total	ug/L	Grab	Monthly <sup>2</sup>
Zinc, soluble	ug/L	Grab	Monthly <sup>2,3</sup>
Lead, total	ug/L	Grab	Monthly <sup>2</sup>
Lead, soluble	ug/L	Grab	Monthly <sup>2,3</sup>

<u>Constituent</u>	<u>Unit</u>	<u>Type of Sample</u>	<u>Sampling Frequency</u>
pH	units	Grab	Quarterly
Temperature	°C	Grab	Quarterly
Specific Conductance	µmhos/cm	Grab	Quarterly

<sup>1</sup> Analyses shall be by EPA Method 8015M.

<sup>2</sup> May be relaxed after one year of sampling

<sup>3</sup> Soluble analysis for R-2 only

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

- |                                 |                    |
|---------------------------------|--------------------|
| a. Floating or suspended matter | e. Aquatic life    |
| b. Discoloration                | f. Slimes          |
| c. Scum or foam                 | g. Petroleum sheen |
| d. Bottom deposits              |                    |

Notes on receiving water conditions shall be summarized in the monitoring report. If any sample of the receiving water shows total semivolatile petroleum hydrocarbons above the Receiving Water Limitation, the Discharger shall immediately resample and reanalyze the receiving water and treatment plant effluent for the detected constituent, and shall continue sampling on a weekly basis until the total semivolatile hydrocarbon concentration is below the Receiving Water Limitation.

### **GROUNDWATER MONITORING**

The groundwater extraction wells adjacent to the retaining wall and the Sacramento River shall be inspected at a frequency adequate to ensure proper operation of the extraction system and to ensure groundwater levels are sufficiently depressed to prevent discharges to the Sacramento River. The retaining wall and concrete walkway between the railyard and the Sacramento River shall also be inspected for discharges of oil which may enter surface waters. All inspections shall be noted in the monthly monitoring reports.

### **THREE SPECIES CHRONIC TOXICITY**

Chronic toxicity monitoring using a sample collected from Discharge 001 immediately before it enters the infiltration gallery shall be conducted **once during the life of the Permit**. The testing shall be conducted as specified in EPA 600/4-91-002, or latest edition. Individual grab samples shall be representative of the volume and quality of the discharge. Date and time of sample collection shall be recorded. The results shall be submitted with the monitoring report and include the following:

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

Frequency: Once during the life of the Permit.

	Dilutions (%)					Controls	
	<u>100</u>	<u>75</u>	<u>50</u>	<u>25</u>	<u>12.5</u>	<u>Receiving Water<sup>1</sup></u>	<u>Lab Water</u>
% Discharge 001 Effluent	100	75	50	25	12.5	0	0
% Dilution Water <sup>1</sup>	0	25	50	75	87.5	100	0
% Lab Water	0	0	0	0	0	0	100

<sup>1</sup> Dilution water shall be receiving water from the Sacramento River taken upstream from the discharge point (R-1). If the receiving water exhibits toxicity the Discharger may be required to use lab water as dilution water. The dilution series may be modified after the initial test upon approval of the Executive Officer.

### PRIORITY POLLUTANT MONITORING

The State Water Resources Control Board (SWRCB) 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. 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. The sampling event shall be conducted **at least 180 days but no more than 365 days prior to expiration of this Order**. Results shall be reported within **90 days of sample collection**.

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 detectables are to be confirmed by GCMS. Inorganics shall be analyzed by the following methods:

Metals shall be analyzed by the US EPA methods listed below. Alternative analytical procedures may be used with approval by the Regional 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

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 U.S. EPA 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.

## REPORTING

Monitoring results shall be submitted to the Regional Board by the **1<sup>st</sup> day of the second month** following sample collection. (i.e., the January report is due by 1 March). All reports submitted in response to this Order shall comply with signatory requirements of Standard Provision D.6. 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 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 report form.

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

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

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

\_\_\_\_\_  
27 January 2005  
(Date)

JFR:

## INFORMATION SHEET

ORDER NO. R5-2005-0016  
UNION PACIFIC RAILROAD COMPANY  
DUNSMUIR RAILYARD  
SISKIYOU COUNTY

### GENERAL INFORMATION

The Union Pacific Railroad Company submitted a Report of Waste Discharge, dated 1 October 2003, and applied for renewal of a permit to discharge waste from the Dunsmuir Railyard under the National Pollutant Discharge Elimination System (NPDES).

The facility property (State Board Equalization Map No. 872-47-1A, parcel 1) is owned by the Discharger and is in Section 25, T39N, R4W, MDB&M, as shown on Attachment A, a part of this Order. The facility lies in the Upper Sacramento Hydrologic Unit, HSA No. 525.21, as depicted on interagency maps prepared by the Department of Water Resources. The Discharger operates a groundwater extraction and treatment system for the removal of petroleum contamination. A maximum of 0.86 mgd (600 gpm) of treated wastewater is discharged to a subsurface infiltration gallery (Discharge 001) constructed in river gravels and fill immediately adjacent to the Sacramento River, a water of the United States, as shown on Attachment B, a part of this Order.

The site was previously owned and operated by Southern Pacific Transportation Company (SPTC) and was purchased by the Discharger in August 1996. The discharge was previously regulated under Waste Discharge Requirements Order No. 99-021, adopted by the Board on 30 April 1999.

The Dunsmuir Railyard is underlain by an undetermined quantity of fuel oil which has spilled or leaked from steam and diesel locomotives, storage tanks, and conveyance pipelines since the early 1900s. This oil flows along with groundwater, and if it not intercepted, discharges into the Sacramento River. SPTC installed a subsurface oil/water collection system and treatment system which was subsequently upgraded and is currently operated by the Discharger.

The treatment system consists of a an interceptor trench, extraction wells, an oil water separator tank, a 218,000 gallon storage tank, a slant rib coalescing oil water separator with surge tank, two lines of sand filters, and two activated carbon filters. The contaminated groundwater recovered from the extraction wells contains an insoluble heavy oil phase and dissolved hydrocarbons, (Bunker C fuel). Other sources which may be directed to the treatment system include oil and fuel which have leaked from locomotives onto drip pans or into the turntable pit, water purged from monitoring wells, and drainage from the maintenance drainage pad.

A trench has been excavated below the groundwater table and the adjacent river level for a distance of 850' along the Sacramento River. Material contaminated by bunker fuel and uncontaminated material were segregated during the excavation process and stockpiled for further processing. An impervious liner was installed to a depth of approximately 15 feet on the

river side of the trench. The liner consisted of welded 40 mil high density polyethylene between two layers of 10 oz. geotextile padding.

A groundwater extraction system was constructed consisting of eighteen 36" diameter groundwater extraction wells. These wells are numbered 1 through 18 from south to north and wells were designed to maximize the amount of viscous bunker fuel recovery from the trench. The wells were installed below seasonal low groundwater levels to capture bunker fuel throughout the year and to provide a barrier to migration of groundwater contamination toward the Sacramento River. The trench was backfilled with washed screened rock and imported washed river run rock. The site was graded to promote runoff and paved to prevent infiltration.

The principal waste streams originate in the extraction wells, which are pumped from two different elevations in the water column. Surface water in the well, which may include floating petroleum product, is pumped to a recovered oil storage tank located immediately north of the office building adjacent to Well No. 1. This tank is equipped with an oil sensing element mounted in the top which indicates the thickness of the oil layer. When the layer thickness approaches 3 inches the oil is pumped out and removed by an environmental service company. The bottom water layer from the recovered oil storage tank is discharged to a 218,000 gallon storage tank in the treatment compound. Dewatering pumps transfer water from the lower part of the wells where there is a minimum of petroleum contamination. The dewatering pumps discharge directly to the 218,000 gallon storage tank.

The 218,000 gallon tank discharges to a slant rib coalescing oil/water separator to remove suspended oil and solid matter, then passes into a media filter to remove suspended sediment and other solids. Spent sand from the media filter is sent to Button Willow Landfill. The waste stream receives a final polish with granular activated carbon to remove dissolved hydrocarbons prior to discharge to the infiltration gallery. The two activated carbon filters are operated in series and samples taken from the line between the filters to determine when carbon in the upstream filter is exhausted. When this occurs the carbon is changed and the valve positions are adjusted to reverse the direction of flow. The previous upstream filter becomes the downstream filter. Spent carbon is sent to the manufacturer for regeneration. Discharge rates from the treatment facility will vary depending upon site cleanup strategies and groundwater elevations, which are directly affected by precipitation events.

The facility contains an asphalt bermed wash pad located opposite of extraction well No. 4. Vehicles and equipment are occasionally washed with high pressure water and a biodegradable detergent. Discharge from the pad is to the recovered oil storage tank.

The Report of Waste Discharge describes the discharge as follows:

Parameter	Analysis, (10/02/03)	Reporting Limit	Method
pH	6.5	NA	field
Specific Conductance	254 $\mu$ S	NA	field
Temperature	68 Deg. F	NA	field
TPH	ND	50 $\mu$ g/L	EPA 8015M
Benzene	ND	5 $\mu$ g/L	EPA 8021B
Toluene	ND	5 $\mu$ g/L	EPA 8021B
Ethyl Benzene	ND	5 $\mu$ g/L	EPA 8021B
Xylene	ND	5 $\mu$ g/L	EPA 8021B
Chromium	ND	2 $\mu$ g/L	EPA 200.8
Lead	ND	1 $\mu$ g/L	EPA 200.8

The mean annual rainfall is approximately 55 inches and the 10-year 24-hour storm is 6.30 inches. The pan evaporation rate is approximately 55 inches per year, based on information obtained from DWR Bulletin 73-79 (November 1979).

Petroleum storage at the site consists of two 500 gallon diesel tanks and one 300 gallon tank for storage of oil recovered from extraction well heads. The Discharger had previously installed a 15,000-gallon aboveground diesel storage tank for fueling locomotives. This tank has been emptied, cleaned and prepared for removal. Locomotives are no longer fueled at this site. Since total petroleum storage at the site is less than 1,300 gallons the Discharger is no longer required to seek coverage under the Aboveground Petroleum Storage Tank Act.

Domestic wastewater is discharged to the City of Dunsmuir wastewater treatment plant.

## **STORMWATER**

Order No. 99-021 included monitoring for storm water discharges and relieved the Discharger from seeking coverage under the SWRCB Order No. 97-03-DWQ (General Permit) which specifies storm water discharge requirements associated with industrial activities, excluding construction activities. To be consistent with regulation of other dischargers, this Order's Provisions require the Discharger to obtain coverage under the General Permit **by 30 March 2005.**

## **ANTIDegradation**

The Board adopted a *Water Quality Control Plan, Fourth Edition, for the Sacramento and San Joaquin River Basins* (hereafter Basin Plan). The Basin Plan designates beneficial uses, establishes water quality objectives, and describes an implementation program and policies to achieve water quality objectives for all waters of the Basin. This includes plans and policies adopted by the SWRCB and incorporated by reference, such as Resolution No. 68-16, Statement

of Policy with Respect to Maintaining High Quality of Waters in California. These requirements implement the Basin Plan.

The discharge as permitted herein is consistent with the provisions of Resolution 68-16. Consistency is based on the following: Domestic waste from the facility is discharged to the City of Dunsmuir Wastewater Treatment Plant and therefore poses no threat to water quality. The industrial wastewater will pose a negligible threat to water quality, as compliance with these requirements will result in the use of best practicable treatment and control of the discharge. There is less than 1,300 gallons of petroleum stored at the site and this petroleum is stored in Convault tanks with adequate containment. The Discharger has 18 extraction wells which control the gradient of groundwater flow in the vicinity of the original contamination. The gradient is confirmed by measuring the groundwater level in the five monitoring wells. If a spill were to occur, the pumping of the extraction wells in combination with the barrier curtain adjacent to the Sacramento River would insure that any contaminated groundwater resulting from the spill would be pumped out, and processed in the treatment facility. In consideration of the conditions at the facility there are no additional requirements for a groundwater monitoring program.

## **BENEFICIAL USES**

The Basin Plan identifies the following beneficial uses for the Sacramento River from Box Canyon Dam to Shasta Lake: agricultural supply (AGR); water contact (REC-1) and noncontact (REC-2) recreation; cold freshwater habitat (COLD); spawning, reproduction, and/or early development of fish (SPWN); and wildlife habitat (WILD).

The beneficial uses of groundwater are municipal and domestic supply, industrial service supply, industrial process supply, and agricultural supply.

## **EFFLUENT LIMITATIONS**

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 standards applicable to this discharge. The SWRCB 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 policies and procedures for implementation of the NTR and the CTR.

Federal regulations contained in 40CFR 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. On 11 December 2000, the Discharger was issued a letter under the authority of California Water

Code, Section 13267 requesting effluent and receiving water monitoring to meet the requirements of the SIP. The Discharger sampled Discharge 001 and the receiving water once to determine if the priority pollutants established in the CTR and NTR were detected. Analytical results were submitted for volatile substances, semi-volatile substances, pesticide compounds, metals, asbestos, 2,3,7,8 TCDD and its congeners, and seventy-four priority pollutant organic substances.

Waste discharge requirements order No. 99-021 contained effluent limits for Total Semivolatile Petroleum Hydrocarbons (EPA Method 8270), total chromium, lead, benzene, toluene, ethylbenzene and xylene (benzene, toluene, ethylbenzene and xylene are hereafter referred to as BTEX). The monitoring and reporting program of waste discharge requirements Order No. 99-021 required monthly monitoring of all these potential pollutants in both influent and effluent. A review of the past three years data reveals that in no case have the BTEX constituents been detected in either influent or effluent. Neither have these constituents been detected in the CTR sampling and analysis conducted by the Discharger on 12 January 2001. Therefore, effluent limitations for BTEX constituents have not been included in this order.

Based on information submitted as part of the application, in studies, CTR sampling and as directed by monitoring and reporting programs the Regional Board finds that the discharge does have a reasonable potential to cause or contribute to an in-stream excursion above a water quality objectives for acute toxicity, lead, pH and total semivolatile petroleum hydrocarbons. Reasonable potential has been determined according to the procedures in Section 1.3 of the SIP. Effluent limitations for these constituents are included in this Order. It was suspected that chromium and zinc might have reasonable potential for exceeding an applicable water quality criterion in the receiving water, however calculations revealed that chromium did not have a reasonable potential and that there was insufficient information to make a determination for zinc.

### **Chromium**

Total chromium has occasionally been detected in both effluent and influent. Levels in both influent and effluent are approximately equal and when detected range from approximately 1.4 to 7.4 µg/L. Water quality criteria for chromium are specified for chromium III and Chromium VI, but not total chromium. The lowest applicable criterion for chromium is the chronic criterion for protection of freshwater aquatic life for chromium VI and is 11.61 µg/L, after application of the SIP conversion factor. The criteria for chromium III are considerably higher. Chromium III is the more common oxidation state for chromium under most conditions, and the limited information from the Discharger's CTR results indicate that this is the case for their discharge. No chromium has been detected in the receiving water and based on the procedures in Section 1.3 of the SIP there is no reasonable potential for chromium III or chromium VI to exceed an applicable water quality criteria.

## Zinc

Both effluent samples analyzed for zinc had concentrations above reporting limits, 19 ug/L (12 December 2001) and 7 ug/L (5 December 2003). Zinc was also detected above the reporting limit for both receiving water samples analyzed, 20 ug/L (2 April 2002) and 2 ug/L (5 December 2003). The Regional Board finds that, at this time, there is insufficient information to determine if an effluent limitation for zinc is appropriate. Therefore, the Discharger is required to conduct additional monitoring and reporting for zinc, as specified in the attached Monitoring and Reporting Program, to provide sufficient information. On site inspections and sampling by regional board staff suggest that sampling by the ultra clean protocol may eliminate spurious results for zinc, and demonstrate that there is no reasonable potential. If this is the case, the Permit will not be re-opened for inclusion of effluent limitations. If, however, the Regional Board finds that effluent limitations for zinc are necessary, then this Order may be reopened and modified to include appropriate effluent limitations for zinc.

## Acute Toxicity

The Basin Plan states that, "All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal or aquatic life. ... In addition effluent limits based upon acute biotoxicity tests of effluents will be prescribed where appropriate." This order requires the Discharger to conduct annual testing for acute toxicity by a 96-hour static bioassay using Rainbow Trout. The minimum survival of test fishes in a 96-hour static bioassay for a single test is 70 %. The median survival for any three or more consecutive tests is 90 %. These limits are consistent with the limits in the previous Order.

## Lead

The methodology described in Section 1.3 of the SIP was used to evaluate the Discharger's monitoring data. The Regional Board has determined that the discharge has a reasonable potential to cause or contribute to an in-stream excursion above a water quality standard for lead. No credit for dilution of the effluent with the receiving water has been considered at this time.

The CTR acute and chronic aquatic life criterion for lead are applicable to these discharges and are given by the following formulas:

$$Pb_{acute} = e^{1.273 (\ln \text{Hardness}) - 1.460} \times (1.46203 - \ln \text{hardness} \times .145712)$$
$$Pb_{chronic} = e^{1.273 (\ln \text{Hardness}) - 4.705} \times (1.46203 - \ln \text{hardness} \times .145712)$$

The lowest observed, representative hardness measurement of the receiving water for the discharge period was 46 mg/l. When this value for hardness is used in the formulae above, the  $Pb_{acute}$  criterion/objective is determined to be 27.47  $\mu\text{g/L}$ , (dissolved) and the  $Pb_{chronic}$  criterion/objective to be 1.07  $\mu\text{g/L}$  (dissolved). No dilution allowance is being granted,

therefore the effluent concentration allowance (ECA) is equal to the adjusted water quality criteria or objective.

Appendix 3 of the SIP provides conversion factors (CFs) for converting a metal criterion expressed as the total recoverable to a criterion expressed as the dissolved fraction in the water column. The CFs are listed for both acute and chronic criteria. Some of the CFs including cadmium and lead, are hardness dependent. The conversion factors based on hardness for lead in freshwater are calculated using the following equations:

Lead:

$$CF_{\text{Chronic}} = 1.46203 - [(\ln \{\text{hardness}\})(0.145712)], \text{ at } 46 \text{ mg/L hardness} = 0.9041$$

$$CF_{\text{Acute}} = 1.46203 - [(\ln \{\text{hardness}\})(0.145712)], \text{ at } 46 \text{ mg/L hardness} = 0.9041$$

Both the acute and chronic lead criteria above are expressed as dissolved, therefore these criteria should be divided by the appropriate factor. Applying the conversion factors calculated above to the criteria determined for lead gives an adjusted acute criterion of 30.38 µg/L, (total recoverable), and a chronic criterion of 1.18 µg/L, (total recoverable).

The long term average discharge condition, (LTA), is calculated by multiplying the ECA by a factor that adjusts for effluent variability. These factors are based on the coefficient of variation, (Std. Deviation/Mean), of the sample population. There were 35 Analytical values for lead in effluent were available, but as the distribution of the sample was clearly not a normal distribution, and 70% of the values were reported as not detected (ND) at 1.0 ug/L, it was considered inappropriate to calculate a standard deviation. Therefore a coefficient of variation (CV) could not be calculated and the default value of 0.6 recommended by EPA was used. The corresponding ECA multiplier from Table 1 of the SIP is 0.527 (chronic) and 0.321 (acute). Applying these multipliers to the ECAs yielded an **LTA acute** of **9.75 µg/L** total recoverable and the **LTA chronic** of **0.624 µg/L** total recoverable. The LTA chronic is the lower of the two and is therefore used for the calculation of the MDEL, (Maximum Daily Effluent Limit), and AMEL, (Average Monthly Effluent Limit).

The SIP states that the LTA is multiplied by the maximum daily effluent limitation (MDEL) multiplier to arrive at the MDEL. Similarly, the LTA is multiplied by the average monthly effluent limit (AMEL) multiplier to arrive at the AMEL. Using the coefficient of variation of 0.6, and assuming a monitoring frequency of less than four times per month, the MDEL multiplier from Table 2 of the SIP is 3.11 and the AMEL multiplier is 1.55. Therefore, the **MDEL** for lead is **1.94 µg/L** (total recoverable) and the **AMEL** is **0.97 µg/L** (total recoverable).

## pH

The Basin Plan states that, “The pH shall not be depressed below 6.5 nor raised above 8.5. Changes in normal pH levels shall not exceed 0.5 in fresh waters with designated COLD or

WARM beneficial uses.” This Order requires the effluent pH to remain between 6.5 and 8.5 units. These limits are consistent with the limits in the previous Order.

### **Total Semivolatile Petroleum Hydrocarbons**

The effluent limitation for total semivolatile petroleum hydrocarbons in this Permit, (USEPA Method 8015M), is consistent with Order No. 5-00-119, (General Order for Discharge to Surface Waters from Cleanup of Groundwater from Cleanup of Petroleum Fuel Pollution).

### **Zinc**

Both effluent samples analyzed for zinc had concentrations above reporting limits, 19 ug/L (12 December 2001) and 7 ug/L (5 December 2003). Zinc was also detected above the reporting limit for both receiving water samples analyzed, 20 ug/L (2 April 2002) and 2 ug/L (5 December 2003). The Regional Board finds that, at this time, there is insufficient information to determine if an effluent limitation for zinc is appropriate. Therefore, the Discharger is required to conduct additional monitoring and reporting for zinc, as specified in the attached Monitoring and Reporting Program, to provide sufficient information.

### **COMPLIANCE SCHEDULE AND INTERIM LIMITS**

Section 2.1 of the SIP provides that: *“Based on an existing discharger’s request and demonstration that it is infeasible for the discharger to achieve immediate compliance with a CTR criterion, or with an effluent limitation based on a CTR criterion, the RWQCB may establish a compliance schedule in an NPDES permit.”* Section 2.1, further states that compliance schedules may be included in NPDES permits provided that the following justification has been submitted: *...“(a) documentation that diligent efforts have been made to quantify pollutant levels in the discharge and the sources of the pollutant in the waste stream; (b) documentation of source control measures and/or pollution minimization measures efforts currently underway or completed; (c) a proposal for additional or future source control measures, pollutant minimization actions, or waste treatment (i.e., facility upgrades); and (d) a demonstration that the proposed schedule is as short as practicable.”* This Order requires the Discharger to provide this information. The final water quality based effluent limitations for lead become effective **120 days** after adoption of this Order unless an acceptable compliance schedule justification meeting the requirements of Section 2.1 of the SIP is completed and submitted by the Discharger. If an acceptable compliance schedule justification is submitted, the interim effluent limits described in this Order for lead will supercede the final effluent limits until **60 months** after adoption of this Order. At that time the final effluent limits will be fully applicable. As this schedule is greater than one year, the Discharger shall submit semiannual progress reports on **1 January** and **1 July** each year until the Discharger achieves compliance with the final water quality based effluent limitations for lead.

Within **12 months** of adoption of this Order, the Discharger shall either (1) submit a workplan for reducing the concentrations of pollutants in the discharge to levels that will comply with the final effluent limits, (2) demonstrate that excursions above the final effluent limitation are not

occurring and that there is, therefore, no reasonable potential for exceeding the applicable receiving water criteria, or (3) submit a workplan(s) for studies that will prove that the final effluent limits should be modified based on site-specific conditions. The Discharger must take such actions necessary to comply with the final effluent limits. The Regional Board may reopen this Order and modify the final effluent limits if appropriate, based on results of studies the Discharger may conduct.

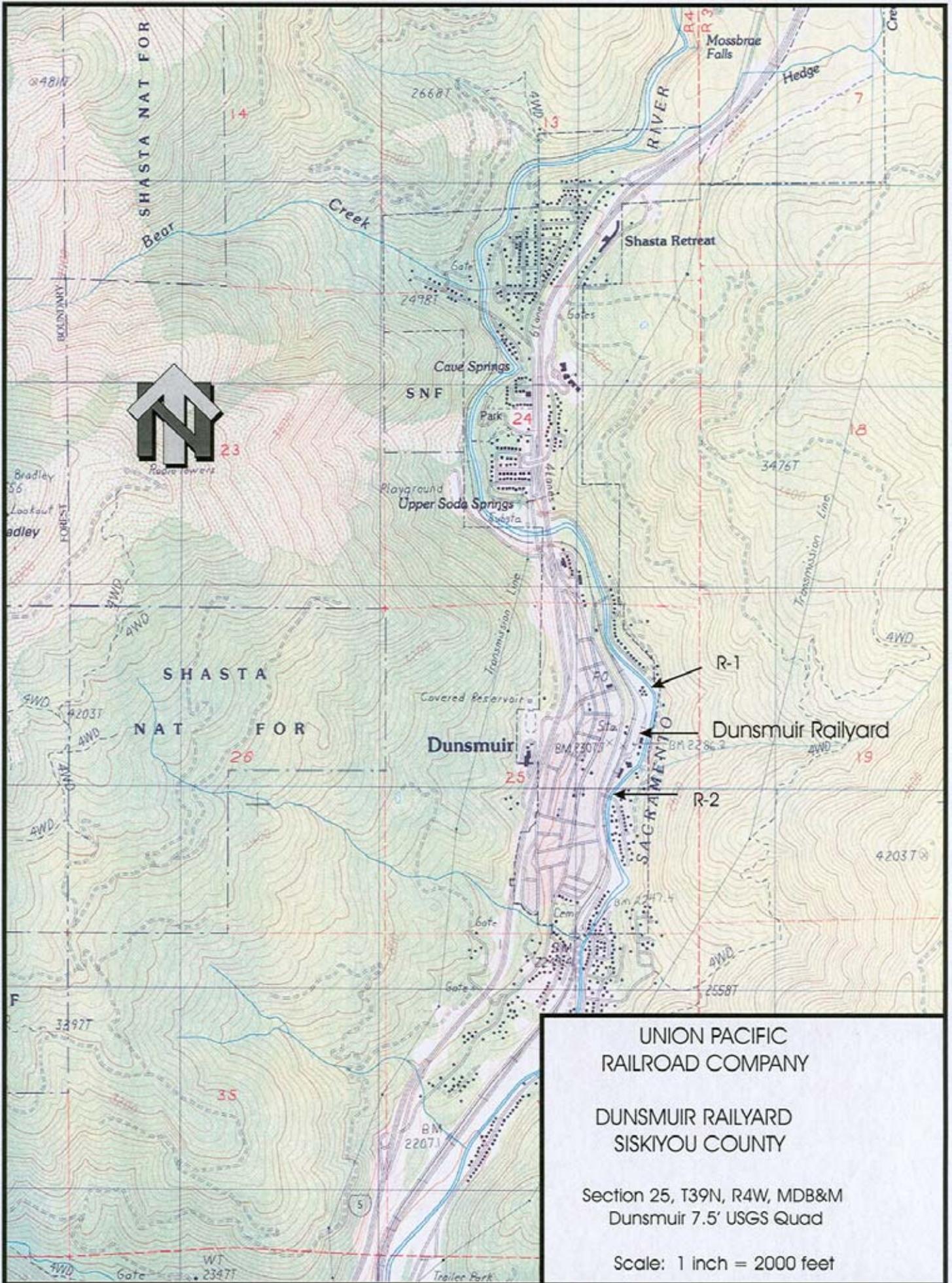
The SIP, Section 2.2.1, requires that if a compliance schedule is granted for a CTR or NTR constituent, the Regional Board shall establish interim limitations and dates for their achievement in the NPDES permit. The interim limitations must: be based on current treatment plant performance or existing permit limitations, whichever is more stringent; include interim compliance dates separated by no more than one year, and; be included in the Provisions. The interim limitations for lead in this Order are technology based limits based on the current treatment plant performance. The objective of these limits is to maintain, at a minimum, the current plant performance level. The *Technical Support Document for Water Quality Based Toxics Control* (EPA/505/2-90-001)(TSD) discusses uncertainty in effluent characterization in Section 3.3.2. Section 3.3.2 describes how to project an estimated maximum concentration for effluent taking into account the sample variability. The estimated maximum concentration is calculated as the upper bound of the expected lognormal distribution of effluent concentrations at a high confidence level. This statistical approach has two parts: The first is a characterization of the highest measured effluent concentration based on the desired confidence level. The second part of the approach is a relationship between the percentile described above and the selected upper bound of the lognormal effluent distribution. (USEPA's database suggests that the lognormal distribution well characterizes effluent concentrations). Tables 3-1 and 3-2 of the TSD show the combined effects of both parts for 99th and 95 percentiles respectively. The factors shown in the tables are multiplied by the highest concentration in an effluent sample to estimate the maximum expected concentration in the population. The TSD states a minimum of ten data points is required for a valid statistical analysis and recommends a value of 0.6 as a default CV, if the regulatory authority does not have more accurate information on the CV for the pollutant or pollutant parameter. The Discharger's data set for lead contains 35 individual analyses, however, over 70% of these are recorded as not detected (ND). Under these circumstances, the calculation of a standard deviation and CV may not be appropriate. For this reason we have assumed the default value for CV of 0.6. A histogram of the transformed data has been plotted and the distribution approximates lognormal. The highest value of the 35 samples in the set, 10.9 ug/L, is greater than the 88th percentile (99% confidence level). The appropriate multiplier from Table 3.1 of the TSD is 2.1, which when multiplied by the highest value in the data set, 10.9 ug/L, gives a maximum daily effluent limit of 22.9 ug/L. The long-term average objective is to maintain the current level of pollutant concentrations or better. Therefore, the monthly average interim limitation for lead cannot exceed the maximum detected concentration, which is 10.9 µg/L. Interim limitations for lead are summarized below:

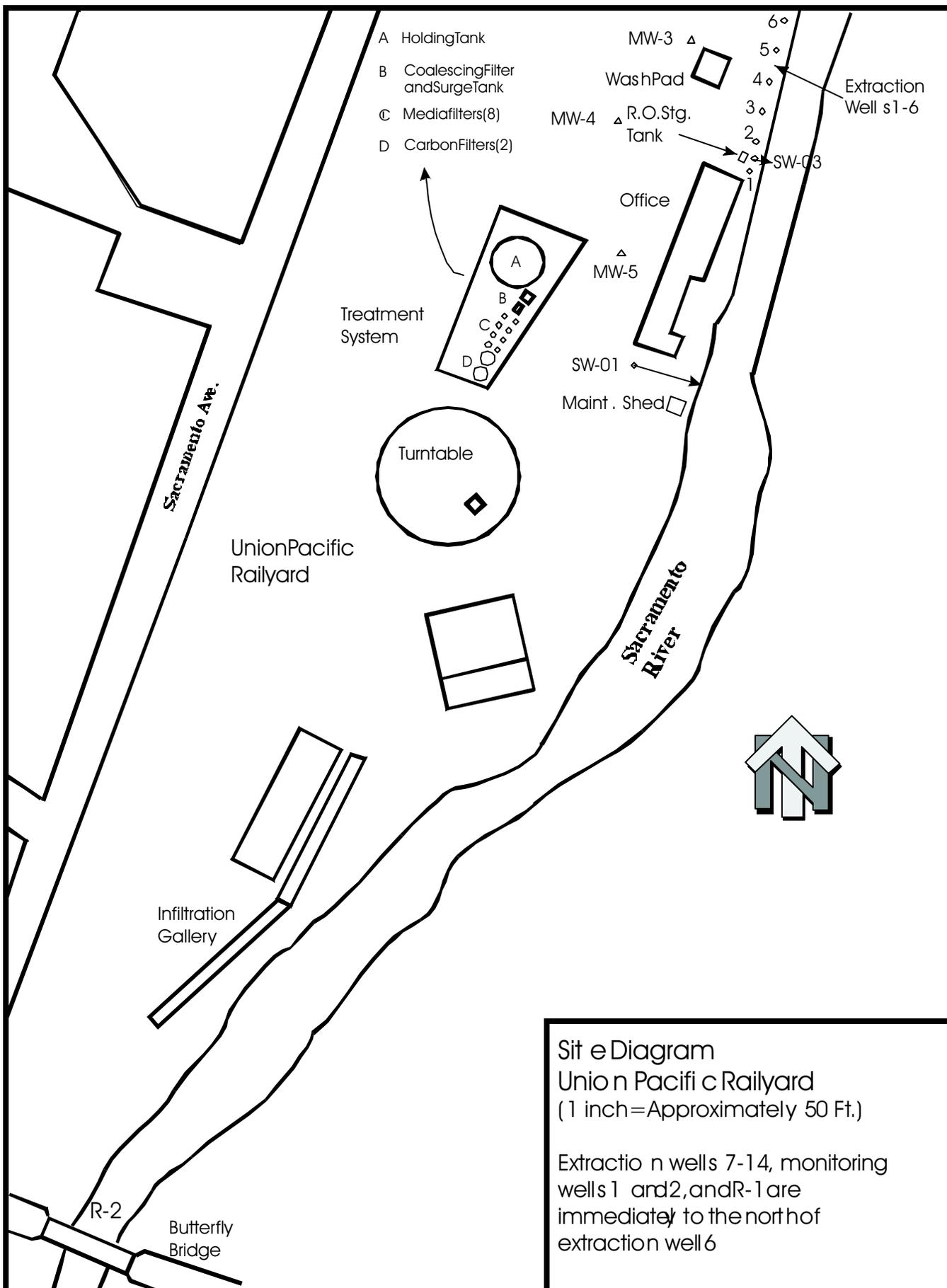
<u>Parameter</u>	<u>Unit</u>	<u>30-DayAverage</u>	<u>Daily Maximum</u>
Lead (total)	µg/L	10.9	22.9
	lbs/day	0.079	0.165

The Regional Board finds that the Discharger may be able to undertake source control and treatment plant measures to maintain compliance with the interim limitations included in this Order. The Discharger may also be able to demonstrate, through ultra clean sampling protocol or other analytical techniques, that the concentration of lead in the effluent is lower than previously determined, and that there is not a reasonable potential for exceeding an applicable water quality criteria. Interim limitations are established when compliance with NTR and CTR based Effluent Limitations cannot be achieved by the existing discharge. Discharge of constituents in concentrations in excess of the final Effluent Limitations, but in compliance with the interim Effluent Limitations, can significantly degrade water quality and adversely affect the beneficial uses of the receiving stream on a long-term basis.

The Discharger's treatment system was designed for the purpose of removing organic pollutants and does not remove lead. An examination of the Discharger's effluent data before and after treatment confirms that there is no reduction in lead, and in fact there may even be an increase. The source of contaminants in the groundwater being treated was from practices that have been discontinued for many years, and source control may not be particularly effective in reducing the lead level in the effluent. Treatment such as ion exchange or reverse osmosis is a possibility, but would be expensive. Granting of a dilution credit may be justified.

27 January 2005





Site Diagram  
Union Pacific Railyard  
(1 inch=Approximately 50 Ft.)

Extraction wells 7-14, monitoring wells 1 and 2, and R-1 are immediately to the north of extraction well 6

