

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
SAN FRANCISCO BAY REGION  
1515 Clay Street, Suite 1400  
Oakland, CA 94612

**FACT SHEET**

Reissuance of General Waste Discharge Requirements

For

**Discharge or Reuse of Extracted and Treated Groundwater Resulting From the Cleanup of Groundwater Polluted by Volatile Organic Compounds**

NPDES Permit No. CAG912003

**PUBLIC NOTICE**

**Public Hearing** - The California Regional Water Quality Control Board, San Francisco Bay Region (Water Board) at its regular meeting on July 21, 2004, will consider adoption of the Tentative Order reissuing general waste discharge requirements for discharge or reuse of extracted and treated groundwater resulting from the cleanup of groundwater polluted by volatile organic compounds. The meeting will start at 9:00 am and will be held at the Elihu Harris State Building (1st Floor auditorium) at 1515 Clay Street in Oakland (walking distance from Oakland City Center 12<sup>th</sup> Street BART station). You may also check <http://www.swrcb.ca.gov/~rwqcb2> for more detailed directions.

**Comments** – Comments on the Tentative Order are due by June 28, 2004. Comments received after this date will not be considered by the Water Board. Comments should be submitted to Farhad Azimzadeh of Board staff by **June 28, 2004, at the above address** (email [fa@rb2.swrcb.ca.gov](mailto:fa@rb2.swrcb.ca.gov)).

**Additional Information** - The proposed permit requirements, rationale, and other supporting data are on file at the Board's office at 1515 Clay Street, Suite 1400 in Oakland. These documents may be inspected between 8:00 a.m. and 12:00 p.m. and between 13:00 p.m. and 17:00 p.m. Monday through Friday. Most of these documents may also be obtained from <http://www.swrcb.ca.gov/~rwqcb2>. For further information please contact Farhad Azimzadeh at (510) 622-2310.

**INTRODUCTION**

This Fact Sheet describes the factual, legal, and methodological basis for the proposed permit and provides supporting documentation to explain the rationale and assumptions used in deriving the limits.

**Facilities Regulated by this General Permit** - This tentative order establishes a general permit regulating extracted and treated groundwater discharges resulting from the cleanup of groundwater polluted by volatile organic compounds. Regulated facilities are normally those that used to store solvent in leaking underground storage tanks.

**Type and Quantity of Pollutants Discharged** - Dischargers authorized under this general permit typically use aeration and/or granular activated carbon (GAC) systems to treat their pollutants of concern. The most common pollutants contained in the influent of these treatment systems are volatile organic compounds such as tetrachloroethylene, trichloroethylene, and vinyl chloride. A few inorganic compounds may also be present in the influent and effluent. Other volatile or semi volatile organic compounds may also be present in the influent of a few facilities regulated under this permit.

Except for some inorganic compounds, the concentrations of pollutants in the effluents of the discharges are usually below detectable levels. The reported detection limit for most volatile organic compounds (VOCs) is 0.5 ug/l; and the reported detection limits for semi volatile organic compounds are mostly 5.0 or 10.0 ug/l. The average of all flow rates of the 98 facilities permitted to discharge their extracted and treated groundwater during the 1999-2004 period is about 100 gallons per minute (gpm).

**What is new in the Tentative Order?** - The effluent limitations in the proposed General Permit are the same limits as those specified in the expiring NPDES permit except for the following changes:

- In order to make this permit consistent with U.S. EPA California Toxics Rule (CTR), **State Implementation Plan (SIP)** and Order No. 01-100, NPDES Permit No. CAG912002, for discharge or reuse of extracted and treated groundwater resulting from the cleanup of groundwater polluted by fuel leaks and other related wastes at service stations and similar sites (Fuel General NPDES permit), the instantaneous maximum limit in the expiring permit has been changed to average monthly and maximum daily effluent limitation for discharge to drinking water areas and other surface water areas.
- Methyl Tertiary Butyl Ether (MTBE) and Trichlorotrifluoroethane (Freon 113) effluent limits are added to the effluent limitations table, in order to make this permit consistent with the Fuel General NPDES permit.
- In the suite of VOCs regulated by this permit, several VOCs have water quality criteria (WQC) in the CTR that are below the respective technology based effluent limit. The average monthly and maximum daily effluent limits for those VOCs are based on CTR WQC.
- Water Board Order No. R2-2002-0062 amended the expiring permit by deleting the effluent limits for the open-ended categories of volatile and semi volatile organic compounds and polynuclear aromatic hydrocarbons. Triggers are now included along with an expanded provision requiring additional activities to cover a wide range of volatile and semi volatile organic compounds, polynuclear aromatic hydrocarbons, asbestos, 2,3,7,8-TCDD (Dioxin/Furan), and Polychlorinated biphenyls (PCBs).

- The inorganic effluent limits have been replaced with triggers because the inorganic compounds are primarily due to background groundwater constituents. Sites where inorganic compound have impacted groundwater are not eligible for coverage under this general permit. The inorganic triggers are concentration-based instead of mass-based because dewatering dischargers covered by the general permit with large authorized flow rates may exceed mass-based triggers but not necessarily exceed water quality objectives for that inorganic compounds.
- Based on the new fee schedule dated October 17, 2003, the discharges regulated under this general NPDES permit are categorized as Category 1. The discharges under this category require treatment systems to meet priority toxic pollutant limits and could impair beneficial uses if limits are violated. This fee schedule also requires an ambient water-monitoring surcharge of 18.5% of the calculated fee to be added the Category 1 fee. The annual fee for this category is currently \$4,800 plus a \$888 surcharge for a total of \$5,688.

## **BASIS FOR DISCHARGE PROHIBITIONS**

The proposed prohibitions are required to protect beneficial uses of the surface waters and ground waters of the San Francisco Bay Region.

**Prohibition A.1**, no unauthorized discharge of extracted and treated groundwater, is based on 40 CFR 122.45(d).

**Prohibition A.2**, no discharge of extracted and treated groundwater and added treatment chemicals shall cause adverse affects, is based on 40 CFR 122.44.

**Prohibition A.3**, no discharge of extracted and treated groundwater in excess of the authorized flow rate, is based on 40 CFR 122.45(d).

**Prohibition A.4**, no pollution, contamination, or nuisance due to discharge of extracted and treated groundwater, is based on the Basin Plan.

**Prohibition A.5**, no scouring or erosion due to discharge of extracted and treated groundwater, is based on best professional judgment.

**Prohibition A.6**, no pollution, contamination, or nuisance, is based on the Basin Plan.

**Prohibition A.7**, no bypass or overflow of untreated or partially treated polluted groundwater, is based on 40 CFR 122.41(m)(ii)(4).

## **BASIS FOR EFFLUENT LIMITATIONS B.1**

The proposed effluent limitations are required to protect beneficial uses of the surface waters and ground waters of the San Francisco Bay Region.

The Clean Water Act (CWA) requires technology-based effluent limits (Section 301) unless more stringent limits are required in order to achieve water quality objectives. Section 301 of the CWA also requires that technology-based effluent limits include the application of best available technology economically achievable (BAT) for the pollutants being discharged. Technology based effluent limits were developed for the suite of VOCs to be regulated, and then water quality based effluent limits were developed for those VOCs whose lowest value from the CTR was less than the respective technology based effluent limit.

**Technology Based Effluent Limit Development** - Best professional judgment (BPJ) was used in developing technology-based effluent limits in this tentative order. BPJ is defined as the highest quality technical opinion developed by a permit writer after consideration of all reasonably available and pertinent data or information that forms the basis for the terms and conditions of a NPDES permit. The authority for BPJ is contained in Section 402(a)(1) of the CWA.

In the treatment systems regulated by this permit, organic compounds are typically removed from groundwater through either aeration processes or through adsorption processes (e.g. granular activated carbon). When properly designed and operated, most aeration and/or granular activated carbon (GAC) systems can lower the concentration of petroleum pollutants and VOCs to below detection limits. Limits established in the tentative order for VOCs can be met if GAC/air stripper treatment systems are properly operated.

In 1986, U.S. EPA Region 9 in a document titled “NPDES Permit Limitations for Discharge of Contaminated Groundwater: Guidance Document” (USEPA 1986) concluded that the cost of attaining effluent levels to non-detect for all volatile and semi-volatile organic compounds commonly detected in contaminated groundwater is considered economically achievable. In 1986, the reported detection limits for most VOCs were 5 ug/l. The reported detection limits for most VOCs are now less than 5 ug/l (SIP Appendix 4).

The suite of pollutants to be regulated with effluent limits in the tentative order was selected by reviewing USEPA 1986 and the Fuel General NPDES permit, and using the compounds called out by those documents as most likely to be detected at VOC or Fuel groundwater cleanup sites and for which a Maximum Contaminant Level (MCL) has been promulgated. Recent monitoring data was also reviewed to confirm the suite of pollutants to be regulated. The reason for having effluent limits for fuel related contaminants of concern included in this permit is to regulate the groundwater cleanup sites that have solvent and fuel related plumes commingled.

The proposed technology based effluent limits in the tentative order are either 5.0 ug/l or the MCL for compounds with MCLs lower than 5 ug/l. Table B.1 shows all the pollutants with effluent limitations in this tentative order with their regulated MCLs.

The only exception to this approach is TPH. TPH has a proposed effluent limit of 50.0 ug/l. The reason for this is that TPH does not have an MCL and typically has a reporting limit 50 ug/l.

In staff’s BPJ, these proposed technology based effluent limits are sufficient to protect beneficial uses of surface waters and groundwaters of the San Francisco Bay Region. Since aeration and GAC treatment reduces concentrations of petroleum pollutants and VOCs listed in Table B.1 to below detectable levels, the permitted discharges should not have a reasonable potential to cause, or contribute to, a violation of water quality objectives.

**Water Quality Based Effluent Limit Development** - The CWA also requires water quality based effluent limits if technology based effluent limits are not sufficiently stringent to meet

water quality objectives. In the suite of VOCs regulated by the tentative order, several VOCs have water quality criteria (WQC) in the CTR that are below the respective technology based effluent limit. The effluent limit for those VOCs are set to be the CTR WQC.

If the detection limit for the VOC is greater than the CTR WQC then the effluent limit is set at the CTR WQC and a non-detect result using an appropriate SIP Appendix 4 detection level is deemed to be in compliance. There should be no significant adverse impact on water quality from those VOCs whose detection limit is above the CTR WQC because these are low volume discharges and because the treatment used, aeration or GAC, reduces concentrations of VOCs to non-detectable levels.

For the pollutants that have a water quality objective less than 5 ug/l, monthly average effluent limit and maximum daily effluent limits have been included, consistent with SIP. Monthly average effluent limits for discharge to areas of drinking water usage utilize CTR criteria for consumption of water and organisms. Monthly average effluent limits for discharge to other surface water areas utilize CTR criteria for consumption of organisms. For those pollutants that have water quality objectives less than 5 ug/l, the maximum daily effluent limit was computed according to SIP Procedure 1.4B, step 6, without dilution, utilizing a multiplier of 2.01 times the monthly average effluent limit. The maximum daily effluent limits that were calculated to be greater than 5 ug/l were then capped at 5 ug/l, since this is the BPJ-determined technology based limit. In cases where the value of the maximum daily effluent limit is equivalent to the monthly average effluent limit, no monthly average effluent limit is necessary.

For the effluent limits for "Discharge to Other Surface Water Areas," the rationale for these limits is the same as for the effluent limits for "Discharge to Drinking Water Areas," except that any maximum daily effluent limits that were less than 5 ug/l for drinking water areas effluent limits have been increased to 5 ug/l for other surface water areas effluent limits, which is the BPJ-determined technology based limit.

No dilution credit is given in establishing effluent limits in this permit for the following reasons:

- Most discharges of treated groundwater regulated under this general permit are to storm sewer systems that discharge to creeks and streams. Many of these creeks and streams are dry during the summer months. Therefore, for many months of the year, these discharges may represent all or nearly all of the flow in some portions of the receiving creeks or streams. These discharges therefore have the potential to recharge groundwaters protected as drinking waters;
- Pursuant to the Basin Plan, the effluent limitations for shallow water discharges are calculated assuming no dilution. An exception to this policy may be applied for based on demonstration of compliance with water quality objectives in the receiving water as described in the Basin Plan. This exception process is more appropriate for an individual permit, and would not be appropriate for a general permit; and
- None of the sites permitted under this general permit discharge into a deep outfall with a diffuser.

The technology based effluent limits together with the water quality based effluent limits are sufficiently stringent to protect water quality and beneficial uses.

The CTR list of priority pollutants contains more compounds than are included in Table B1. Pursuant to the Self-Monitoring Program a subset of dischargers will be required to monitor for all CTR pollutants. This subset will include discharges with a history of waste discharge involving the broader range of CTR pollutants. This permit will be re-opened if necessary, before July 21, 2009, to add effluent limitations for other CTR constituents that are shown to have reasonable potential to cause, or contribute to an excursion of numeric or narrative water quality criteria based on data collected pursuant to the Self-Monitoring Program.

Table B.1: Reasoning for Effluent Limits.

No.	Compound	SMCL	FMCL	Expiring Permit Instantaneous Maximum Limit	CTR Criteria Water and Organisms **	CTR Criteria Organisms Only **	Discharge to Drinking Water Areas ****		Discharge to Other Surface Water Areas	
							Average Monthly Effluent Limitation (ug/L)	Maximum Daily Effluent Limitation (ug/L)	Average Monthly Effluent Limitation (ug/L)	Maximum Daily Effluent Limitation (ug/L)
1	Benzene	1	5	1	1.2	71	-	1	-	5
2	Carbon Tetrachloride	0.5	5	0.5	0.25	4.4	0.25*	0.50	4.4	5
3	Chloroform	80	80	5	-	-	-	5	-	5
4	1,1-Dichloroethane	5	-	5	-	-	-	5	-	5
5	1,2-Dichloroethane	0.5	5	0.5	0.38	-	0.38*	0.5	-	5
6	1,1- Dichloroethylene	6	7	5	0.057	3.2	0.057*	0.11*	3.2	5
7	Ethylbenzene	300	700	5	-	-	-	5	-	5
8	Methylene Chloride (Dichloromethane)	5	5	5	4.7	-	4.7	5	-	5
9	Tetrachloroethylene	5	5	5	0.8	-	0.8	1.6	-	5
10	Toluene	150	1000	5	-	-	-	5	-	5
11	Cis 1,2- Dichloroethylene	6	70	5	-	-	-	5	-	5
12	Trans 1,2- Dichloroethylene	10	100	5	-	-	-	5	-	5
13	1,1,1- Trichloroethane	200	200	5	-	-	-	5	-	5
14	1,1,2- Trichloroethane	5	5	5	0.6	-	0.6	1.2	-	5
15	Trichloroethylene	5	5	5	2.7	-	2.7	5	-	5
16	Vinyl Chloride	0.5	2	0.5	-	-	0.5	0.5	-	5
17	Total Xylenes	1750	10000	5	-	-	-	5	-	5
18	Methyl Tertiary Butyl Ether (MTBE)	5	-	-	-	-	-	5	-	13
19	Total Petroleum Hydrocarbons (TPH)	-	-	50	-	-	-	50	-	50
20	Ethylene Dibromide (1,2- Dibromoethane)	0.05	0.05	0.05	-	-	-	0.05*	-	5

No.	Compound	SMCL	FMCL	Expiring Permit Instantaneous Maximum Limit	CTR Criteria Water and Organisms **	CTR Criteria Organisms Only **	Discharge to Drinking Water Areas ****		Discharge to Other Surface Water Areas	
		(ug/L)	(ug/L)				(ug/L)	(ug/L)	Average Monthly Effluent Limitation (ug/L)	Maximum Daily Effluent Limitation (ug/L)
21	Trichlorotrifluoroethane	1200	-		-	-	-	5	-	5

LEGEND: FMCL - Federal Maximum Contaminant Level & SMCL - California Maximum Contaminant Level  
 NOTES:  
 \* If reported detection level is greater than effluent limit, then a non-detect result using a 0.5 ug/L detection level is deemed to be in compliance.  
 \*\* CTR Human Health Criteria - The concentration in the California Toxics Rule that is less than the technology based effluent limit. A blank cell in this column denotes the California Toxics Rule criterion is not less than the technology based effluent limit.  
 \*\*\* If reported detection level is greater than effluent limit, then a non-detect result using a 0.5 ug/L detection level is deemed to be in compliance.  
 \*\*\*\* Drinking water areas are defined as surface waters with the existing or potential beneficial uses of "municipal and domestic supply" and "groundwater recharge" (the latter includes recharge areas to maintain salt balance or to halt salt water intrusion into fresh water aquifers).

**BASIS FOR EFFLUENT LIMITATIONS B.2**

Effluent Limitations B.2 (pH) is based on Chapter 4 of the Basin Plan.

**BASIS FOR EFFLUENT LIMITATIONS B.3**

Effluent Limitations B.3 (toxicity) is based on the Basin Plan.

**BASIS FOR RECEIVING WATER LIMITATIONS**

The proposed receiving water limitations are intended to protect beneficial uses of the surface waters and ground waters of the San Francisco Bay Region and are based on the Basin Plan.

**BASIS FOR WATER RECLAMATION SPECIFICATIONS**

These specifications are based on best professional judgment.

**BASIS FOR PROVISIONS E.1 THROUGH E.6**

**Provision E.1**, Notice of Intent (NOI) Application, is based on 40 CFR 122.21(f).

**Provision E.2 and E.3**, NOI Review and Discharge Authorization, is based on 40 CFR 122.21(e).

**Provision E.4**, Non-Compliance As A Violation, is based on 40 CFR 122.41(a).

**Provision E.5**, Self-Monitoring Program, is based on 40 CFR 122.41, 122.48, 122.62, 122.63, and 124.5, and BPJ.

**Provision E.6**, Order Modification, is based on 40 CFR 122.62 and 124.5, and BPJ.

**BASIS FOR PROVISIONS E.7 THROUGH E.11**

The dischargers authorized under this general permit are expected to use BAT and treat their volatile organic pollutants to non-detectable levels. However, some compounds, other than pollutants with effluent limitations, may be detected in the effluent of some of the treatment systems. These pollutants include both organic and inorganic compounds. The purpose of these provisions is to require dischargers to do additional activities should any pollutants exceed the triggers in Tables E.7. These triggers are not effluent limitations, and should not be construed as such. Instead, they are levels at which additional investigation is warranted to determine whether a numeric limit for a particular constituent is necessary.

**TRIGGERS FOR INORGANIC COMPOUNDS**

Antimony, Arsenic, Beryllium, Cadmium, Chromium, Copper, Lead, Mercury, Nickel, Selenium, Silver, Thallium, and Zinc (hereinafter called inorganic compounds) are present in VOC-cleanup discharges, primarily due to background concentrations in the shallow groundwater being remediated. 1999-2003 monitoring data for a subset of the covered discharges do not indicate any impairment of beneficial uses or exceedances of inorganic compounds objectives in receiving waters due to VOC cleanup discharges. This result stems from the fact that both the discharge volume and effluent inorganic compounds concentrations are already low before the effluent is discharged into the storm drain system. Bay-wide inorganic compounds loading from VOC cleanup discharges represent a small portion of total inorganic compounds loadings from sources within the region (including municipal and industrial point-source discharges and stormwater discharges). The table below illustrates this point:

Compound	Stormwater Runoff (Metric Ton/Year) *	Note	Municipal and Industrial (Metric Ton/Year)**	Note	Sum of Stormwater Runoff, Municipal, and Industrial (Metric Ton/Year)	Median of reported maximum levels in effluent of the treated groundwater ( ug/L)	Annual Loading from VOC cleanup sites (Metric Ton/Year) ***	% from VOC loading compared to the SUM of Stormwater, Municipal, and Industries
Antimony	Not Available		Not Available		Not Available	Not Available	Not Available	Not Available
Arsenic	4.2	7	3.05	6	7.3	<5	<0.100	<1.37
Beryllium	Not Available		Not Available		Not Available	Not Available	Not Available	Not Available
Cadmium	2.5	1	2.65	6	5.2	<5	<0.100	<1.93
Chromium (total)	43	1	8.4	6	51	<10	<0.199	<0.39
Chromium (VI)	Not Available		Not Available		Not Available	<10	<0.199	Not Available
Copper	73	1	11.95	3, 4	85	<10	<0.199	<0.23
Lead	97	1	12.01	6	109	<5	<0.100	<0.09
Mercury	0.14	2	0.016	5	0.2	<0.2	<0.004	<2.55
Nickel	52.5	1	7.49	3, 4	60	<15	<0.299	<0.50
Selenium	0.64	7	2.1	8	2.7	7.5	0.149	5.45
Silver	0.28	7	4.47	6	4.8	<5.0	<0.100	<2.10



Compound	Stormwater Runoff (Metric Ton/Year) *	Note	Municipal and Industrial (Metric Ton/Year)**	Note	Sum of Stormwater Runoff, Municipal, and Industrial (Metric Ton/Year)	Median of reported maximum levels in effluent of the treated groundwater ( ug/L)	Annual Loading from VOC cleanup sites (Metric Ton/Year) ***	% from VOC loading compared to the SUM of Stormwater, Municipal, and Industries
Thallium	Not Available		Not Available		Not Available	Not Available	Not Available	Not Available
Zinc	310	1	58.22	6	368	35	0.697	0.19
<p>* Average of low and high load estimate from stormwater  ** Mean Load Estimate from Municipal and Industrial  *** Annual Loading calculated by multiplying the Median of reported maximum levels in effluent ug/L by the 0.144 MGD average of all authorized flow rates by 100 sites, 365 days in a year, 3.79 liter in a gallon, and divided by 1,000,000 grams in a metric Ton (Metric Ton/Year)</p> <p>1) Source: Davis, J.A.; McKee, L.J.; Daum, T.H. (2000) "Contaminants Loads from stormwater to coastal waters in the San Francisco Bay Region, Published by the San Francisco Estuary Institute, September 2000</p> <p>2) Source: Final Report Joint Stormwater Agency project to study urban sources of Mercury, PCBs and Organochlorine Pesticides prepared by Kinnetic Laboratories Inc. in association with EOA Inc. April 2002</p> <p>3) Source: DRAFT February 2004 Clean Estuary Partnership Copper &amp; Nickel Site Specific Objectives North of the Dumbarton Bridge - State Implementation Plan Justification Report Prepared by EOA Inc and Larry Walker Associates</p> <p>4) Source: Water Board Final Staff Report on Proposed Site-Specific Water Quality Objectives and Water Quality Attainment Strategy for Copper and Nickel for San Francisco Bay South of the Dumbarton Bridge May 15, 2002</p> <p>5) Source: Mercury in San Francisco Bay Bay Total Maximum Daily Load (TMDL) Proposed Basin Plan Amendment and Staff Report, California Regional Water Quality Control Board, San Francisco Bay Region, April 30, 2004</p> <p>6) Source: The average between low and high of available 1984-1987 data from the March 21, 1991, Final Draft "Status and Trends Report on Pollutants in the San Francisco Estuary" prepared under EPA Cooperative Agreement CE-009496-01 by the San Francisco Bay-D</p> <p>7) Source: San Francisco Bay Area Stormwater Runoff Monitoring Data Analysis, 1988 -1995, Final Report October 15, 1996. Prepared by Woodward-Clyde for BASMAA</p> <p>8) Source: From Table 5 Page 58 of Source No. 6 above. This number covers only six refineries average Selenium loading derived from 1985 through 1987 data and does not include municipal sources</p>								

Approximately 100 dischargers are expected to be discharging under this general permit. Using information from the above described data from dischargers, the loading of each inorganic compound listed in the above table ranges from less than 0.1% to 5.45% of other sources explained in the table. The water quality benefit that these dischargers provide offsets some adverse impact to surface water from the discharge of inorganic compounds.

In addition, sites where inorganic compounds have adversely impacted groundwater are not eligible for coverage under this general permit. Each discharger shall submit, as part of the application for proposed discharge, analytical results including inorganic compounds concentrations in the influent and effluent if available or maximum concentrations in any individual extraction wells, if not operating yet. Based on these data, the discharger may receive a discharge authorization letter.

In some cases after starting up an extraction and treatment system, the effluent concentration of some inorganic compounds may exceed the triggers listed in Table E.7. In this case, the discharger shall take three additional samples and have them analyzed for the inorganic compound of concern and comply with the Provisions E.8, E.9 or E.10. For example, if the results of two or three of the additional samples exceed the triggers, then the discharger shall investigate the toxicity and treatment of the constituent of concern. Dischargers who cannot comply with these provisions will lose their authorization to discharge under this general permit.

The Table E.7 concentration-based triggers are set at the lowest value of the State Maximum Contaminant Level, Federal Maximum Contaminant Level, State Public Health Goal in Drinking Water, California Toxics Rule lowest criterion, or Basin Plan water quality objective, except for Arsenic and Chromium. The median of reported maximum Arsenic levels in the effluent of all authorized discharges is non-detect with a 5 ug/L reporting limit. The total Chromium trigger is to trigger additional testing for Chromium (VI) when the total Chromium concentration exceeds 11 as referenced in the Table E.7. The basis for this Provision is BPJ.

## **TRIGGERS FOR ORGANIC COMPOUNDS**

Dischargers authorized under this general permit are expected to use BAT and treat their volatile organic pollutants to non-detectable levels. Sites where pesticides or other conservative pollutants have adversely impacted groundwater are not eligible for coverage under this general permit. Each discharger shall submit, as part of the application for proposed discharge, analytical results including volatile and semi volatile organic compounds concentrations in the influent and effluent if available or maximum concentrations in any individual extraction wells, if not operating yet. In addition, each discharger shall submit a report, to the satisfaction of Executive Officer, certifying the adequacy of the proposed treatment system in removal of all organic pollutants of concern. Based on these data and information, the discharger may receive a discharge authorization letter. However, some organic compounds, other than pollutants with effluent limitations, may be detected in the effluent of some of the treatment systems. This could be due to the movement of the contaminated groundwater from a neighboring site into the capture zone of the treatment facility authorized under this permit. Table E.7 contains concentration-based triggers for conducting additional activities for a list of pollutants reported by dischargers or listed in the CTR.

This provision would allow dischargers to continue groundwater cleanup while investigating the toxicity and treatability of any detected volatile or semi volatile organic compounds, in excess of Table E.7 triggers.

The Table E.7 concentration-based triggers are set at the lowest value of the State Maximum Contaminant Level, Federal Maximum Contaminant Level, State Public Health Goal in Drinking Water, California Toxics Rule lowest criterion, or Basin Plan water quality objective but not exceeding 5 ug/l as referenced in Table E.7 below. The basis for this Provision is BPJ.

Compound	CAS Number	State MCL ug/L	Federal MCL ug/L	State PHG in Drinking Water ug/L	CTR Lowest Criterion unless noted ug/L	Trigger (ug/L)
Antimony	7440360	6	6	20	14	6
Arsenic	7440382	50	10	NA	36	10
Beryllium	7440417	4	4	1	NA	1
Cadmium	7440439	5	5	0.07	2.2	0.07
Chromium (total)	18540299	50	100	NA	180	11*
Chromium (VI)	18540299	NA	NA	NA	11	11
Copper	7440508	1000	1000	170	3.1	3.1
Lead	7439921	15	15	2	2.5	2.0
Mercury	7439976	2	2	1.2	0.025**	0.025
Nickel	7440020	100	NA	12	8.2	8.2
Selenium	7782492	50	50	NA	5.0	5.0
Silver	7440224	100	100	NA	1.9	1.9
Thallium	7440280	2	2	0.1	1.7	0.1
Zinc	7440666	5000	5000	NA	81	81
Cyanide	57125	200/150	200		1	1.0
Asbestos	1332214	7 MFL	7 MFL		7 MFL	7 MFibers/L
2,3,7,8-TCDD (Dioxin)	1746016	0.00003	0.00003		1.3E-08	0.000000013
Acrylonitrile	107131	-	-		0.059	2.0
Bromoform	75252	100/80	100/80		4.3	4.3
Chlorodibromomethane	124481	100/80	100/80		0.401	0.401
Dichlorobromomethane	75274	100/80	100/80		0.56	0.56
1,2-Dichloropropane	78875	5	5	0.5	0.52	0.50
1,3-Dichloropropylene	542756	0.5	-	0.2	10	0.2
1,1,2,2-Tetrachloroethane	79345	1	-	0.1	0.17	0.1
Pentachlorophenol	87865	1	1	0.4	0.28	0.28
2,4,6-Trichlorophenol	88062	-	-		2.1	2.1
Benzidine	92875	-	-		0.00012	0.00012
Benzo(a)Anthracene	56553	-	0.1		0.0044	0.0044
Benzo(a)Pyrene	50328	0.2	0.2	0.004	0.0044	0.004
Benzo(b)Fluoranthene	205992	-	-		0.0044	0.0044
Benzo(k)Fluoranthene	207089	-	-		0.0044	0.0044
Bis(2-	111444	-	-		0.031	0.031

Compound	CAS Number	State MCL ug/L	Federal MCL ug/L	State PHG in Drinking Water ug/L	CTR Lowest Criterion unless noted ug/L	Trigger (ug/L)
Chloroethyl)Ether						
Bis(2-Ethylhexyl)Phthalate	117817	-	-		1.8	1.8
Chrysene	218019	-	-		0.0044	0.0044
Dibenzo(a,h)Anthracene	53703	-	-		0.0044	0.0044
3,3'-Dichlorobenzidine	91941	-	-		0.04	0.04
2,4-Dinitrotoluene	121142	-	-		0.11	0.11
1,2-Diphenylhydrazine	122667	-	-		0.04	0.04
Hexachlorobenzene	118741	1	1	0.03	0.00075	0.00075
Hexachlorobutadiene	87683	-	-		0.44	0.44
Hexachloroethane	67721	-	-		1.9	1.9
Indeno(1,2,3-cd)Pyrene	193395	-	-		0.0044	0.0044
N-Nitrosodimethylamine	62759	-	-		0.00069	0.00069
N-Nitrosodi-n-Propylamine	621647	-	-		0.005	0.005
Aldrin	309002	-	-		0.00013	0.00013
alpha-BHC	319846	-	-		0.0039	0.0039
beta-BHC	319857	-	-		0.014	0.014
gamma-BHC	58899	0.2	0.2		0.019	0.019
delta-BHC	319868	-	-		-	5.0
Chlordane	57749	0.1	2	0.03	0.00057	0.00057
4,4'-DDT	50293	-	-		0.00059	0.00059
4,4'-DDE	72559	-	-		0.00059	0.00059
4,4'-DDD	72548	-	-		0.00083	0.00083
Dieldrin	60571	-	-		0.00014	0.00014
alpha-Endosulfan	959988	-	-		0.0087	0.0087
beta-Endosulfan	33213659	-	-		0.0087	0.0087
Endrin	72208	2	2	1.8	0.0023	0.0023
Endrin Aldehyde	7421934	-	-		0.76	0.76
Heptachlor	76448	0.01	0.4	0.008	0.00021	0.00021
Heptachlor Epoxide	1024573	0.01	0.2	0.006	0.0001	0.0001

Compound	CAS Number	State MCL ug/L	Federal MCL ug/L	State PHG in Drinking Water ug/L	CTR Lowest Criterion unless noted ug/L	Trigger (ug/L)
Polychlorinated biphenyls (PCBs) total	1336363	0.5	0.5		0.00017	0.00017
Toxaphene	8001352	3	3	0.03	0.0002	0.0002
1,4-dioxane	123911	3****	-		-	3
Perchlorate	14797730			6		5.0
Freon 12 (Dichlorodifluoro methane)	75718	-	-		0.19***	0.19
Other VOCs	-	-	-		-	5.0
Other SVOCs	-	-	-		-	5.0

Legend:  
CAS = Chemical Abstract System  
PHG = Public Health Goal  
CTR = California Toxics Rule  
NA = Not Applicable  
MCL = Maximum Contaminant Level

\* If total chromium concentration exceeds 11 then Chromium (VI) analysis shall also be done  
\*\* Basin Plan  
\*\*\* USEPA National Recommended Ambient Water Quality Criteria  
\*\*\*\* California Department of Health Services Action Level for Drinking Water

The basis for Provisions E.7 through E.11 is BPJ.

**BASIS FOR PROVISIONS E.12 THROUGH E.21**

**Provision E.12**, Individual NPDES Permit May Be Required, is based on 40 CFR 122.28 and 122.21.

**Provision E.13**, Duty to Comply, is based on 40 CFR 122.41(a).

**Provision E.14**, Duty to Mitigate, is based on 40 CFR 122.41(d).

**Provision E.15**, Inspection and Entry, is based on 40 CFR 122.41(i)

**Provision E.16**, Treatment Reliability, is based on 40 CFR 122.41 (e).

**Provision E.17**, Transfers, is based on 40 CFR 122.62 and 124.5.

**Provision E.18**, Planned Changes, is based on 40 CFR 122.41(l)(1).

**Provision E.19**, General NPDES Permit, is based on 40 CFR 122.28.

**Provision E.20**, Continuous Coverage, is based on 40 CFR 122.6.

**Provision E.21**, Expiration Date, is based on 40 CFR 122.46.

**REFERENCE DOCUMENTS**

Federal Water Pollution Control Act (referred as the Clean Water Act);

Code of Federal Regulations, Title 40 - Protection of Environment, Chapter 1, United States Environmental Protection Agency, Subchapter D, Water Programs 40 CFR 122.28, 122.44, 123.62, 131.12, and 403.10;

Model NPDES Permit for Discharges Resulting From The Cleanup of Gasoline Released From Underground Storage Tanks (U.S. EPA June 1989);

NPDES Permit Limitations for Discharge of Contaminated Groundwater: Guidance Document (U.S. EPA Region 9, June 1986);

The Porter-Cologne Water Quality Control Act;

Water Quality Control Plan for the San Francisco Bay Basin (Basin Plan) adopted on June 21, 1995;

Article 1, Chapter 9, Division 3, Title 23 of California Code of Regulations, Fee schedule dated May 18, 1995;

Board Resolution No. 88-160 adopted on October 19, 1988;

State Water Resources Control Board (State Board) Resolution No. 68-16 adopted on October 24, 1968;

Code of Federal Regulations, Title 40, Part 131, Water Quality Standards; Establishment of Numeric Criteria for Priority Toxic Pollutants for the State of California; California Toxics Rule; and

Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California, 2000; State Water Resources Control Board (State Implementation Policy); and,

Order No. 01-100, NPDES Permit No. CAG912002, for discharge or reuse of extracted and treated groundwater resulting from the cleanup of groundwater polluted by fuel leaks and other related wastes at service stations and similar sites (Fuel General NPDES permit).