California Regional Water Quality Control Board
San Francisco Bay Region

Order No. R2-2018-0050

Amendment of Order No. R2-2017-0048 (NPDES No. CAG912002)
for General Waste Discharge Requirements for Discharge or Reclamation of Extracted and Treated Groundwater Resulting from the Cleanup of Groundwater Polluted by Volatile Organic Compounds (VOCs), Fuel Leaks, Fuel Additives, and Other Related Wastes (VOC and Fuel General Permit)

WHEREAS the California Regional Water Quality Control Board, San Francisco Bay Region (hereinafter "Regional Water Board"), finds that:

1. On December 13, 2017, the Regional Water Board adopted Order No. R2-2017-0048, which reissued waste discharge requirements that serve as a National Pollutant Discharge Elimination System (NPDES) general permit (NPDES General Permit No. CAG912002) for discharges and reclamation of extracted and treated groundwater resulting from the cleanup of groundwater polluted by volatile organic compounds (VOCs), fuel leaks, fuel additives, and other related wastes. Order No. R2-2017-0048 (hereinafter "Permit") authorizes dischargers enrolled under the Permit (hereinafter "Dischargers") to discharge treated effluent from their respective facilities to waters of the United States pursuant to specific conditions.

2. The requirements of Order No. R2-2017-0048 will become effective January 1, 2019. Until then, Order No. R2-2012-0012 (previous order) contains the waste discharge requirements that serve as NPDES General Permit No. CAG912002.

3. This Order amends the Permit to do the following:

- Rescind sulfate and manganese water quality-based effluent limits (WQBELs),
- Reduce selenium monitoring and related requirements,
- Provide for revised and alternate analytical test methods, and
- Rescind reporting requirements for the mass removal of pollutants.

4. The Fact Sheet attached to this Order (Attachment F) contains background information and rationale for these changes. It is hereby incorporated into this Order by reference and therefore constitutes part of the findings for this Order.

5. This Order is exempt from the provisions of the California Environmental Quality Act pursuant to California Water Code section 13389.

6. The Regional Water Board notified the Dischargers and other interested agencies and persons of its intent to consider adoption of this Order and provided an opportunity to submit written comments. In a public meeting, the Regional Water Board heard and considered all comments pertaining to this Order.

IT IS HEREBY ORDERED, pursuant to the provisions of California Water Code Division 7 and regulations adopted thereunder, and the provisions of the federal Clean Water Act and regulations and guidelines adopted thereunder, that the Dischargers shall comply with the Permit as amended by this Order, effective January 1, 2019. The changes are shown below in underline for additions and ~~strikethrough~~ for deletions.

A. Replace Permit Table 2 with the following:

Table 2. Effluent Limitations

Pollutant	Discharge to Receiving Waters Used as Drinking Water[1]		Discharge to Other Receiving Waters	
	Monthly Average (µg/L)	Daily Maximum (µg/L)	Monthly Average (µg/L)	Daily Maximum (µg/L)
pH	Between 6.5 and 8.5 units at all times.			
Antimony, Total Recoverable	--	6.0	4,300	8,600
Arsenic, Total Recoverable	--	10.	30.	59
Cadmium, Total Recoverable	0.90	1.8	0.90	1.8
Chromium III	--	50.	170	340
Chromium VI	--	10.	8.1	16
Copper, Total Recoverable [2]				
Lower or South SF Bay Discharge	10.	20.	10.	20.
Central SF Bay Discharge	5.4	11	5.4	11
Suisun or San Pablo Bay Discharge	7.1	14	7.1	14
Freshwater Discharge	7.0	14	7.0	14
Lead, Total Recoverable	2.6	5.2	2.6	5.2
Mercury, Total Recoverable	0.050	0.10	0.050	0.10
Nickel, Total Recoverable [2]				
Lower or South SF Bay Discharge	22	44	22	44
Central SF Bay Discharge	10.	21	10.	21
Suisun or San Pablo Bay Discharge	25	50.	25	50.
Freshwater Discharge	43	86	43	86
Selenium, Total Recoverable	4.1	8.2	4.1	8.2
Silver, Total Recoverable	1.1	2.2	1.1	2.2
Thallium, Total Recoverable	--	2.0	6.3	13
Zinc, Total Recoverable	47	95	47	95
Benzene	--	0.50	--	0.50
Chloroform	--	1.9	--	1.9
1,1-Dichloroethane	--	0.50	--	0.50
1,2-Dichloroethane	0.38	0.50	--	0.50
1,1-Dichloroethylene	0.057	0.11	--	0.50
Ethylbenzene	--	0.50	--	0.50
Tetrachloroethylene	--	0.50	--	0.50
Toluene	--	0.50	--	0.50
Cis-1,2-Dichloroethylene	--	0.50	--	0.50

Pollutant	Discharge to Receiving Waters Used as Drinking Water[1]		Discharge to Other Receiving Waters	
	Monthly Average (µg/L)	Daily Maximum (µg/L)	Monthly Average (µg/L)	Daily Maximum (µg/L)
Trans-1,2-Dichloroethylene	--	0.50	--	0.50
1,1,1-Trichloroethane	--	0.50	--	0.50
1,1,2-Trichloroethane	--	0.50	--	0.50
Trichloroethylene	--	0.65	--	0.65
Vinyl Chloride	--	0.50	--	0.90
Benzo(a)Anthracene	0.0044	0.0088	0.049	0.098
Benzo(a)Pyrene	0.0044	0.0088	0.049	0.098
Benzo(b)Fluoranthene	0.0044	0.0088	0.049	0.098
Benzo(k)Fluoranthene	0.0044	0.0088	0.049	0.098
Chrysene	0.0044	0.0088	0.049	0.098
Dibenzo(a,h)Anthracene	0.0044	0.0088	0.049	0.098
Indeno(1,2,3-cd) Pyrene	0.0044	0.0088	0.049	0.098
Total Xylenes	--	0.50	--	0.50
Methyl Tertiary Butyl Ether	--	0.50	--	0.50
TPH as gasoline	--	50	--	50
TPH as diesel	--	50	--	50
TPH as motor oil	--	100	--	100
~~Sulfate~~	~~250,000~~	~~500,000~~	~~—~~	~~—~~
~~Manganese~~	~~50~~	~~100~~	~~—~~	~~—~~
Turbidity	5.0 NTU	10. NTU	--	--
Chlorine, Total Residual	--	0.0[3]	--	0.0[3]

Abbreviations:

µg/L = micrograms per liter
NTU = nephelometric turbidity unit

Footnotes:

[1] Receiving Waters Used as Drinking Water are defined as surface waters with existing or potential beneficial uses of "Municipal and Domestic Supply" or "Groundwater Recharge," or both. Groundwater recharge uses may include recharge areas to maintain salt balance or to halt salt water intrusion into fresh water aquifers.

[2] The WQBEL for each estuarine discharge depends on the sub-embayment into which the discharge eventually flows. Freshwater WQBELs apply when the receiving water salinity is no more than one part per thousand at least 95 percent of the time.

[3] This limit shall be applied as an instantaneous maximum. There shall be no detectable residual chlorine in the effluent (as explained in MRP section IX.B.5, a non-detect result using a detection level equal or less than 0.1 milligrams per liter [mg/L] will not be considered out of compliance).

B. Replace Permit Monitoring and Reporting Program (MRP) Table E-2 with the following:

Table E-2. Minimum Monitoring Requirements

Parameter	Units	Analytical Test Method	Sample Type	Influent (INF-00 *n*)[1]	Effluent and Reclaimed Water (EFF-*n*, REC- *n*)[1]	Receiving Water (RSW-*n*U, RSW-*n*D)
Flow	GPM/GPD/ MGM	--	Continuous	--	Continuous[2]	--

Parameter	Units	Analytical Test Method	Sample Type	Influent (INF-00 *n*)[1]	Effluent and Reclaimed Water (EFF-*n*, REC- *n*)[1]	Receiving Water (RSW-*n*U, RSW-*n*D)
Electrical Conductivity	S/m	EPA 120.1 or SM 2510B	Grab	--	SP, then 1/Month	--
pH	standard units	EPA 150.2	Grab	SP, then 1/Month	SP, then 1/Month	[3]
Temperature	ºC	--	Grab	--	SP, then 1/Month	--
Turbidity	NTU	EPA 180.1 or SM 2130B	Grab	--	SP, then 1/Month	--
Total Dissolved Solids	mg/L	--	--	--	SP, then 1/Month	--
Dissolved Oxygen	mg/L	--	--	--	--	[3]
Hardness (as CaCO3)	mg/L	EPA 130.1 or SM 2340B	Grab	--	--	[3]
Salinity	‰	--	Grab	--	--	[3]
Sulfate	mg/L	EPA 375.2 or EPA 300.0	Grab	--	SP, then 1/Quarter, then 1/Year[4]	--
Manganese	µg/L	EPA 200.8 or EPA 200.7	Grab	--	SP, then 1/Quarter, then 1/Year[4]	--
Total Chlorine Residual[5]	mg/L	Field Kit, EPA 330, or SM4500-Cl	Grab	SP, then 1/Quarter	SP, then 1/Month	[3]
Antimony, Total Recoverable	µg/L	EPA 204.2 or EPA 200.8	Grab	[6]	[6]	[3]
Arsenic, Total Recoverable	µg/L	EPA 206.3 or EPA 200.8	Grab	[6]	[6]	[3]
Beryllium, Total Recoverable	µg/L	EPA 200.9 or EPA 200.8	Grab	[6]	[6]	[3]
Cadmium, Total Recoverable	µg/L	EPA 200.9 or EPA 200.8	Grab	[6]	[6]	[3]
Chromium III[7]	µg/L	~~SM3500~~ --	Grab	[6]	[6]	[3]
Chromium VI[7]	µg/L	~~SM3500~~ EPA 218.6 or EPA 7199	Grab	[6]	[6]	[3]

Parameter	Units	Analytical Test Method	Sample Type	Influent (INF-00 *n*)[1]	Effluent and Reclaimed Water (EFF-*n*, REC- *n*)[1]	Receiving Water (RSW-*n*U, RSW-*n*D)
Copper, Total Recoverable	µg/L	EPA 200.9 or EPA 200.8	Grab	[6]	[6]	[3]
Lead, Total Recoverable	µg/L	EPA 200.9 or EPA 200.8	Grab	[6]	[6]	[3]
Mercury, Total Recoverable[8]	µg/L	EPA 1631E	Grab	[6]	[6]	[3]
Nickel, Total Recoverable	µg/L	EPA 200.9 or EPA 200.8	Grab	[6]	[6]	[3]
Selenium, Total Recoverable[9]	µg/L	EPA 200.9 or EPA 200.8 ~~or SM3114B or C~~	Grab	[6] Once	[6] Once	[3]
Silver, Total Recoverable	µg/L	EPA 200.9 or EPA 200.8	Grab	[6]	[6]	[3]
Thallium, Total Recoverable	µg/L	EPA 200.9 or EPA 200.8	Grab	[6]	[6]	[3]
Zinc, Total Recoverable	µg/L	EPA 200.8	Grab	[6]	[6]	[3]
Cyanide, Total	µg/L	~~SM 4500-CN – C or I~~ SM 4500-CN – D or E	Grab	[6]	[6]	--
Volatile Organic Compounds (VOCs)[9][10]	µg/L	EPA 8260B (full list)	Grab	[6]	[6]	[3]
Semi-volatile organic compounds (SVOCs) excluding polynuclear aromatic hydrocarbons (PAHs)[5],[10][11]	µg/L	EPA 8270C	Grab	SP, then 1/Quarter	SP, then 1/Month	--
PAHs[5],[9]	µg/L	EPA 610 or EPA 8270D	Grab	SP, then 1/Quarter	SP, then 1/Month	[3]
TPHs as Gasoline[5],[11][12]	µg/L	EPA 8260B Modified or EPA 8015B Modified	Grab	SP, then 1/Quarter	SP, then 1/Month	[3]

Parameter	Units	Analytical Test Method	Sample Type	Influent (INF-00 *n*)[1]	Effluent and Reclaimed Water (EFF-*n*, REC- *n*)[1]	Receiving Water (RSW-*n*U, RSW-*n*D)
TPHs as Diesel[5],~~[11]~~[12]	µg/L	EPA 8015B Modified	Grab	SP, then 1/Quarter	SP, then 1/Month	[3]
TPHs other than Gasoline and Diesel[5],~~[11]~~[12]	µg/L	EPA 8015B Modified	Grab	SP, then 1/Quarter	SP, then 1/Month	[3]
Tertiary Amyl Methyl Ether (TAME), DiIsopropyl Ether (DIPE), Ethyl Tertiary Butyl Ether (ETBE), Tertiary Butyl Alcohol (TBA), Ethanol, and Methanol[5]	µg/L	~~EPA 1625 Modified~~ EPA 8260B	Grab	SP, then 1/Year	SP, then 1/Year	--
All other pollutants such as foaming agents~~[12]~~[13]	various	--	Grab	SP, then 1/Month, then 1/Quarter, then 1/Year~~[13]~~[14]	SP, then 1/Month, then 1/Quarter, then 1/Year~~[13]~~[14]	[3]
Acute Toxicity	% survival	See MRP section V	Grab	--	1/Quarter, then 1/Year~~[14]~~[15]	--
Standard Observations	--	--	--	--	SP, then 1/Month~~[15]~~[16]	[3]

Abbreviations

GPM = gallons per minute
GPD = gallons per day
MGM = million gallons per month
NTU = nephelometric turbidity units
% survival = percent survival
mg/L = milligrams per liter
µg/L = micrograms per liter
‰ = parts per thousand
S/m = Siemens per meter
SM = Standard Method
SP = Start-up Phase

Footnotes:

[1] When "Start-up Phase" is indicated, parameters shall be monitored once on the first day of start-up, ~~and~~ once on the fifth day of start-up, and then at the frequency indicated.

[2] Flows shall be measured continuously in gallons per minute (GPM). Flows shall be recorded as gallons per day (GPD), and million gallons per month (MGM). Flows shall be monitored at each outfall or reclamation discharge point by a flow meter or as estimated if no flow meter is in place. The Executive Officer may require the Discharger to install flow meters.

[3] Receiving water shall be monitored whenever there is an effluent limit violation. Receiving water monitoring shall occur on the same calendar day as effluent confirmation monitoring. Receiving water samples shall be analyzed for each violated effluent parameter.

[4] If discharging to receiving waters used as drinking water, sulfate and manganese shall be monitored during the start-up phase, quarterly for the first year of operation, and annually thereafter. No monitoring is required if discharging to other receiving waters.

[5] Chlorine residual, cyanide, VOCs, SVOCs, PAHs, TPHs (as gasoline, diesel), TPHs other than gasoline and diesel, TAME, DIPE, ETBE, TBA, ethanol, and methanol shall be monitored in influent and effluent if known to be present in the influent.

[6] VOCs, metals and cyanide shall be monitored as follows:

(A) Sites contaminated *only* with VOCs: VOCs shall be monitored at the influent on start-up phase, then quarterly. VOCs shall be monitored at the effluent on start-up phase, then monthly. Metals and cyanide shall be monitored at the influent and effluent on start-up phase, then annually.

(B) Sites contaminated with fuel and fuel-related compounds (including fuel-related VOCs): Dischargers shall monitor the influent on start-up phase, then twice per year. Dischargers shall monitor the effluent on start-up phase, then quarterly.

[7] ~~Analysis for total chromium may be substituted for analysis of chromium (III) and chromium (VI) if the concentration measured is below the lowest hexavalent chromium criterion (11 µg/L).~~ Total chromium shall be analyzed using U.S. EPA method 200.8. Analysis for chromium III shall be obtained from the difference of the analytical results for total chromium and chromium VI.

[8] If the discharge exceeds the effluent limitation for mercury, the Discharger shall re-sample and analyze using ultra-clean techniques as described in U.S. EPA methods 1669 and 1631 to eliminate the possibility of artefactual contamination of the sample.

[9] Monitoring shall be performed using low-level detection techniques to achieve reporting levels below effluent limitations.

~~[9]~~[10] The analytes shall include those listed in *USEPA SW-846 Test Method 8260 B: Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry* (December 1996) except internal standard and surrogate compounds. Where appropriate, monitoring of pollutants with effluent limitations shall be performed using low-level detection techniques from any U.S. EPA method 8260 to achieve reporting levels below effluent limitations.

~~[10]~~[11] Monitoring of bis(2-ethylhexyl)phthalate shall be performed using ultra clean sampling techniques for re-evaluation during future permit reissuance.

~~[11]~~[12] TPHs shall be analyzed without silica-gel cleanup.

~~[12]~~[13] All other pollutants, such as foaming agents shall be monitored at the influent and effluent if known to be present in the influent.

~~[13]~~[14] After the start-up phase, parameters shall be monitored monthly for the first year of operation, quarterly for the second year of operation, and annually thereafter.

~~[14]~~[15] Acute toxicity shall be monitored quarterly for the first year of operation and annually thereafter.

~~[15]~~[16] For reclaimed water only.

C. Replace Permit section IV.A with the following:

> All discharges from each groundwater treatment facility, including discharges to outfalls defined in an NOI and Authorization to Discharge, shall comply with the following effluent limits.
>
> Upon becoming aware of any effluent limitation violation other than a selenium effluent limitation violation, the Discharger shall contain the effluent in a holding tank or shut down the extraction and treatment system until the violation is corrected. …

D. Replace Permit MRP section IV.D with the following:

> If monitoring results indicate a violation of any effluent limitation other than a selenium effluent limitation, the Discharger shall take a confirmation effluent sample and receiving water samples within 24 hours of becoming aware of the violation. …

E. Replace Permit MRP Table E-3 with the following:

Table E-3. Monitoring Periods and Reporting Schedule

Sampling Frequency	Monitoring Period Begins On…	Monitoring Period[1]
Continuous	First day of discharge	All times while the facility is discharging
SP	Start-up date	First day of start-up phase through last day of start-up phase.
1/Month	First day of calendar month following the last day of start-up phase.	First day of calendar month through last day of calendar month
1/Quarter	Closest of January 1, April 1, July 1, or October 1 following (or on) the last day of start-up phase.	January 1 through March 31 April 1 through June 30 July 1 through September 30 October 1 through December 31
2/Year	Closest of January 1 or July 1 following (or on) the last day of the start-up period.[2]	January 1 through June 30 July 1 through December 31
1/Year	January 1 following (or on) the last day of the start-up period.	January 1 through December 31
Once	First day of discharge	Once per permit term such that results are available to submit with the Notice of Intent required by Provision VI.C.2.e of this Order

Footnotes:

[1] Reporting begins on the effective date of Authorization to Discharge.

[2] Monitoring conducted during the term of the previous order may be used to satisfy monitoring required with this sampling frequency.

F. Remove Permit MRP section IX.B.2.b.iv(g) as follows:

~~Tabular summary of mass removal of pollutant(s), with effluent limitations, in treatment system during the reporting period. Total quantities shall be reported in kilograms (kg).~~

I, Bruce H. Wolfe, Executive Officer, do hereby certify that this Order with all attachments is a full, true, and correct copy of the Order adopted by the California Regional Water Quality Control Board, San Francisco Bay Region, on November 14, 2018.

Digitally signed by Bruce H. Wolfe
Date: 2018.11.16 15:52:33 -08'00'

Bruce H. Wolfe, Executive Officer

ATTACHMENT F – FACT SHEET

This Fact Sheet includes the legal requirements and technical rationale that serve as the basis for the requirements of this Order.

I. PURPOSE

This Order amends Order No. R2-2017-0048 (Permit) to do the following:

- Rescind sulfate and manganese water quality-based effluent limits (WQBELs),
- Reduce selenium monitoring and related requirements,
- Provide for revised and alternate analytical methods, and
- Rescind reporting requirements for mass removal of pollutants.

II. BACKGROUND

On December 13, 2017, the Regional Water Board adopted Order No. R2-2017-0048, which reissued General Permit No. CAG912002 for discharges and reclamation of extracted and treated groundwater resulting from the cleanup of groundwater polluted by volatile organic compounds (VOCs), fuel leaks, fuel additives, and other related wastes. The Permit contains reopener provisions based on 40 C.F.R sections 122.62 and 122.63 that allow modification of the Permit under various circumstances, including when investigations demonstrate that the discharges governed by that order will cease to have a reasonable potential to cause or contribute to adverse impacts on water quality or beneficial uses of the receiving waters (see Permit Provision VI.C.1.a). Moreover, because Clean Water Act (CWA) section 308 and 40 C.F.R. sections 122.41(h), 122.41(j)-(l), 122.44(i), and 122.48 require that NPDES permits specify monitoring and reporting requirements, and because Water Code sections 13267 and 13383 authorize the Regional Water Board to establish monitoring and reporting requirements, these statutes authorize the Regional Water Board to amend the monitoring and reporting requirements of the Permit.

III. RATIONALE

A. Sulfate Limits. This Order rescinds the sulfate effluent limits based on a revised analysis indicating that sulfate has no reasonable potential to cause or contribute to exceedance of the sulfate water quality objective in receiving waters. The original reasonable potential analysis had been based on the protocol set forth in the State Implementation Policy; however, that policy is only required for priority pollutants. Sulfate is not a priority pollutant, so the policy merely serves as guidance.

U.S. EPA's *Technical Support Document for Water Quality-Based Toxics Control* (March 1991) provides additional guidance for conducting reasonable potential analyses. Consistent with sections 3.1.3, 3.3.5, and 3.3.8 of the *Technical Support Document*, reasonable potential may be determined by estimating receiving water concentrations and comparing them to applicable water quality objectives. When available receiving water data reflect the influence of effluent discharges, receiving water concentrations can be

measured directly and estimation is unnecessary. Monitoring data collected through the Surface Water Ambient Monitoring Program (SWAMP) from 2001 through 2015 show that sulfate concentrations in the San Francisco Bay Region's creeks ranged from 3.6 mg/l to 1,410 mg/l (the average was 83 mg/l). Only 16 out of 247 samples (about 6 percent) exceeded the sulfate water quality objective of 250 mg/L.

Discharges covered by the Permit appear to be unrelated to the instances of creek sulfate concentrations exceeding the water quality objective. Discharge monitoring data collected since November 2017 ranged from 42 mg/l to 670 mg/l. Although 10 of 29 sample results exceeded the sulfate water quality objective, all the exceedances corresponded to just two adjacent cleanup sites. The ambient groundwater sulfate concentrations at these sites are also higher than the water quality objective, and up-gradient and down-gradient groundwater monitoring indicates that the cleanup actions are not increasing groundwater sulfate concentrations (Rowland, K., personal communication, January 10, 2018). Notably, SWAMP data for the receiving waters downstream of these sites are no higher than 72 mg/l, well below the water quality objective. Because these discharges with the highest sulfate concentrations do not appear to cause or contribute to receiving water concentrations above the water quality objective, water quality-based effluent limitations are unnecessary. Although this Order rescinds the sulfate effluent limits, it retains sulfate monitoring at the frequency specified in the Permit.

B. Manganese Limits. This Order rescinds the manganese effluent limits because there is no reasonable potential for manganese to cause or contribute to exceedance of the manganese water quality objective in the receiving waters. The original reasonable potential analysis in the Permit had been based solely on monitoring data from discharges to receiving waters without the Municipal and Domestic Supply (MUN) or Groundwater Recharge (GWR) beneficial uses (e.g., tidal portions of creeks, where salinity makes the water unsuitable for drinking). However, the manganese water quality objective is a secondary Maximum Contaminant Level, which only applies to MUN and GWR waters. Therefore, there is no reasonable potential for manganese to cause or contribute to exceedance of the manganese water quality objective and no need for water quality-based effluent limitations. Although this Order rescinds the manganese effluent limits, it retains manganese monitoring at the frequency specified in the Permit.

C. Selenium Monitoring and Related Requirements. This Order revises the Permit's selenium monitoring and related requirements in anticipation of changes to the applicable selenium water quality objective. The existing objective, expressed as a water column concentration, was promulgated through the California Toxics Rule, and the regulations governing implementation of the California Toxics Rule are set forth in the State Implementation Policy. The rationale for the Permit imposing selenium effluent limits is based on the State Implementation Policy, and this Order does not change those limits.

However, U.S. EPA now recommends new selenium water quality criteria that the State may promulgate as new water quality objectives. U.S. EPA explains its recommended selenium criteria in *Aquatic Life Ambient Water Quality Criterion for Selenium –*

Freshwater (2016). Specifically, it recommends four criteria, two based on selenium concentrations in fish tissue (egg-ovary and whole body or muscle) and two based on selenium concentrations in the water column (monthly exposure and intermittent exposure), as listed in the table below:

U.S. EPA Recommended Freshwater Selenium Criteria

Media Type	**Fish Tissue**[1]		**Water Column**[4]	
Criterion	**Egg-Ovary**[2]	**Fish Whole Body or Muscle**[3]	**Monthly Average Exposure**	**Intermittent Exposure**
Magnitude	15.1 mg/kg dw	8.5 mg/kg dw whole body or 11.3 mg/kg dw muscle (skinless, boneless fillet)	1.5 ug/L (lentic aquatic systems)[5] 3.1 ug/L (lotic aquatic systems)[6]	$WQC_{int} = \frac{WQC_{30-day} - C_{bkgrnd}(1-f_{int})}{f_{int}}$
Duration	Instantaneous	Instantaneous	30 days	Number of days/month with an elevated concentration
Frequency	Not to be exceeded	Not to be exceeded	Not more than once in 3 years on average	Not more than once in 3 years on average

Abbreviations

mg/kg dw = milligrams per kilogram dry weight
µg/L = micrograms per liter
WQC_{int} = water quality criterion for intermittent exposure
$WQC_{30\text{-day}}$ = water column monthly criterion for lentic or lotic waters
C_{bkgrnd} = average background selenium concentration
f_{int} = fraction of any 30-day period during which elevated concentrations occur (f_{int} is assigned a value of greater or equal to 0.033, corresponding to 1 day)

Footnotes:

[1] Fish tissue criteria are expressed as steady-state.

[2] Egg-ovary supersedes any whole-body, muscle, or water column criterion when fish egg-ovary concentrations are measured.

[3] Fish whole-body and muscle tissue criteria supersede water column criteria when both fish tissue and water concentrations are measured.

[4] Water column criteria are expressed as dissolved total selenium in water and are the applicable criteria in the absence of fish tissue data.

[5] Lentic aquatic systems are standing (nonflowing) waters, such as lakes and ponds.

[6] Lotic aquatic systems are flowing waters, such as rivers, creeks, or streams.

U.S. EPA recommends that the egg-ovary criterion supersede the other criteria because selenium toxicity and bioaccumulation are best evaluated through its reproductive effects in fish. U.S. EPA also recommends that the fish tissue criteria supersede the water column criteria, except in circumstances where fish tissue data are unavailable. The recommended water column criteria, which are lower than the current California Toxics Rule water quality objectives, are derived from the fish tissue criteria using bioaccumulation modeling, which incorporates a number of conservative assumptions.

U.S. Geological Survey monitoring data indicate that selenium concentrations in fish tissue from South San Francisco Bay meet U.S. EPA's new fish tissue criteria. The U.S. Geological Survey's report *Status of Selenium in South San Francisco Bay – A Basis for Modeling Potential Guidelines to Meet National Tissue Criteria for Fish and a Proposal Wildlife Criterion for Birds* (2018) provides selenium concentrations in aquatic life in South San Francisco Bay. In 2009 and 2014, selenium concentrations of 18 white sturgeon muscle samples ranged from 3.1 mg/kg to 9.7 mg/kg on a dry weight basis. Similarly, selenium concentrations of 13 white croaker muscle samples ranged from 2.2 mg/kg to 7.2 mg/kg on a dry weight basis. All these values are lower than the muscle criterion of 11.3 mg/kg.

Because South San Francisco Bay fish meet the new selenium criteria, the fish in tributary creeks likely also meet the new criteria. Therefore, the current selenium effluent limits will likely be removed from the Permit when the State (through the Regional Water Board or State Water Board) promulgates U.S. EPA's newly recommended water quality criteria as water quality objectives because there is no reasonable potential for discharges covered by the Permit to cause or contribute to exceedances of the new criteria.

Accordingly, in anticipation of this change, this Order revises the Permit's selenium requirements to reduce the burden on the Dischargers to comply with the existing limits. Dischargers in the southern part of the Region would otherwise need to address their relatively high selenium discharge concentrations, which result from natural groundwater conditions throughout Santa Clara County.[1] Such treatment upgrades would be unreasonable since they are unnecessary to protect water quality, would be extremely costly, and may only serve to move dissolved selenium from one discharge location to another. No available technology (including those typically employed at municipal wastewater treatment plants) actually breaks down selenium.

For the reasons explained above, this Order reduces the selenium monitoring frequency to once each permit term, removes the requirement to collect and analyze a confirmation sample after finding a selenium effluent limit violation, and eliminates the requirement to contain effluent onsite or shut down the extraction and treatment system following a second violation. This Order does not rescind the selenium effluent limits outright because the State Implementation Policy still requires them.

D. Analytical Methods. This Order provides for revised and alternate analytical test methods because some previously listed methods were outdated or not as widely available from certified laboratories. These updated methods are at least as sensitive as those listed in 40 C.F.R part 136.

E. Mass Removal Reporting. This Order removes the requirement to report pollutant mass removal because that information is unnecessary for any Permit-related purpose.

[1] Ambient groundwater samples of water supply wells collected through the Groundwater Ambient Monitoring and Assessment Program (GAMA) since 1980 show that approximately 35 percent (144 out of 414 samples) have selenium concentrations above the water quality objective.

IV. DISCHARGE REQUIREMENT CONSIDERATIONS

A. Anti-backsliding. This Order complies with the anti-backsliding provisions of CWA sections 402(o) and 303(d)(4) and 40 C.F.R. section 122.44(1), which generally require new effluent limitations to be as stringent as those in the previous order. This Order does not change any effluent limitation in the previous order, which remains in effect until January 1, 2019. This Order removes sulfate and manganese effluent limitations that were to go into effect on January 1, 2019, because there is no reasonable potential for these pollutants to cause or contribute to the exceedance of water quality objectives. Consistent with State Water Board Order WQO-2003-0012, the elimination of water quality-based effluent limitations when there is no reasonable potential is not backsliding. Although this Order relaxes some selenium requirements (but not the selenium effluent limitations), any related potential backsliding is permissible under CWA section 402(o)(2)(B)(i), because this Order reflects new information not available when the previous order was adopted, and under CWA section 303(d)(4) because this Order also complies with antidegradation requirements.

B. Antidegradation. This Order is consistent with the antidegradation provisions of 40 C.F.R. section 131.12 and State Water Board Resolution No. 68-16. It continues with the status quo with respect to the discharges authorized in the previous order, which is the baseline by which to measure whether degradation will occur. It does not allow for a reduced level of treatment or less stringent effluent limitations. The rescinded sulfate and manganese effluent limitations were not to go into effect until January 1, 2019. The previous order did not contain selenium effluent limitations, and this Order does not change the selenium effluent limitations set to go into effect January 1, 2019.

V. PUBLIC PARTICIPATION

A. Notification of Interested Parties. The Regional Water Board notified the Dischargers enrolled under NPDES General Permit No. CAG912002 and interested agencies and persons of its intent to amend the Permit and provided an opportunity to submit written comments and recommendations. Notification was provided through the *Mercury News* in San Jose. The public had access to the agenda and any changes in dates and locations through the Regional Water Board's website at http://www.waterboards.ca.gov/sanfranciscobay.

B. Written Comments. Interested persons were invited to submit written comments concerning the tentative amendment as explained through the notification process. Comments were to be submitted either in person or by mail to the Executive Officer at the Regional Water Board at 1515 Clay Street, Suite 1400, Oakland, California, to the attention of Marcos De la Cruz. For full staff response and Regional Water Board consideration, the written comments were due at the Regional Water Board office by 5:00 p.m. on September 30, 2018.

C. Public Hearing. The Regional Water Board held a public hearing on the tentative amendment during its regular meeting at the following date and time, and at the following location:

Date: **November 14, 2018**
Time: 9:00 a.m.
Location: Elihu Harris State Office Building
1515 Clay Street, 1st Floor Auditorium
Oakland, CA 94612

Contact: Marcos De la Cruz, (510) 622-2365,
marcos.delacruz@waterboards.ca.gov

Interested persons were invited to attend. At the public hearing, the Regional Water Board heard testimony pertinent to the tentative amendment. For accuracy of the record, important testimony was to be in writing.

The Regional Water Board web address is http://www.waterboards.ca.gov/sanfranciscobay, where one could access the current agenda for changes in dates and locations.

D. Reconsideration of Amendment. Any aggrieved person may petition the State Water Board to review the Regional Water Board decision regarding the tentative amendment. The State Water Board must receive the petition at the following address within 30 calendar days of the Regional Water Board action:

State Water Resources Control Board
Office of Chief Counsel
P.O. Box 100, 1001 I Street
Sacramento, CA 95812-0100

For instructions on how to file a petition review, see www.waterboards.ca.gov/public_notices/petitions/water_quality/wqpetition_instr.shtml.

E. Information and Copying. Supporting documents and comments received are on file and may inspected at the address above between 9:00 a.m. and 5:00 p.m., Monday through Friday. Copying of documents may be arranged by calling (510) 622-2300.

F. Register of Interested Persons. Any person interested in being placed on the mailing list for information regarding NPDES permits should contact the Regional Water Board and provide a name, address, and phone number.

G. Additional Information. Requests for additional information or questions regarding this Order should be directed to Marcos De la Cruz at (510) 622-2365 or marcos.delacruz@waterboards.ca.gov.