

Response to Comments

**Sentinel Peak Resources California, LLC. Inglewood Oil Field
Tentative Order No. R4-2018-XXXX
NPDES Permit No. CA0057827**

Agency/ Letter	#	Comment	Response	Action Taken
Letter dated January 5, 2018 from Sentinel Peak Resources California, LLC (Discharger) Comments on Tentative Order No. R4-2018-XXXX				
Discharger	1a	<p><u>Concerns about the new effluent limitation of 100 µg/L for total petroleum hydrocarbons (TPH) in the tentative order.</u></p> <p><u>Drinking water taste and odor standards for taste and odor are not applicable to these receiving waters.</u> The beneficial uses of Ballona Creek are shown in Figure 1 of the Basin Plan. As shown in the figure, excerpted from the Los Angeles Region Basin Plan for Coastal Waters in Los Angeles and Ventura Counties (Basin Plan), segments of Ballona Creek have been designated as "p*" for municipal drinking water supply (MUN), indicating that the listing is "potential" under State Water Resources Control Board Resolution SB 88-63 and Los Angeles Regional Water Quality Control Board Resolution RB 89-03. In the Basin Plan, the Los Angeles Regional Water Quality Control Board recognized that additional technical work was needed before such designations could validly occur, and included the following language:</p> <p>"In recognition of this fact, the Regional Board will soon implement a detailed review of criteria in the State Sources of Drinking Water policy and identify those waters in the Region that should be excepted from the MUN designation. Such exceptions will be proposed under a special Basin Plan Amendment and will apply exclusively to those waters designated as MUN under SB res. No. 88-63 and RB Res. No. 89-03. In the interim, no new effluent limitations will be placed in Waste Discharge Requirements as a result of these designations until the Regional Board adopts this amendment."</p>	<p>Please refer to specific responses presented below.</p> <p>TPH-gasoline, -diesel, and –waste oil range hydrocarbons are pollutants of concern related to the discharges from an actively producing oil and gas field. The monitoring results collected from March 2013 to August 2017 indicated no detected concentrations of TPH as gasoline (C₆-C₁₂). However, detected concentrations reported for TPH as diesel (C₁₃-C₂₂) or TPH as motor oil (C₂₃₊) ranged from less than 250 µg/L to greater than 1000 µg/L. Therefore, TPH as diesel and motor oil has the potential to be discharged to the receiving water, and into waters of the state.</p> <p>The effluent limitation of 100 µg/L for TPH including gasoline, diesel, and waste oil, is justified on many levels. First, this limit is routinely prescribed in the permits that regulate storm water discharges from petroleum product handling or storage facilities such as tank farms and oil refineries in the jurisdiction of the Los Angeles Regional Water Quality Control Board ("Regional Board" or "Region 4"). Permits issued to Plains West Coast Terminal, Vopak Terminal Long Beach Inc., Phillip 66 Company, SFPP LP, Tesoro Logistics Operations LLC, Kinder Morgan Liquids Terminals and Chevron USA, to name a few, all include the TPH limitation of 100 µg/L. In addition, the effluent limitation of 100 µg/L for TPH has been consistently included in the Los Angeles Regional Water Board's General NPDES Permit No. CAG914001 for Discharges of Treated Groundwater from</p>	None necessary.

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		<p>EPA, in approving the Basin Plan, stated:</p> <p>"EPA bases its approval on the court-'s finding that the Regional Board-'s identification of waters with an asterisk in conjunction with the implementation language at page 2-4 of the 1994 Basin Plan., was intended "to only conditionally designate and not finally designate as MUN those water bodies identified by an (*) for the MUN use in Table 2-1 of the Basin Plan without further action. Thus, the waters identified with an (*) do not have MUN as a designated use until such time as the State undertakes additional study and modifies its Basin Plan."</p> <p>In addition, Ballona Creek is concrete lined to the estuary, where groundwaters are saline. Therefore, the discharge from the Inglewood Oil Field would not come into contact with groundwater designated as MUN beneficial use. Since the receiving waters for the stormwater discharged from the Inglewood Oil Field are not designated as MUN, the proposed use of the EPA SNARL drinking water taste and odor standard of 100 ug/L is too restrictive and not appropriate.</p>	<p>Investigation and/or Cleanup of Volatile Organic Compounds-Contaminated Sites to Surface Waters since 1997. The technology available for the removal of TPH compounds has been used to comply with these permits for decades.</p> <p>Second, the 100 µg/l effluent limitation for TPH is based on best professional judgment (BPJ).</p> <p>Third, even if the surface water does not have a MUN designation, the groundwater underlying Ballona Creek does have a municipal and domestic supply (MUN) beneficial use. Although the Los Angeles Regional Water Quality Board (Regional Board) staff acknowledges that discharges flow to a concrete-lined channel in the Ballona Creek, cracks are present in the concrete and this creates the potential to discharge TPH into groundwater.</p> <p>Therefore, the 100 µg/L TPH (gasoline+diesel+waste oil) limitation in the proposed order is appropriate for discharges based on the data provided and based on BPJ.</p>	
	1b	<p><u>US EPA SNARL of 100 ug/L for diesel is not based on sound science.</u> Attached to this comment letter is a 2016 review of the basis for the SNARL for diesel submitted to the Journal of Groundwater Monitoring and Remediation, published by the National Groundwater Management Association. This review found that the threshold level is not appropriately applied to diesel and is 10 to 20 times lower what was reported in the original 1.951 literature review. The primary conclusions of the review are quoted below:</p> <p>"Based on our review, it appears that the basis for the 0.1 mg/L WQO for diesel in groundwater likely originates with a 1951 Polish literature review summary of a 1948 compilation of fragmented articles, which may have been impacted by compounding transcription or translation errors over the years. We did not find evidence of USE PA or the SWRCB incorporating the results of technically defensible research conducted by any US scientific or regulatory agency or vetting of</p>	<p>Of note, the permit limitation of 100 µg/L for TPH is a Technology-based Effluent Limitation (TBEL). That said, the Suggested No Adverse Response Level (SNARL) (a/k/a Health Advisory) of 100 µg/L for diesel was put forth by the USEPA in 1980.</p> <p>EPA has not withdrawn the SNARL (Health Advisory) that Region 4 has been using for decades to evaluate petroleum related cleanups and to regulate TPH contamination in stormwater discharges from refineries and tank farms. Nevertheless, staff has included the TPH effluent limitation of 100 µg/L for gasoline, diesel and waste oil in the proposed order based on BPJ.</p> <p>BPJ is the method used by permit writers to develop technology-based NPDES permit conditions on a case-by-case basis using all reasonably available and relevant data. BPJ-based TBELs are established in cases in which effluent</p>	None necessary.

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		<p>the cited value as to its original source. Further, based on Kirkor (1951) and McKee and Wolf (1963), it appears that the value that should have been assigned to distilled crude oil ("kerosine" in Stofen [1973]) is 1.0 to 2.0 mg/L, and not 0.1 mg/L, and that the value for raw crude oil ranges from 0.1 to 0.5 mg/L, and not 0.1 to 0.3 mg/L. We have translated the original documents and have exhausted virtually every resource to find out why the values presented in Stofen (1973) do not match those presented in Kirkor (1951). We conclude that the SWRCB most likely used the USEPA (1980) because it thought the SNARL to be reliable, although the 0.1 mg/L value for "kerosene or diesel fuel" was 10 to 20 times lower than what was reported in its own compilation by McKee and Wolf (1963)."</p>	<p>limitation guidelines are not available for a particular pollutant of concern. Authorization for using BPJ limitations is found under 40 CFR section 125.3. The TPH limitation has been achievable through source control and treatment at facilities engaged in various petroleum operations and is consistent with permits for similar facilities within the Los Angeles Region.</p> <p>Regional Board staff has considered factors outlined in 40 CFR sections 123.3(c) and (d)(1) in establishing its TPH limitations based on TPH. A table summarizing the considerations is attached to this document.</p>	
	1c	<p><u>San Francisco Regional Water Quality Control Board Environmental Screening Levels (ESLs) provide science-based standards applicable to these receiving waters.</u> Toxicity and taste and odor levels are difficult to establish for petroleum because they represent a mix of many individual compounds. The regulatory approach that has been used by the San Francisco Regional Water Quality Control Board is to quantify the risk posed by petroleum mixtures by first dividing the petroleum mixtures into fractions based on size or apparent carbon number and selecting surrogate mixtures or compounds to represent the toxicity of these hydrocarbon fractions or carbon ranges; this approach was first developed by a public-private partnership known as the Total Petroleum Hydrocarbon Working Group and later used by the state of Massachusetts, the EPA, and other agencies (Cited in SFRWQCB ESL guidebook: TPHCWG 1997a, 1997b, 1998a, 1998b, and 1999; MADEP 2003; USEPA 2009; Hawaii DOH 2011; Regional Water Board 2016b). The San Francisco Regional Water Quality Control Board's approach used to develop screening levels for TPH mixtures is presented in the Technical Resource Document: Fraction Approach to Develop ESLs for TPH Mixtures (Appendix F; SFRWQCB ESL guidebook 2016) and includes development of TPH mixture ESLs for gasoline, Stoddard solvent, diesel, and motor oil.</p>	<p>There are several reasons why the Environmental Screening Levels (ESLs) used by the San Francisco Regional Water Quality Control Board to provide screening levels for chemicals commonly found at sites with contaminated soil and groundwater, or cleanup sites, should not be used in relation to setting discharge limitations for NPDES permits.</p> <p>First, the ESLs for fresh water aquatic life are 440 µg/L for TPH gasoline and 640 µg/L for TPH diesel. These ESLs were developed by the San Francisco Regional Water Board based on toxicity studies derived from local projects. They have not been evaluated with regard to their applicability to the receiving waters in Southern California, nor have they been incorporated in any way into the Regional Board's Basin Plan. They are also much less stringent than the 100 µg/L limitation which has been used for decades to regulate TPH discharges to surface waters in this region. Historically, the permittees have been able to consistently comply with the 100 µg/L limitation during cleanups and discharges of collected storm water.</p> <p>Second, it should be noted that the ESLs are used for guidance purposes and they are not intended to serve as a "stand-alone decision making tool." (See, https://www.waterboards.ca.gov/sanfranciscobay/water_issue</p>	None necessary.

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		<p>Although the ESLs were developed by the San Francisco Regional Water Quality Control Board, they are in wide use throughout the State of California because the ESLs provide a broad range of well-supported standards that are not specific only to environmental conditions within that region. With respect to taste and odor thresholds for TPH, the ESLs are based on the results of recent studies¹ and modeling (as described in the 2016 ESL User's Guide), and that support setting the levels for aquatic life at 440 µg/L for TPH-gasoline and 640 µg/L for TPH-diesel.</p> <p>The ESLs provide scientifically-based TPH standards for freshwater aquatic life (presented in ESL Table GW-2, shown in Figure 2 below) (refer to original comment letter) that are fully applicable to the receiving waters of the Inglewood Oil Field stormwater discharge. Use of these values would lead to effluent limitations of 440 µg/L for TPH gasoline and 640 µg/L for TPH-diesel and motor oil. Note that these values are more protective than the non-drinking water odor nuisance levels (5,000 µg/L) also cited in the ESLs, and therefore would certainly protect beneficial uses. No standard is applied to TPH-oil because it is insoluble (see notes to ESL Table GW-5, Figure 2, Note 1) (refer to original comment letter). We therefore recommend these levels for the TPH waste discharge requirements</p>	<p>s/programs/ESL/ESL%20Users%20Guide_22Feb16.pdf). They also may not be adequately protective for some sites. (See, <i>ibid.</i>) There is no evidence that they should be used here, in the context of stormwater discharge permitting, where municipal and other beneficial uses may be threatened.</p> <p>Based on all of the following, Regional Board staff has chosen not to use the San Francisco Regional Water Quality Control Board ESLs and has instead included the 100 µg/L effluent limitation for TPH in the proposed order based on its BPJ.</p>	
	1d	<p><u>Use of 100 µg/L for TPH-gasoline, TPH-diesel, and TPH-motor oil would require entirely new treatment technology.</u></p> <p>The treatment system designed for the Inglewood Oil Field stormwater discharge substantially reduces total suspended solids, and the metals and organic material that is absorbed to that sediment. Further testing and optimization is required to reach a final design, but based on data collected thus far, the system is expected to bring the stormwater discharge from the field in full compliance with Total Maximum Daily Loads and California Toxics Rule standards for all receiving waters. However, sediment removal is not sufficient to reach the SNARL level of 100 µg/L for TPH fractions (hence the inclusion of these compounds to the extension of the Time Schedule Order). In order to meet this standard, an entirely new treatment</p>	<p>The Regional Board respectfully disagrees with this comment. The TPH limitation is new in the proposed order as the data to evaluate the pollutants was not available during the consideration of Order No. R4-2013-0021. Sampling completed during the term of this Order provided the data to evaluate reasonable potential for TPH. After reviewing the data available it was clear that the concentrations of TPH detected exceeded the current water quality objective of 100 µg/L, thus establishing reasonable potential.</p> <p>The treatment technology for the removal of TPH pollutants is well developed. As mentioned in the comment letter, an activated carbon unit may be adequate for the removal of these pollutants. In order to meet the proposed standard,</p>	None necessary.

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		<p>technology (activated carbon) would be required, substantially increasing the capital cost, maintenance requirements, and transportation costs of spent carbon for the system. Since the SNARL is based on a questionable scientific basis, compared to the San Francisco Regional Water Quality Control Board ESLs which are derived from recent studies, the substantial added treatment cost does not appear to be warranted.</p>	<p>Regional Board staff acknowledge that added treatment cost is required; however, the technologies are readily available and routinely used through the Region. Costs are reasonable in relation to the effluent reduction benefits to be achieved, particularly in light of the fact that a Time Schedule Order has been proposed which will allow the discharger time in which to comply with the final effluent limitation in the Permit without incurring mandatory minimum penalties.</p>	
	1e	<p>SNARL only applies to TPH-diesel. We believe that we have demonstrated that TPH levels of 440 µg/L for TPH-gasoline and 640 µg/L for TPH-diesel are fully protective of beneficial uses and supported by recent studies. However, if the SNARL is to still be applied despite this demonstration, it should only apply to the TPH-diesel fraction to which it refers. It should not be applied to the other TPH fractions.</p>	<p>The USEPA Health Advisory or SNARL of 100 µg/L is applicable for diesel oil and for kerosene. The USEPA Health Advisory for gasoline is 5 µg/L. The motor oil or waste oil is not soluble; however, its degraded by-products may contribute to the TPH diesel fraction. The Regional Board has utilized the USEPA Health Advisory for the protection of beneficial uses of the receiving waters at petroleum contaminated sites and to evaluate cleanups in the Region. Therefore, and for the reasons set forth above in response to the comments, the Regional Board staff included the 100 µg/L limitation for TPH in the proposed order for Inglewood Oil Field based on BPJ.</p>	None necessary.

Factors Considered Pursuant to 40 C.F.R. section 125.3(c) and (d)(1)

Factors	Considerations
The appropriate technology for the category or class of point sources of which the applicant is a member, based upon all available information	Although the Regional Board makes no determination as to what the appropriate technology is, it is clear that dischargers can comply with the 100 µg/L TPH effluent limitation using existing practicable and economically achievable treatment technologies. Such technology has been in use for decades.
Any unique factors relating to the applicant	Unique factors include the fact that these limits for TPH have been in place for decades and there is and has been repeated industry compliance with these limits. The effluent limit however is new to Sentinel Peak Resources California, LLC, Inglewood Oil Field. Consequently, staff has proposed an interim effluent limitation and compliance schedule in the Time Schedule Order which will be considered by the Regional Board along with the proposed permit.
Total cost of application of technology in relation to the effluent reduction benefits to be achieved from such application	The cost of imposing the 100 µg/L TPH effluent limitation is reasonable given that existing dischargers can comply with them with existing practicable and economically achievable treatment technologies. The discharger may need to modify their existing treatment processes. Overall, the limited cost associated with implementing the TPH effluent limitation is warranted to minimize pollutant discharges to the neighboring communities and create a level playing field for the discharger community. Other facilities in the Region have the TPH effluent limitation specified here and anyone enrolling in the NPDES General Permits for Discharges of Treated Groundwater and Other Wastewaters from Investigation and Cleanup of Petroleum Fuel-Contaminated Sites to Surface Waters (CAG834001) and for Discharges of Treated Groundwater from Investigation and/or Cleanup of Volatile Organic Compounds-Contaminated Sites to Surface Waters (CAG914001) is required to meet the same TPH effluent limitation.
Age of equipment and facilities	Most dischargers from petroleum related cleanup sites, refineries and tank farms already employ treatment technologies that comply with the TPH effluent limitation, regardless of the age of their existing equipment and facilities.
Processes employed	Most dischargers with effluent limitations for TPH already employ treatment technologies that comply with the effluent limitation since it has been in the Waste Discharge Requirements for Discharges of Treated Groundwater and Other Wastewaters from Investigation and/or Cleanup of Petroleum Fuel-Contaminated Sites to Surface Waters in Coastal Watersheds of Los Angeles and Ventura Counties, General NPDES Permit No. CAG834001, since 1997; therefore, the processes dischargers can employ to comply with the effluent limitation are readily available.
Engineering aspects of application of control techniques	Most dischargers already employ treatment technologies that comply with the TPH effluent limitation; therefore, the engineering aspects of such technologies have been largely resolved. Available controls are practicable and capable of meeting the limit.
Process changes	The discharger may need to modify their existing treatment processes.
Non-water-quality environmental impact (including energy requirements)	The discharges may need to modify their existing treatment processes, such as including granular activated carbon (GAC) systems. The non-water-quality environmental impact of such changes may involve the cost for solid waste disposal.