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Subject: Lake Tahoe Laundry Works' proposed CAO Comments - PES/EKI on behalf of SSLP/Fox
Date: Monday, September 19, 2022 3:07:05 PM
Attachments: [102100101L018.pdf](#)

EXTERNAL:

Dear Ms. Fleshman,

Attached please find attached technical comments on the proposed Cleanup and Abatement Order for the Lake Tahoe Laundry Works (LTLW) site located at 1024 Lake Tahoe Boulevard in South Lake Tahoe, California (GeoTracker Global Id No. SL0601754315). These comments were prepared by PES Environmental, Inc., an NV5 Company (PES), and EKI Environment & Water, Inc. (EKI) on behalf of Seven Springs Limited Partnership (SSLP) and Fox Capital Management Corporation (Fox).

Best regards,

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19 September 2022

Katrina Fleshman
Executive Assistant
Lahontan Regional Water Quality Control Board
2501 Lake Tahoe Boulevard
South Lake Tahoe, California 96150

**Subject: Comments on Proposed Lake Tahoe Laundry Works Cleanup and Abatement Order
1024 Lake Tahoe Boulevard, South Lake Tahoe, California**

Dear Ms. Fleshman:

On behalf of Seven Springs Limited Partnership (Seven Springs) and Fox Capital Management Corporation (Fox), PES Environmental, Inc., an NV5 Company, (PES) and EKI Environment & Water, Inc. (EKI) submit these technical comments on the proposed Cleanup and Abatement Order (Proposed Order) prepared by the Lahontan Regional Water Quality Control Board (Regional Board) for the former Lake Tahoe Laundry Works (LTLW) tenant space at 1024 Lake Tahoe Boulevard in South Lake Tahoe, California (Site). Our comments are based in part on the information set forth on the GeoTracker pages for the Lake Tahoe Laundry Works site (Global ID No. [SL0601754315](#)), the Former Big O Tires site (Global ID No. [SL0601729739](#)), the Former Norma's Cleaners site (Global ID No. [SL0601790916](#)), the South Y Regional Contamination (Global ID No. [T10000007984](#)), and the historical South Y PCE contamination (Global ID No. [SL0601794942](#)). An index of the documents listed for these sites is included in Exhibit 163 (see attached List of Exhibits). Additionally, documents referenced in this letter are available for download at <https://pesenvironmental.filegenius.com/downloadPublic/v1a2q4t7lahznfc/qbgymc76s72jxno>.

Our comments address inaccurate and misleading statements in the Proposed Order and refute the Regional Board's scientifically flawed effort to ascribe groundwater contaminated by perchloroethylene (PCE) throughout the Tahoe Valley South Subbasin to the LTLW. This contamination is due to PCE releases at numerous sites and does not derive to any appreciable measure from PCE discharged at the LTLW. The Proposed Order is not needed to complete cleanup of the LTLW and should not be adopted because the LTLW has been fully characterized, effective remedial actions are in place, and the scope of work in the Proposed Order pertains to investigation and remediation of regional PCE contamination for which LTLW is not the cause.

1 THE PROPOSED ORDER "OVERVIEW" AND "REGULATORY AND LITIGATION HISTORY" SECTIONS ARE INACCURATE

The Regional Board incorrectly describes the PCE discharge at the LTLW and inexplicably disparages the work Seven Springs and Fox have accomplished, under the Regional Board's supervision, to investigate and remediate the effects of that discharge.

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1.1 The Proposed Order Incorrectly Describes the PCE Discharge at the LTLW

The Regional Board states that “[s]pills/discharges associated with PCE delivery, handling, and disposal practices are the likely sources of waste discharge at the Site.”¹ Seven Springs and Fox disagree with the Regional Board’s characterization of the likely sources of PCE at the Site. The results of environmental investigations at the Site indicate that PCE released during delivery is the only source of contamination at the LTLW. Four investigative events were conducted between 2003 and 2006, which involved completing 35 boreholes and collecting 77 soil and 22 groundwater samples from them to assess conditions beneath the LTLW tenant space, parking lot in front of the building, and along the sanitary sewer and storm drain pipelines.² Investigative findings suggest the only significant source of discharge at the Site was associated with a release during PCE delivery that appears to have occurred in the parking lot in front of the building.³ In the nearly twenty years of investigations of the LTLW, all of which were conducted under the direction of the Regional Board, no evidence of spills or discharges, other than in the parking lot, have been identified.⁴

1.2 The Proposed Order Misrepresents Seven Springs and Fox’s Diligence in Remediating the LTLW

The Proposed Order presents an inaccurate and incomplete depiction of the regulatory history of the Site that somehow omits the fact that Seven Springs and Fox have undertaken a lengthy, thorough, and objectively successful effort to remediate the Site. In Paragraphs 10 through 18, the Proposed Order summarizes the basic history of the Site without mentioning the considerable work by Seven Springs to address the presence of chlorinated volatile organic compounds (VOCs) and respond to the Regional Board’s concerns since 2003, when the Regional Board initially contacted Seven Springs, or the actions that Seven Springs and Fox jointly took after 2008.

¹ Proposed Order, at 2 ¶ 5.

² PES. 17 November 2003. Groundwater Investigation Results, Lake Tahoe Laundry Works, 1024 Lake Tahoe Boulevard, South Lake Tahoe, California; PES. 13 October 2004. Supplemental Site Investigation Results, Lake Tahoe Laundry Works, 1024 Lake Tahoe Boulevard, South Lake Tahoe, California; PES 27 May 2005. Additional Site Investigation Results, Lake Tahoe Laundry Works, 1024 Lake Tahoe Boulevard, South Lake Tahoe, California; PES. 31 January 2006. Additional Soil Investigation Results, Lake Tahoe Laundry Works, 1024 Lake Tahoe Boulevard, South Lake Tahoe, California, RWQCB SLIC CASE No. T6S043.

³ Regional Board. 12 May 2017. Cleanup and Abatement Order (CAO) R6T 2017 0022 Requiring Remediation and Additional Investigation of PCE Groundwater Contamination, Lake Tahoe Laundry Works, South Lake Tahoe, California, Site Cleanup Program Case T6S043. (“2017 CAO”), at 3 (attributing contamination at the LTLW to spills during solvent delivery).

⁴ These findings were confirmed by investigations completed under the 2017 CAO.

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Seven Springs and Fox have cooperated fully and have been engaged in a Site Cleanup Program with the Regional Board for more than a decade. As a result, the Regional Board should amend the Proposed Order to present a more complete discussion of the “Regulatory and Litigation History” portion of the Proposed Order.

Delineation. The Regional Board cites the issuance of Water Code § 13267 investigative directives in 2003, 2004, and 2005 and indicates that four investigations were performed at the Site between 2003 and 2006.⁵ The Proposed Order goes on to state that “[a]lthough required in these WC section 13267 investigative orders, the lateral and vertical extent of PCE and other wastes was never determined.”⁶ This statement does not align with findings made by the Regional Board in earlier correspondence to Seven Springs and Fox. In an 18 April 2006 directive, provided in response to the results of an additional soil investigation, the Regional Board stated “[s]ampling was essentially successful in defining the vertical and lateral extent of solvent contamination in soil.”⁷ Additionally, on 8 April 2009, the Regional Board issued Investigative Order No. R6T-2009-0013 requiring submittal of a remediation workplan. The order specifically stated “[t]he lateral and vertical extent of tetrachloroethene (PCE) is defined in the vadose zone based on soil sample results and geologic cross sections.”⁸ On 1 September 2009, the Regional Board accepted an Interim Remedial Action Workplan that concluded on-Site contamination had been delineated and was not migrating off the LTLW.⁹

Scope of Cleanup. The Proposed Order¹⁰ mentions the 8 April 2009 directive, Remedial Action Workplan, and the Draft Remedial Action Plan,¹¹ dated 12 August 2010, that Seven Springs and Fox submitted to the Regional Board, but the Proposed Order fails to acknowledge the Regional Board’s role in determining the

⁵ Proposed Order, at 3-4 ¶¶ 10.

⁶ *Id.*

⁷ Regional Board. 18 April 2006. Order for Corrective Action Workplan, Lake Tahoe Laundry Works, 1024 Lake Tahoe Boulevard, South Lake Tahoe, El Dorado County, at 1.

⁸ Regional Board. 8 April 2009. *Investigative Order No. RGT-2009-0013 to Submit Workplan for Remediation at the Lake Tahoe Laundry Works, 1024 Lake Tahoe Boulevard, South Lake Tahoe, El Dorado County*, at 1.

⁹ See letter from Regional Board to S. Reisch (counsel for Fox) and B. Beard (counsel for Seven Springs) 1 September 2009. *Acceptance of Interim Remedial Action Workplan and Addendum, Lake Tahoe Laundry Works*, at 1; Environmental Engineering, Consulting and Remediation, Inc. (E₂C). 4 June 2009. *Interim Remedial Action Workplan for SZA Groundwater Investigation, SZA Groundwater Monitoring, Interim Remedial Action Vadose Zone Soil and Shallow Groundwater Cleanup, Lake Tahoe Laundry Works, 1024 Lake Tahoe Boulevard, South Lake Tahoe*, at 1-4.

¹⁰ Proposed Order, at 4 ¶¶ 12-13.

¹¹ E₂C. 12 August 2010. *Interim Remedial System Installation/Pilot Testing Report of Findings and Draft Remedial Action Plan for Vadose Zone Soil and Shallow Groundwater Cleanup, Lake Tahoe Laundry Works, 1024 Lake Tahoe Boulevard, South Lake Tahoe, California*.

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scope of those documents. In particular, the Regional Board in its Staff Report¹² supporting the Proposed Order describes the area that it agreed should be remediated in 2008 as a “source area zone” that Seven Springs/Fox “predefined.”¹³

Cleanup was not limited to the source area on the LTLW. During a meeting on 24 September 2008, Seven Springs/Fox and the Regional Board reached consensus that remediation should address all soil and shallow groundwater impacted by the discharge at the Site. The soil vapor extraction and groundwater air sparge system (SVE/GASS) implemented by Seven Springs/Fox addressed (1) vadose zone soil in the vicinity of the former laundromat tenant space and adjacent parking lot, and (2) shallow zone groundwater to 25 below ground surface (bgs) encompassing an area approximately 375 feet long by 145 feet wide.¹⁴ In 2013, the Regional Board issued an order approving use of the SVE/GASS to “remediate contaminants in soil, soil gas, and groundwater.”¹⁵ The order stated that the case for the LTLW could be closed after verification monitoring for one year demonstrated chlorinated VOCs in groundwater remain at concentrations less than their respective maximum contaminant levels (MCLs) to “ensure restoration of beneficial uses to the drinking water aquifer” had been achieved.¹⁶

Replacement Water. Seven Springs and Fox entered into a Stipulated Agreement for Replacement Water Supply¹⁷ with the owners of properties at 883 and 903 Eloise Avenue at the request of the Regional Board. The Proposed Order cites the date of the agreement as 5 June 2015;¹⁸ the actual date of the agreement is 15 June 2015. Water samples collected from noncommunity water system wells at these properties in 2014 and 2015 contained PCE.¹⁹ Seven Springs and Fox disagreed with the Regional Board about the source of PCE detected in samples from the wells, but nevertheless agreed to provide a replacement water supply (i.e., reimbursement for bottled water and for alternate permanent water supply). The Proposed Order does not mention that the agreement contains the following language: “[b]y agreeing to provide a

¹² Regional Board. 16 June 2022. *Staff Report Supporting Cleanup and Abatement Order No. R6T-2022-(Proposed)*. (“Regional Board Staff Report” or “Staff Report”).

¹³ *Id.*, at 59.

¹⁴ E₂C (2010). *supra* n. 11, at 21.

¹⁵ Proposed Order, at 4 ¶¶ 14; Regional Board. 2 August 2013. Acceptance of Workplan for Remediation and Order to Submit Technical Reports, Former Lake Tahoe Laundry Works, 1024 Lake Tahoe Boulevard, South Lake Tahoe, El Dorado County, Investigative Order R6T-2013-0064, at 2.

¹⁶ Regional Board (2013). *supra* n. 15, at 2; *see also* 2017 CAO, at 1 ¶ 2. (“Investigation and corrective actions prior of the date of this Order have been implemented by Seven Springs Limited Partnership (Seven Springs) and Fox Capital Management Corporation (Fox) in compliance previous Water Board Directives.”).

¹⁷ Regional Board. 15 June 2015. *Notification of Stipulated Agreement for Replacement Water Supply at 883 and 903 Eloise Avenue, South Lake Tahoe*.

¹⁸ Proposed Order, at 4 ¶ 15.

¹⁹ Regional Board (2015). *supra* n. 17, at 1.

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replacement water supply, all Parties agree that neither Fox Capital nor Seven Springs admit to any liability under or any violation of the California Water Code or any other federal, state, or local law or ordinance.”²⁰

The Proposed Order at Paragraph 17 states that a Satisfaction of Stipulated Agreement for Replacement Drinking Water²¹ was provided to Seven Springs and Fox on 17 February 2016. Left unsaid is that Seven Springs and Fox reimbursed the property owners at 883 and 903 Eloise Avenue a sum of \$45,800 for expenses of obtaining bottled water as an interim water supply and connecting the two properties to a Lukins Brothers Water Company (LBWC) potable water line on Eloise Avenue that serves as an alternate permanent water supply.

Compliance with 2017 CAO. Paragraphs 24 through 28 of the Proposed Order present an inaccurate and misleading depiction of Seven Springs/Fox’s work in complying with the 2017 CAO. Extensive on-Site and off-Site sampling was conducted as part of the Preferential Pathway Evaluation, Off-Site Groundwater Investigation, and Data Gap Investigation implemented pursuant to the 2017 CAO and work plans approved by the Regional Board.

With respect to the Preferential Pathway Evaluation, Seven Springs and Fox submitted the work plan for the evaluation²² to the Regional Board on 28 September 2018, which the Regional Board approved²³ on 5 October 2018. The Preferential Pathway Evaluation was to be accomplished in two stages. Between October and December 2018, Seven Springs and Fox conducted Stage 1 of the Preferential Pathway Evaluation, which entailed (1) reviewing public records and interviewing staff at the City of South Lake Tahoe Building Division and South Tahoe Public Utility District (STPUD) regarding storm drain and sanitary sewer systems in the vicinity of the Site, (2) performing a closed-circuit television (CCTV) inspection of the storm drain and sanitary sewer pipelines to establish their conditions and identify any defects (e.g., displaced joints, separated joints, breaks and cracks) where chlorinated VOCs may have entered or exited the pipes, (3) analyzing passive soil gas samples from thirteen locations along the alignments of the storm drain and sanitary sewer systems and inside four manholes of these systems on the LTLW, and (4) testing samples of fill surrounding the storm drain and sanitary sewer pipelines at locations where higher PCE masses were measured in passive soil gas samples. As discussed in Section 2.6, the results of the Stage 1 Preferential Pathway Evaluation do not indicate PCE migrated off-Site along utility lines or other subsurface features that could act as preferential pathways for PCE transport.

²⁰ *Id.* 17, at 1.

²¹ Regional Board. 17 February 2016. *Satisfaction of Stipulated Agreement for Replacement Drinking Water — Lake Tahoe Laundry Works, 1024 Lake Tahoe Boulevard, South Lake Tahoe, El Dorado County.*

²² PES. 28 September 2018. Preferential Pathway Evaluation Work Plan, Former Lake Tahoe Laundry Works, South Y Shopping Center, 1024 Lake Tahoe Boulevard, South Lake Tahoe, California.

²³ B. Grey (Regional Board). 16 October 2018. Email to Working Parties and Regional Board staff. *Re Comments on Weekly Progress Reports, Preferential Pathway Evaluation Work Plan and Revised Preliminary Planning Report.*

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Seven Springs and Fox began work on the Stage 2 Preferential Pathway Evaluation after completing Stage 1 of the evaluation. On 18 April 2019, pursuant to a reimbursement agreement with Seven Springs/Fox, STPUD performed a CCTV inspection of the sanitary sewer pipeline on Lake Tahoe Boulevard, Glorene Avenue, and Tucker Avenue (i.e., manholes TK-578, TK-577, TK-576, TK-575, and TK-536). Seven Springs and Fox attempted a Stage 2 CCTV inspection of the storm drain pipeline that traverses the former Big O Tires facility, but the property owners did not provide access.

In parallel, Seven Springs and Fox initiated the Off-Site Groundwater Investigation in accordance with the Amended Groundwater Investigation Work Plan,²⁴ dated 18 March 2018. Seven Springs/Fox implemented three phases of the Off-Site Groundwater Investigation, which included the performance of cone penetrometer tests, membrane interface probe assessments, construction of three shallow zone/middle zone groundwater monitoring well pairs, and collection and analysis of 110 multi-depth grab groundwater samples from one on-Site and 20 off-Site borehole locations.

The need to evaluate off-Site sources of PCE to groundwater between Lake Tahoe Boulevard and Tucker Avenue became evident when multi-depth grab groundwater samples obtained during the Off-Site Groundwater Investigation showed PCE concentrations in groundwater within the shallow zone, defined to be from ground surface to approximately 30 feet bgs, and middle zone, defined to be approximately 30 feet bgs to 60 feet bgs, along Tucker Avenue to be up to 100 times greater than PCE concentrations in samples collected along Lake Tahoe Boulevard.²⁵ Accordingly, the Data Gap Investigation resulted in collection and analysis of 45 passive soil gas samples at the Napa Auto Parts/Former Lakeside Automotive site, along Glorene Avenue, and within the Tucker Avenue stormwater detention basin (Tucker Basin).²⁶ Seven Springs/Fox proposed passive soil gas sampling at the former Big O Tires facility but were not granted permission to access the property.²⁷

Communication with Regional Board. The Proposed Order does not reflect the degree to which Seven Springs and Fox communicated with Regional Board staff on a regular basis. At the Regional Board's request, Seven Springs and Fox prepared and submitted Planning and Progress Reports (PPRs) and participated in meetings with Regional Board staff to discuss work by Seven Springs and Fox, and actions conducted by others regarding the regional groundwater PCE contamination. Seven Springs and Fox submitted 13 weekly PPRs from 9 October 2018 through 29 January 2019 (PPR Nos. 2 through 14), bi-weekly PPRs from 12 February 2019 through 19 November 2020 (PPR Nos. 15 through 31), and monthly

²⁴ EKI. 19 March 2018. Amended Groundwater Investigation Work Plan, Former Lake Tahoe Laundry Works Site, 1024 Lake Tahoe Boulevard, South Lake Tahoe, California.

²⁵ EKI. 4 October 2019. Investigation Summary Report, Former Lake Tahoe Laundry Works, 1024 Lake Tahoe Boulevard, South Lake Tahoe, California, at 4.

²⁶ EKI. 1 April 2019. Investigation Summary Report, Former Lake Tahoe Laundry Works Site, 1024 Lake Tahoe Boulevard, South Lake Tahoe, California, at 17.

²⁷ EKI (2019). *supra* n. 25, at 16-17.

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PPRs from 17 December 2020 through 3 May 2022 (PPR Nos. 32 through 63). Generally, one telephonic meeting between consultants for Seven Springs/Fox and Regional Board staff was conducted during the period covered by each PPR.

During these meetings and as reflected in the associated PPRs, Seven Springs and Fox presented investigative results and explained difficulties with executing planned work at the former Big O Tires facility. Seven Springs and Fox made the need for access to the Big O Tires site clear during regular telephonic meetings with the Regional Board and in PPRs submitted prior to the meetings. In November 2018, Seven Springs and Fox submitted a letter to owners of the former Big O Tires facility requesting access to perform the work.²⁸ Property representatives did not respond to this request or to a follow-up request made by Seven Springs/Fox²⁹ in December 2018. In January 2019, Seven Springs and Fox sought Regional Board assistance in gaining access to the former Big O Tires facility.³⁰ In spite of these requests, no assistance from the Regional Board was forthcoming. As a result, Seven Springs and Fox were prevented from conducting work essential to understanding if investigation of Tucker Basin by Seven Springs/Fox was appropriate based on a determination that the discharge at LTLW had impacted the basin. The Regional Board indicated it would assist with access to the Big O Tires site; Seven Springs and Fox are not aware of any assistance that might have been provided.³¹

Off-Site Source Investigations. Actions by Seven Springs and Fox that established the lateral and vertical extents of chlorinated VOCs associated with the LTLW are not accurately described in the Proposed Order. The Proposed Order incorrectly states that “[d]espite these regular communications, the Dischargers elected to focus on finding additional potential dischargers.”³² This inaccurate statement should be removed as it ignores Seven Springs/Fox (1) undertook extensive on-Site and off-Site work at the Regional Board’s request, and (2) attempted to conduct additional off-Site work, but were precluded from doing so because they were denied access and the Regional Board did not respond to requests from Seven Springs/Fox to obtain access.

²⁸ PES. 15 November 2018. *Request for Site Access, 1961 Lake Tahoe Boulevard APN 023-523-08-100, South Lake Tahoe, California.*

²⁹ PES. 13 December 2018. *Follow-Up on Request for Site Access, 1961 Lake Tahoe Boulevard APN 023-523-08-100, South Lake Tahoe, California.*

³⁰ PES. 14 January 2019. *Request for Assistance with Access, Former Big O Tires Store, 1961 Lake Tahoe Boulevard APN 023-523-08-100, South Lake Tahoe, California, at 1.*

³¹ PES and EKI. 15 January 2019. *Groundwater Investigation Planning and Progress Report No. 13, Former Lake Tahoe Laundry Works Site, 1024 Lake Tahoe Boulevard, South Lake Tahoe, California.*

³² Proposed Order, at 6 ¶ 26.

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The Proposed Order erroneously states that the Regional Board pursued a grant from the State Water Resources Control Board's (State Water Board's) Site Cleanup Subaccount Program (SCAP) due in part to delay by Seven Springs/Fox.³³ Under the 2017 CAO, Seven Springs and Fox conducted the Preferential Pathway Evaluation and Data Gap Investigation to the extent possible and implemented three phases of the Off-Site Groundwater Investigation. Prior to issuance of the 2017 CAO, Seven Springs and Fox conducted a voluntary off-Site investigation. Rather than pursue the SCAP grant because of any failure by Seven Springs/Fox, the Regional Board's own press release states that it sought the grant because "[s]everal businesses in the South Y area are known or suspected to have used, stored, or disposed of PCE or PCE-containing products" and the Regional Board pledged to use a \$4.6 million SCAP grant to "track down all potential sources of pollution" to regional groundwater PCE contamination.³⁴ As discussed in Section 2.1, the Regional Board has endeavored to identify PCE sources since the Tahoe South Y PCE Investigation commenced after discovering contamination in public water system wells in 1989.

Verification Monitoring. The Proposed Order observes verification monitoring has not been conducted at the LTLW.³⁵ Under the 2017 CAO, the SVE/GASS is to be operated "in accordance with previously accepted work plans and proposals."³⁶ Investigative Order R6T-2013-0064 requires verification monitoring after remediation of the LTLW is completed.³⁷ As remediation is ongoing, verification monitoring would be premature "to ensure restoration of beneficial uses,"³⁸ which is the intent of such monitoring.

2 THE REGIONAL PCE CONTAMINATION IS NOT ATTRIBUTABLE TO A PCE DISCHARGE AT THE LTLW

The Regional Board contends that a discharge at the LTLW is responsible for the so-called "South Y PCE Plume," an area of groundwater containing PCE within the Tahoe Valley South Subbasin that the Regional Board asserts is approximately 1.5 miles long and 1 mile wide.³⁹ The Regional Board claims that the LTLW is at the "head of a contiguous plume,"⁴⁰ that extends, without interruption, to the Tahoe Keys to the north

³³ *Id.*, at 6 ¶ 28.

³⁴ Regional Board. 13 March 2019. Lahontan Water Board Receives \$4.6 Million Grant to Investigate Perchloroethylene (PCE) Contamination in South Lake Tahoe's Groundwater. Media Release. https://www.waterboards.ca.gov/press_room/press_releases/2019/pr20190313_reg6_grant_invest_pce_in_sl_t.pdf.

³⁵ Proposed Order, at 4 ¶ 14.

³⁶ 2017 CAO, at 14 ¶ 1.1.

³⁷ Regional Board (2013). *supra* n. 15, at 2.

³⁸ Proposed Order, at 4 ¶ 14.

³⁹ AECOM Technical Services, Inc. (AECOM). June 2022. Regional Plume Characterization Summary Report: South "Y" PCE Plume, 2019-2020 Field Season, at 24.

⁴⁰ The word "contiguous" means "touching" or "bordering upon," which would suggest that the Regional Board recognizes the so-called South Y PCE Plume consists of multiple plumes, some of which may have commingled at certain locations within the Tahoe South Subbasin. As the Regional Board attempts to describe a single

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and to depths of up to approximately 240 feet below ground surface (bgs).”⁴¹ The Regional Board’s depiction of the contamination is shown on Figure 8 of the Proposed Order (“Regional PCE Contamination”). The Proposed Order and Staff Report’s claims are at odds with the Regional Board’s previous recognition that PCE contamination in the Tahoe Valley South Subbasin is caused by multiple sources and its past acknowledgement that only localized impacts resulted from a PCE discharge on the LTLW.⁴² As explained in many submittals to the Regional Board, data obtained from extensive investigations completed by Seven Springs and Fox demonstrate the Regional PCE Contamination (1) is not a uninterrupted plume that originates from the LTLW, (2) is not attributable to a single source but is due to PCE releases at numerous sites, and (3) does not derive to any appreciable measure from PCE discharged at LTLW either before or after commencement of on-Site remediation.

2.1 The Regional Board Does Not Consider Upgradient Sources of the Regional PCE Contamination

The Proposed Order states that PCE was first reported in public water system wells in 1989 within the South Y Area of South Lake Tahoe and states various parties have undertaken efforts to investigate and remediate PCE discovered in the wells.⁴³ The Proposed Order omits important details of these investigative and remedial efforts, and in the process fails to include information about known sources upgradient of the Regional PCE Contamination.

In 1991 or 1992, STPUD installed an air stripper at the Clement Street public water system well to remove PCE in groundwater extracted from the well.⁴⁴ Extracted groundwater from the Julie Lane, Tata Lane #4, and South Y Center public water system wells was conveyed to the Clement Street wellhead treatment system.⁴⁵ STPUD stopped operating these wells in 1998 or 1999.⁴⁶ The Julie Lane, Tata Lane #4, and

“uninterrupted” plume in the Proposed Order and Staff Report and does not say what the “contiguous” plume touches or borders upon, we request that the Regional Board clarify its intent in any subsequent order.

⁴¹ Regional Board Staff Report, at 22. Similar claims are made at Proposed Order, at 3 ¶¶ 6 and 8, 8 ¶ 32.j; Regional Board Staff Report at 26, 54, 57, 68-69.

⁴² Regional Board (2009). *supra* n. 8, at 1 (noting investigations conducted by Seven Springs and Fox found that “[t]he lateral and vertical extent of [PCE] is defined in the vadose zone based on soil sample results and geologic cross sections. The investigation results indicate that solvent DNAPL (dense non-aqueous phased liquid) has not migrated from the site to other properties”).

⁴³ Proposed Order, at 7 ¶ 30.

⁴⁴ STPUD. 2021. *Who We Are*. <https://stpud.us/about/>. Accessed 29 August 2022.

⁴⁵ Regional Board. 22 August 2005. *Staff Report, Solvent Contamination at the Big O Tires Store, 1961 Lake Tahoe Boulevard, South Lake Tahoe*, at 10; STPUD. 23 November 2016. Feasibility Study of Remedial Alternatives to Mitigate PCE Contamination. Proposition 1 Groundwater Grant Program Planning Final Application, at 4 of Attachment 1.

⁴⁶ STPUD (2016). *supra* n. 45, at 4 of Attachment 1; STPUD (2021). *supra* n. 44.

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South Y Center wells were destroyed in 2006.⁴⁷ The Clement Street well is inactive and remains a groundwater level observation well.

The Regional Board initiated the Tahoe South Y PCE Investigation upon discovery of contamination in public water system wells.⁴⁸ As part of this investigation, the Regional Board performed two soil gas surveys, researched current and historical businesses that may have used PCE in the South Y Area, visited the businesses and interviewed their owners and operators, and provided funding to STPUD to identify the cause of PCE detected in public water system wells.⁴⁹ The Regional Board discontinued the Tahoe South Y PCE Investigation in 2015.

The Clement Avenue, Julie Lane, Tata Lane #4, and South Y Center wells were in the upgradient direction of groundwater flow from the LTLW, as was Industrial Avenue #2 well that also contained PCE. In 1997 and 1998, STPUD collected grab groundwater samples from the shallow zone and grab water samples from the City of South Lake Tahoe sanitary sewer system.⁵⁰ The Regional Board suspected vehicle repair facilities on Shop Street and D Street to be the source of groundwater contamination in the vicinity of Julie Lane and determined PCE in Industrial Avenue #2 well was due to a release on the Tahoe Asphalt property located at 1104 Industrial Avenue.⁵¹

The Regional Board did not require delineation of impacts to groundwater off the property when it closed the Tahoe Asphalt case in 2004. Contamination discovered at other sites along Shop Street and Industrial Avenue also has not been fully characterized. For example, the Regional Board reported that 26 micrograms per liter ($\mu\text{g/L}$) of PCE was detected in a monitoring well in September 1997 at the Campora Gas property at 1640 Shop Street.⁵² Neither the source nor the lateral and vertical extents of this contamination has been established to the laboratory analytical method reporting limit of 0.5 $\mu\text{g/L}$, which is the requirement imposed by the Proposed Order.⁵³ The actual maximum concentration of PCE in groundwater beneath the Campora Gas property is not known.

⁴⁷ Proposed Order, at Figure 13; Kennedy/Jenks Consultants. 22 December 2014. *Tahoe Valley South Basin (6-5.01) 2014 Groundwater Management Plan*, at 6-6.

⁴⁸ https://geotracker.waterboards.ca.gov/profile_report?global_id=SL0601794942.

⁴⁹ Regional Board. 20 August 1997. Agency Agreement to Support the Tahoe South “Y” PCE Investigation, at 1; Regional Board. September 1997. Status Report on the “Y” Investigation in South Lake Tahoe, at 1.

⁵⁰ Regional Board. 25 February 1999. *Summary of PCE Investigations, South Lake Tahoe. FY 1997/98*, at 1.

⁵¹ *Id.*, at 3.

⁵² Regional Board. 15 July 1998. Campora Gas Property, 1640 Shop Street, South Lake Tahoe.

⁵³ Proposed Order, at 21-22 ¶ 2.a.

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In 1998, STPUD discovered that the STAGE Bus facility at 1663, 1669, and 1679 Shop Street was discharging “a great deal of petroleum products” to the sanitary sewer.⁵⁴ Based on sewer samples, these petroleum wastes were found to contain PCE and toluene, as well as lower concentrations of ethylbenzene, xylenes, and methylene chloride.⁵⁵ In 1999, the City of South Lake Tahoe, which owned STAGE Bus, a public bus service that provided transportation in and around South Lake Tahoe, collected grab groundwater samples at six locations on the STAGE Bus facility. No PCE was detected in the grab groundwater samples, but the sampling was limited to depths of approximately 10 feet bgs to 17.5 feet bgs,⁵⁶ in contrast to the multi-depth grab groundwater samples that have been obtained from distinct permeable units as deep as 150 feet bgs by Seven Springs/Fox and AECOM in their investigations of the LTLW and South Y Area, respectively. Although the Regional Board considered the STAGE Bus site to be a potential source of groundwater contamination because PCE and other VOCs were detected in the sewer, it did not require investigation of deeper groundwater and closed the STAGE Bus case based on the limited sampling that was performed.⁵⁷

The Regional Board concludes that the analytical results of grab groundwater samples collected from two boreholes (i.e., KM1 and KM2) near Kmart at the South Y Center and three boreholes along Tata Lane (i.e., LTLW-GW-16, LTLW-GW-17, and LTLW-GW-18) demonstrate “[n]o sources of PCE were identified upgradient from the Site.”⁵⁸ Seven Springs and Fox conducted sampling near Kmart to assess if identified off-Site sources in the Shop Street/Industrial Avenue area were adding PCE to groundwater beneath the LTLW.⁵⁹ Sampling along Tata Lane was performed at the direction of the Regional Board⁶⁰ and was constrained to public right of ways. No sampling was conducted at properties within the Shop Street/Industrial Avenue area that are known or suspected PCE sources to groundwater. Of the grab groundwater samples collected near Kmart and along Tata Lane,⁶¹ PCE was detected in only one sample

⁵⁴ STPUD. 20 August 1998. Letter to Regional Board regarding plugged sanitary sewer pipeline.

⁵⁵ Regional Board. 17 July 1998. STAGE Bus Property, 1680 Shop Street, South Lake Tahoe (El Dorado County) APN 032-312-02; Phase Three Environmental Management. 8 February 1999. Groundwater Investigation, STAGE Bus Facility — Shop Street, South Lake Tahoe, California.

⁵⁶ *Id.*, at 3-5.

⁵⁷ Regional Board. 4 March 1999. No Further Action at the STAGE Bus Properties, Shop Street, South Lake Tahoe, El Dorado County.

⁵⁸ Proposed Order, at 9 ¶ 33. See similar assertions at Regional Board Staff Report, at 21, 43, and 58.

⁵⁹ EKI. 30 August 2017. Off-Site Groundwater Investigation Data Report, South Y Area, South Lake Tahoe, California, at 4.

⁶⁰ PES and EKI. 13 November 2018. Groundwater Investigation Planning and Progress Report No. 7, Former Lake Tahoe Laundry Works Site, 1024 Lake Tahoe Boulevard, South Lake Tahoe, California, at attached Meeting Notes.

⁶¹ EKI (2019). *supra* n. 25, at Table 5-1.

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at 0.64 µg/L obtained from the middle zone at LTLW-GW-18. This concentration is above the PCE delineation requirement of 0.5 µg/L established by the Proposed Order.

Even if chlorinated solvent releases at upgradient properties are not affecting conditions at the LTLW, PCE from upgradient off-Site sources may be contributing PCE at concentrations greater than 0.5 µg/L to the Regional PCE Contamination. In 2016, STPUD retained the Desert Research Institute (DRI) to examine the fate and transport of PCE in groundwater within the Tahoe Valley South Subbasin as part of a feasibility study evaluating remedial alternatives for the contamination. The State Water Board funded preparation of the feasibility study.⁶² Particle tracking by DRI's resulting numerical groundwater flow model indicates groundwater from the Shop Street/Industrial Avenue area bypasses the LTLW as it moves into the Regional PCE Contamination.⁶³ Consequently, the magnitude of the impact on groundwater quality from sources upgradient of the LTLW is unknown because the Regional Board has not required or performed an adequate investigation of groundwater potentially impacted by off-Site sources in the Shop Street/Industrial Avenue area.

2.2 The Regional Board's Current Conceptual Site Model Conflicts with its Prior Conclusions and Those of its Contractors and Other Stakeholders

The Regional Board's current conceptual site model (CSM) — that the Regional PCE Contamination is an uninterrupted plume that derives exclusively from the LTLW — is incorrect and conflicts with the Regional Board's earlier findings. In issuing the 2017 CAO, Patty Kouyoumdjian, the Regional Board's Executive Officer at that time, concluded that:

. . . there is insufficient evidence to link all PCE contamination in the region to Lake Tahoe Laundry Works site at this time. It is possible that there are other parties responsible for portions of the PCE, which merits additional investigation. It is also possible that there are portions of the PCE plume that we are unable to tie back to a responsible party, and I want to better understand the orphan share of the regional plume if we determine, from the required investigation results, that other sources have contributed to the PCE contamination.⁶⁴

⁶² State Water Board. 30 March 2017. South Tahoe Public Utility District Planning Grant, Groundwater Planning, Feasibility Study of Remedial Alternatives to Mitigate Tetrachloroethylene Contamination. Agreement No. D1712508.

⁶³ See figures illustrating DRI particle tracking from Shop Street/Industrial Avenue area included as Attachment A to PES and EKI. 11 January 2018. *Responses to Comments Regarding Revised Groundwater Investigation Work Plan, Former Lake Tahoe Laundry Works Site, 1024 Lake Tahoe Boulevard, South Lake Tahoe, California.*

⁶⁴ 2017 CAO, at 2.

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In Paragraph 7 of the 2017 CAO, the Regional Board stated:

After consideration of the available information and comments received on the proposed CAO and the revised proposed CAO, the Site and regional groundwater investigations performed to date have not generated conclusive data identifying or eliminating the Site as the sole source of the regional PCE plume. Existing groundwater quality data cannot definitely link contaminant concentrations detected in the municipal and domestic supply wells in the region to the Site given insufficient data produced by limited scopes of the site specific and regional investigations conducted to date, the distribution of contaminants reported, location of other potential sources, the significant amount of time that has passed since the alleged historical PCE release(s) at the Site in the 1970s, and the significant fluctuations in the groundwater table from decades of intermittent municipal supply well pumping. As a result, current evidence is insufficient to require the cleanup and abatement of the regional PCE plume under California Water Code section 13304.

Nevertheless, the Regional Board now contends that the investigations it performed in 2019 and 2020 have “conclusively establish[ed]” that Regional PCE Contamination originates from the Site.⁶⁵ However, the Proposed Order does not resolve critical issues raised by the Regional Board in the 2017 CAO, such as the need to “definitely link contaminant concentrations detected in the municipal and domestic supply wells in the region” in light of off-Site sources, the “significant amount of time that has passed” since releases occurred in the 1970s, or the significant fluctuations in the groundwater table as a result of “decades of intermittent municipal supply well pumping.”

The Regional Board has long understood that a single source did not create the Regional PCE Contamination. For instance, the Regional Board has determined the former Big O Tires facility at 1961 Lake Tahoe Boulevard and the former Norma’s Cleaners (i.e., Hurzel) site at 961 Emerald Bay Road, both located squarely within the Regional PCE Contamination, are sources of PCE to groundwater. In 2005, the Regional Board concluded PCE in groundwater at the Big O Tires site did not originate from the LTLW and that conditions on Big O Tires are “primarily affected by a PCE source originating onsite.”⁶⁶ In 2019, the Regional Board concluded that investigations performed on the Big O Tires site in 2001 and 2006 show “unauthorized discharges of petroleum and chlorinated hydrocarbons in select soil and groundwater samples from past facility operations.”⁶⁷

⁶⁵ Proposed Order, at 3 ¶ 8, 6 ¶ 28.

⁶⁶ Regional Board (2005). *supra* n. 45, at 3.

⁶⁷ Regional Board. 10 May 2019. Order to Submit Technical Reports in Accordance with Section 13267 of the California Water Code, Big O Tire Store, 1961 Lake Tahoe Boulevard, South Lake Tahoe, El Dorado County, SCP Case #T6S034, GeoTracker Global ID SL0601729739, at 9.

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The Regional Board similarly identified the former Norma's Cleaners site as a source of PCE contamination based on the results of two soil gas surveys that it performed in the South Y Area in 1992 and 1993. The soil gas surveys, conducted with Petrex tubes, revealed significant soil gas responses near Norma's Cleaners and Lampson One-Hour Cleaners/Sierra Dry Cleaners/S&S One Hour Cleaners at 2022 Lake Tahoe Boulevard. The Regional Board stated the following concerning these former dry cleaners:

Raw data from the second survey confirmed the first survey results — we were dealing with multiple sources. Both historic dry cleaners may have been sources, but there seemed to be other sources, as well, which were not as obvious.⁶⁸

In 2008, shallow excavation of PCE-containing soil was performed at the Norma's Cleaners site.⁶⁹ This remedial effort was inadequate and left contaminated soil in place on the property.⁷⁰ In 2019, the Regional Board stated "[i]nvestigations conducted in 2001, 2003, 2007 and 2008 identified chlorinated hydrocarbons in soil and groundwater samples which indicates unauthorized waste discharge(s) have occurred from past [s]ite operations."⁷¹ In 2020, the State Water Board informed representatives of the Norma's Cleaners site that the Regional Board finds the property is "a continuing source of contamination to the aquifer."⁷²

Responsible parties for the former Big O Tires and Norma's Cleaners sites have received several notices of violation from the Regional Board for not complying with directives to characterize the impacts caused by releases at their respective properties.⁷³ On 16 June 2022, the Regional Board issued proposed CAOs to investigate and remediate contamination on and off the former Big O Tires and Norma's Cleaners sites. Relying in part on the results of investigations performed by Seven Springs and Fox, the proposed CAO for the former Big O Tires facility states that PCE contamination in groundwater is migrating from the former Big O Tires facility.⁷⁴ The proposed CAO for Norma's Cleaner states PCE contamination leaching from site

⁶⁸ Regional Board. 5 January 1996. *Tahoe South Y PCE Investigation*, at 2.

⁶⁹ SECOR International Incorporated. 30 May 2008. Site Investigation Report, Former Dry Cleaning Business, 949 Emerald Bay Drive, South Lake Tahoe, CA 96150.

⁷⁰ PES. 23 August 2019. Comments on Previous Site Characterization and Remediation, Hurzel Properties, LLC., 945, 949, and 961 Emerald Bay Road, South Lake Tahoe, California.

⁷¹ Regional Board. 10 May 2019. Order to Submit Technical Report in Accordance with Section 13267 of the California Water Code, Hurzel Properties, LLC, 961 Emerald Bay Road, South Lake Tahoe, El Dorado County, SCP Case No. T6S044, GeoTracker Global ID SL0601790916, at 8.

⁷² T. Austin. (State Water Board). 15 July 2020. Email to A. Giorgianni (Rodriguez Wright LLP) *Re 961 Emerald Bay (Trestle South Tahoe LLC)*.

⁷³ See Big O Tires Cleanup and Abatement Order No. R6T-2022-(PROPOSED) at 8-9 ¶¶ 22.f-g; Proposed Cleanup and Former Norma's Cleaners Cleanup and Abatement Order No. R6T-2022-(PROPOSED), at 12 ¶ 27.h-k.

⁷⁴ Proposed Cleanup and Abatement Order for former Big O Tires facility at 4 ¶ 10.

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soil into groundwater has allowed the off-site migration of PCE in groundwater to occur.⁷⁵ These proposed CAOs show that the Regional Board is aware that the Regional PCE Contamination is not a single plume originating from one source.

The Regional Board's contractors and other stakeholders also reached findings that contradict the Proposed Order's conclusions. In 2016, an off-Site groundwater investigation conducted by URS Corporation Americas (URS) on behalf of the Regional Board found that:

PCE detections in the eastern end *were separated* from PCE detections in the western end by 1,100 feet and three locations showing non-detect concentrations. This information suggests separate PCE sources for each end of the study boundary.⁷⁶

If the Regional Board currently believes that URS's conclusion is incorrect, the Regional Board should identify specifically what it believes to be the flaws in URS's analysis.

Similarly, the Regional Board should address prior findings of the Tahoe Keys Property Owners Association (TKPOA), which operates public water system wells for the Tahoe Keys waterfront community. In 2020, TKPOA representatives determined:

High concentrations of PCE [were] detected at CPT-G06. Groundwater contamination appears to be *discontinuous* with [the] Regional Plume and could be associated with other sources (e.g. Tahoe One-Hour Cleaner, Ed's Autobody, CSK Auto).⁷⁷

The Regional Board should revise the Proposed Order and accompanying Staff Report to align its conclusions with these previous findings. If it does not do so, it should at a minimum explain how contamination from off-Site sources identified by the Regional Board, its contractors, and stakeholders can now be considered an uninterrupted plume originating from the LTLW.

2.3 PCE Contamination is Not a Single, Uninterrupted Plume

Sections 2.3.1 through 2.3.4 explain the deficiencies in the Regional Board's characterization of the Regional PCE Contamination as a single, uninterrupted plume that originates from the LTLW.

⁷⁵ Proposed Cleanup and Abatement Order for former Norma's Cleaners site, at 5 ¶ 13.

⁷⁶ URS. 19 January 2016. Final PCE Investigation Report, South Lake Tahoe, California, at 7. (emphasis added).

⁷⁷ Regional Board. 27 February 2020. *South Y PCE Technical Meeting Notes*, at 2. (emphasis added).

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2.3.1 The Regional Board should explain its depiction of the Regional PCE Contamination

The Regional Board relies on Figures 8 through 10 in the Proposed Order to establish the extent of groundwater contamination that must be addressed. These figures are depictions of the so-called South Y PCE Plume in plan and cross-section views that AECOM generated by kriging,⁷⁸ which is a geostatistical data interpolation technique. While three-dimensional computer-generated graphical displays of subsurface data are an important data visualization tool, they should not be mistaken for a CSM.⁷⁹ The exact process used to generate the PCE concentration contours presented on Figure 8 of the Proposed Order is unclear. AECOM states on page 23 of its 2022 Regional Plume Characterization Summary Report that Earth Volumetric Studio™ (EVS) software was used to produce the contours shown on the plan map incorporated as Figure 8 in the Proposed Order. However, Note 2 on Figure 8 states “PCE Plume estimation initially provided as EVS output and revised as appropriate using professional judgment.” The Regional Board should explain where, to what magnitude, and why the EVS kriging model results were altered.

Moreover, AECOM notes on page 23 of its 2022 Regional Plume Characterization Summary Report that in developing the PCE concentration contours — upon which the Regional Board relies in the Proposed Order — certain data collected before 2018 were eliminated in “the desire to represent current conditions and accounting for seasonal or longer-term variability in the data.” This selective inclusion of data may result in an incomplete understanding of the Regional PCE Contamination and potential sources. For example, no mention is made as to whether groundwater elevation measurements were considered when accomplishing the data reduction. AECOM states “PCE groundwater data collected from January 1, 2018, to September 5, 2020 was the period during which results were selected. This period (2.7 years) captured multiple seasonal cycles while being recent enough to minimize the impact of long-term plume migration.” It is unclear what AECOM means by this language or why it was attempting to minimize anything. The Regional Board should explain how this truncated data set results in an accurate depiction of the Regional PCE Contamination, including the effects of “significant fluctuations due to decades of municipal supply well pumping.” This information is critically important as AECOM’s depiction of the Regional PCE Contamination is the foundation of the Proposed Order’s requirements.

⁷⁸ AECOM (2022). *supra* n. 39, at 22-23.

⁷⁹ U.S. EPA. September 2017. Best Practices for Environmental Site Management: A Practical Guide for Applying Environmental Sequence Stratigraphy to Improve Conceptual Site Models. National Risk Management Research Laboratory. EPA/600/R-17/293, at 23.

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2.3.2 The Regional Board neglects to consider groundwater flow directions within distinct hydrostratigraphic units and their influences on PCE migration

Based on its description of the Regional PCE Contamination, it appears that the Regional Board assumes that any detection of PCE at any depth at any location north, northeast, or northwest of the LTLW means a single plume originates from the LTLW and extends to those northerly detections. That simplistic assumption is erroneous. Dissolved contaminant transport is governed by groundwater flow (i.e., advection) and diffusion.⁸⁰ As explained in this section, the plume depiction on Figure 8 does not take these processes into account and consolidates groundwater PCE data irrespective of the hydrostratigraphic units to which the data apply.

Various hydrostratigraphic units exist within the Tahoe Valley South Subbasin. Kennedy/Jenks Consultants, on behalf of STPUD, states:

Units of relatively high permeability typically correspond to coarse-grained glacial outwash, fluvial and deltaic deposits forming the basin-fill aquifer. The laterally continuous fine-grained lacustrine (lake-bed) deposits form local confining layers or aquitards that affect groundwater flow between these higher permeability deposits.⁸¹

Hydrostratigraphic units behave as subsurface “plumbing.”⁸² In the vicinity of the LTLW, groundwater within the shallow zone flows in different direction than groundwater within the middle zone. Groundwater moves to the northeast within the shallow zone and to the north-northwest within the middle zone.⁸³ Differing flow directions that influence PCE migration were not considered by AECOM in its generation of groundwater PCE concentration contours. The Department of Toxic Substances Control (DTSC) states a more complicated hydrogeological setting with multiple aquifers and confining layers will demand a more detailed CSM,⁸⁴ which necessitates contaminant concentration contour maps for each aquifer or hydrostratigraphic unit. The Regional Board’s reliance on data interpretation that does not adhere to DTSC guidance is particularly egregious because the Proposed Order⁸⁵ directs Seven Springs/Fox to prepare their CSM in accordance with that guidance.

⁸⁰ Hadley, P. and Newell, C. 2014. *The New Potential for Understanding Groundwater Contaminant Transport*. Groundwater. Vol. 52. No. 2. pp. 174-186.

⁸¹ Kennedy/Jenks Consultants (2014). *supra* n. 47, at 5-1.

⁸² U.S. EPA (2017). *supra* n. 79, at 4.

⁸³ PES. 15 June 2022. First Quarter 2022 Monitoring Report, Former Lake Tahoe Laundry Works, 1024 Lake Tahoe Boulevard, South Lake Tahoe Boulevard, South Lake Tahoe, California, at 4.

⁸⁴ DTSC. June 2012. Guidelines for Planning and Implementing Groundwater Characterization of Contaminated Sites, at 13.

⁸⁵ Proposed Order, at 20 ¶ 1.

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Groundwater PCE concentration differences in the shallow and middle zones distinguish impacts at the LTLW from the Regional PCE Contamination.⁸⁶ Groundwater PCE concentrations in the shallow and middle zones beneath Lake Tahoe Boulevard **before** initiating remediation at the LTLW were less than those presently measured in groundwater samples collected north of the street. As shown on Figures 14 through 17 of the Regional Board Staff Report, the highest PCE concentration in the shallow zone below Lake Tahoe Boulevard before starting SVE/GASS was 85.3 µg/L at LW-MW-6S in 2008 compared with Regional PCE Contamination in the shallow zone of 596 µg/L at LTLW-GW-11 in 2018.⁸⁷ Likewise, the highest PCE concentration in the middle zone beneath Lake Tahoe Boulevard was 230 µg/L at GW-7 in 2004 compared with Regional PCE Contamination in the middle zone of 503 µg/L at LTLW-GW-9, 1,680 µg/L at LTLW-GW-11, 490 µg/L at OS-2M, 570 µg/L at CPT-E01, 1,040 µg/L at LTLW-FIF, and 718 µg/L at LTLW-J4 between 2017 and 2022.⁸⁸ These higher PCE concentrations (both pre-remediation and post-initiation of remediation) distinguish the Regional PCE Contamination from impacts at the LTLW.

In addition to groundwater flow, a combination of biological, physical, and chemical actions known as natural attenuation processes can affect the fate and transport of chemicals in groundwater and, under favorable conditions, can result in a reduction of mass, toxicity, mobility, volume and/or concentration of chemicals in groundwater. These processes can include biodegradation, dispersion, dilution, sorption, volatilization, and chemical or biological stabilization, transformation, or destruction of constituents.⁸⁹ The National Research Council (NRC) states:

Every aquifer has a natural capacity to dilute or attenuate the contaminants. Dilution processes include diffusion and dispersion, while attenuation processes include sorption and chemical/microbial reactions. Such processes act to limit the rate of migration and growth of a plume.⁹⁰

⁸⁶ EKI (2019). *supra* n. 26, at 38; EKI (2019). *supra* n. 25, at 15; PES and EKI. 20 February 2020. *Response to Weiss Associates Letter Regarding South Y Basin Aquifer PCE South Lake Tahoe, California*, at 10-11; EKI. 3 April 2020. *Investigation Summary Report, Former Lake Tahoe Laundry Works, 1024 Lake Tahoe Boulevard, South Lake Tahoe, California*, at 10-11; PES. 16 April 2020. *Comments on Kennedy Jenks Consultants Inc.'s Draft Interim Remedial Action Plan (IRATP) and South Y PCE Facilities Feasibility Study (FS), South Lake Tahoe, California*, at 5.

⁸⁷ Regional Board Staff Report, at Figure 52.

⁸⁸ *Id.*, at Figure 53; AECOM (2022). *supra* n. 39, at Table 3; PES (2022). *supra* n. 83, at Table 3.

⁸⁹ U.S. EPA. 21 April 1999. *Use of Monitored Natural Attenuation at Superfund, RCRA Corrective Action, and Underground Storage Tank Sites*. Office of Emergency and Remedial Response. Directive 9200.4-17P, at 3.

⁹⁰ NRC. 2005. *Contaminants in the Subsurface: Source Zone Assessment and Remediation*. National Academies Press, Washington DC, at 140.

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Lower groundwater PCE concentrations upgradient cannot convert into higher PCE concentrations downgradient and cross-gradient. The most plausible explanation for higher PCE concentrations in the downgradient and cross-gradient directions of groundwater flow from the LTLW is PCE mass has been released to the subsurface at sites other than LTLW.

2.3.3 The Regional Board does not address intervening sources and their effects on PCE concentration gradients

The Regional Board's assumption that every downgradient PCE detection originates from the LTLW is irrational because it ignores the potential for intervening sources. One way to determine if an intervening source exists is to look at the "concentration gradient." A concentration gradient occurs when the amount of contaminant dissolved in groundwater is higher at one location than another. As noted by the Regional Board, "plumes composed of dissolved solvent compounds migrate with groundwater flow and decrease in concentration with distance from the source."⁹¹ Accordingly, if the Regional PCE Contamination were due to the discharge at the LTLW, then the lower PCE concentrations present beneath Lake Tahoe Boulevard prior to and during groundwater remediation at LTLW, and significantly higher PCE concentrations at downgradient locations are not possible. PCE concentrations beneath Lake Tahoe Boulevard should be higher than downgradient locations, which is not the case.

The Regional Board has stated that it suspects the source of the highest PCE concentrations in soil and groundwater near monitoring well LW-MW-1S on the LTLW is a surface release from a "pump truck that periodically delivered solvents to the Site via a hose from the truck to the indoor drum."⁹² The Regional Board believes this release involved PCE dry cleaning solvent in the form of dense non-aqueous phase liquid (DNAPL).⁹³

DNAPL leaves a trail of blobs and ganglia when it moves through the subsurface.⁹⁴ This residual DNAPL then dissolves into groundwater giving rise to aqueous-phase plumes of dissolved contamination.⁹⁵ The NRC states dissolved contaminants in groundwater always sorb to and diffuse into sediments within the

⁹¹ Regional Board (2005). *supra* n. 45, at 6.

⁹² Regional Board. 18 July 2016. Revised Cleanup and Abatement Order No. R6T-2016-PROP at 3 ¶ 7.

⁹³ Regional Board Staff Report, at 50. DNAPL, such as PCE dry cleaning solvent, is a liquid that forms a separate, immiscible phase when in contact with water. Differences in the properties of DNAPL and water result in the formation of a physical interface between the liquids that prevents the two fluids from mixing. DNAPL has a density greater than that of water.

⁹⁴ U.S. EPA. January 1992. *Estimating Potential for Occurrence of DNAPL at Superfund Sites*. Office of Solid Waste and Emergency Response. Publication: 9355.4-07FS, at 1.

⁹⁵ U.S. Department of Defense Strategic Environmental Research and Development Program (SERDP) and U.S. Department of Defense Environmental Security Technology Certification Program (ESTCP). 2014. *Chlorinated Solvent Source Zone Remediation*, at 36.

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saturated zone.⁹⁶ Dissolved contamination migrates into low permeability zones such as clay lenses. As long as the contaminant concentration is greater in the transmissive zones than in the low permeability zones, contamination will be driven into the low permeability zones. However, once the contaminant concentration declines in the transmissive zones, contamination will begin diffusing out of the low permeability zones.⁹⁷ This process is referred to as “back diffusion,” and it can sustain plumes for long periods of time. In 2002, STPUD described the prime effect that contaminant back diffusion might have on groundwater quality within the Tahoe Valley South Subbasin:

Contaminant migration is directly affected by the rate at which groundwater is supplied to the system, and the sources of this recharge (e.g. overlying soil infiltration vs. mountain front recharge). Within the basin-fill sediments, networks of sands and gravels provide pathways in which dissolved contaminants flow with groundwater supplied by this recharge. As they are being advected with moving groundwater, **contaminants will diffuse into adjacent low permeability clays and silts, where they can be sequestered for years to decades.** Sequestered contaminants slowly bleeding back into adjacent flowing channels can hamper remediation efforts and act as long-term sources to production wells.⁹⁸

The Regional Board also recognizes back diffusion of PCE from low permeability zones is an important process that needs to be understood.⁹⁹ Due to processes such as back diffusion, contaminant concentrations are highest beneath their source at any site where a chemical release has taken place.¹⁰⁰ The absence of a decreasing PCE concentration gradient in groundwater emanating from the LTLW means PCE migration in groundwater from the LTLW is not the origin of the Regional PCE Contamination and supports the conclusion that other sources have released PCE to groundwater within the Tahoe Valley South Subbasin.¹⁰¹

⁹⁶ NRC (2005). *supra* n. 90, at 27.

⁹⁷ ESTCP. March 2011. A Guide for Selecting Remedies for Subsurface Releases of Chlorinated Solvents. Decision Guide. ESTCP Project ER-200530, at 13.

⁹⁸ STPUD. 12 November 2002. Local Groundwater Assistance Grant Application for the Development of Groundwater Resources in the Presence of Contaminant Plumes, South Lake Tahoe, California, at 7. (emphasis added and citations omitted).

⁹⁹ B. Grey (Regional Board). 29 October 2018. Email to Working Parties Re Comments on Weekly Planning and Progress Reports with Request for Face to Face Technical Meeting.

¹⁰⁰ U.S. EPA. September 1990. *Handbook, Ground Water, Volume 1: Ground Water and Contamination*. Office of Research and Development. EPA/625/6-90/016a, at 109-110.

¹⁰¹ Hogan Lovells US LLP (counsel for Fox). 8 September 2016. Response to Revised Cleanup and Abatement Order for Former Lake Tahoe Laundry Works, 1024 Lake Tahoe Boulevard, South Lake Tahoe, California, at 32-33; EKI (2019). *supra* n. 26, at 38-40; EKI (2019). *supra* n. 25, at 15; PES and EKI (2020). *supra* n. 86, at 5-6; EKI (2020).

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Although the Regional Board realizes the importance of back diffusion, it does not address the implications of the process nor attempt to explain how contamination in groundwater migrating from the LTLW could have resulted in PCE concentrations at the Big O Tires and Norma’s Cleaners sites that are higher than those below Lake Tahoe Boulevard adjacent to the LTLW. Unable to proffer a scientific rationale supporting the finding that groundwater with significant PCE concentrations flowed off the LTLW, the Regional Board hypothesizes (1) the existence of PCE in groundwater beneath Lake Tahoe Boulevard at concentrations near the MCL of 5 µg/L is proof that the LTLW created the Regional PCE Contamination, and (2) PCE from LTLW traveled along a storm drain pipeline to Tucker Basin and subsequently leached to groundwater and formed the Regional PCE Contamination. The first hypothesis is based on the Regional Board’s belief that the only way the LTLW is not responsible for the Regional PCE Contamination is if no PCE whatsoever were detected in groundwater samples collected along Lake Tahoe Boulevard.¹⁰² This theory is undone by the Regional Board’s own recognition that “plumes composed of dissolved solvent compounds migrate with groundwater flow and decrease in concentration with distance from the source.”¹⁰³ The second hypothesis, that PCE was transported through the vadose or unsaturated zone to Tucker Basin is uncorroborated speculation, as discussed in Section 2.6.

2.3.4 Despite its flaws, Figure 8 in the Proposed Order clearly shows the Regional PCE Contamination is due to multiple sources and is not a single plume

A contaminant plume attributable to a single source is narrow and no wider than a few times the width of the source at its head.¹⁰⁴ In contrast, “amoeba-like” or very wide plumes,¹⁰⁵ such as that depicted on Figure 8, indicate multiple sources.

The multiple distinct areas of higher PCE concentrations of 100 µg/L or more in groundwater or “hot spots” shown on Figure 8 (i.e., closed yellow- and red-shaded areas) also indicate contamination caused by releases at off-Site properties. For example, at borehole SONIC10, located along 11th Street near Eloise Avenue, PCE was measured at a concentration of 550 µg/L at an elevation of 6144 feet above mean sea level (msl).¹⁰⁶ However, no PCE has been detected in groundwater samples collected at this elevation in upgradient boreholes SONIC01 and SONIC22 or below 6210 feet msl at the LTLW itself. The highest PCE

supra n. 86, at 10-11; PES (2020). supra n. 86, at 5; PES and EKI. 14 May 2021. Response to Weiss Associates Comments Regarding South Y Basin Aquifer PCE South Lake Tahoe, California, at 2-3.

¹⁰² Regional Board Staff Report, at 68-70 (“Notably, EKI was only able to identify an ‘intervening’ area of lower PCE concentrations rather than an ‘intervening’ area where PCE contamination was not detected. The presence of lower concentrations does not support a ‘plume separation’ theory.”).

¹⁰³ Regional Board (2005). supra n. 45, at 6.

¹⁰⁴ Siegel, D. 2008. *Reductionist Hydrogeology: Ten Fundamental Principles*. Hydrological Processes. Vol. 22. pp. 4967-4970.

¹⁰⁵ *Id.*

¹⁰⁶ AECOM (2022). supra n. 39, at Table 3.

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concentration in groundwater samples collected at elevations of 6140 feet msl or less from boreholes placed between the LTLW and SONIC10 was 44 µg/L in SONIC03.

The relative lack of PCE in the upgradient direction of SONIC10 is shown on Figure 5-5 in EKI's Investigation Summary Report, dated 1 October 2020. Figure 5-5 of that report illustrates that PCE at 550 µg/L in SONIC10 likely originates from a release in the vicinity of a 7-Eleven store along Emerald Bay Road near 10th Street. In 2016, the Regional Board also believed the source for the western portion of the Regional PCE Contamination may exist in this area. The Regional Board "strongly" believed that a small engine repair shop¹⁰⁷ near the 7-Eleven store was "responsible for the contamination and shutdown of Lukins #2 and #5 public water system (PWS) wells and Rockwater Apartments well (small community water system well) on Emerald Bay Road."¹⁰⁸ The Regional Board stated that a "suspected-source area investigation near the 7-11 Store property on Emerald Bay Road" should be performed.¹⁰⁹ The investigation advocated by the Regional Board has not been accomplished to date.

AECOM's data interpretation presented on Figure 8 in the Proposed Order adds to the false impression of an uninterrupted plume. Although not contained in the Proposed Order, Section D-D (Figure 11) in AECOM's Regional Plume Characterization Summary Report illustrates the shortcoming of Figure 8 that is included. PCE was measured at 320 µg/L in a groundwater sample obtained at an elevation of 6168 feet msl (71 feet bgs) from SONIC15, which is located at Colorado Court east of Tahoe Keys Boulevard. As shown on Section D-D, AECOM joins this contamination at SONIC15 to PCE measured at 5.4 µg/L west of Tahoe Keys Boulevard at 6147 feet msl in borehole SONIC17. Boreholes SONIC15 and SONIC 17 are approximately 1,500 feet apart and in the probable cross-gradient direction of groundwater flow from each other. Consequently, PCE in groundwater is unlikely to migrate from SONIC17 to SONIC15.

Figures 3 and 54 in the Regional Board Staff Report depicts the separation in plumes consistent with TKPOA's recognition in 2020 that groundwater PCE contamination east of Tahoe Keys Boulevard was due to different sources than groundwater PCE contamination west of this street. The Regional Board's own conjecture of a plume emanating from the LTLW does not expand east of the former Norma's Cleaners site,¹¹⁰ which is situated roughly one-half mile west of Tahoe Keys Boulevard. Nonetheless, the Regional Board accepts AECOM's data interpretation despite its implausibility and contradiction with TKPOA's

¹⁰⁷ State Water Board. 20 July 2016. *Meeting Summary — Lake Tahoe Laundry Works*, at 1.

¹⁰⁸ STPUD. 25 October 2016. 2016 GWMP Stakeholder Advisory Group Minutes, at 2.

¹⁰⁹ Regional Board. 2 September 2016. Meeting Summary to Discuss Next Steps for the South Y PCE Investigation, at 1.

¹¹⁰ L. Dernbach (Regional Board). 20 July 2016. Email to T. Carter (State Water Board). *Re Call to Lahontan RWQCB — South Lake Tahoe — Former Lake Tahoe Laundry Works (NEW TELECON #)*; L. Dernbach (Regional Board). 22 September 2016. Email to T. Carter (State Water Board). *Re STPUD*.

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determination that PCE detected at CPT-G06, which is in the vicinity of SONIC15, is associated with sources east of Tahoe Keys Boulevard.

In a similar fashion, AECOM links contamination in the middle zone at the former Big O Tires facility and former Norma's Cleaners site by extrapolating PCE concentration contours in a direction counter to the prevailing groundwater flow direction in this hydrostratigraphic unit.¹¹¹ PCE was measured at 1,680 µg/L at 6233 feet msl in borehole LTLW-GW-11, which is near the former Big O Tires facility.¹¹² Although groundwater in the middle zone has been demonstrated to flow to the northwest,¹¹³ AECOM extrapolated the 100 to 500 µg/L PCE concentration contour approximately 1,200 feet northeast to LTLW-J4, which is next to the former Norma's Cleaners site.¹¹⁴ PCE was measured at 718 µg/L at 6239 feet msl in borehole LTLW-J4. In linking these detections, AECOM ignored the PCE concentration of 10.9 µg/L at 6232 feet msl in borehole LTLW-GW-12, which is about 100 feet northeast of LTLW-GW-11, and in the same direction that AECOM mapped the 100 to 500 µg/L PCE concentration contour in the middle zone.¹¹⁵ The substantially lower PCE concentration in nearby LTLW-GW-12 indicates elevated PCE concentrations in groundwater did not move in the direction mapped by AECOM. Figure 53 in the Regional Board Staff Report depicts the separation of the 100 to 500 µg/L PCE concentration contour in the middle zone along Emerald Bay Road and the presence of another distinct area of higher groundwater PCE contamination near businesses along Ruth Avenue. As discussed in Section 3, these distinct areas of higher groundwater contamination are indicative of PCE discharges at off-Site properties.

AECOM also is incorrect that PCE in groundwater to a depth of 25 feet bgs within the shallow zone forms an uninterrupted plume that extends from the Tucker Basin in a northeast direction beyond the Eloise Avenue stormwater detention basin (Eloise Basin).¹¹⁶ AECOM denotes Eloise Basin as Dunlap Retention Pond on the plan map that is included as Figure 11 in the Proposed Order. Between 2003 and 2005, STPUD investigated Eloise Basin and did not detect PCE in soil samples obtained from the basin or in groundwater samples collected from the shallow zone beneath the basin.¹¹⁷ AECOM ignores these data and overlays the greater than 25 µg/L PCE concentration contour on Eloise Basin on Figure 11, which conflicts with STPUD's finding that no contamination exists at the basin.

¹¹¹ Regional Board Staff Report, at 73.

¹¹² AECOM (2022). *supra* n. 39, at Appendix A, Historic PCE Groundwater and Soil Databases, 1989 Through 2020.

¹¹³ PES (2022). *supra* n. 83, at Figure 3B; Regional Board. 16 June 2022. Big O Tires Cleanup and Abatement Order No. R6T-2022-(PROPOSED), at 4-5 ¶ 12.

¹¹⁴ Proposed Order, at Figure 10.

¹¹⁵ *Id.*, at Figure 9.

¹¹⁶ *Id.*, at Figure 11.

¹¹⁷ 2NDNATURE. 17 March 2006. Detention Basin Treatment of Hydrocarbon Compounds in Urban Stormwater. Final Report, at 1, 34; Rybarski, S., M. Hausner, and Bergsohn, I. 22 April 2022. Alternative Plan for Tahoe Valley South Subbasin (6-005.01), First Five-Year Update. Volume I, at 180.

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U.S. EPA advises that a CSM is developed using available data and illustrates the relationship between contaminants, transport media, and receptors.¹¹⁸ Because the Proposed Order is predicated on a CSM that does not account for locations of off-Site sources, PCE amounts these sources are contributing to the subsurface, and how groundwater flow influences PCE mass transport and distribution within the Tahoe Valley South Subbasin, the Proposed Order does not provide a valid basis for either identifying responsible parties or evaluating the need for future cleanup and abatement measures.

2.4 No Appreciable Off-Site Migration of PCE in Groundwater Occurred Before or After Remediation of LTLW

As discussed in Sections 2.4.1 and 2.4.2, no appreciable migration of PCE in occurred in groundwater before or after that SVE/GASS commenced operation in 2010.

2.4.1 Pre-remedial migration

The Regional Board's assertion that the Proposed Order is necessary because contamination likely migrated from the LTLW before the SVE/GASS was installed is unsupported by the record. The Regional Board asserts:

Over 982 pounds of VOCs (i.e., PCE) have been removed from the Site since AS/SVE system initiation. . . The design of the AS/SVE system and mass removal over time clearly shows on-Site mass was available in sufficient quantities and at depths to provide the mass loading which is consistent with the regional PCE plume and not a limited localized plume restricted to the Site and near vicinity.¹¹⁹

To state the obvious, contamination found beneath LTLW is PCE that has not migrated off-Site. If anything, the fact that this quantity of contamination still was present at the Site when cleanup began, 30 years after the dry-cleaning unit ceased operating, suggests that contamination was trapped at LTLW, and significant migration did not occur historically.¹²⁰

¹¹⁸ U.S. EPA. September 1993. *Data Quality Objectives Process for Superfund*. Interim Final Guidance. Office of Emergency and Remedial Response. EPA540-R-93-071, at 49.

¹¹⁹ *Id.*, at 71. (citations and footnotes omitted).

¹²⁰ See Hogan Lovells US LLP (2016). *supra* n. 101, at 22 (quantity of PCE spilled was insufficient to reach groundwater as DNAPL and became trapped in vadose zone soil). See also EKI (2019). *supra* n. 26, at 30-32; PES and EKI (2020). *supra* n. 86, at 7-9. The pounds of PCE referenced by the Regional Board is based on PES's estimate of the quantity of PCE **removed** from the Site by the SVE/GASS. The PCE mass removed by SVE/GASS is estimated to be 986 pounds as of 26 April 2022. See PES (2022). *supra* n. 83, at 8.

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The Regional Board's assertion regarding pre-remedial migration is further suspect because it conflicts with the Regional Board's previously held positions and existing data. In 2004, almost 20 years ago, the Regional Board considered whether contamination from LTLW had migrated to the immediately downgradient facility, the (now former) Big O Tires property, where PCE also was detected.¹²¹ Noting that contamination at LTLW was confined to shallow groundwater while off-Site contamination was found 15 to 20 feet deeper in middle zone groundwater, Regional Board staff "agree[d]" with the conclusion that "the source of contamination" is "not from the laundromat."¹²² Figures 14 and 15 of the Staff Report depict pre-remediation groundwater conditions in the shallow zone and middle zone, respectively. As shown on these figures, PCE concentrations are lower in samples collected within Lake Tahoe Boulevard than those detected on the Big O Tires site. Four years later, in 2008, the Regional Board again found that "data from investigations at other PCE sites strongly suggest" that contamination at the Site "is not a free product source that migrated to the Big O Tire site."¹²³ In 2009, the Regional Board approved the LTLW remedial action work plan, which concluded that contamination had not migrated off-Site.¹²⁴ The Proposed Order does not explain how or why the Regional Board has now reached a conclusion incompatible with its earlier positions. Certainly, no new information regarding pre-remedial conditions has become available.

2.4.2 Post-remedial migration

According to the Regional Board, PCE is continuing to migrate from the LTLW because "the remediation system was only designed to address on-Site vadose zone (unsaturated zone above groundwater) soil and shallow groundwater."¹²⁵ In 2005, the Regional Board concluded the discharge on the LTLW resulted in "shallow residual contamination in soil instead of sinking free-product in the aquifer" and PCE in groundwater is "near the water table since PCE concentrations decrease with distance from the site."¹²⁶ The Regional Board attributed PCE within the middle zone beneath Lake Tahoe Boulevard to the release at the former Big O Tires facility and possibly other off-Site sources.¹²⁷ The SVE/GASS treats only soil and shallow groundwater because the remedial action plan for the Regional Board determined these were the

¹²¹ L. Dernbach (Regional Board). 16 November 2004. Email to H. Singer (Regional Board) *Re PCE at Y*.

¹²² *Id.* See also Regional Board (2005). *supra* n. 45, at 21-23. (rejecting the LTLW as a source of the Big O Tires site contamination on various technical grounds).

¹²³ Regional Board. 7 March 2006. Amended Cleanup and Abatement Order No. 6T-2003-031A1, Big O Tires Store, 1961 Lake Tahoe Boulevard, South Lake Tahoe, El Dorado County, at 2 ¶¶ 5, 8. (attributing contamination on the Big O Tires site to a source on that property).

¹²⁴ E₂C (2009). *supra* n. 11, at 7, Figure 3; Regional Board (2009). *supra* n. 9.

¹²⁵ *Id.*, at 23-24. See similar assertions in Proposed Order, at 3 ¶ 7, 10 ¶ 39, 11-12 ¶¶ 43-44, 47; and Regional Board Staff Report, at 21, 59, 68-69.

¹²⁶ Regional Board (2005). *supra* n. 45, at 7-8.

¹²⁷ *Id.*, at 8, 22-24.

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media impacted primarily by the PCE discharge at the Site.¹²⁸ The remedial action plan states the purpose of the SVE/GASS is to “permanently prevent or minimize the release of hazardous substances or contaminants from the site such that they do not migrate or cause imminent and substantial endangerment to present or future public health and welfare, or the environment.”¹²⁹ On 2 August 2013, the Regional Board issued Investigative Order R6T-2013-0064 approving SVE/GASS as the remedy for the LTLW.¹³⁰ In the 2017 CAO, the Regional Board acknowledged that these remedial measures were “implemented . . . in compliance with previous Water Board Directives.”¹³¹

In May 2017, groundwater samples were collected from eight SVE wells (VE-2, VE-3, VE-4, VE-5, VE-10, VE-11, VE-12, and VE-13) and nine air sparge wells (AS-6, AS-7, AS-8, AS-13, AS-14, AS-19, AS-20, AS-21, and AS-25). PCE was not measured above the laboratory analytical method reporting limit of 0.5 µg/L in 12 of the 17 samples.¹³² PCE detected in the other five samples was less than the MCL of 5 µg/L. The SVE and air sparge wells were sampled at the request of the Regional Board to “better define [the] extent of contamination” in groundwater at the Site.¹³³ The data for these wells confirm that the zones of influence (ZOIs) exerted by the air sparge wells cover the shallow zone that the Regional Board directed to be remediated and refute that the notion that the SVE/GASS was somehow inadequate.¹³⁴

If appreciable contamination dissolved in groundwater were leaving the LTLW, then elevated PCE concentrations within the shallow and middle zones would be evident due to back diffusion. The Regional Board now claims dissolved contamination along groundwater travel routes has not been found because this region still has not been sufficiently characterized,¹³⁵ but Seven Springs, separately between 2003 and

¹²⁸ E₂C (2010). *supra* n. 11, at 21, Figure 4.

¹²⁹ *Id.*, at 17.

¹³⁰ Regional Board (2013). *supra* n. 15.

¹³¹ 2017 CAO, at 1 ¶ 2.

¹³² E₂C. 2 June 2017. Second Quarter 2017 Groundwater Monitoring Report and Current Site Remediation Status Report, Lake Tahoe Laundry Works, 1024 Lake Tahoe Boulevard, South Lake Tahoe, California, at Table 1.

¹³³ Regional Board. 4 January 2017. Request for Supplemental Work Plan to Perform Batch Pumping, Former Lake Tahoe Laundry Works, 1024 Lake Tahoe Boulevard, South Lake Tahoe, El Dorado County, at 2.

¹³⁴ Regional Board. 16 May 2016. Comments on Air Sparge Performance Test, Lake Tahoe Laundry Works, 1024 Lake Tahoe Boulevard, South Lake Tahoe, at 3. See also E₂C. 27 July 2016. Response to Comments on Air Sparge Performance Test, Lake Tahoe Laundry Works, 1024 Lake Tahoe Boulevard, South Lake Tahoe, California; PES and EKI. 4 April 2017. Lake Tahoe Laundry Works. (responding in greater detail to Regional Board’s assertion that the SVE/GASS is allowing PCE in groundwater to migrate from the LTLW).

¹³⁵ Regional Board Staff Report, at 70. (“Lahontan Water Board staff observe that a more likely explanation for the high PCE concentrations in groundwater north of Lake Tahoe Boulevard may be attributed to off-Site migration within investigated and uninvestigated areas and depths between the shallow and middle zones (i.e., between 26 and 41 feet bgs) and off-Site transport of PCE contamination to Tucker Basin via the stormwater conveyance system.”).

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2005, and together with Fox, in 2008 and 2018, investigated groundwater conditions beneath Lake Tahoe Boulevard.¹³⁶ These investigations were performed under Regional Board supervision and entailed the combined collection of 39 groundwater samples beneath Lake Tahoe Boulevard.

The 2018 investigation was conducted after implementation of the SVE/GASS in 2010 and confirms the effectiveness of this system and the fact that no appreciable PCE in groundwater is migrating from the LTLW. In 2018, PES collected multi-depth grab groundwater samples at five locations LTLW-GW-2, and LTLW-GW-4 through LTLW-GW-7 along Lake Tahoe Boulevard. PCE concentrations in the off-Site shallow zone were low, ranging from non-detection at the laboratory analytical method reporting limit of 0.5 µg/L to 7.78 µg/L. PCE concentrations in the middle zone along Lake Tahoe Boulevard ranged from non-detection at the laboratory analytical method reporting limit of 0.5 µg/L to 28.6 µg/L. No PCE was detected in any of the groundwater samples collected at a depth of 70 feet bgs below Lake Tahoe Boulevard.¹³⁷

The Regional Board contends without justification that PCE in groundwater below Lake Tahoe Boulevard should have declined to concentrations less than the MCL of 5 µg/L by now and “‘erased’ the link between the PCE contamination originating from the Site and the regional PCE plume.”¹³⁸ PCE concentrations greater than the MCL in groundwater beneath Lake Tahoe Boulevard are not surprising. Back diffusion from low permeability layers in granular porous media can give rise to low contaminant concentrations for decades after complete removal of the source.¹³⁹

Formation of a groundwater contaminant plume is governed by the mass balance between contaminant loading and attenuation mechanisms. The Interstate Technology & Regulatory Council (ITRC)¹⁴⁰ explains, “[a]s contaminant (or mass) loading occurs from a source area into the aquifer, the mechanisms of dispersion, convection, and advection cause the contaminants to spread within the groundwater and aquifer materials.”¹⁴¹ The plume will expand if the rate of contaminant loading is greater than the rate of all attenuation mechanisms. Conversely, the plume will remain stable or shrink if the loading rate is equal to, or less than the attenuation rate, respectively.¹⁴² Thus, the lack of a significant off-Site plume

¹³⁶ EKI (2019a). *supra* n. 86, at 2-4, 10-12.

¹³⁷ Regional Board Staff Report, at Figure 8.

¹³⁸ *Id.*, at 68-69.

¹³⁹ ESTCP (2011). *supra* n. 97, at 37-38.

¹⁴⁰ ITRC is a public/private coalition that produces documents and provides training with the goal of improving technical knowledge to expedite regulatory decision making while protecting human health and the environment.

¹⁴¹ ITRC. April 2008. *Enhanced Attenuation: Chlorinated Organics*. Technical and Regulatory Guidance, at 20.

¹⁴² ITRC. August 2010. Use and Measurement of Mass Flux and Mass Discharge. Technology Overview, at 30.

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originating from LTLW is explained by a PCE loading rate to groundwater that is less than the PCE attenuation rate in groundwater.¹⁴³

The Regional Board concedes PCE dissolved in groundwater is subject to attenuation processes.¹⁴⁴ The Regional Board's rebuttal¹⁴⁵ to these phenomena is to disregard them and claim PCE concentrations less than 100 µg/L and frequently closer to the MCL of 5 µg/L in groundwater samples collected beneath Lake Tahoe Boulevard are proof that LTLW is responsible for PCE detected as high as 4,700 µg/L in groundwater beneath the former Big O Tires facility¹⁴⁶ and greater than 500 µg/L in groundwater elsewhere within the Tahoe Valley South Subbasin.¹⁴⁷ In doing so, the Regional Board ignores the likely explanation for these detections, which is that former Big O Tires and Norma's Cleaners sites discharged significant quantities of PCE to groundwater¹⁴⁸ as well as other off-Site sources.

2.5 Numerical Modeling Does Not Support the Regional Board's Assertion That LTLW is the Cause of the Regional PCE Contamination

DRI attempted to develop a numerical groundwater flow and mass transport model that simulated the evolution of Regional PCE Contamination due to a PCE release at the LTLW. DRI ignored back diffusion to simulate PCE migration from the LTLW as a detached plume (i.e., a dissolved-phase plume detached from the source location) that is a rare occurrence.¹⁴⁹ Had this assumption been accurate, the model should have been capable of simulating a release that matches the distinct areas of higher PCE concentrations in groundwater throughout the South Y Area as mapped by AECOM. However, when contamination is modeled as a single source, DRI obtained concentric PCE contours that decrease in concentration and expand in areal extent as groundwater flows from the assumed source. DRI's contours do not correspond to those mapped by AECOM. DRI failed because its CSM, which is the same one adopted by the Regional Board,¹⁵⁰ is incorrect. The Regional PCE Contamination does not originate from the LTLW.

¹⁴³ EKI (2019). *supra* n. 26, at 38.

¹⁴⁴ Regional Board Staff Report, at 55.

¹⁴⁵ Proposed Order, at 3 ¶ 7, 11 ¶¶ 43-44; Regional Board Staff Report, at 68-73.

¹⁴⁶ Harding ESE. 30 October 2001. Groundwater Investigation, Big-O Tire Center, 1961 South Lake Tahoe Boulevard, South Lake Tahoe, California, at 2.

¹⁴⁷ AECOM (2022). *supra* n. 39, at Table 3.

¹⁴⁸ See Regional Board (2019). *supra* n. 67, at 9; Regional Board (2019). *supra* n. 71, at 8; Proposed Cleanup and Abatement Order for former Big O Tires facility at 5 ¶ 16; Proposed Cleanup and Abatement Order for former Norma's Cleaners site, at 3 ¶ 6, 9-10 ¶¶ 24-25. (finalized and pending orders stating discharges at the Big O Tires and Norma's Cleaners sites have contaminated soil and groundwater at the properties).

¹⁴⁹ PES (2020). *supra* n. 86, at 4-5.

¹⁵⁰ Regional Board Staff Report, at 21.

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To generate an impacted groundwater volume that approaches the dimensions of the Regional PCE Contamination mapped by AECOM, DRI had to assume a massive DNAPL release took place at the LTLW for which there is no evidence. STPUD relied upon the DRI model to conduct a feasibility study of potential remedial actions to mitigate the Regional PCE Contamination.¹⁵¹ Due to the unreasonably large release assumed by DRI, STPUD claims the preferred remedial action will remove 770 to 3,300 pounds of PCE from groundwater over 20 years.¹⁵² In contrast, Seven Springs and Fox calculated that the total mass of PCE dissolved in groundwater is on the order of only 100 to 300 pounds.¹⁵³ The groundwater PCE concentration contour maps prepared by AECOM reflect a total PCE mass of approximately 240 pounds, which is within the range estimated by Seven Springs and Fox. AECOM's mapping supports the conclusion that the PCE mass comprising the Regional PCE Contamination is too small to have originated from a single location. A much bigger release is needed for one location to be the source of a wide region of impacted groundwater. The large-impacted groundwater dimensions associated with the smaller PCE mass results from discharges at multiple sites spread across the Tahoe Valley South Subbasin to produce the Regional PCE Contamination. This manner of discharge is consistent with the distinct areas of higher PCE concentrations of 100 µg/L or more in groundwater shown on Figure 8 (i.e., closed yellow- and red-shaded areas).

2.6 PCE Did Not Travel Off-Site from the LTLW Through Storm Drain or Sanitary Sewer Pipelines

Besides declaring the Regional PCE Contamination was created by PCE in groundwater that migrated from the LTLW, the Regional Board hypothesizes PCE traveled through a storm drain pipelines to Tucker Basin where the chlorinated solvent infiltrated the subsurface and resulted in the Regional PCE Contamination.

Seven Springs and Fox disagree with the Regional Board's interpretation and conclusions regarding the contribution of storm water and sanitary sewer conveyances at the LTLW to the Regional PCE Contamination. As summarized below and detailed in the April 2019 Investigation Summary Report¹⁵⁴, neither the Preferential Pathway Evaluation nor previous Site investigations have identified evidence that PCE as DNAPL or in dissolved form migrated off-Site along utility lines or other subsurface features that could act as preferential pathways for PCE transport. PCE concentrations in fill samples (i.e., soil matrix) surrounding the storm drain and sanitary sewer pipelines were low, ranging from non-detection at the

¹⁵¹ Kennedy/Jenks Consultants, Inc. 10 May 2020. *South Y PCE Facilities Feasibility Study*.

¹⁵² STPUD. 12 June 2020. *Responsiveness Summary for Item 12 Interim Remedial Action Plan*. Feasibility Study of Remedial Alternatives to Mitigate Tetrachloroethylene Contamination. CALSTARS Agreement No. D1712508, at 5.

¹⁵³ EKI. 24 April 2020. Transmittal of Calculations Regarding Perchloroethylene Mass in Groundwater Within South Y Area, South Lake Tahoe, California included as attachment to Seven Springs and Fox. 24 April 2020. *Supplemental Comments on Kennedy Jenks Consultants Inc.'s Draft Interim Remedial Action Plan (IRAP) and South Y PCE Facilities Feasibility Study (FS), South Lake Tahoe, California*.

¹⁵⁴ EKI (2019). *supra* n. 26, at 47-48.

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laboratory analytical method reporting limit of 0.00127 milligrams per kilogram (mg/kg) to a maximum of 0.106 mg/kg, which is less than the LTLW soil cleanup goal of 0.37 mg/kg.¹⁵⁵ The fill sample data do not indicate that the storm drain and sanitary sewer systems served as preferential pathways for migration of PCE from the LTLW. Further, DNAPL partitioning calculations for PCE support the findings that DNAPL did not migrate along preferential pathways to the Tucker Basin.¹⁵⁶

PCE in soil at the LTLW appears localized to the suspected source area near monitoring well LW-MW-1S. Soil matrix and groundwater sampling performed in 2004 indicate that no VOCs greater than laboratory analytical method reporting limits were measured in soil samples along the sanitary sewer pipe below and west of the former LTLW tenant space. Given the lack of PCE in soil and groundwater underneath the building, PES previously concluded it “is unlikely that significant release of PCE or other solvents occurred inside Lake Tahoe Laundry Works.”¹⁵⁷ The Regional Board concurred, stating:

Preferential pathways were considered by Water Board Staff when evaluating whether potential off-site PCE sources affected the Facility [Big O Tires Store]. The 2004 *Supplemental Site Investigation Report* for the Laundry [LTLW] site shows that extensive sampling was conducted along the sewer line on the property. When samples failed to show PCE detections, the sewer line was ruled out as a preferential pathway for contaminant migration.¹⁵⁸

While these investigations failed to identify any support for the Regional Board’s suggestion that PCE originating from the LTLW was conveyed to Tucker Basin via subsurface utilities, studies of the former Big O Tires site have identified that site as a source. Investigations have shown that the storm drain pipeline on the Big O Tires site conveyed surface water runoff from the former Big O Tires facility to Tucker Basin. The direction of flow within the pipelines from the former Big O Tires facility to Tucker Basin is evident from the fact that the invert¹⁵⁹ of the storm drain pipeline on the Big O Tires site was higher than the invert of the storm drain pipeline that enters the facility beneath Lake Tahoe Boulevard from the LTLW.¹⁶⁰ The Regional Board itself has concluded that the Big O Tires site discharged PCE to Tucker Basin:

¹⁵⁵ E₂C (2010). *supra* n. 11, at 30.

¹⁵⁶ EKI (2019). *supra* n. 26, at 47-48.

¹⁵⁷ PES (2004). *supra* n. 2, 12.

¹⁵⁸ Regional Board. 12 December 2005. Comments on Draft Amended Cleanup and Abatement Order (CAO) No. R6T-2003-031A1 for the Big O Tires Store, South Lake Tahoe, at 7-8.

¹⁵⁹ William F. Pillsbury, Inc. October 1978. Tahoe Valley Drainage Basin, Drainage Study. Sheet 4 shows the storm drain pipeline on the Big O Tires facility to be 8 inches in diameter with an invert elevation of 6264.72 feet msl.

¹⁶⁰ The storm drain pipeline is 24 inches in diameter with an invert elevation of 6263.54 feet msl at the southern edge of the Big O Tires facility.

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The presence of PCE and petroleum hydrocarbons in soil gas at the stormwater conveyance system inlet, standard stormwater management practices at the time of discharge, and Site history indicate stormwater runoff contaminated with chlorinated hydrocarbons (e.g., PCE) and/or petroleum hydrocarbons from the Site transported via surface flow, as directed by the Site's grading to the former stormwater conveyance system's drop inlet and then discharged to Tucker Basin.¹⁶¹

Given the Regional Board's determination, any further sampling activities within Tucker Basin should be performed in connection with investigation of PCE sources and preferential pathways on the Big O Tires site. As discussed above in Section 1.2, Seven Springs and Fox did not receive permission from the owners of the Big O Tires site to complete the Stage 2 Preferential Pathway Evaluation and Data Gap Investigation on that property.

As explained in the October 2019 Investigation Summary Report,¹⁶² relatively low PCE concentrations in shallow zone groundwater may be the source of PCE masses measured in the passive soil gas sampling devices placed within Tucker Basin. PCE possibly diffused from a source in the vadose zone at the Big O Tires site and migrated through backfill surrounding the storm drain pipeline that discharged surface water runoff from the former Big O Tires facility to Tucker Basin. Kerfoot states that "[m]an-made conduits for gases, such as high gas-filled porosity gravel backfill around electrical lines or pipes, can create extremely confusing spatial patterns of soil-gas concentrations if their presence is not taken into consideration."¹⁶³ Seven Springs and Fox understand that soil gas data to be obtained on the Big O Tires site will provide additional insight as to the potential source of PCE detected in the vadose zone beneath Tucker Basin.

3 THE REGIONAL PCE CONTAMINATION IS DUE TO MULTIPLE OFF-SITE SOURCES

The Regional PCE Contamination is attributable to multiple off-Site sources as discussed in Sections 3.1 through 3.5.

3.1 The Regional Board Recognizes the Existence of Known and Suspected Off-Site Sources of PCE in the Tahoe Valley South Subbasin

The Regional Board has suspected for decades that multiple sources of PCE in the Tahoe Valley South Subbasin most probably are responsible for the Regional PCE Contamination. In 1999, the Regional Board stated its intention to "direct PRPs [potentially responsible parties], likely vehicle repair and printing shops, to conduct investigations and determine whether they are sources of solvent chemicals in ground

¹⁶¹ Proposed Cleanup and Abatement Order for former Big O Tires facility, at 7 ¶ 20.f.

¹⁶² EKI (2019). *supra* n. 25, at 13.

¹⁶³ Kerfoot, H. 1990. *Soil-Gas Surveys for Detection and Delineation of Groundwater Contamination*. Trends in Analytical Chemistry. Vol. 9. No. 5. pp. 157-163.

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water and in drinking water wells.”¹⁶⁴ In 2016, sampling by the Regional Board’s contractor, URS, “narrowed the area of likely PCE discharge to a nine-block area.”¹⁶⁵ Seven Springs and Fox have provided detailed information to the Regional Board about potential sources of the Regional PCE Contamination, much of it derived from the Regional Board’s own files.¹⁶⁶ When the Regional Board refused to act on this information, Seven Springs and Fox voluntarily conducted their own sampling in 2017,¹⁶⁷ which identified PCE in groundwater near several suspected off-Site PCE sources.¹⁶⁸ As noted in Section 1.2, in 2019, the Regional Board stated “[s]everal businesses in the South Y area are known or suspected to have used, stored, or disposed of PCE or PCE-containing products” and pledged to use a \$4.6 million SCAP grant to “track down all potential sources of pollution” to the Regional PCE Contamination.¹⁶⁹ In the Proposed Order, the Regional Board acknowledges “that additional, as-yet-undetermined, sources may have contributed to the high concentrations of PCE detected north of Lake Tahoe Boulevard,”¹⁷⁰ and it continues to cite data obtained from the voluntary investigation as evidence of a discharge from the Norma’s Cleaners site.¹⁷¹

3.2 Identified “Hot Spots” are Evidence of Multiple Off-Site Sources Within the Regional PCE Contamination

The distinct areas (e.g., LTLW-GW-11, CPT-F01, LTLW-FIF, CPT-G01, CPT-E01, SONIC10, SONIC15) of higher PCE concentrations within the Regional PCE Contamination¹⁷² signify separate locations where PCE has

¹⁶⁴ Regional Board (1999). *supra* n. 50, at 4.

¹⁶⁵ URS (2016). *supra* n. 76, at 2.

¹⁶⁶ See e.g., PES. 19 October 2004. Comments on Preliminary Workplan for Additional Investigation of Chlorinated Solvents, Big O Tire Store Site, 1961 Lake Tahoe Boulevard, South Lake Tahoe, California; PES. 10 July 2007. Comments on Soil and Groundwater Investigations at the Big O Tire Store Site, 1961 Lake Tahoe Boulevard, South Lake Tahoe, California; EKI. 3 December 2015. Response to Water Board Notification of Consideration of No Further Action; Former Big O Tires Store Site, 1961 Lake Tahoe Boulevard, South Lake Tahoe, California; PES. 15 December 2020. Comments on Passive Soil Gas Investigation Report, Former Big O Tires Store Site, 1961 Lake Tahoe Boulevard, South Lake Tahoe, California; Flory, K. (PES). 27 August 2021. Email to B. Grey (Regional Board). Re Former Big O Tire Site – Comments on Revised Phase 2 Work Plan dated July 26, 2021 (identifying PCE release locations on the downgradient former Big O Tires facility); Hogan Lovells US LLP. (2016). *supra* n. 101, at 35-47 (identifying numerous known and suspected PCE sources in the South Y Area).

¹⁶⁷ Proposed Order, at 9 ¶ 33; Regional Board Staff Report, at 43.

¹⁶⁸ EKI (2017). *supra* n. 59.

¹⁶⁹ Regional Board (2019). *supra* n. 34.

¹⁷⁰ Regional Board Staff Report, at 70.

¹⁷¹ See Proposed Cleanup and Abatement Order for former Norma’s Cleaners site, at 6 ¶ 16.

¹⁷² Proposed Order, at Figure 8; Regional Board Staff Report, at Figures 52-54; EKI. 1 October 2020. Investigation Summary Report, Former Lake Tahoe Laundry Works, 1024 Lake Tahoe Boulevard, South Lake Tahoe, California, at Figure 5-5.

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been released to the Tahoe Valley South Subbasin. Prakash and Datta used kriging to generate concentration contours for different numbers and arrangements of modeled sources.¹⁷³ Contaminant concentration patterns surrounding sources modeled by Prakash and Datta¹⁷⁴ resemble those associated with higher PCE concentrations within the Regional PCE Contamination that AECOM also generated by kriging.¹⁷⁵ According to environmental forensics guidance:

At sites impacted by chlorinated solvents of a single source or release, the parent and/or daughter compounds often occur in the order of tetrachloroethene (PCE), trichloroethene (TCE), dichloroethane (DCE), and vinyl chloride (VC) from upgradient to downgradient. ***For each individual compound, the concentration typically decreases from upgradient to downgradient. In cases in which this sequence of occurrence is interrupted and/or concentration pattern is reversed, potential additional sources should be considered*** and more efforts made to collect data to confirm or rule out the hypothesis.¹⁷⁶

Consistent with the above guidance, Seven Springs and Fox corroborated that PCE “hot spots” are likely attributable to PCE releases at off-Site properties by reviewing additional information related to off-Site properties where releases of chlorinated solvents might have occurred.

3.3 Chemical Use Information Links Off-Site Sources to “Hot Spots” Within the Regional PCE Contamination

Seven Springs and Fox examined a subset of the 115 questionnaires provided by respondents that received Investigative Orders sent by the Regional Board on 3 April 2019.¹⁷⁷ The Investigative Orders were issued to 223 parties pursuant to Section 13267 of the California Water Code to assist the Regional Board in its efforts to determine the magnitude of chlorinated solvents in groundwater, identify potential sources, and develop remedial actions to restore affected groundwater to beneficial uses. Investigative Orders were sent to businesses that may have used chlorinated solvents, including historical and current

¹⁷³ Prakash, O. and Datta, B. 2013. Sequential Optimal Monitoring Network Design and Iterative Spatial Estimation of Pollutant Concentration for Identification of Unknown Groundwater Pollution Source Locations. Environmental Monitoring and Assessment. Vol. 185. pp. 5611-5626.

¹⁷⁴ See EKI (2019). *supra* n. 25, at 16 for figures from Prakash and Datta illustrating kriged concentration contours for different numbers and arrangements of sources.

¹⁷⁵ AECOM (2022). *supra* n. 1, at 22-23.

¹⁷⁶ Lu, J. 2015. Chapter 6, Identification of Forensic Information from Existing Conventional Site-Investigation Data, at 156. In *Introduction to Environmental Forensics*. 3rd Ed. Elsevier Ltd. (emphasis added).

¹⁷⁷ See Attachment 1 to Regional Board. 22 August 2019. Memorandum *Re Summary of 13267 Site History Questionnaire as of July 26, 2019*.

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dry cleaners, laundromats, carpet cleaning businesses, automotive repair shops, paint and automotive body shops, and printing shops.¹⁷⁸

Seven Springs and Fox supported their examination of questionnaires with review of other publicly available information, which included, but was not limited to: reports and correspondence posted on GeoTracker, data pertaining to hazardous waste shipments included in DTSC Hazardous Waste Tracking System, searches of environmental databases by Environmental Data Resources, Inc. (EDR) presented in EDR Radius Map™ Reports with GeoCheck®, historical aerial photographs, and city directories. Table 1 shows the correlations between suspected off-Site PCE sources and PCE “hot spots.”

Most questionnaire responses provide information only regarding current activities at the property. Information concerning past operations that may have entailed use of chlorinated solvents is lacking, even though it was specifically requested by the Regional Board.¹⁷⁹ The record does not offer any indication that the Regional Board followed up with questionnaire recipients to require them to provide this critical information. Irrespective of the incomplete chemical use history, the data that are available reveal widespread use of chlorinated solvents within the Tahoe Valley South Subbasin.¹⁸⁰ Many of the sites discovered to use chlorinated solvents coincide with PCE “hot spots” in groundwater, as shown in Table 1.

A number of businesses acknowledge in their responses past or present use of PCE at their properties, including with respect to: former Big O Tires (1961 Lake Tahoe Boulevard), Liberty Utilities (933 Eloise Avenue), Flyers Energy LLC (2070 James Avenue), South Tahoe Refuse and Recycling Services (2140 Ruth Avenue), and City of South Lake Tahoe (1663, 1669, and 1679 Shop Street). Besides LTLW, at least three dry cleaners that used PCE existed within or near the South Y Area. These former dry cleaners were Norma’s Cleaners, Tahoe One Hour Cleaners (2301 Lake Tahoe Boulevard), and Lampson One-Hour Cleaners/Sierra Dry Cleaners/S&S One Hour Cleaners (2022 Lake Tahoe Boulevard).

Some entities state that no chlorinated solvents are currently used in their operations, but hazardous waste records indicate otherwise. For example, Barton Memorial Hospital (2170 South Street) and automobile service and repair facilities at 912 Eloise Avenue (Sunshine Taxi, Inc.), 927 Eloise Avenue (Struve Automotive), 2143 Eloise Avenue (Eloise Automotive & Alignment), 1855 Lake Tahoe Boulevard (Cardinale Way Toyota), 1901 Lake Tahoe Boulevard (Les Schwab Tire Center), and 2119 Ruth Avenue (Five Star Automotive) claim no chlorinated solvents are employed in their operations. However, review of generator records or hazardous waste shipment data from the DTSC Hazardous Waste Tracking System show spent solvents have been classified and manifested for disposal from these businesses as a D039

¹⁷⁸ *Id.*, at 1.

¹⁷⁹ Section V of the Regional Board’s Chemical Storage and Use Questionnaire requests that the owner or operator answer fourteen questions pertaining to current and past operations at the property.

¹⁸⁰ See EKI (2020). *supra* n. 172, at Table 5-1 and Figure 5-6 for descriptions and locations of potential PCE sources.

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PCE Resource Conservation and Recovery Act (RCRA) hazardous waste.¹⁸¹ There is no indication that the Regional Board ever followed up with these facilities regarding the inaccuracies in their questionnaire responses, even after Seven Springs and Fox pointed these out to the Regional Board.¹⁸²

Other businesses or entities indicate chlorinated solvents may have been used or are uncertain about historical practices at their properties. Of these businesses or entities, Ed's Auto Body (2314 Lake Tahoe Boulevard), former Wheel Works (2317 Lake Tahoe Boulevard), City of South Lake Tahoe (1700 D Street), Tahoe Import Auto and Rubicon Moon Automotive (1746 and 1748 D Street), South Side Auto Body (920 Eloise Avenue), and former South Shore Motors (1875 Lake Tahoe Boulevard) have or appear to have used PCE based upon a review of environmental site assessment reports, U.S. EPA's RCRA database, and the DTSC Hazardous Waste Tracking System that indicates PCE was released or spent PCE was generated at these sites.

The absence of chlorinated solvent disposal for a business listed in the DTSC Hazardous Waste Tracking System does not preclude historical use of PCE at the property, as the DTSC database tracks only those hazardous waste shipments that occurred from 1993 to the present.¹⁸³ Certain businesses identified by the Regional Board as possibly using chlorinated solvents, initiated operations as early as the 1940s. Therefore, records of chlorinated solvent disposal between the 1940s and 1993 cannot be verified in the DTSC Hazardous Waste Tracking System. The Regional Board has not adequately investigated the historical use of chlorinated solvents at properties operating prior to 1993.

Many businesses have been assigned hazardous waste Identification (ID) numbers, but no hazardous waste shipment data are included in the DTSC Hazardous Waste Tracking System because these businesses ceased generating hazardous waste before 1993. Given the prevalence of PCE use by businesses engaged in dry cleaning, automobile maintenance and repair, printing, machining, or auto body repair, it would be reasonable to presume chlorinated solvent usage where the same types of activities have been conducted, but no documentation on chemical use and disposal is readily available.

Although Seven Springs and Fox assembled compelling evidence that many actual and potential sources of PCE exist within or near the South Y Area, it is not a complete listing of such sources. Omitted properties where current or former businesses may have engaged in activities that involved chlorinated solvents, such as dry cleaners, laundromats, carpet cleaning businesses, automotive repair shops, paint and auto body shops, and printing shops,¹⁸⁴ but for which no questionnaire was received by the Regional Board. Examples include Crow's Auto Care (931 3rd Street), Runnels Automotive (986 Emerald Bay Road), South Side Auto Body (927 James Avenue), Ken's Tire Center (2104 Lake Tahoe Boulevard), and Instant Copy

¹⁸¹ *Id.*, at Table 5-1.

¹⁸² EKI (2020). *supra* n. 86, at 5.

¹⁸³ DTSC. 2020. *Hazardous Waste Tracking System*. <https://hwts.dtsc.ca.gov/>. Accessed 22 March 2020.

¹⁸⁴ Regional Board (2019). *supra* n. 178.

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(2197 Lake Tahoe Boulevard). It is imperative that the Regional Board compel these and other businesses that have not complied with the Regional Board's Investigative Orders to submit questionnaires so that their contributions to PCE in groundwater within the Tahoe Valley South Subbasin can be properly evaluated.

Runnels Automotive and Ken's Tire Service are of particular interest. Runnels Automotive is located next to monitoring well pair OS-2S/OS-2M constructed in Tucker Avenue. Releases at the Runnels Automotive site may be contributing to PCE detected in these monitoring wells. In 1998, sampling of the City of South Lake Tahoe sanitary sewer system by the Regional Board found chlorinated solvents in a segment downstream of "vehicle parts and repair shops on Tucker Avenue."¹⁸⁵ A map included in a Regional Board letter, dated 3 October 2001, indicates PCE was detected at 1.5 µg/L at 20 feet bgs and 69 µg/L at 40 feet bgs beneath the Runnels property at 986 Emerald Bay Road.¹⁸⁶

Past and present chemical use at Ken's Tire Service also is illustrative. Like Les Schwab Tire Center and Wheel Works, chemical use at Ken's Tire Service provides insight into the chemical use of current or former businesses selling tires and performing automobile service and repair within or near the South Y Area. High Sierra, Inc. dba Ken's Tire Service, uses PCE in its operations. Review of DTSC hazardous waste generator records shows Ken's Tire Center disposed of 67 to 267 pounds of hydrocarbon solvents as D039 PCE RCRA hazardous waste per year between 2010 and 2017.¹⁸⁷ These PCE quantities correspond to roughly 5 to 20 gallons of PCE annually, assuming a PCE density of 13.5 pounds per gallon. In 2000, Ken's Tire Center disposed of 709 pounds of liquids with halogenated organic compounds as a F002 spent halogenated solvent RCRA hazardous waste.¹⁸⁸ In 2003, Ken's Tire Center disposed of 459 pounds of unspecified oil-containing waste as a F001 spent halogenated solvent used in degreasing RCRA hazardous waste.¹⁸⁹ Both F001 and F002 RCRA hazardous wastes can consist partially or completely of PCE.

Ken's Tire Center's inconsistent approach to profiling spent PCE suggests the possibility that other businesses may have misclassified spent PCE as simply unspecified oil-containing waste, hydrocarbon solvent, unspecified solvent mixture, or waste oil and mixed oil. Chlorinated solvents, including PCE, are commonly found in used oil. With respect to the presence of chlorinated solvents in used oil, U.S. EPA states:

¹⁸⁵ Regional Board (1999). *supra* n. 50, at 3.

¹⁸⁶ Regional Board. 3 October 2001. Letter to Gerald and Ann Johnson, Tahoe Supply Company, and TWGW Inc. Notice to Submit Workplan for Investigation at 1931 and 1935 Lake Tahoe Boulevard, South Lake Tahoe, El Dorado County (APN 023-351-18).

¹⁸⁷ DTSC. 15 October 2018. EPA ID Profile, High Sierra Co. Inc. dba Ken's Tire Center.

¹⁸⁸ DTSC. 23 October 2003. EPA ID Profile, High Sierra, Inc.

¹⁸⁹ *Id.*

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They are not a normal component of crankcase oil, but are indirectly introduced through careless or ignorant management practices by generators and collectors. For example, automobile mechanics often pour small amounts of degreasing solvents into tanks used primarily for storing used automotive oils.¹⁹⁰

Les Schwab Tire Center and Wheel Works also have disposed of PCE as a D039 RCRA hazardous waste. Although operators of the former Big O Tires facility have acknowledged the use of solvents containing chlorinated VOCs,¹⁹¹ no records exist in the DTSC Hazardous Waste Tracking System that show Big O Tires disposed of any wastes as either non-RCRA or RCRA hazardous waste from 1993 to 2006 when the former Big O Tires ceased operating. Big O Tires may have disposed of hazardous waste before 1993 as the DTSC database tracks only those hazardous waste shipments that occurred from 1993 to the present.

STPUD's evaluation of possible contaminating activities (PCAs) confirms Seven Springs and Fox's findings that numerous sources may be contributing PCE to groundwater within the Tahoe Valley South Subbasin. Utilizing the PCA inventory methodology¹⁹² established by the California Department of Health Services, STPUD identified **418 distinct** geographically scattered sources of potential contamination.¹⁹³ Sources identified by STPUD include gasoline service stations, automobile repair facilities, automobile body shops, and boat repair and refinishing facilities.¹⁹⁴ Pursuant to CDHS guidance documents, certain types of PCA sites in the Tahoe Valley South Subbasin have a high potential or very high potential for contaminating groundwater.¹⁹⁵ STPUD's ranking of PCA sites from low threat to very high threat is presented in its Groundwater Management Plan.¹⁹⁶

In addition, findings from Seven Spring and Fox's most recent effort in 2020 to identify known or potential sources of PCE contamination to groundwater in the South Y Area were used by the Regional Board and

¹⁹⁰ U.S. EPA. 1984. *Composition and Management of Used Oil Generated in the United States*. Office of Solid Waste and Emergency Response. EPA/530-SW-013, at 1-14.

¹⁹¹ See Strong, Mark A. 24 February 2020. Chemical Storage and Use Questionnaire, 1961 Lake Tahoe Boulevard; and Letter by W. Tarantino and S. Reisch, to P. Kouyoumdjian, Executive Officer, Lahontan Regional Water Quality Control Board, dated 23 August 2019, that provides comments to assist the Regional Board in its ongoing investigation of regional groundwater PCE contamination, particularly as it relates to the Big O Tires Investigation Order.

¹⁹² Rybarski, et al. (2022). *supra* n. 117, at Figure 6-16.

¹⁹³ STPUD. 29 March 2021. Tahoe Valley South Subbasin (6-005.01) Annual Report, 2020 Water Year, at 57.

¹⁹⁴ *Id.*, at 58.

¹⁹⁵ CDHS. January 2000. Drinking Water Source Assessment and Protection (DWSAP) Program. Revision 2, at 86-95.

¹⁹⁶ Kennedy/Jenks Consultants (2014). *supra* n. 81, at Figure 6-5.

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AECOM to categorize off-Site PCE sources to groundwater¹⁹⁷ and create a “potential source area inventory.”¹⁹⁸

3.4 The Regional Board Has Failed to Pursue Off-Site Sources of the Regional PCE Contamination

The Regional Board has a history of failing to require sources of the Regional PCE Contamination to properly investigate and remediate impacts associated with PCE releases that have occurred at these off-Site properties. Notably, the Regional Board initially granted closure of the Norma’s Cleaners site even though it had ascertained that PCE in soil on the site may be leaching to groundwater,¹⁹⁹ and at one point the Regional Board proposed closure of the former Big O Tires site, despite previously determining the site was inadequately characterized.²⁰⁰ Even after issuing orders to the owners of those sites in 2019, the Regional Board has not been able to secure completion of the requested work.

The Regional Board sent Notices of Violations (NOVs) to 24 entities that did not respond to Water Code § 13267 Investigative Orders issued to known and suspected sources of PCE.²⁰¹ The NOVs seem to have been ignored. The Regional Board still does not appear to have the information requested from entities that received the NOVs in June 2019. The Regional Board also has not followed up with other parties who provided incomplete or inaccurate information requested by the Investigative Orders. More recently, the Regional Board has not reconciled its potential source area inventory with STPUD’s PCA site threat rankings to prioritize those sites that should be investigated to determine if they are contributing PCE to the Tahoe Valley South Subbasin.

¹⁹⁷ See EKI (2020). *supra* n. 171, at Table 5-1 and Figure 5-6, and AECOM (2022). *supra* n. 39, at Table B-1 and Figure B-1 for descriptions and locations of these potential PCE sources.

¹⁹⁸ AECOM (2022). *supra* n. 39, at 9.

¹⁹⁹ Regional Board. 8 July 2003. Notice to Submit Workplan for PCE Source Investigation at 949 Emerald Bay Road, South Lake Tahoe, El Dorado County, at 1.

²⁰⁰ Regional Board. 24 July 2007. Denial of No Further Action Request, Big O Tires Store, 1961 Lake Tahoe Boulevard, South Lake Tahoe, El Dorado County — Cleanup and Abatement Order No. R6T-2003-031A1, at 2.

²⁰¹ See Notices of Violation, Investigative Order R6T-2019-0019 Requiring Submittal of Completed Questionnaire issued to (1) City of South Lake Tahoe, (2) Tahoe Asphalt, (3) Sierra Tahoe T Shirt Co., (4) Chevron Products Co., (5) Boscacci Group LLC, (6) Barton Health Care, (7) Barton Memorial Hospital, (8) James Martin, (9) Carol A. Cope Revocable Trust, (10) Robert and Carol Brunald, (11) Old Stage MHP CA LLC, (12) Donald and Michele Gibson (13) James and Terri Salvo, (14) Tahoe Blue Property Inc., (15) Roland A. and Trudy L. Dunn, (16) Figueroa Werbo CA LLC, (17) Joseph and Jeanette Cardinale, (18) Kaelin Haus CA LLC, (19) Jack and Augusta Morgan, (20) Metropolitan Enterprises, (21) Karen and Eugene Franceschi, (22) Robert and Edna Beaty, (23) Richard Solari, and (24) TKV Properties Holdings LLC.

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In Paragraph 34, the Proposed Order states that the Regional Board issued site-specific Water Code § 13267 investigative orders requiring suspected dischargers to assess the PCE impacts to soil, soil gas, and groundwater. The Proposed Order further states that the assessments are ongoing. Other than with respect to the former Big O Tires and Norma's Cleaners sites, Seven Springs and Fox are not aware of these investigative orders and request copies of the issued directives and any assessments that have been undertaken to date. The results of those assessments should be evaluated, and, if appropriate, additional investigations should be conducted to define the lateral and vertical extents of PCE that has emanated from the properties in question.

The Regional Board must collate the available lines of evidence so it can identify all sites that need to be investigated to determine if they have added to the Regional PCE Contamination. Attached Table 1 provides a starting point for this effort. As evidenced by the inability of Seven Springs and Fox to gain access to investigate conditions on the former Big O Tires site, testing required by the Proposed Order probably would be constrained to public right of ways (e.g., streets). Collection of data on the suspected source properties themselves is needed to establish the off-Site sources that must be abated to restore groundwater throughout the Tahoe Valley South Subbasin to its beneficial uses and to comply with the antidegradation policy embodied in State Water Board Resolution No. 68-16. Parties that have contributed to the Regional PCE Contamination should be required to remediate the impacts that have resulted from releases at their properties.

The Regional Board's own contractor, AECOM, has acknowledged the importance of evaluating the potential source area inventory "relative to the shallow regional PCE plume characterization data to help identify potential responsible parties that may be contributing to the regional PCE plume, support the siting of select soil gas sampling locations as discussed in the Soil Gas Investigation Work Plan and the Soil Gas Investigation Work Plan Addendum, and support the need for future source area investigations and remediation."²⁰² Yet, the Regional Board has made no apparent progress in accomplishing these objectives. Although the Regional Board has been aware of PCE impacts to municipal supply wells within the Tahoe Valley South Subbasin for 33 years,²⁰³ the Regional Board commits only to "continue to make a reasonable effort to identify additional dischargers contributing to the regional PCE plume."²⁰⁴

Seven Springs and Fox provided comments on the passive Soil Gas Investigation Work Plan.²⁰⁵ As noted in these comments, the State of California Environmental Protection Agency (CalEPA) advises soil gas sampling locations should be based initially on the location of known or suspected release(s), site

²⁰² *Id.* (citations omitted).

²⁰³ Proposed Order, at 3 ¶ 6.

²⁰⁴ *Id.*, at 9 ¶ 34.

²⁰⁵ EKI. 16 November 2021. Comments on AECOM Soil Gas Investigation Work Plan, South "Y" PCE Plume, South Lake Tahoe, California.

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operations, and history of chemical use.²⁰⁶ Consequently, Seven Springs and Fox recommended that the passive soil gas investigation be expanded to include (1) PCE detected in shallow zone groundwater at the western end of the South Y Area, where the Regional Board has determined an off-Site PCE source is present,²⁰⁷ and (2) all PCE source areas categorized as having a high or medium potential of contributing PCE to the Regional PCE Contamination.²⁰⁸ Passive soil gas sampling can be an effective method to identify volatile organic compound source areas in the vadose zone and generally delineate the extent. AECOM did not adopt these recommendations and the Regional Board did not acknowledge that it even considered Seven Springs and Fox's comments.

Nor has the Regional Board meaningfully assessed groundwater PCE concentration anomalies listed in Table 1 that are correlated with off-Site sources. Despite acknowledging "potential additional PCE sources may be contributing PCE mass to the regional PCE plume,"²⁰⁹ the Regional Board dismisses their significance by claiming its "[i]nitial review of groundwater data relative to source area inventory locations, did not indicate any 'hot spots' in shallow groundwater that could not be potentially attributed to the Site."²¹⁰ No rationale is offered for why LTLW is responsible for "hot spots," which, by definition, are indicative of additional sources.²¹¹

3.5 The Regional Board is Wrong That Seven Springs and Fox Did Not Consistently Apply Source Identification Criteria Under the 2017 CAO

The Regional Board asserts Seven Springs and Fox have inconsistently applied source identification criteria to potential off-Site PCE sources that has resulted in "an inaccurate analysis of source identification."²¹² The Regional Board claims that under the 2017 CAO, Seven Springs and Fox applied one set of criteria to the LTLW and a different set of criteria to other potential sources to evade investigating Tucker Basin²¹³

²⁰⁶ CalEPA. February 2020. Supplemental Guidance: Screening and Evaluating Vapor Intrusion. Draft for Public Comments, at 12.

²⁰⁷ EKI (2019). *supra* n. 26, at 16. In 2016, the Regional Board determined that a "suspected-source area investigation near the 7-11 Store property on Emerald Bay Road" should be performed. *See* Regional Board (2016). *supra* n. 109, at 1.

²⁰⁸ EKI (2021). *supra* n. 205, at 4-5.

²⁰⁹ *Id.*, at 25.

²¹⁰ Regional Board Staff Report, at 46.

²¹¹ Lu (2015). *supra* n. 176.

²¹² Regional Board Staff Report, at 44.

²¹³ *Id.*, at 25, 44.

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and have thus “failed to delineate the lateral and vertical extent of COCs [contaminants of concern] originating from the Site.”²¹⁴

Putting aside the fact that Fox was never lawfully subject to the 2017 CAO, the Regional Board’s assertion is incorrect. Contrary to the Regional Board’s assertion, Seven Springs and Fox consistently applied the source identification criteria approved by the Regional Board.²¹⁵ These criteria are described in EKI’s Amended Groundwater Investigation Work Plan²¹⁶ and listed on page 44 of the Regional Board Staff Report. Based on these criteria, a site is considered to be a source if operations associated with solvent use took place on the property; site-specific information, such as chemical use inventories, disposal records, soil samples with detections of VOCs, and/or elevated VOC concentrations in soil gas samples, indicate chlorinated solvents were used on the property; and VOC concentrations in groundwater samples collected from locations downgradient of the potential source are significantly higher than VOC concentrations in groundwater samples collected in the same hydrogeological unit from locations upgradient of the potential source.

Applying these criteria, Seven Springs and Fox identified Big O Tires site as an off-Site source.²¹⁷ The Regional Board’s criticism is perplexing because it also has determined that Big O Tires meets the source identification criteria²¹⁸ and that the site has discharged PCE to Tucker Basin.²¹⁹

The owners of the former Big O Tires site denied Seven Springs and Fox access to investigate environmental conditions on the site,²²⁰ and the Regional Board has repeatedly declined to secure that access on their behalf, as documented in Planning and Progress Reports submitted to the Regional Board.²²¹ Seven Springs and Fox complied with the investigative decision logic agreed upon by the Regional Board, which required the parties to seek access to the potential source property from the relevant landowner, and, if unsuccessful, document efforts made to obtain access and seek assistance from the

²¹⁴ Proposed Order, at 6 ¶ 26.

²¹⁵ Regional Board Staff Report, at 44.

²¹⁶ EKI (2018). *supra* n. 24, at 2-4.

²¹⁷ As described in Section 3.3, Seven Springs and Fox also have identified Runnels Automotive, which borders the east side of Tucker Basin, as a potential contributing source to contamination, if any, present in groundwater below the basin.

²¹⁸ Proposed Cleanup and Abatement Order for former Big O Tires facility at 2 ¶ 3, 2-3 ¶ 4, 3 ¶ 6, 4 ¶¶ 9-11, 5 ¶¶ 13-15, 6 ¶ 19.

²¹⁹ *Id.*, at 7 ¶ 20.f.

²²⁰ PES (2019). *supra* n. 30; EKI (2019). *supra* n. 25, at 5.

²²¹ https://geotracker.waterboards.ca.gov/profile_report?global_id=SL0601754315.

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Regional Board.²²² Seven Springs and Fox were to complete sampling upon obtaining access to the property, which, largely due to the Regional Board's unwillingness to compel access, has not occurred.

Further, the decision logic specifies that "if an additional source of VOCs to groundwater appears to have been identified," Seven Springs and Fox would "present the results to the Water Board for appropriate action."²²³ In its preparation of the decision logic, Seven Springs and Fox understood this action to mean the Regional Board would require the responsible parties for the off-Site release to characterize its impacts. Accordingly, the Regional Board issued the 2019 order to responsible parties for Big O Tires to delineate the contamination emanating from that property. As discussed in Section 2.6, potential impacts to Tucker Basin are likely associated with a release at the former Big O Tires facility and should be investigated by the responsible parties for that property.

Seven Springs and Fox also determined the former Norma's Cleaners site meets source identification criteria²²⁴ and have advised the Regional Board of significant data gaps concerning investigative and remedial actions at the property.²²⁵ The Regional Board concurs and issued an investigative order²²⁶ and a proposed CAO²²⁷ in 2019 and 2022, respectively, to responsible parties of the Norma's Cleaner site. The Regional Board concludes that the Norma's Cleaners site meets source identification criteria, including documented chlorinated solvent use, on-site contamination, and higher groundwater PCE concentrations downgradient of the site.²²⁸

²²² EKI. (2018). *supra* n. 24, at 2-3.

²²³ *Id.*

²²⁴ EKI (2019). *supra* n. 26, at 49-50.

²²⁵ PES (2019). *supra* n. 70; P. Gorman (PES) 3 November 2020. Email to B. Grey (Regional Board) *Re Comments on RMC's Investigation Work Plan for Hurzel Properties LLC (SL0601790916)*; PES. 22 December 2020. *Comments on Investigation Work Plan, Hurzel Properties, LLC., 945, 949, and 961 Emerald Bay Road, South Lake Tahoe, California*; PES. 14 May 2021. *Comments on RMC Geoscience, Inc. Soil Vapor Probe Investigation Report, Hurzel Properties, LLC., 945, 949, and 961 Emerald Bay Road, South Lake Tahoe, California*; P. Gorman (PES). 14 October 2021. Email to B. Grey (Regional Board) *Re Hurzel Site — PES Comments*; P. Gorman (PES). 1 December 2021. Email to B. Grey (Regional Board). *Re Hurzel Site — PES Comments on RMC's Phase 2 Work Plan*.

²²⁶ Regional Board (2019). *supra* n. 71.

²²⁷ Regional Board. 16 June 2022. Former Norma's Cleaners Cleanup and Abatement Order No. R6T-2022-(PROPOSED).

²²⁸ Regional Board (2019). *supra* n. 71, at 5-11; Proposed Cleanup and Abatement Order for former Norma's Cleaners site at 3 ¶ 6.a, 3-5 ¶¶ 8-13, 6-7 ¶¶ 16-18, 8-11 ¶¶ 23-26.

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4 THE PROPOSED ORDER'S REQUIREMENT THAT THE REGIONAL PCE CONTAMINATION BE DELINEATED TO NON-DETECTABLE CONCENTRATIONS IS OVERLY EXPANSIVE

The Proposed Order asserts the Regional PCE Contamination has not been fully delineated²²⁹ and requires that the lateral and vertical extents of PCE in groundwater be defined to the laboratory analytical method reporting limit of 0.5 µg/L.²³⁰ The requirement to delineate the Regional PCE Contamination as depicted by the Regional Board is overly broad. As discussed in Section 2.2, AECOM consolidated PCE data for all hydrostratigraphic units onto one plan map (Figure 8 of the Proposed Order) and then generated contours without considering groundwater flow directions and, hence, whether the contours are realistic. Additionally, AECOM omitted certain PCE data sets, such as URS's 2015 investigation, without examining the ramifications on the PCE concentration contours by doing so. A prominent effect of these flaws is distinct plumes within hydrostratigraphic units associated with off-Site sources are obscured. Distinct plumes obscured on Figure 8 are shown on Figures 52 through 54 of the Staff Report and Figure 5-5 in EKI's October 2021 Investigation Summary Report that group data by hydrostratigraphic units and account for the effects of groundwater movement.

The Proposed Order requires Seven Springs and Fox to characterize the lateral and vertical extents of improperly lumped contamination due to multiple sources.²³¹ The unreasonableness of this requirement is evident from even a superficial review of Figure 8 despite its flaws. Figure 8 depicts an area between Tahoe Valley Elementary School and Tahoe Keys Boulevard where no PCE is detected in groundwater at any depth. PCE in groundwater flanks the west and east sides of this clean area. The Regional Board does not explain how a single source, let alone the LTLW, can be responsible for this PCE distribution in groundwater and its further delineation. Because the plume depicted on Figure 8 of the Proposed Order links chlorinated VOC detections that cannot possibly be related, the delineation mandate is untethered to any meaningful metric and never could be completed.

The value of delineating lateral and vertical extents of the Regional PCE Contamination to non-detectable concentrations is questionable given the Regional Board has not identified all off-Site sources responsible for the contamination. The NRC states:

[I]t is important to avoid over-delineation of the plume at the expense of more localized source zone characterization efforts. This means that as salient information about site hydrogeology and plumes is gleaned from the larger-scale site characterization efforts, potential source zone configurations should be added to the site conceptual model.²³²

²²⁹ Proposed Order, at 6 ¶¶ 26, 28, 8 ¶ 32.j, 17 ¶ 69.

²³⁰ *Id.*, at 22 ¶ 3.a.

²³¹ *Id.*, at 3 ¶ 6, 8 ¶¶ 32.i-j.

²³² NRC (2005), *supra* n. 90, at 103.

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Off-Site sources that are sustaining the Regional PCE Contamination must be identified and remediated to restore groundwater to its beneficial uses and to comply with the antidegradation policy embodied in State Water Board Resolution No. 68-16. If off-Site sources are not abated, then the only feasible alternative for preserving groundwater as potable supply is to treat water at the wellhead, which currently is being done.

5 IMPACTS TO PUBLIC WATER SYSTEM WELLS ARE NOT DUE TO THE LTLW AND INSTEAD ARE ATTRIBUTABLE TO OFF-SITE SOURCES

The Regional Board observes that the Regional PCE Contamination has impacted public water system wells within the Tahoe Valley South Subbasin,²³³ and is requiring preparation and implementation of Interim Emergency and Permanent Water Replacement Plans.²³⁴ For the reasons discussed in Sections 2 and 3, to the extent PCE has migrated from the LTLW, the concentrations are de minimis and do not materially contribute to the impacts to public water system wells for which the Regional Board is requiring mitigation. As summarized in Section 2.4.2, groundwater samples collected in 2018 from five boreholes placed in Lake Tahoe Boulevard in the downgradient direction of groundwater flow from the LTLW contained PCE at concentrations ranging from non-detection to 28.6 µg/L. Most samples contained PCE at or below the MCL of 5 µg/L.²³⁵ By contrast, the public water system wells at issue have obviously been impacted by sources other than the LTLW. In 2021, PCE was measured as high as 130 µg/L in sentry wells installed by the Regional Board near public supply wells.²³⁶ If PCE in sentry wells were attributable to the LTLW, then PCE concentrations in groundwater along Lake Tahoe Boulevard should be higher than PCE concentrations in sentry wells. As explained in Section 2.3, back diffusion would have established a concentration gradient where PCE levels are highest near the LTLW and decrease with distance from the Site.

6 THE PROPOSED ORDER'S INTERIM EMERGENCY AND PERMANENT WATER REPLACEMENT PLAN REQUIREMENTS ARE UNREASONABLE

No justification is provided for Tasks 7.b and 7.c, implementing an Interim Emergency Water Replacement Plan and a Permanent Water Replacement Plan. Wellhead treatment involving granular activated carbon²³⁷ by TKPOA and LBWC eliminates any threat posed by the Regional PCE Contamination to public

²³³ Proposed Order, at 11 ¶¶ 46, 14-15 ¶¶ 56-58; Regional Board Staff Report, at 60-64.

²³⁴ Proposed Order, at 26-28 ¶¶ 7.b-c.

²³⁵ Regional Board Staff Report, at Figure 8.

²³⁶ A. Cazier (Regional Board). 10 December 2021. Email to Stakeholders *Re SCAP Regional PCE Plume Investigation Project Update: Preliminary Sentry Well Groundwater Sampling Results*, at Enclosure 2 Draft Figure 1 Sentry_Well_Site_Map_Event1 Concentrations.

²³⁷ Regional Board Staff Report, at 62.

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water systems.²³⁸ In 2019, STPUD and the State Water Board commissioned Kennedy/Jenks Consultants to conduct a human health risk assessment (HHRA) of public water system wells within the Tahoe Valley South Subbasin. The HHRA concluded “[t]he risks to human health from chemicals present in water from active wells currently in use as a drinking water source were found to be acceptable.” Thus, no need exists to replace public water system wells on either an interim or permanent basis.²³⁹

In 2017, STPUD conducted a survey of noncommunity water system wells that typically serve individual residences.²⁴⁰ This study shows perhaps one domestic well is in use on the eastern edge of the Regional PCE Contamination.²⁴¹ AECOM also performed a survey of noncommunity water system wells as part of the SCAP grant obtained by the Regional Board. In October 2019, AECOM collected water samples from eight noncommunity water system wells. AECOM collected samples from only eight wells because property owners denied access and many of the noncommunity water system wells are inactive and do not have functional pumps so water cannot be readily obtained from them.²⁴² In the eight samples that were collected, PCE was not measured above the laboratory analytical method reporting limit of 0.5 µg/L in seven samples and was detected at the reporting limit of 0.5 µg/L in one sample.²⁴³ Further, this detected concentration may not be representative because the laboratory indicated the PCE analytical result could be biased high.²⁴⁴ Hence, no data have been provided by the Regional Board that domestic wells within the Regional PCE Contamination have contaminants at concentrations above their respective MCLs thereby meeting the definition of an impaired well²⁴⁵ in the Proposed Order that is subject to emergency water replacement.

7 THE PROPOSED ORDER’S INVESTIGATION REQUIREMENTS ARE UNWARRANTED AND THEIR COSTS DO NOT BEAR A REASONABLE RELATION TO THE ASSOCIATED BURDEN

The Proposed Order requires investigation and submittal of work plans and reports and indicates that the burden, including costs, of those reports bears a reasonable relationship to the need for and the benefits to be obtained from the reports. This premise is valid for investigations and submittal of technical documents related to PCE at the LTLW. The requirements are not appropriate for investigations and

²³⁸ Pursuant to Health & Safety Code § 116275, a “public water system” means a system for the provision of water for human consumption through pipes or other constructed conveyances that has 15 or more service connections or regularly serves at least 25 individuals daily at least 60 days out of the year.

²³⁹ Kennedy/Jenks Consultants. 2 January 2019. *Human Health Risk Assessment for South Y Groundwater*, at 14.

²⁴⁰ Allegro Communication Consulting. 2018. *TVS Groundwater Basin Survey of Well Owners*.

²⁴¹ Rybarski, et al. (2022). *supra* n. 117, at 60.

²⁴² AECOM (2022). *supra* n. 39, at 15.

²⁴³ *Id.*, at Table 5.

²⁴⁴ *Id.*

²⁴⁵ Proposed Order, at 12 ¶ 51.

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submittal of reports that are not related to PCE at the LTLW, which includes remediation of regional PCE-impacted groundwater, and investigation and possible mitigation of regional PCE-impacted soil gas. As discussed in Sections 2 and 3, the evidence does not support the Proposed Order's assertion that the Regional PCE Contamination is due to the discharge at the LTLW.

Off-Site sources correlated with distinct areas of higher groundwater contamination (i.e., "hot spots") must be investigated by responsible parties for those sources to establish the effects the releases have on groundwater within the Tahoe Valley South Subbasin. Until off-Site sources are thoroughly characterized, the Regional Board lacks sufficient data to show the discharge at the LTLW is the cause of the Regional PCE Contamination. Without the requisite evidence to link the Regional PCE Contamination to the LTLW, any requirements imposed on Seven Springs and Fox to investigate and submit reports related to regional PCE-impacted groundwater and soil gas are unreasonable and cumbersome. Therefore, the requirements for these investigations and submittal of technical documents should be removed from the Proposed Order.

Putting aside the lack of evidence showing the Regional PCE Contamination is due to the LTLW, the cost of investigations required by the Proposed Order is unwarranted and disproportionate to any benefit. The Regional Board has been investigating the Regional PCE Contamination for over thirty years. The Regional Board, Seven Springs, and Fox each have spent many millions of dollars performing these investigations. Given the number of PCE sources within the Regional PCE Contamination and the practical and legal challenges in pursuing them, the only plausible remedial approach is wellhead treatment. Millions of dollars in further investigation will not change that.

If the Regional Board nonetheless persists in requiring the additional investigations described in the Proposed Order, it should provide more information to how investigation costs were calculated and correct apparent calculation errors. For example, the cost summary table in Attachment B, 5-Year Cost Estimate Scenario includes a line item for "regulatory oversight" at a "lump sum" cost of \$1,000,000. However, the calculated total for this line item indicates a cost of \$600,000, which appears erroneous (i.e., $\$1,000,000 \times 1 \neq \$600,000$). Seven Springs and Fox request this apparent error be corrected. Further, Seven Springs and Fox ask that the Regional Board provide details (e.g., number of hours, labor rates, rationale) and justification of the projected \$600,000 to \$1,000,000 regulatory oversight costs noted in the 5-Year and 25-Year Cost Estimate tables, respectively. The projected regulatory oversight costs appear to be excessive; especially in comparison to the projected labor hours to actually perform and complete the work. The Regional Board projects 12,871 labor hours for performance of field activities and preparation of reports related to Proposed Order Required Actions (i.e., Tasks 1 through 6, and 9). These 12,871 hours equate to a labor cost of \$1,476,586. It is unclear why the \$600,000 regulatory oversight costs are 41 percent of the labor cost to perform this work (i.e., $\$600,000 / \$1,476,586 = 41\%$).

Paragraph 59 of the Proposed Order provides a summary of "order of magnitude" costs and states, "[m]any of these costs are controllable and may be reduced significantly with aggressive and prompt remediation efforts." However, the cost estimates provided in Attachment B are for investigation and

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monitoring activities; not “remediation efforts.” It is not apparent how accelerated remedial actions could reduce investigative costs associated with Task 1 (Conceptual Site Model), Task 2 (Sampling and Analysis Plan and Quality Assurance Project Plan), Task 3 (Develop, Submit, and Implement Site Investigation Work Plan), Task 4 (Develop, Submit, and Implement a Monitoring Well Installation Work Plan), Task 5 (Develop, Submit, and Implement a Vapor Intrusion Investigation Work Plan), and Task 6 (Prepare and Submit Human Health and Ecological Risk Assessment). Indeed, under the Proposed Order, it is not clear that accelerated remedial actions are permitted in advance of completing the required investigations.

The Regional Board asserts, “extensive solvent plume cases have been resolved with high resolution investigation and remediation, reducing high concentration solvent plumes down to MCLs within a span of three to five years.”²⁴⁶ Multiple off-Site sources are responsible for formation of the Regional PCE Contamination, which AECOM estimates is approximately 1.5-miles long, 1-mile wide, and as deep as 240 feet bgs, as noted in Section 2. The timeframe for remediating this contamination depends (1) on the rates at which PCE back diffuses from low permeability zones that have contacted PCE-impacted groundwater, and (2) the Regional Board’s ability to locate and institute source control at the properties where PCE continues to leach to groundwater. Seven Springs and Fox believe the likelihood is remote that groundwater throughout the Tahoe Valley South Subbasin can be restored to its beneficial uses within 5 years considering the Regional Board has been unable to determine the off-Site sources causing the Regional PCE Contamination despite more than 30 years of trying to do so. Any attempt to clean up the Regional PCE Contamination will be protracted and/or fail without proper source characterization and removal. The costs of investigating and remediating PCE in groundwater to non-detectable concentrations are indeterminate unless the Regional Board identifies and requires abatement of the off-Site sources that are sustaining the Regional PCE Contamination.

8 EFFECTIVE REMEDIAL ACTIONS ARE IN PLACE AT THE LTLW

PCE impacts to soil, soil gas, and groundwater at the LTLW are being remediated by the SVE/GASS, which consists of 6 horizontal SVE wells, 20 vertical SVE well pairs, and 27 air sparge wells.²⁴⁷ Each SVE well pair consists of one well with a screen interval between approximately 5 feet bgs and 10 feet bgs and the other with a screen interval between approximately 10 feet bgs and 12 feet bgs. SVE well pairs are spaced 30 feet from each other. This spacing maintains overlapping radii of influence (ROIs) between the well pairs was designed such that the entire vadose zone within the cleanup area is addressed by SVE. Consistent with this fact, E₂C found that “[v]acuum influence over the entire site, including under the building and into Lake Tahoe Boulevard, can be readily achieved using all shallow SVE wells.”²⁴⁸ The air

²⁴⁶ Proposed Order, at 14-15 ¶ 59.

²⁴⁷ E₂C (2010). *supra* n. 11, at 21.

²⁴⁸ *Id.*, at 15.

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sparge wells are installed in a triangular pattern and individual wells are spaced so their ZOIs overlap to remediate PCE-containing groundwater resulting from the discharge at the LTLW.²⁴⁹

The Regional Board indicates that due to “declining AS/SVE system performance and contamination identified outside of [the AS/SVE] radius of influence, the Dischargers must continue to evaluate other remedial options to enhance removal of the residual contaminant mass and to address ongoing off-Site COC migration in groundwater.”²⁵⁰ The SVE/GASS is not displaying “declining system performance” as characterized by the Regional Board. Contaminant mass removal rates of SVE systems are understood to decrease along a first-order (exponential) decay curve with high initial rates that eventually attain an “asymptote” level.²⁵¹ The SVE/GASS has reached this asymptotic stage. The VOC mass removal rate has dropped from approximately 100 grams per day upon start-up in 2010 to presently less than 1 gram per day.²⁵² In June 2022, Seven Springs initiated optimization of the SVE/GASS²⁵³ with the goal of maximizing the VOC mass removal rate consistent with U.S. EPA guidance.²⁵⁴

Seven Springs and Fox concur with the Regional Board that batch groundwater pumping was effective in reducing PCE concentrations in groundwater. Batch pumping activities were stopped based on the Lahontan Regional Board’s concerns that batch pumping activities could affect the results of off-Site groundwater investigation activities. Seven Springs and Fox agree that batch pumping and other remedial technologies at the Site should continue to be evaluated, as appropriate.

Seven Springs and Fox also agree with the Regional Board that an in-situ chemical oxidation (ISCO) pilot study performed in November 2019 indicates that ISCO significantly reduced PCE concentrations remaining in the capillary fringe and shallow groundwater, and ISCO is a potential remediation technology that can reduce PCE mass in shallow and middle zone groundwater.”²⁵⁵ The Proposed Order states that the Responsible Parties “[m]ust continue to evaluate other options to enhance removal of the residual contaminant mass and to address ongoing COC migration in groundwater.”²⁵⁶ On 12 August 2021, Seven

²⁴⁹ E₂C (2016). *supra* n. 134.

²⁵⁰ Proposed Order, at 10 ¶ 39.

²⁵¹ U.S. Department of Energy. February 2013. *Soil Vapor Extraction System Optimization, Transition, and Closure Guidance*. PNNL-21843. RPT-DVZ-AFRI-006. Pacific Northwest National Laboratory, at 2.4.

²⁵² PES (2022). *supra* n. 83, at Table 6.

²⁵³ PES. 15 September 2022. Second Quarter 2022 Monitoring Report, Former Lake Tahoe Laundry Works, South Y Shopping Center, 1024 Lake Tahoe Boulevard, South Lake Tahoe, California, at 5.

²⁵⁴ U.S. EPA. February 2018. *Engineering Issue: Soil Vapor Extraction (SVE) Technology*. Office of Research and Development, National Risk Management Research Laboratory, Land and Materials Management Division. EPA/600/R-18/053, at 30.

²⁵⁵ Proposed Order, at 11 ¶ 41.

²⁵⁶ *Id.*, at 10 ¶ 39.

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Springs submitted Remediation Evaluation Workplan for Chlorinated Volatile Organic Compounds in Middle Zone Groundwater (“MZA Work Plan”) to the Regional Board.²⁵⁷

The MZA Work Plan was submitted to perform a pilot study to evaluate remedial technology for VOC-impacted groundwater within the middle zone or MZA beneath the LTLW. On 16 November 2021 and 1 December 2021, the Regional Board issued correspondence halting the pilot study that would have further evaluated remedial technologies to address PCE-impacted groundwater.²⁵⁸ On 2 December 2021, Morrison Foerster submitted correspondence to the Regional Board regarding the correspondence halting the proposed pilot study.²⁵⁹ The Morrison Foerster correspondence stated (1) “[f]irst, with its actions, the Regional Board has unnecessarily halted ongoing cleanup and remediation efforts underway on the Site, to the detriment of the residents of the city of South Lake Tahoe;” and (2) “[t]he Middle Zone Remediation Evaluation Workplan was just another means by which Seven Springs sought to test new technologies for further remediation of the Site, yet the Regional Board, by its December 1 Updated Notice, needlessly stopped such important work from proceeding.” In January 2022, Seven Springs requested a meeting with the Regional Board’s Executive Officer, Michael Plaziak, to discuss aspects of the LTLW and the proposed MZA pilot study for middle zone groundwater. However, counsel for the State Water Board denied the request to meet with the Executive Officer due to a prohibition on “ex parte” communications while the Proposed Order was pending; as such, further evaluation of additional on-Site remediation was halted.²⁶⁰

²⁵⁷ PES. 12 August 2021. Remediation Evaluation Workplan for Chlorinated Volatile Organic Compounds in Middle Zone Groundwater, Lake Tahoe Laundry Works (LTLW), 1024 Lake Tahoe Boulevard, South Lake Tahoe, California.

²⁵⁸ Regional Board. 16 November 2021. Notice of Deficient Workplan, August 12, 2021 *Remediation Evaluation Workplan for Chlorinated Volatile Organic Compounds in Middle Zone Groundwater*, Lake Tahoe Laundry Works (LTLW), 1024 Lake Tahoe Boulevard, South Lake Tahoe, El Dorado County, Site Cleanup Program Case No. T6S043; Regional Board. 1 December 2021. *Updated Notice of Deficient Workplan, August 12, 2021 Remediation Evaluation Workplan for Chlorinated Volatile Organic Compounds in Middle Zone Groundwater*, Lake Tahoe Laundry Works (LTLW), 1024 Lake Tahoe Boulevard, South Lake Tahoe, El Dorado County, Site Cleanup Program Case No. T6S043.

²⁵⁹ Morrison Foerster. 20 December 2021. Notice of Deficient Workplan, August 12, 2021 *Remediation Evaluation Workplan for Chlorinated Volatile Organic Compounds in Middle Zone Groundwater*, Lake Tahoe Laundry Works (LTLW), 1024 Lake Tahoe Boulevard, South Lake Tahoe, El Dorado County, Site Cleanup Program Case No. T6S043, dated November 16, 2021, and *Updated Notice of Deficient Workplan, August 12, 2021 Remediation Evaluation Workplan for Chlorinated Volatile Organic Compounds in Middle Zone Groundwater*, Lake Tahoe Laundry Works (LTLW), 1024 Lake Tahoe Boulevard, South Lake Tahoe, El Dorado County, Site Cleanup Program Case No. T6S043, dated December 1, 2021.

²⁶⁰ T. Austin (State Water Board). 1 February 2022. Email to W. Tarantino (Morrison Foerster) Re Request for Meeting — Remediation at the Lake Tahoe Laundry Works Site and the Tahoe Valley South Basin.

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9 THE WORK REQUIRED BY THE PROPOSED ORDER IS UNREASONABLE AND UNWARRANTED

Most of the work specified in the Proposed Order pertains to investigation and remediation of the Regional PCE Contamination for which the release at the LTLW is not the cause. The Proposed Order is not needed to complete cleanup of the LTLW, which already is being successfully remediated. Apart from these concerns, much of the work sought by the Proposed Order is inappropriate or improper.

9.1 Conceptual Site Model

Task 1 of the Proposed Order requires Seven Springs and Fox to develop a CSM. However, development of the CSM is not a stand-alone effort as reflected in the Proposed Order. Both DTSC and U.S. EPA indicate a CSM is part of the data quality objective (DQO) process,²⁶¹ which is a seven-step iterative approach to preparing the field sampling plan (FSP) for environmental data collection efforts. The first six steps of the DQO process define the purpose of the data collection effort, clarify what the data should represent to satisfy this purpose, and specify the performance requirements for the quality of information to be obtained from the data. These outputs are then used in the seventh and final step of the DQO process to develop a data collection effort that meets performance criteria and other design requirements and constraints.²⁶²

In 2017, Seven Springs and Fox included a CSM in initial versions of the Groundwater Investigation Work Plan that were submitted to the Regional Board to comply with the 2017 CAO.²⁶³ The CSM in these work plans was described as follows:

Results of sampling at the Site, which includes testing beneath the former LTLW tenant space, indicate that VOC-impacted soil and groundwater are limited primarily to the parking lot north of the existing Site building. Our preliminary CSM is that a surface release or releases of PCE occurred at the Site when a delivery truck leaked PCE in the parking lot.

²⁶¹ DTSC (2012). *supra* n. 84, at 8-10; U.S. EPA. January 2000. *Data Quality Objectives Process for Hazardous Waste Site Investigations, EPA QA/G-4HW*. Final. Office of Environmental Information. EPA/600/R-00/007, at 2; U.S. EPA. February 2006. *Guidance on Systematic Planning Using the Data Quality Objectives Process, EPA QA/G-4*. Office of Environmental Information. EPA/240/B-06/001, at 15-18; U.S. EPA. March 2005. *Uniform Federal Policy for Quality Assurance Project Plans, Evaluating, Assessing, and Documenting Environmental Data Collection and Use Programs, Part 1: UFP-QAPP Manual*. Final. Version 1. Intergovernmental Data Quality Task Force. EPA-505-B-04-900A, at 39.

²⁶² U.S. EPA (2000). *supra* n. 261, at 2.

²⁶³ EKI. 26 July 2017a. Groundwater Investigation Work Plan, Former Lake Tahoe Laundry Works Site, 1024 Lake Tahoe Boulevard, South Lake Tahoe, California; EKI. 11 September 2017b. Revised Groundwater Investigation Work Plan, Former Lake Tahoe Laundry Works Site, 1024 Lake Tahoe Boulevard, South Lake Tahoe, California.

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The surface release migrated downward and resulted in VOC-impacted unsaturated or vadose zone soil.

The resulting vadose zone contamination affected shallow zone groundwater at the Site, but has not significantly impacted middle zone groundwater or off-Site groundwater conditions. The SVE/GASS is successfully remediating on-Site contamination and is preventing its migration from the Site. PCE contamination in shallow and deeper groundwater off-Site is attributable to releases at properties other than LTLW. The CSM is supported by information and data collected to date, including data compiled from investigative and remedial activities performed on and off the Site by the Working Parties and separate entities; and various findings made by the Water Board, STPUD, and DRI.²⁶⁴

Stakeholders criticized the above CSM and asserted it did not incorporate “all existing data relevant to understanding the fate and transport of PCE and related compounds throughout the South Y area.”²⁶⁵ Seven Springs and Fox, referred to as the “Working Parties” at that time, explained that it was not worthwhile, or even logistically possible, to create a CSM to define contamination throughout the South Y Area in an initial work plan.²⁶⁶ The CSM was intended to assist with identifying and prioritizing data gaps associated with potential contamination originating from the LTLW. Regardless, Seven Springs and Fox agreed to remove the CSM from the work plan so sampling activities required by the 2017 CAO could begin.²⁶⁷

Groundwater VOC data and information regarding off-Site sources obtained after the work plan was approved by the Regional Board in 2018 confirm the validity of Seven Springs/Fox’s CSM. Task 1 should be omitted because Seven Springs and Fox have developed an accurate CSM that could be included as an element of the FSP, which presumably is equivalent to the Site Investigation Work Plan (SIWP) that the Proposed Order requires in Task 3.

Task 1 also should be removed from the Proposed Order because the Regional Board insists Seven Springs and Fox incorporate environmental release and transport mechanisms into the CSM that are controverted by available data and information. U.S. EPA states the following about the ramifications that a faulty CSM can have on investigation and remediation of a site:

²⁶⁴ EKI (2017b). *supra* n. 263, at 3-1.

²⁶⁵ Ground Zero Analysis, Inc. 27 September 2017. *Comments on the September 11, 2017 EKI Revised Groundwater Investigation Workplan*. Prepared for Tahoe Keys Property Owners Association, at 1.

²⁶⁶ PES and EKI (2018). *supra* n. 63, at 2.

²⁶⁷ *Id.*, at 3.

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It is critical to carefully develop an accurate conceptual model of the environmental problem, as this model will serve as the basis for all subsequent inputs and decisions. . . Errors in the development of the conceptual model will be perpetuated throughout the other steps of the DQO Process and are likely to result in developing a sampling and analysis plan that may not achieve the data required to address the relevant issues.

The Regional Board wants to dismiss the presence of hydrostratigraphic units within the Tahoe Valley South Subbasin despite their identification by Kennedy/Jenks Consultants²⁶⁸ and other scientists that have studied the matter.²⁶⁹ The Regional Board claims there is a hydraulic connection between shallow and middle zone groundwater that “refute[s] a fundamental basis of the Dischargers’ CSM, that a silt layer is purportedly preventing downward vertical migration of PCE and other COCs in groundwater.”²⁷⁰ In making this claim, the Regional Board disregards investigative findings that show silt and other fine-grained layers inhibit (i.e., slow or retard) vertical groundwater movement in the Tahoe Valley South Subbasin. A study of stormwater infiltration conducted for the Tahoe Regional Planning Agency (TRPA) determined “[t]here is particularly high confidence that little groundwater recharge from stormwater will occur in locations where continuous confining layers are present that physically separate the shallow groundwater table from deeper aquifers, as in South Lake Tahoe.”²⁷¹

Further, Seven Springs and Fox have never stated that a slit layer is “preventing downward vertical migration of PCE” or that the silt layer was an impermeable barrier, as the Regional Board alleges.²⁷² Instead, Seven Springs and Fox have noted that the presence of fine-grained layers at and in the vicinity of the Site retards vertical groundwater flow and contaminant movement from shallow to middle zone groundwater. Lithologic data collected from the Site indicate the presence of a silt layer beginning at

²⁶⁸ Kennedy/Jenks Consultants (2014). *supra* n. 47, at 5-1.

²⁶⁹ See e.g., Morgan et al. 2008. Glacio-Lacustrine Stratigraphy, Aquifer Characterization and Contaminant Transport: A Case Study in South Lake Tahoe, California, USA. *Hydrogeology Journal*. Vol. 16. pp. 981-994. (“The general continuity of these fine-grained lacustrine units within the South Y area at the 6-15 m [20-50 ft] depth interval is supported by the lithologic record reviewed for this study, as well as hydraulic head differences and contaminant migration patterns. It is recognized that the potential for discontinuity exists. However, no evidence of discontinuities in the lithologic data or water-level data was observed.”).

²⁷⁰ Proposed Order, at 11 ¶ 42.

²⁷¹ 2NDNATURE. August 2011. Synthesis of Existing Information, Infiltration BMP Design & Maintenance Study. Final, at 51.

²⁷² Proposed Order, at 11 ¶ 42.

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depths of roughly 30 to 35 feet bgs.²⁷³ Large differences in hydraulic heads between paired groundwater monitoring wells²⁷⁴ confirms fine-grained layers inhibits vertical groundwater flow.

Task 1.c of the Proposed Order compels development of a CSM based on Regional Board opinions that are unsupported or contrary to available data. The Proposed Order should be revised to remove Task 1 entirely because (1) the CSM will be included in the SIWP required by Task 3 of the Proposed Order, and (2) Seven Springs and Fox cannot lawfully adopt a CSM that is unsupported or contrary to available data as Task 1.c directs the parties to do.²⁷⁵

9.2 Sampling and Analysis Plan and Quality Assurance Project Plan

Task 2 of the Proposed Order is confusing due to the terminology used to describe the work to be performed. The task specifies preparation of a Sampling and Analysis Plan (SAP) and a Quality Assurance Project Plan (QAPP). Typically, the QAPP is a component of the SAP or work plan, which also includes the FSP.²⁷⁶ The Proposed Order does not require preparation of an FSP but does direct Seven Springs and Fox to prepare a SIWP under Task 3. The Regional Board should clarify if the SIWP is equivalent to an FSP and explain how the SAP differs from the SIWP, if at all.

More importantly, the Regional Board has previously approved a work plan with a QAPP that Seven Springs and Fox submitted to fulfill requirements of the 2017 CAO.²⁷⁷ This work plan²⁷⁸ describes the “procedural and analytical requirements for sampling soil, soil gas, surface water (if applicable), subsurface utility backfill (e.g., stormwater and sanitary sewer conveyance system backfill) and groundwater”²⁷⁹ that the Regional Board requires in preparation of the SAP. Task 2 should be revised to

²⁷³ EKI (2019). *supra* n. 26, at 22.

²⁷⁴ Measured hydraulic head differentials include 10.87 feet for LW-MW-1S/D in March 2019, 8.20 feet for LW-MW-2S/D in April 2022, 10.86 feet for LW-MW-5S/D in June 2019, 4.75 feet for OS-2S/M in June 2019, 14.49 feet for OS-3S/M in November 2021, and 8.71 feet for OS-4S/M in March 2019.

²⁷⁵ The Proposed Order, at 32 ¶ 12, requires Seven Springs and Fox to hire “an appropriately experienced California registered professional civil engineer or geologist” to prepare — and sign — “all reports” required under the Proposed Order, in accordance with California Business and Professions Code §§ 6735, 7835, and 7835.1. Under the same paragraph, “the authorized representative” must certify under penalty of law that he or she “has examined and is familiar with the report and that to his knowledge, the report is true, complete, and accurate.”

²⁷⁶ DTSC (2012). *supra* n. 84, at 8; U.S. EPA (2000). *supra* n. 261, at 4.

²⁷⁷ Regional Board. 22 August 2018. Conditional Acceptance of March 19, 2018, Amended Groundwater Investigation Work Plan, Lake Tahoe Laundry Works (LTLW), South Lake Tahoe, El Dorado County, Site Cleanup Program Case No. T6S043.

²⁷⁸ EKI (2018). *supra* n. 24.

²⁷⁹ Proposed Order, at 21 ¶ 2.a.

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provide that the QAPP previously approved by the Regional Board under the 2017 CAO meets the QAPP requirements of the Proposed Order.

9.3 SIWP(s)

The Proposed Order requires development, submittal, and implementation of one or more SIWP(s). Task 3 of the Proposed Order states that a SIWP is to update on-Site and off-Site information with the data required to define the lateral and vertical extents of the alleged discharge to soil, soil gas, and groundwater to support evaluation of potential threats to human health, and sensitive (e.g., schools, day care facilities, and nursing homes) and ecological receptors. Among other requirements, the SIWP must fully assess the extent of discharges along or to:

- Preferential pathways (e.g., stormwater conveyance system including Tucker Basin and other stormwater retention/infiltration basins in the system, sanitary sewer, other subsurface utilities).
- Vertical conduits (e.g., water supply wells and monitoring wells).
- Surface water (e.g., stormwater conveyance system infiltration/detention basins).

The assessment results are to be used to support development and submittal of (1) Monitoring Well Installation Work Plan, (2) Vapor Intrusion Investigation Work Plan, (3) HHRA and Ecological Risk Assessment, and (4) recommendations for interim remedial actions, including supply of replacement water. The Proposed Order defines “fully assess” to mean Seven Springs and Fox:

. . . must perform step-out sampling, both laterally and vertically, until soil and soil vapor concentrations are defined to the applicable ESLs (i.e., direct exposure, vapor intrusion, terrestrial habitat, leaching to groundwater) and groundwater concentrations of COCs are defined to 0.5 µg/L (i.e., the reporting limit for each COC; the method detection limit will be utilized as the practical limitation for defining natural background concentrations). If investigation data are being collected to support the Human Health and Ecological Risk Assessment, applicable health and ecological-based screening levels shall be considered when developing data quality objectives for the SIWP.²⁸⁰

As discussed in Section 4, the NRC advises against over-delineation of the plume boundaries at the expense of source characterization efforts. As a technical matter, Seven Springs and Fox are unable to characterize PCE in groundwater beneath Lake Tahoe Boulevard to 0.5 µg/L because PCE at or near the MCL of 5 µg/L at that location abuts Regional PCE Contamination originating north of Lake Tahoe Boulevard, most likely at the former Big O Tires facility based on available groundwater data. As explained in Sections 9.5 and 9.6, defining PCE concentrations in soil and soil gas to applicable Environmental

²⁸⁰ Proposed Order, at 22 ¶ 3.a.

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Screening Levels (ESLs) is not indicated given impacts to these media from the LTLW discharge have been fully characterized, and an HHRA and an ecological risk assessment for the LTLW is not warranted.

SIWP requirements are based on the Regional Board's incorrect assumption that the Regional PCE Contamination originated from the LTLW. For the foregoing reasons herein, the evidence does not indicate the Regional PCE Contamination was caused by PCE as DNAPL or in dissolved form that migrated off the LTLW in groundwater or along utility lines or other subsurface features that could act as preferential pathways for contaminant transport. As a result, the Proposed Order should not require an SIWP to address the Regional PCE Contamination.

The Proposed Order does not mention that the Regional Board has retained AECOM to investigate the vapor intrusion (VI) exposure pathway or explain how the VI assessment required by Task 3 is not duplicative of AECOM's investigation. According to AECOM's Soil Gas Investigation Work Plan:

AECOM will review the data [gathered] and perform a Tier I risk evaluation for potential human health risk associated with the subsurface-to-indoor-air/VI pathway," including:

- Comparing the soil gas volatile organic compound (VOC) results to ESLs;
- Evaluating the shallow and deep soil gas results to assess the strength of the groundwater vapor source (deep samples) and the degree of soil gas attenuation between the groundwater vapor source and the shallow soil gas samples; and
- Providing recommendations as to whether further investigation, such as collecting additional soil gas samples or indoor air/sub-slab samples, is warranted.²⁸¹

Regional Board communications indicate that the investigation outlined in the Soil Gas Investigation Work Plan and its Addendum²⁸² was scheduled to begin the "the first week of July."²⁸³ On 25 July 2022, Morrison Foerster, on behalf of Seven Springs, sent a letter to the Regional Board that stated:

Seven Springs requests the laboratory data from AECOM's soil gas investigation as soon as it becomes available. Despite the investigation's overlap with the comment period, the findings from the soil gas investigation will be critical to Seven Springs' evaluation of the Proposed LTLW, Big O Tires, and Norma's Cleaners CAOs. Seven Springs and Fox cannot

²⁸¹ AECOM. 5 October 2021. Soil Gas Investigation Work Plan, South "Y" PCE Plume South Lake Tahoe, California, at 1.

²⁸² https://geotracker.waterboards.ca.gov/view_documents_all?global_id=T10000007984&doc_id=6058310.

²⁸³ A. Cazier (Regional Board). 13 June 2022. Email to Stakeholders *Re SCAP Regional PCE Plume Investigation Project Update*.

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provide a complete assessment of, for example, Paragraphs 36, 37, and 65 and Required Action No. 5 of the Proposed Order without access to the data collected pursuant to the Regional Board's soil gas investigation of the regional plume.²⁸⁴

On 28 July 2022, the Regional Board indicated that the data from the soil gas investigation would be made available to interested parties as soon as full data packages are available.²⁸⁵ It is imperative that the soil gas investigation results be made available as soon as possible to aid in understanding soil gas conditions at the locations sampled and to avoid repeating work that the Regional Board has performed. Without the soil gas investigation results, Seven Springs and Fox cannot determine the VI scope of work, if any, to include in the SIWP pertaining to the discharge at the LTLW.

The Proposed Order requests a schedule for implementation of the SIWP and indicates that “[s]tep-out sampling shall proceed without significant interruption.”²⁸⁶ The Proposed Order further states that “[a]ny failure to continue conducting sampling for a period exceeding ten business days is a significant interruption.”²⁸⁷ The proposed schedule is unreasonable and is based on the mistaken premise that the Regional PCE Contamination originated from the LTLW. In the Staff Report included with the Proposed Order, the Regional Board discusses briefly the two orders issued to the former Big O Tires Site and the Norma's Cleaners site as well as the Water Code § 13267 Investigative Orders sent to 223 parties. Seven Springs and Fox should not be held responsible for investigation of PCE impacts that are due to releases at other properties. Implementation of a continuous investigation or investigations downgradient of potential sources of PCE that have not been thoroughly investigated would surely result in just that.

9.4 Monitoring Well Installation Work Plan

Task 4 of the Proposed Order requires Seven Springs and Fox to prepare and implement a Monitoring Well Installation Work Plan (MWIWP) that evaluates the behavior of the Regional PCE Contamination.²⁸⁸ Inclusion of this task in the Proposed Order is inappropriate and should be omitted because the Regional PCE Contamination is associated with releases at off-Site properties and not the LTLW, as explained in Sections 2 and 3.

²⁸⁴ Morrison Foerster (counsel for Seven Springs). 25 July 2022. Request for Comments — Cleanup and Abatement Orders R6T-2022-(Proposed) for the LTLW, Former Big O Tires, and Former Norma's Cleaners Sites, at 3.

²⁸⁵ Regional Board. 28 July 2022. *Request For Technical Reports, Laboratory Data and Comment Period Extension for Proposed Cleanup and Abatement Orders: Lake Tahoe Laundry Works, Big O Tires, and Former Norma's Cleaners, South Lake Tahoe, El Dorado County*, at 1.

²⁸⁶ Proposed Order at 22 ¶ 3.f.

²⁸⁷ *Id.*

²⁸⁸ *Id.*, at 23 ¶ 4.

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The Regional Board's 5-Year and 25-Year Cost Estimate scenarios assume 69 monitoring wells will comprise the monitoring well network required by Task 4. The network would consist of the existing 18 on/off-Site wells that are currently sampled pursuant to the 2017 CAO, 9 sentry wells that were constructed as part of the SCAP Regional PCE Plume Investigation, and 42 new perimeter and sentry wells that the Regional Board contemplates would be installed under the Proposed Order.

The Regional Board does not explain why it believes a monitoring well network on the order of 69 wells is indicated. The seven-step DQO process discussed in Section 9.1 should be followed to develop the MWIWP, which begins with the identification of monitoring objectives that are directly related to the expected outcome of the site activity.²⁸⁹ For example, if the Regional Board does not pursue investigation and remediation of off-Site sources in a timely fashion, then wellhead treatment is the viable remedy for continued use of groundwater as a potable supply. Given the mature nature of the Regional PCE Contamination, wellhead treatment is not sensitive to minor concentration changes at the peripheries of the contamination. Consequently, the extensive monitoring well network assumed by the Regional Board would not be needed. U.S. EPA and the U.S. Army Corps of Engineers (USACE) state "[d]esigning an effective long-term groundwater monitoring program involves locating monitoring points and developing a site-specific strategy for groundwater sampling and analysis in order to maximize the amount of information obtained to effectively address the temporal and spatial objectives of monitoring, while minimizing incremental costs."²⁹⁰

While the Regional Board's cost estimates do reflect a decrease in the sampling frequency from quarterly to semi-annually after a certain length of time, the Proposed Order should reflect that a well-designed monitoring program will evolve in other ways. Approaches to the design, evaluation, and optimization of effective groundwater monitoring programs must acknowledge and account for the dynamic nature of groundwater systems.²⁹¹ Both the temporal and spatial characteristics of a groundwater monitoring program must be assessed periodically. For example, there may be some cases where continuing to sample a monitoring well serves no useful purpose. In a study of groundwater monitoring optimization techniques for U.S. EPA, Parsons Corporation (Parsons) states a "monitoring well having a history of contaminant concentrations below detection limits may be providing little or no useful information."²⁹²

²⁸⁹ U.S. EPA. January 2004. Guidance for Monitoring at Hazardous Waste Sites: Framework for Monitoring Plan Development and Implementation. OSWER Directive No. 9355.4-28, at 1-1.

²⁹⁰ U.S. EPA and USACE. May 2005. *Roadmap to Long-Term Monitoring Optimization*. EPA 542-R-05-003, at 7.

²⁹¹ U.S. EPA. September 2004. *Demonstration of Two Long-Term Groundwater Monitoring Optimization Approaches*. Office of Solid Waste and Emergency Response. EPA 542-R-04-001b, at 8.

²⁹² Parsons. May 2003. Appendix D, Three-Tiered Groundwater Monitoring Network, Optimization Evaluation for Long Prairie Ground Water Contamination Superfund Site, Minnesota. Draft Final. Prepared for U.S. EPA, at 5-4. In U.S. EPA (2004). *supra* n. 291.

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The Proposed Order should be revised to make clear that the MWIWP will establish criteria for revising the monitoring program as it evolves.

Like most tasks prescribed in the Proposed Order, the MWIWP cannot be prepared in accordance with the schedule presented in Attachment C. The Proposed Order requires the MWIWP to be submitted to the Regional Board within two months after the Proposed Order has been adopted. Yet, the Proposed Order requires the MWIWP to “[f]ully evaluate available groundwater and lithological data generated from the SIWP(s).”²⁹³ Investigations described in the SIWP would not be finished within two months of Order adoption because Attachment C states Site Investigations shall be completed within six months of Order adoption. Further, as discussed in Section 9.8, the Order deadline for completing Site Investigations may not be achievable depending on the scope of work to be performed, the time required for the Regional Board to review and approve the SIWP(s), the ability to secure site access and necessary permits, and weather conditions at the time of planned field work.

9.5 Vapor Intrusion Investigation Work Plan

The Proposed Order requires development, submittal, and implementation of a Vapor Intrusion Investigation Work Plan. Paragraphs 36 and 37 of the Proposed Order indicate that soil gas samples have been collected from on-Site SVE wells since 2010 and PCE concentrations in soil gas exceed the ESL developed by the San Francisco Bay Regional Water Quality Control Board (SFRWQCB) for commercial use of 67 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$).²⁹⁴ The Proposed Order further states that additional investigations are required delineate the extent of PCE in soil gas originating at the Site as well as from off-Site areas such as Tucker Basin. A review of the on-Site soil gas sampling conducted over the last four quarters (Second Quarter 2021 through First Quarter 2022) indicates that the soil vapor probes with PCE concentrations greater than the commercial ESL are located in the parking lot north of the building and are bound by soil vapor probes with concentrations less than the commercial ESL.²⁹⁵ The lateral extent of PCE-impacted soil gas is defined on the LTLW and further off-Site investigation is not required.

²⁹³ *Id.*, at 23 ¶ 4.a.

²⁹⁴ SFRWQCB. 2019. ESL Workbook. Revision 2, at Table SG-1.

²⁹⁵ PES. 15 September 2021. Second Quarter 2021 Monitoring Report, Former Lake Tahoe Laundry Works, South Y Shopping Center, 1024 Lake Tahoe Boulevard, South Lake Tahoe, California; PES. 15 December 2021. Third Quarter 2021 Monitoring Report, Former Lake Tahoe Laundry Works, South Y Shopping Center, 1024 Lake Tahoe Boulevard, South Lake Tahoe, California; PES. 15 March 2022. Fourth Quarter 2021 Monitoring Report, Former Lake Tahoe Laundry Works, South Y Shopping Center, 1024 Lake Tahoe Boulevard, South Lake Tahoe, California; PES (2022). *supra* n. 83.

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In December 2015, indoor air sampling was conducted at LTLW tenant spaces at 1022, 1024, and 1026 Lake Tahoe Boulevard and 1032 Emerald Bay Road.²⁹⁶ The indoor air sampling was conducted on a voluntary basis by Seven Springs to assess concentrations of VOCs in indoor air and ensure no unacceptable conditions are present. PCE in the samples ranged from not being measured above the laboratory analytical method reporting limit of 0.0678 $\mu\text{g}/\text{m}^3$ to a maximum detected concentration of 0.514 $\mu\text{g}/\text{m}^3$. These concentrations are less than the indoor air ESL of 2 $\mu\text{g}/\text{m}^3$ for commercial use²⁹⁷ and confirm conditions are acceptable within tenant spaces at the LTLW. In 2022, Seven Springs submitted a Revised Indoor Air Sampling Work Plan to conduct additional indoor air sampling at the Site on a voluntary basis.²⁹⁸ Additional indoor air sampling will be conducted in warm months to evaluate temporal variability.

In 2001, PCE was measured at 720 $\mu\text{g}/\text{L}$ in shallow zone groundwater sample collected from borehole B-2 completed on the Big O Tires site.²⁹⁹ In 2020, an investigation of the Big O Tires site determined storm drain pipelines on the property discharged to Tucker Basin.³⁰⁰ Passive soil gas sample PSG-1 was placed upgradient of borehole B-2 at a drop inlet to the storm drain pipelines. A PCE mass of 510 nanograms was measured in PSG-1. The groundwater and soil gas data indicate potential PCE transport and release to Tucker Basin.³⁰¹ The Regional Board agrees PCE from the Big O Tires site was discharged to Tucker Basin.³⁰² As a consequence, the requirement to investigate Tucker Basin as well as delineate the lateral extent of PCE-impacted soil gas should be directed to the responsible parties of the former Big O Tires site.

The lateral extent of PCE-impacted soil gas is defined on the LTLW and further off-Site investigation is not required. Therefore, development, submittal, and implementation of a Vapor Intrusion Investigation Work Plan is not appropriate. VI impacts that are related to other sources of PCE should be assessed by the appropriate responsible parties. The origin of the PCE in groundwater resulting in potential VI impacts should be determined based on investigations of the potential source properties and off-Site investigations to determine the lateral and vertical extents of the PCE.

²⁹⁶ PES. 14 January 2016. Indoor Air Sampling Report, Former Lake Tahoe Laundry Works, 1022, 1024, and 1026 Lake Tahoe Boulevard, and 1032 Emerald Bay Road, South Lake Tahoe, California (RWQCB SLIC Case No. T6S043).

²⁹⁷ SFRWQCB (2019). *supra* n. 294, at Table IA-1.

²⁹⁸ PES. 22 February 2022. Revised Indoor Air Sampling Work Plan, Former Lake Tahoe Laundry Works, 1022, 1024, and 1026 Lake Tahoe Boulevard, and 1032 Emerald Bay Road, South Lake Tahoe, California (RWQCB SLIC Case No. T6S043).

²⁹⁹ Harding ESE (2001). *supra* n. 146, at 2.

³⁰⁰ Welsh Hagen Associates. 10 November 2020. Passive Soil Gas Investigation Report, Former Big O Tires Site, 1961 Lake Tahoe Boulevard, South Lake Tahoe, California.

³⁰¹ PES (2020). *supra* n. 166, at 4-5.

³⁰² Proposed Cleanup and Abatement Order for former Big O Tires facility, at 7 ¶ 20.f.

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9.6 HHRA and Ecological Risk Assessment

Task 6 of the Proposed Order allows for completion of either a screening evaluation or baseline risk assessment. A screening evaluation involves estimating risk or hazard posed by the maximum concentration of a chemical detected in each medium (soil, water, air) using an established human health risk-based screening level as a comparator.³⁰³ A baseline risk assessment is site-specific and may vary in both detail and the manner in which qualitative and quantitative analyses are used, depending on the complexity and particular circumstances of the site.³⁰⁴ The function of the baseline risk assessment is to provide an understanding of the actual and potential risks to human health and the environment related to a site so it can be determined if those risks warrant remedial action.³⁰⁵

Task 6 should be excluded from the Proposed Order because neither a human health screening evaluation nor a baseline risk assessment is required for the LTLW. In 2009, the Regional Board determined that the Site should be remediated.³⁰⁶ In 2013, the Regional Board approved soil and groundwater cleanup goals for the LTLW and use of SVE/GASS to attain those goals.³⁰⁷ After commencing SVE/GASS, PCE has been measured in soil at a maximum concentration of 0.106 mg/kg,³⁰⁸ which is less than the LTLW soil cleanup goal of 0.37 mg/kg.³⁰⁹ In addition, SVE/GASS has reduced PCE concentrations in soil gas by orders of magnitude. For example, PCE in soil vapor probe VP-2, located near the suspected PCE release location, has declined from a maximum concentration of 8,136,000 $\mu\text{g}/\text{m}^3$ to a current concentration of 88 $\mu\text{g}/\text{m}^3$.³¹⁰ As discussed in Section 9.5, PCE concentrations in indoor air samples collected from LTLW tenant spaces in 2015 were less than the indoor air ESL of 2 $\mu\text{g}/\text{m}^3$ for commercial use, which demonstrate VOCs in soil gas are not resulting in unacceptable vapor intrusion risks. MCLs are the Regional Board-approved cleanup goals for groundwater at the LTLW.

Hydrologic monitoring performed at Eloise Basin between 2003 and 2005 suggests groundwater infiltrates the basin annually during late winter to early spring.³¹¹ The subsurface region beneath a water body where conditions change from a groundwater dominated to surface water dominated system is designated the

³⁰³ DTSC. October 2015. Preliminary Endangerment Assessment Guidance Manual, at 34.

³⁰⁴ U.S. EPA. December 1989. *Risk Assessment Guidance for Superfund, Volume 1, Human Health Manual (Part A)*. Office of Emergency and Remedial Response. EPA/540/1-89/002, at 1-6.

³⁰⁵ U.S. EPA. April 22, 1991. *Role of the Baseline Risk Assessment in Superfund Remedy Selection Decisions*. Office of Solid Waste and Emergency Response. OSWER Directive 9355.0-30, at 2.

³⁰⁶ Regional Board (2009). *supra* n. 8, at 2.

³⁰⁷ Regional Board (2013). *supra* n. 15.

³⁰⁸ EKI (2019). *supra* n. 26, at 15.

³⁰⁹ E₂C (2010). *supra* n. 11, at 30.

³¹⁰ PES (2022). *supra* n. 83, at Table 4.

³¹¹ 2NDNATURE (2006). *supra* n. 117, at 46-50.

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transition zone.³¹² The locations and characteristics of transition zones and associated groundwater discharge areas vary both spatially and temporally.³¹³ Not all areas of a water body receive groundwater discharge, and even if this pathway were complete at some locations within the Tahoe Valley South Subbasin, VOC concentrations at the groundwater table are too low to cause ecological threats. The maximum PCE concentration measured in first encountered groundwater was 63.3 µg/L³¹⁴ in a sample obtained at 22 feet bgs from borehole LTLW-GW-11. This concentration is less than the ecological ESL of 120 µg/L.³¹⁵

The main objective of screening levels is to quickly enable users to distinguish which sites pose a significant threat.³¹⁶ Sites that are adequately characterized with chemical concentration data below the ESLs most likely do not pose a threat.³¹⁷ For that reason, no ecological risk assessment is needed for the Tahoe Valley South Subbasin. Task 6 should be removed from the Proposed Order.

9.7 RAP and IRAP

The Proposed Order requires preparation and implementation of an Interim Remedial Action Plan (IRAP) and a Remedial Action Plan (RAP) that are duplicative in scope and pertain to the Regional PCE Contamination instead of the localized impacts resulting from the PCE discharge at the LTLW.

9.7.1 IRAP

The IRAP required by the Proposed Order is intended to evaluate remedial actions for areas where COC concentrations are greater than relevant ESLs.³¹⁸ COCs are defined to be PCE and its degradation compounds consisting of trichloroethylene (TCE), cis-1,2-dichloroethylene (cis-1,2-DCE), trans-1,2-dichloroethylene (trans-1,2-DCE), 1,1-dichloroethylene (1,1-DCE), and vinyl chloride.³¹⁹ ESLs cited in the Proposed Order and Regional Board Staff Report are those developed by the SFRWQCB.³²⁰

³¹² U.S. EPA. July 2008. *Evaluating Ground-Water/Surface-Water Transition Zones in Ecological Risk Assessments*. ECO Update/ Ground Water Forum Issue Paper. Office of Solid Waste and Emergency Response. EPA-540-R-06-072, at 4.

³¹³ *Id.*

³¹⁴ Regional Board Staff Report, at Figure 13.

³¹⁵ SFRWQCB (2019). *supra* n. 294, at Table IP-6.

³¹⁶ SFRWQCB. 2019. *User's Guide: Derivation and Application of Environmental Screening Levels (ESLs)*. Interim Final (Revision 1), at 1-6.

³¹⁷ *Id.*, at 1-5.

³¹⁸ Proposed Order, at 29 ¶ 7.d.

³¹⁹ *Id.*, at 1-2 ¶ 1.

³²⁰ *Id.*, at 8 ¶ 32.g; Regional Board Staff Report, at 21-22, 26, 29-30, 47-53.

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The requirement to implement an IRAP that addresses COCs above ESLs is improper because such exceedances are not appropriate criteria for requiring remedial action. As SFRWQCB itself has recognized “the presence of a chemical at concentrations exceeding an ESL does not necessarily indicate adverse effects on human health or the environment, rather that additional evaluation is warranted.”³²¹ This is because ESLs are conservatively based on a 1×10^{-6} risk level.³²² Both U.S. EPA³²³ and DTSC³²⁴ consider a 1×10^{-6} risk level to be a point of departure for establishing cleanup goals based upon potential cancer effects. In other words, U.S. EPA and DTSC consider risks less than 1×10^{-6} to be insignificant and no further action is required. SFRWQCB states “[c]leanup goals typically are chemical concentrations for a specific site that are agreed-upon through a risk and feasibility evaluation and discussions between the overseeing regulatory agency and the discharger considering site-specific conditions.”³²⁵ Consistent with State Water Board Resolution No. 92-49 and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), the need for remedial action should not be based on ESLs, but on anthropogenic contaminant background concentrations, results of the HHRA, and compliance with applicable or relevant and appropriate requirements (e.g., MCLs).

State Water Board Resolution No. 92-49 governs remediation,³²⁶ which allows cleanup to a less stringent level if it is unreasonable to achieve MCLs.³²⁷ The Regional Board also relies on the NCP to establish groundwater cleanup levels.³²⁸ Under the NCP, U.S. EPA normally does not set cleanup goals below anthropogenic contaminant background concentrations.³²⁹ The reasons for this protocol include cost-effectiveness, technical practicability, and the potential for recontamination of remediated areas by surrounding areas with elevated anthropogenic contaminant background concentrations.³³⁰

³²¹ SFRWQCB (2019). *supra* n. 316, at ii.

³²² *Id.*, at 3-4.

³²³ U.S. EPA. 14 July 2022. *Regional Screening Levels (RSLs) — User's Guide*. <https://www.epa.gov/risk/regional-screening-levels-rsls-users-guide>. Accessed 4 August 2022.

³²⁴ DTSC. May 2022. *Human Health Risk Assessment (HHRA) Note Number 3, DTSC-modified Screening Levels (DTSC-SLs)*. Human Health and Ecological Risk Office, at 5-6.

³²⁵ SFRWQCB (2019). *supra* n 316, at 1-6.

³²⁶ Proposed Order, at 15 ¶ 60.

³²⁷ State Water Board. Resolution No. 92-49: Policies and Procedures for Investigation and Cleanup and Abatement of Discharges Under Water Code Section 13304, at § III.H

³²⁸ Regional Board. 22 September 2021. *Water Quality Control Plan for the Lahontan Region*, at 4.2-4.

³²⁹ U.S. EPA. 1 May 2002. *Role of Background in the CERCLA Cleanup Program*. Office of Solid Waste and Emergency Response. OSWER 9285.6-07P, at 7.

³³⁰ *Id.*

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Rather than require an IRAP based on ESL exceedances, the appropriate step to address ESL exceedances is preparation of an HHRA. An HHRA is used to determine whether response actions such as remediation is necessary, to help provide justification for performing remedial action, and to assist in determining what exposure pathways need to be remediated.³³¹

Even if an IRAP were appropriate, the Regional Board's schedule for submitting and implementing such a plan is unreasonable. The IRAP actually entails completing five separate plans that are intended to:

- (1) Enhance contaminant mass removal and address off-Site COC migration at the LTLW.
- (2) Evaluate and destroy any vertical conduits (e.g., water supply wells and/or monitoring wells) within the Regional PCE Contamination that allow the downward migration of COCs.
- (3) Remediate COCs identified in any preferential pathways (e.g., stormwater conveyance system/Tucker Basin) located within the Regional PCE Contamination.
- (4) Mitigate any threats to human health at the Site or off-Site via the vapor intrusion to indoor air pathway.
- (5) Address any immediate threats to the beneficial use of groundwater not mitigated by implementation of the Permanent Water Replacement Plan.

The Proposed Order requires these five plans to be submitted to the Regional Board within two months of Order adoption.³³² That alone is impossible, but the Proposed Order also requires completion of no less than thirteen other tasks during the same period.

Further, the goals of the IRAP are ambiguous. For example, the "contaminant mass removal plan" is supposed to "address" off-site COC migration at the Site. The word "address" is vague and does not convey what is required. Similarly, the vertical conduit plan requires evaluation and destruction of "any" vertical conduits within the Regional PCE Contamination that "allow" the downward migration of COCs" and the preferential pathway plan requires remediation of COCs identified in "any" preferential pathways. The language of these requirements does not appear to distinguish between vertical conduits and preferential pathways that have the potential to materially impact the Regional PCE Contamination from those that do not, nor does the Proposed Order describe expected actions for those vertical conduits that are permitted in the South Y Area, such as dry wells, unlined sumps, seepage pits, and stormwater detention basins.³³³ Finally, the vapor intrusion and groundwater beneficial use plans require mitigation of "any" threats, without regard to the magnitude of the risk or the likelihood of it arising.

³³¹ 55 FR 8709; Health & Safety Code § 25356.1.5.

³³² Proposed Order, at Attachment C: Time Schedule.

³³³ Kennedy/Jenks Consultants (2014). *supra* n. 47, at Figure 6-6; Rybarski, et al. (2022). *supra* n. 117, at 86-87.

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The Proposed Order states all work associated with the IRAP be completed within two years. That requirement is particularly unreasonable given the Proposed Order requires that the IRAP scope of work be completed concurrent with site investigations that presumably would inform the scope of and implantation of the interim remedial work.³³⁴

9.7.2 RAP

The RAP serves the same function as the IRAP as these tasks are described in the Proposed Order. The IRAP is supposed to address “immediate threats” that are not mitigated by the Permanent Water Replacement Plan³³⁵ but the Proposed Order does not define the conditions that constitute such threats. The RAP also must assess the need for “interim remedial measures” and “multiple remedial measures may be needed and may be implemented to achieve all cleanup goals.”³³⁶

The Regional Board claims “[i]t is not necessary to identify all dischargers prior to proceeding with requirements for investigation and clean up and abatement”³³⁷ However, continued PCE leaching from off-Site sources makes restoration of groundwater to its beneficial uses and background quality technically and economically infeasible to accomplish. U.S. EPA guidance realizes other sites contributing to regional groundwater contamination must be addressed to enable effective remediation of the plume as a whole.³³⁸ U.S. EPA states “aquifer restoration will not be possible unless further leaching of contaminants to ground water is controlled, from both surface and subsurface sources.”³³⁹ The NRC concludes “[a]s long as the source remains, a dissolved phase plume will continue to develop; hence, removal (or isolation) of the source zone is required to halt creation of the dissolved phase plume.”³⁴⁰ CalEPA indicates that a CSM should incorporate information about each site that may be a chemical

³³⁴ The Proposed Order schedule requires submittal of a “Comprehensive Interim Remedial Action Plan” within nine months of adoption of the Proposed Order, but the text of the Proposed Order does not mention such a plan.

³³⁵ Proposed Order, at 29 ¶ 7.d.i.5.

³³⁶ *Id.*, at 30 ¶ 7.e.i.1.

³³⁷ Proposed Order, at 9 ¶ 34.

³³⁸ U.S. EPA. December 1988. *Guidance on Remedial Actions for Contaminated Ground Water at Superfund Sites*. Office of Emergency and Remedial Response. EPA/540/G-88/003, at B-1.

³³⁹ U.S. EPA. October 1996. *Presumptive Response Strategy and Ex-Situ Treatment Technologies for Contaminated Ground Water at CERCLA Sites*. Final Guidance. Office of Solid Waste and Emergency Response. EPA 540/R-96/023, at 2.

³⁴⁰ NRC (2005), *supra* n 90, at 26.

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source.³⁴¹ ASTM International likewise states the location, boundaries, and volume of each source should be measured or estimated.³⁴²

The Regional Board has not completed the crucial work of identifying off-Site sources that would be necessary if PCE is to be reduced to concentrations less than the MCL of 5 µg/L throughout the Tahoe Valley South Subbasin. The Regional Board has opted to try to shift that burden to Seven Springs and Fox by declaring LTLW is “connected” to PCE measured at concentrations greater than 500 µg/L in groundwater at the former Big O Tires facility and former Norma’s Cleaners site³⁴³ even though the Regional Board has determined PCE has been released at both properties and admits other off-Site sources likely exist in the Tahoe Valley South Subbasin.

The Regional PCE Contamination is not the responsibility of Seven Springs and Fox because the Regional PCE Contamination is due to off-Site sources. Even if it were, wellhead treatment being performed by TKPOA and LBWC already protects individuals from exposure to COCs in extracted groundwater. U.S. EPA makes clear that protectiveness of human health does not have to be achieved by reducing COCs concentrations in affected media to cleanup goals especially when such remediation is not possible:

In refining alternatives, it is important to note that protectiveness is achieved by reducing exposures to acceptable levels, but achieving these reductions in exposures may not always be possible by actually cleaning up a specific medium to these same levels. For example, ***protection of human health at a site may require that concentrations of contaminants in drinking water be reduced to levels that could not reasonably be achieved for the water supply aquifer; thus, protection could be provided by preventing exposures with the use of a wellhead treatment system.***³⁴⁴

The example cited in the above excerpt from U.S. EPA is the situation that confronts the Regional Board. Given the Regional Board’s unwillingness to pursue the sites that are responsible for the Regional PCE Contamination, leaching of PCE will sustain COC concentrations above MCLs in groundwater, making it impossible for the Regional PCE Contamination to be remediated.

³⁴¹ CalEPA. 25 June 2007. California Uniform Site Assessment Tools, at Figure 2.

³⁴² ASTM International. Standard Guide for Developing Conceptual Site Models for Contaminated Sites. Designation: E1689-20, at 4.

³⁴³ Regional Board Staff Report, at 26.

³⁴⁴ U.S. EPA. October 1988. *Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA*. Interim Final. Office of Emergency and Remedial Response. EPA/540/G-89/004, at 4-22 (emphasis added).

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Section 13304 of the Water Code considers wellhead treatment to be an acceptable remedy for preventing exposure to COCs in groundwater.³⁴⁵ The preferred alternative identified in STPUD's feasibility study entailed continued use of existing wellhead treatment for groundwater extracted from the Tahoe Valley South Subbasin.³⁴⁶ The Regional Board also acknowledges wellhead treatment could be the permanent water replacement plan for the Regional PCE Contamination.³⁴⁷ The remedial action requirements in the Proposed Order are not warranted because (1) no exposure to COCs in groundwater is occurring due to operation of existing wellhead treatment systems, and (2) LTLW is not the cause of the Regional PCE Contamination. If the Regional Board elects to issue the Proposed Order, then Task 7 of the Proposed Order should be limited to operating the SVE/GASS, as specified by Task 7.a.1, and preparation of a RAP that evaluates additional remedial actions to restore groundwater at the LTLW to its beneficial uses designated in the Water Quality Control Plan for the Lahontan Region.

9.8 Attachment C Time Schedule

The Proposed Order requires establishes an impossibly aggressive schedule for completing the required work. The two-month timeframe for submittal of these documents is unreasonable, especially given the fact all of following are required to be submitted to the Regional Board within two months of the Order being adopted:

- (1) Conceptual Site Model (Estimated Development Time = 3 weeks, per Attach. C)
- (2) Sampling and Analysis Plan (Estimated Development Time = 2 weeks, per Attach. C)
- (3) Quality Assurance Project Plan (Development Time included with SAP)
- (4) Site Investigation Work Plan (Estimated Development Time = 4 weeks, per Attach. C)
- (5) Monitoring Well Installation Work Plan (Estimated Development Time = 2 weeks, per Attach. C)
- (6) Vapor Intrusion Investigation Work Plan (Estimated Development Time = 2 weeks, per Attach. C)
- (7) Initial Interim Remedial Action Plan (No Estimated Development Time provided in Attach. C. Assumed by Seven Springs/Fox to be 8 weeks)

³⁴⁵ Water Code § 13304(a) ("cleanup and abatement order issued by the state board or a regional board may require the provision of, or payment for, uninterrupted replacement water service, which may include wellhead treatment . . .").

³⁴⁶ Kennedy/Jenks Consultants, Inc. 9 May 2020. *Interim Remedial Action Plan for the South Y PCE Facilities Feasibility Study*, at 1-2; Kennedy/Jenks Consultants. (2020). *supra* n. 151, at ES-4.

³⁴⁷ Proposed Order, at 14 ¶ 57, 27 ¶ 7.c.i.; Regional Board Staff Report, at 61.

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- (8) Report on Interim Emergency Water Replacement to Municipal Supply Entities (No Estimated Development Time provided in Attach. C. Assumed by Seven Springs/Fox to be 3 weeks)
- (9) Public Participation Plan (No Estimated Development Time provided in Attach. C. Assumed by Seven Springs/Fox to be 2 weeks)
- (10) Baseline Community Assessment (No Estimated Development Time provided in Attach. C. Assumed by Seven Springs/Fox to be 1 week; however, may be significantly longer if a community information gathering questionnaire is required to be mailed.)
- (11) Interested Persons Contact List (No Estimated Development Time provided in Attach. C. Assumed by Seven Springs/Fox to be 1 week)
- (12) Draft Fact Sheet (No Estimated Development Time provided in Attach. C. Assumed by Seven Springs/Fox to be 1 week)

The total estimated time to develop the aforementioned reports and planning documents is 29 weeks or approximately 7 months. However, the Regional Board is requiring these documents to be submitted **within two months** with the threat of civil liabilities/fines for failure to comply with these impossible deadlines. For perspective, SCAP funding was received by the Regional Board on 4 March 2019, but AECOM's SAP/QAPP³⁴⁸ and Regional Plume Characterization Work Plan³⁴⁹ were not finalized until June and July 2019, respectively. AECOM and the Regional Board needed four months to prepare the SAP/QAPP and Regional Plume Characterization Work Plan, **all while not having the burden of fulfilling the additional requirements and reports listed above, or a need to coordinate between multiple parties and agencies**. Therefore, the Proposed Order needs to be revised to reflect an appropriate time schedule such that tasks are suitably phased and scheduled and consistent with industry practices.³⁵⁰ Additionally, installation of monitoring wells, and performance of the Site and Vapor Intrusion Investigations are to be completed within six months of Order adoption but, under the Proposed Order's time schedule, work on these tasks cannot commence until the Regional Board approves the associated work plans.³⁵¹ Tasks

³⁴⁸ AECOM. June 2019. South Lake Tahoe "Y" PCE Plume Sampling and Analysis Plan; AECOM. June 2019. Site Cleanup Subaccount Program, California, Quality Assurance Project Plan.

³⁴⁹ AECOM. 3 July 2019. Task 3 Work Plan — South Lake Tahoe "Y" PCE Plume — Regional Plume Characterization.

³⁵⁰ This issue is not limited to initial submittals. Planning documents for site investigations, monitoring well installations, vapor intrusion investigations, and the HHRA are all due at the same time, as are Site Investigation completion reports, monitoring well installation completion reports and Vapor Intrusion Investigation completion reports. See Proposed Order, at Attachment C.

³⁵¹ For instance, if the Order is approved in October, a SIWP is timely submitted in December, and the Regional Board approves the plan in April, the proposed schedule would require Seven Springs/Fox to commence the work by June and to complete the month before, in May.

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contingent upon Regional Board's approval to start need to be revised to reflect an appropriate and reasonable schedule that is based upon when approval is given.

Another issue with the Proposed Order's schedule is that it fails to account for the fact that the Proposed Order envisions multiple rounds of plans. Task 3 refers to Site Investigation Work "Plan(s)" and Task 4 refers to Monitoring Well Installation Work "Plan(s)." However, the Proposed Order requires submittal of completion reports based on "Order adoption" and does not provide time for submittal, approval, and implementation of multiple plans.

The Schedule in Attachment C also is unreasonable insofar as it fails to account for scheduling challenges posed by the need to obtain access to properties not owned by Seven Springs or Fox and the limited field season in South Lake Tahoe. The Proposed Order ignores the access issue altogether and purports to account for seasonal issues by noting that it may grant extensions pursuant to the terms of the Proposed Order. The Regional Board has an obligation to adopt reasonable provisions, and it cannot avoid that obligation by requiring the parties named in the order to seek extensions. The Proposed Order should contain a provision that makes deadlines for field work subject to the ability to obtain reasonable site access and contractor availability. In addition, the Proposed Order should state that it does not require field work to be performed between the months of October and May when snowfall typically covers the ground surface. This timeframe coincides with the TRPA's non-Grading Season, defined to be between 15 October and 1 May of each year during which TRPA restricts construction activities.³⁵² The Regional Board should adjust any deadline for field work in the Proposed Order that falls between October and May to a reasonable deadline outside that period, and extensions due to seasonable issues may be sought as appropriate.

9.9 Monitoring and Attachment E Monitoring and Reporting Program

Page 1 of the Monitoring and Reporting Program provided in Attachment E of the Proposed Order requires collection and analysis of groundwater samples from "threatened, impacted, and impaired active water supply wells" on a quarterly basis. This requirement is based on the premise that the Regional PCE Contamination originated from the LTLW. Detected concentrations of PCE in public water system wells in the Tahoe Valley South Subbasin are not attributed to the LTLW. Therefore, the Proposed Order needs to be revised to remove the requirement for sampling off-Site public water system wells.

10 CLOSING

The Proposed Order is not needed to complete cleanup of the LTLW and should not be adopted because the LTLW has been fully characterized and effective remedial actions are in place that can be enhanced to address residual PCE in middle zone groundwater at the Site. The primary intent of the Proposed Order is to require investigation and remediation of contamination for which LTLW is not the cause. Without

³⁵² TRPA. 25 July 2022. Code of Ordinances, at § 33.3.1.A.

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access to and investigation and remediation of off-Site sources, the Proposed Order will have little to no effect on restoring groundwater within the Tahoe Valley South Subbasin to its beneficial uses because off-Site sources are sustaining the Regional PCE Contamination. If off-Site sources are not abated, then the only feasible alternative for preserving groundwater as potable supply is to treat water at the wellhead, which currently is being done.

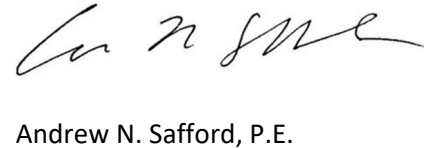
We appreciate the Regional Board's consideration of our comments on the Proposed Order. If you have any questions or require additional information, please call Kyle Flory at (415) 798-3028 or Peter Gorman at (415) 798-3029 with PES, or Andrew Safford with EKI at (650) 292-9100.

Respectively submitted,

PES ENVIRONMENTAL, INC.


Kyle S. Flory, P.G.

EKI ENVIRONMENT & WATER, INC.


Andrew N. Safford, P.E.



Peter D. Gorman, C.H.G., P.G.

ATTACHMENTS

Table 1 - Correlations Between Perchloroethylene (PCE) "Hot Spots" In Groundwater and Suspected Off-Site Sources

Index of Exhibits to PES & EKI Comments on Proposed Lake Tahoe Laundry Works Cleanup and Abatement

TABLE 1
CORRELATIONS BETWEEN PERCHLOROETHYLENE (PCE) "HOT SPOTS" IN GROUNDWATER AND SUSPECTED OFF-SITE SOURCES

Groundwater Sample "Hot Spot" Result Reported By AECOM ¹					Suspected Off-Site Sources Responsible for Groundwater "Hot Spot"				
Sample ID	Detected PCE Concentration (µg/L)	Depth (feet bgs)	Elevation (feet msl)	Hydrostratigraphic Unit	Off-Site Source	Site Address	Former and Current Operations	Years of Operations	Chemical Use History
CPT-E01	570	49-51	6219	Middle	Former Big O Tires	1961 Lake Tahoe Boulevard	Automobile service and repair	1975 to 2006	In a 2004 letter to the Lahontan Regional Water Quality Control Board (Regional Board), a representative for lessees CAMCO and BOT 65, Inc. disclosed that "trace amounts of PCE" were present in solvent used by these lessees. This letter also disclosed that Brakleen was handled at the property. ² Brakleen is a brake cleaning product that historically contained as much as 65 to 94 percent by weight of PCE. ³ Chlorinated solvent formulations of Brakleen may have been used by past operators of the Big O Tires franchise at the site. ⁴ An investigation conducted in 2001 discovered up to 4,700 micrograms per liter (µg/L) of PCE in middle zone groundwater beneath the former Big O Tires site. ⁵ In 2002, CAD Enterprises, the current property owner, notified former and current lessees of its intent to commence legal actions against them based upon their contribution to soil and groundwater PCE contamination at the property. ⁶ In 2019, the Regional Board issued an Investigation Order to past and current owners and operators of the former Big O Tires facility to further characterize site conditions. ⁷ The Regional Board concluded in this order that investigations performed on the Big O Tires site in 2001 and 2006 show "unauthorized discharges of petroleum and chlorinated hydrocarbons in select soil and groundwater samples from past facility operations." ⁸ In its 2022 proposed Cleanup and Abatement Order, the Regional Board finds "stormwater runoff contaminated with chlorinated hydrocarbons (e.g., PCE) and/or petroleum hydrocarbons" ⁹ from the Big O Tires facility has been discharged to the Tucker Avenue stormwater detention basin.
CPT-E01	540	58-62	6210						
LTLW-GW-9	503	42-46	6235						
LTLW-GW-11	1,680	42-46	6233						
					Runnels Automotive	986 Emerald Bay Road	Automobile service station and repair	1970 to present	According to an Environmental Data Resources, Inc. database report, a 400-gallon waste oil tank was reportedly located on-site. ¹⁰ Past auto repair operations may have included the use of PCE as a degreasing solvent. In 1997, according to the EDR report, the Regional Board required Runnels to submit a work plan to conduct a groundwater investigation on its site. One shallow zone groundwater sample was collected from the Runnels site in 1997 or 1998, which may have been in response to the Regional Board's request. Other than this one groundwater sample, no other subsurface investigations have been performed on the Runnels site for the presence of PCE.

¹ Groundwater sample data used by AECOM Technical Services, Inc. (AECOM) to generate Dissolved PCE in Groundwater Plume Map presented as Figure 8 in Proposed Order and Figure 5 in AECOM. June 2022. *Regional Plume Characterization Summary Report: South "Y" PCE Plume, 2019-2020 Field Season*.

² Strong, M. (CAMCO and BOT 65, Inc.). 29 January 2004. Letter to Harold Singer, Executive Officer, California Regional Water Quality Board, Lahontan District.

³ U.S. Department of Health & Human Services. 10 July 2007. *Household Products Database, Health & Safety Information on Household Products*, Brakleen Brake Parts Cleaner – Old Product, U.S. National Library of Medicine. Current safety data sheets show Brakleen can be as much as 90 to 100 percent PCE. See <http://docs.crcindustries.com/msds/1003714E.pdf>.

⁴ See Letter by William F. Tarantino, counsel for Seven Springs Limited Partnership, and Scott H. Reisch, counsel for Fox Capital Management Corporation to Patty Kouyoumdjian, Executive Officer, Lahontan Regional Water Quality Control Board, dated 23 August 2019, that provides comments to assist the Regional Board in its ongoing investigation of regional groundwater PCE contamination, particularly as it relates to the Big O Tires Investigation Order, dated 10 May 2019.

⁵ Harding ESE. 30 October 2001. Groundwater Investigation, Big-O Tire Center, 1961 South Lake Tahoe Blvd., South Lake Tahoe, California, at Table 1

⁶ McLaughlin, M. (Feldman & Shaw). 3 January 2002. Letter to Lessees *Re Big-O Tires Center 1961 Lake Tahoe Boulevard, South Lake Tahoe, CA APN 023-523-08*; and McLaughlin, M. (Feldman & Shaw). 17 January 2002. Letter to M. Strong and C. Harris (CAMCO) *Re Big-O Tires Center 1961 Lake Tahoe Boulevard, South Lake Tahoe, CA APN 023-523-08*.

⁷ Regional Board. 10 May 2019. Order to Submit Technical Reports in Accordance with Section 13267 of the California Water Code, Big O Tire Store, 1961 Lake Tahoe Boulevard, South Lake Tahoe, El Dorado County, SCP Case #T6S034, GeoTracker Global ID SL0601729739.

⁸ *Id.*, at 9.

⁹ Regional Board. 16 June 2022. Proposed Cleanup and Abatement Order for former Big O Tires facility, at 7 ¶ 20.f.

¹⁰ Environmental Data Resources, Inc. 4 June 2015. *EDR Radius Map™ Report with GeoCheck®, South Y Area*.

TABLE 1
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Groundwater Sample "Hot Spot" Result Reported By AECOM ¹					Suspected Off-Site Sources Responsible for Groundwater "Hot Spot"				
Sample ID	Detected PCE Concentration (µg/L)	Depth (feet bgs)	Elevation (feet msl)	Hydrostratigraphic Unit	Off-Site Source	Site Address	Former and Current Operations	Years of Operations	Chemical Use History
CPT-E01 CPT-E01 LTLW-GW-9 LTLW-GW-11 (Continued)					Former Honda Motor Company automobile dealership and TCI Cablevision of California	924 Emerald Bay Road	Automobile service and repair	1975 to 1990s ¹¹	Questionnaire response submitted to Regional Board indicates that former owner, Anika and Associates, Inc, has no knowledge of chemical usage by past occupants of the site. ¹² In 1997, the only year for which data are available, Department of Toxic Substances Control (DTSC) hazardous waste generator records indicate that the Honda dealership disposed of approximately 830 pounds of an unspecified oil-containing waste. ¹³ Groundwater beneath the property is known to contain PCE. In 2001, PCE concentrations as high as 190 µg/L were detected in deeper zone groundwater at 80 feet below ground surface (bgs). ¹⁴ In 2007, the Regional Board stated its belief that the site was a potential PCE source to groundwater because "the history of site use, including auto repair, implies the past use of PCE as not being unlikely." ¹⁵ In 2011, the Regional Board closed the case without requiring further soil and groundwater investigation. ¹⁶ In closing the case, the Regional Board stated "Subsequent investigations have identified several potential upgradient PCE sources on Lake Tahoe Boulevard." ¹⁷
LTLW-J2 LTLW-J4 CPT-F01	694 718 320	35-39 35-39 41-43	6236 6239 6220	Middle	Former Norma's Cleaners	949 Emerald Bay Road	Dry cleaning	1969 to 1977 ¹⁸	PCE released at former Norma's Cleaners (i.e., Hurzel or current BevMo site) has impacted soil and groundwater beneath the property. Incomplete investigation and remediation of the site have left a subsurface PCE source that is southeast of the former site building. ¹⁹ PCE contamination at the former PCE truck parking area and possible other source locations (i.e., former dry cleaner machine, PCE delivery hallway, storm water detention basin, trash dumpster, and storm drain and sanitary sewer lines) have not been adequately delineated. In 2019, the Regional Board issued an Investigation Order to past and current owners and operators of the Hurzel site that require those entities to define the "threat and extent of remaining onsite PCE contamination." ²⁰ The 2022 proposed Cleanup and Abatement Order for Norma's Cleaner states PCE contamination leading leaching from site soil into groundwater has allowed the off-site migration of PCE in groundwater to occur. ²¹

¹¹ Emerald Bay Properties, LLC. 5 April 2019. Chemical Storage and Use Questionnaire, 924 Emerald Bay Road. Investigative Order No. R6T-2019-0087.

¹² Anika and Associates, Inc. 3 May 2019. Chemical Storage and Use Questionnaire, 924 Emerald Bay Road. Investigative Order No. R6T-2019-0086.

¹³ DTSC. 28 March 1997. EPA ID Profile, Lake Tahoe Honda Mitsubishi.

¹⁴ GHH Engineering, Inc. February 2001. Additional Assessment Report, TCI Building, 924 Emerald Bay Road, South Lake Tahoe, California, at Table 2.

¹⁵ Regional Board. 18 April 2007. TCI Building, 924 Emerald Bay Road, South Lake Tahoe, El Dorado County.

¹⁶ Regional Board. 8 February 2011. Letter to Murray Wikol. No Further Action Required for the Former TCI Building, 924 Emerald Bay Road, South Lake Tahoe, El Dorado County (SCP No. T6S017).

¹⁷ Regional Board. 7 February 2011. Case Closure Summary. Former TCI Building, at 5.

¹⁸ SECOR International Incorporated ("SECOR"). 30 May 2008. Site Investigation Report, Former Dry Cleaning Business, 949 Emerald Bay Drive, South Lake Tahoe, CA, at 1.

¹⁹ PES Environmental, Inc. 23 August 2019. Comments on Previous Site Characterization and Remediation, Hurzel Properties, LLC, 945, 949 and 961 Emerald Bay Road, South Lake Tahoe, California, Lahontan.

²⁰ Regional Board. 10 May 2019. Order to Submit Technical Reports in Accordance with Section 13267 of the California Water Code, Hurzel Properties, LLC, 961 Emerald Bay, Road, South Lake Tahoe, El Dorado County, SCP Case No. T6S044, GeoTracker Global ID SL0601790916.

²¹ Regional Board. 16 June 2022. Proposed Cleanup and Abatement Order for former Norma's Cleaners site, at 5 ¶ 13.

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Sample ID	Detected PCE Concentration (µg/L)	Depth (feet bgs)	Elevation (feet msl)	Hydrostratigraphic Unit	Off-Site Source	Site Address	Former and Current Operations	Years of Operations	Chemical Use History
LTLW-J2 LTLW-J4 CPT-F01 (Continued)					Tahoe Mobile Auto, Dan's Auto Works, Marine Performance, German Performance, and Jean Sellars	2048 and 2050 Dunlap Drive	Automobile service and repair	Unknown	Questionnaire response submitted to Regional Board provides conflicting information regarding use of chlorinated solvents at the property. ²² One part of the questionnaire response states chlorinated solvents were used in the past while another part of the questionnaire response indicates only Stoddard solvent was employed. ²³ No chemical use records were reviewed in preparing the questionnaire response.
					Former Redwood Oil, Former Sierra Key-Lock, and Creative Fabrication	2060 Eloise Avenue	Bulk fueling	1940s to 2013 ²⁴	Questionnaire response submitted to Regional Board does not contain information regarding Redwood Oil or Sierra Key-Lock's chemical usage. Sierra Key-Lock operated a gasoline service station at the property beginning in 1969. ²⁵ Questionnaire response asserts no chemicals are used in the processes conducted at the site, but the response indicates Creative Fabrication is engaged in metal work or metal degreasing. ²⁶ Between 2005 and 2012, PCE concentrations as high as 430 µg/L were detected in ten shallow groundwater monitoring wells on and around the Redwood Oil facility. ²⁷ Redwood Oil attributed PCE in groundwater beneath its facility to migration from releases that occurred on other properties. Redwood Oil identified the probable sources as the Big O Tires, former Honda Motor Company automobile dealership, and Napa Auto Parts/Former Lakeside Automotive sites. ²⁸
					Former Berry-Hinckley Industries Bulk Terminal, and Flyers Energy LLC	2070 James Avenue	Lubricant and grease products packaging and transport; gasoline and diesel fueling operations	1940s to present ²⁹	The site is an active bulk petroleum terminal, currently operated by Flyers Energy LLC, which was formerly operated by Berry-Hinckley Industries. Flyers Energy states it stores a maximum of 100 gallons of PCE on any given day at the terminal. ³⁰ Shallow zone monitoring well MW-4, which had a screen interval between 8 and 23 feet bgs, ³¹ appears to have been the only well tested for PCE on the former Berry-Hinckley terminal. Well MW-4 contained up to 79 µg/L of PCE in 2006. ³²

²² Broughton Family Trust. 1 May 2019. Chemical Storage and Use Questionnaire, 2048 and 2050 Dunlap Drive. Investigative Order No. R6T-2019-0017.

²³ Stoddard solvent consists of petroleum hydrocarbons. Stoddard solvent is used as a paint thinner; in some types of photocopier toners, printing inks, and adhesives; as a dry-cleaning solvent; and as a general cleaner and degreaser. Agency for Toxic Substances and Disease Registry. 3 March 2011. *Stoddard Solvent*. <https://wwwn.cdc.gov/TSP/substances/ToxSubstance.aspx?toxid=73>. Accessed 13 September 2022.

²⁴ Redwood Oil bulk fueling operations took place from the 1940s to 2013. RDM Environmental Inc. 19 December 2012. *Request for "No Further Action," Former Redwood Oil Company Bulk Plant, 2060 Eloise Avenue, South Lake Tahoe, California*, at 1.

²⁵ Environmental Data Resources, Inc. 4 June 2015. EDR Radius Map™ Report with GeoCheck®, South Y Area.

²⁶ Creative Fabrication. 11 June 2019. Chemical Storage and Use Questionnaire, 2060 Eloise Avenue. Investigative Order No. R6T-2019-0054.

²⁷ RDM Environmental Inc. (2012). *supra* n. 24, at Table 1.

²⁸ *Id.*, at 3.

²⁹ Conestoga-Rovers & Associates. February 2014. Site Conceptual Model and Case Closure Request, Former Berry-Hinckley Industries Bulk Terminal (Former Chevron 1001382), 2070 James Avenue, South Lake Tahoe, California, SLIC Case T6S021, at 2.

³⁰ Flyers Energy LLC. Chemical Storage and Use Questionnaire, 2070 James Avenue. Investigative Order No. R6T-2019-0118 and attached Chemical Inventory Form and Hazardous Materials and Wastes Inventory Matrix Report.

³¹ ECM. 4 May 2005. 1st Quarter 2005 Ground Water Monitoring Report, Former Redwood Oil Company Bulk Plant, 2060 Eloise Avenue, South Lake Tahoe, California, at Table 1.

³² RDM Environmental Inc. (2012). *supra* n. 24, at Table 1.

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LTLW-FIF LTLW-J5	1,040 338	45-49 35-39	6226 6238	Middle	Former Chem-Dry Carpet Cleaning of South Lake Tahoe and Custom Carpet Cleaning	941 Emerald Bay Road	Carpet cleaning	1980s to 1990s	Questionnaire response submitted to Regional Board provides information pertaining only to the Crystal Range Motel that occupied this property. ³³ However, two carpet cleaning businesses are reported to have operated on this site (i.e., Chem-Dry Carpet Cleaning and Custom Carpet Cleaning). ³⁴ No chemical use information for the carpet cleaning businesses was provided. The Regional Board collected a groundwater sample from a domestic well on this property in 1999. The groundwater sample contained 2.9 µg/L of PCE. ³⁵
					Former Beacon and Swiss Mart Gasoline service station	913 Emerald Bay Road	Retail gasoline station and convenience store; automobile service and repair	1950s to present ³⁶	Questionnaire response submitted to the Regional Board describes only current operations. Seerat, Inc., the present occupant, does not use chemicals because no automobile service and repair is conducted at the site. ³⁷ No information regarding past operations is provided. PCE has been detected in groundwater at various depths beneath or near the site. In 2003, PCE was detected at a maximum concentration of 170 µg/L in a monitoring well with a screen interval between 58 and 78 feet bgs ³⁸ PCE analysis of groundwater samples from Swiss Mart monitoring wells was a one-time event. ³⁹
					South Side Auto Body, Two Guys Automotive, and Tahoe Test and Tune	934 Eloise Avenue	Auto body repair; automobile service and repair	Unknown	Questionnaire response submitted to the Regional Board indicates that metal work or metal degreasing is being conducted and has been performed in the past at the property. ⁴⁰ However, the current operator of South Side Auto Body is uncertain whether chlorinated solvents were used by former owners of the auto body business at the site. No information on chemical usage by Two Guys Automotive and Tahoe Test and Tune is provided in the questionnaire response.
					South Side Auto Body	920 Eloise Avenue	Auto body repair	Unknown	Questionnaire response submitted to the Regional Board indicates current operator of South Side Auto Body is not certain whether chlorinated solvents were used by past owners of the auto body business. A search of U.S. EPA's Resource Conservation and Recovery Act (RCRA) database shows South Side Auto Body historically generated spent PCE as part of its operations at this site. ⁴¹

³³ Steven and Janet Leman. 29 April 2019. Chemical Storage and Use Questionnaire, 941 Eloise Avenue. Investigative Order No. R6T-2019-0089.

³⁴ Hill-Donnelly City Directory. 1992; Pacific Bell Directory. 1985.

³⁵ Regional Board. 16 April 1999. Letter to Banoo Iman, Crystal Range Motel Re Notice of Results from Drinking Water Well Sampling at Crystal Range Motel, 941 Emerald Bay Road, South Lake Tahoe, El Dorado County.

³⁶ Apex Envirotech, Inc. 6 January 1999. Site Characterization Report, Swiss Mart, 913 Emerald Bay Road, South Lake Tahoe, CA, at 4.

³⁷ Seerat, Inc. 25 April 2019. Chemical Storage and Use Questionnaire, 913 Emerald Bay Road. Investigative Order No. R6T-2019-0082.

³⁸ Black Point Environmental. 6 May 2003. First Quarter 2003 Groundwater Monitoring Report, Swiss Mart Gas Station, 913 Emerald Bay Road, South Lake Tahoe, at Table 1.

³⁹ *Id.*, at 10.

⁴⁰ South Side Auto Body. Chemical Storage and Use Questionnaire, 934 Eloise Avenue. Investigative Order No. R6T-2019-0052.

⁴¹ Environmental Data Resources, Inc. 4 June 2015. *EDR Radius Map™ Report with GeoCheck®, South Y Area.*

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Groundwater Sample "Hot Spot" Result Reported By AECOM ¹					Suspected Off-Site Sources Responsible for Groundwater "Hot Spot"				
Sample ID	Detected PCE Concentration (µg/L)	Depth (feet bgs)	Elevation (feet msl)	Hydrostratigraphic Unit	Off-Site Source	Site Address	Former and Current Operations	Years of Operations	Chemical Use History
LTLW-FIF LTLW-J5 (Continued)					Liberty Utilities and Sierra Pacific Power Company	933 Eloise Avenue	Electrical distribution, utility yard, warehouse, and office	1969 to present	Review of Uniform Hazardous Waste Manifests included with questionnaire response submitted to the Regional Board shows Liberty Utilities disposes of spent PCE. ⁴² A separate questionnaire response submitted to the Regional Board also indicates Sierra Pacific Power Company used chlorinated solvents. ⁴³ DTSC hazardous waste generator records reveal Sierra Pacific Power Company disposed of approximately 67 to 375 pounds (i.e., 5 to 28 gallons) of PCE annually between 2007 and 2013, ⁴⁴ which is the period for which hazardous waste data are available on DTSC's Hazardous Waste Tracking System.
					Struve Automotive, Bill's Automotive, and Pedersen Underground-Paving Contractor	927 Eloise Avenue	Automobile service and repair	2005 to present	Questionnaire response submitted to the Regional Board states no chlorinated solvents have been used at the facility. ⁴⁵ Yet, DTSC hazardous waste generator records available for 2011 through 2018 show Struve Automotive generated approximately 117 to 325 pounds (i.e., 9 to 24 gallons) annually of PCE. ⁴⁶
					Coordinated Transit Systems, Sunshine/Yellow Taxi-Yellow Cab, and Bill's Garage	912 Eloise Avenue	Automobile service and repair	1990 to present	Questionnaire response submitted to the Regional Board states no chlorinated solvents have been used by former or current tenants. ⁴⁷ However, DTSC hazardous waste generator records show Sunshine Taxi, which has operated at the site since 1990, disposed of 250 to 500 pounds (i.e., 10 to 37 gallons) of PCE annually between 2010 and 2012. ⁴⁸
CPT-G01	120	41-43	6214	Middle	Sierra Alternators & Starters, Tahoe Generator Exchange, Woods-Baker Construction Co., and Appliance Recyclers	2108 Dunlap Drive	Repair of alternators and starters and retail sale of automobile batteries; retail sale of used washers, dryers, stoves and refrigerators	1983 to present	Questionnaire response indicates that current property owner, South Tahoe Refuse Co., is not certain whether chlorinated solvents were used at the site. ⁴⁹ Chemical Inventory Forms included with the response shows the tenant, Sierra Alternators and Starters, uses solvent and brake parts cleaner. Formulations of these products containing chlorinated solvents may have been used in the past at the site.
					South Side Auto Body, Tahoe Printing, and Rave On Builders	2116 Dunlap Drive	Auto body repair; printing	Unknown	Questionnaire response submitted to Regional Board indicates that the current property owner, South Tahoe Refuse Co., is not certain whether chlorinated solvents were used at the site. ⁵⁰ South Side Auto Body used PCE in its operations at 920 Eloise Avenue. ⁵¹ The possibility exists that PCE was used by South Side Auto Body at 2116 Dunlap Drive as well.

⁴² Liberty Utilities. 2 May 2019. Chemical Storage and Use Questionnaire, 927 Eloise Avenue. Investigative Order No. R6T-2019-0048.

⁴³ Liberty Utilities. 2 May 2019. Chemical Storage and Use Questionnaire, 927 Eloise Avenue. Investigative Order No. R6T-2019-0049.

⁴⁴ DTSC. 17 September 2019. EPA ID Profile, Sierra Pacific Power Company.

⁴⁵ Struve Automotive. 23 April 2019. Chemical Storage and Use Questionnaire, 927 Eloise Avenue. Investigative Order No. R6T-2019-0045, at 2-4.

⁴⁶ DTSC. 17 September 2019. EPA ID Profile, Struve Automotive.

⁴⁷ Zack Lannoy. 4 June 2019. Chemical Storage and Use Questionnaire, 912 Eloise Avenue. Investigative Order No. R6T-2019-0040.

⁴⁸ DTSC. 19 July 2017. EPA ID Profile, Sunshine Taxi, Inc.

⁴⁹ South Tahoe Refuse Co. 3 May 2019. Chemical Storage and Use Questionnaire, 2108 Dunlap Drive. Investigative Order No. R6T-2019-0021.

⁵⁰ South Tahoe Refuse Co. 3 May 2019. Chemical Storage and Use Questionnaire, 2116 Dunlap Drive. Investigative Order No. R6T-2019-0020.

⁵¹ See EDR (2015). *supra* n. 41.

TABLE 1
CORRELATIONS BETWEEN PERCHLOROETHYLENE (PCE) "HOT SPOTS" IN GROUNDWATER AND SUSPECTED OFF-SITE SOURCES

Groundwater Sample "Hot Spot" Result Reported By AECOM ¹					Suspected Off-Site Sources Responsible for Groundwater "Hot Spot"				
Sample ID	Detected PCE Concentration (µg/L)	Depth (feet bgs)	Elevation (feet msl)	Hydrostratigraphic Unit	Off-Site Source	Site Address	Former and Current Operations	Years of Operations	Chemical Use History
CPT-G01 (Continued)					South Side Auto Body and South Tahoe Refuse Co.	2132 Dunlap Drive	Auto body repair; repair and maintenance of garbage dumpsters	2000 to present ⁵²	Questionnaire response submitted to Regional Board states metal work or metal degreasing is performed at the property, but no chlorinated solvents are used in these operations. ⁵³ No information is provided on past chemical use by South Side Auto Body. South Side Auto Body used PCE in its operations at 920 Eloise Avenue. ⁵⁴ The possibility exists that PCE was used by South Side Auto Body at 2132 Dunlap Drive.
					Meyers Marine and Coast Oil Company	2140 Dunlap Drive	Unknown	Unknown	Questionnaire response submitted to Regional Board provides information on the current tenant only, which is utilizing the property for boat storage and does not involve chemicals. ⁵⁵ No information is provided on past chemical use at the property. A partial copy of a groundwater monitoring and remediation progress report ⁵⁶ included with the questionnaire indicates five monitoring wells were constructed at the site in connection with investigation and in-situ bioremediation of a petroleum hydrocarbon release. Groundwater samples do not appear to have been analyzed for chlorinated solvents.
					Art's Transmission	2105 Ruth Avenue	Transmission service and repair	1980 to present	Questionnaire response indicates no chlorinated solvents have been used at facility. However, an undated drawing in the business plan attached to the questionnaire shows the presence of two "solvent sinks" and a "cleaning machine" within the building at the facility. ⁵⁷
					Five Star Automotive and Mike's Garage	2119 Ruth Avenue	Automobile service and repair	1990 to present	Questionnaire response submitted to Regional Board states no chlorinated solvents have been used at the facility. ⁵⁸ However, this statement conflicts with DTSC hazardous waste generator records that indicate Five Star Automotive disposed of hydrocarbon solvents, which consisted of 150 pounds or roughly 11 gallons of PCE in 2007. ⁵⁹
					South Tahoe Refuse and Recycling Services	2140 Ruth Avenue	Non-hazardous solid waste transfer station and material recovery facility	1968 to present	Questionnaire response submitted to Regional Board states metal work or metal degreasing has been performed at the site. ⁶⁰ The questionnaire also indicates PCE is used in South Tahoe Refuse's operations. In addition, hazardous materials may be contained in certain non-hazardous solid wastes delivered to the facility for sorting and transfer to Lockwood Regional Landfill in Sparks, Nevada. The facility is permitted to process a maximum of 370 tons per day of municipal solid waste, green material, and construction and demolition debris. ⁶¹

⁵² Years of operation pertain to repair and maintenance of garbage dumpsters at property.

⁵³ South Tahoe Refuse Co. 3 May 2019. Chemical Storage and Use Questionnaire, 2132 Dunlap Drive. Investigative Order No. R6T-2019-0022.

⁵⁴ See EDR (2015). *supra* n. 41.

⁵⁵ Robert and Tammy Hassett. 4 May 2019. Chemical Storage and Use Questionnaire, 2140 Dunlap Drive. Investigative Order No. R6T-2019-0025.

⁵⁶ Fugro West, Inc. 5 June 1996. First Quarter 1996 Quarterly Ground Water Monitoring and Remediation Progress Report, Myers Marine, 2140 Dunlap Drive, South Lake Tahoe, California.

⁵⁷ Art's Transmission. 16 April 2019. Chemical Storage and Use Questionnaire, 2105 Ruth Avenue. Investigative Order No. R6T-2019-0186.

⁵⁸ Five Star Automotive. 29 April 2019. Chemical Storage and Use Questionnaire, 2119 Ruth Avenue. Investigative Order No. R6T-2019-0187.

⁵⁹ DTSC. 19 August 2019. EPA ID Profile, Five Star Automotive.

⁶⁰ South Tahoe Refuse Co. 3 May 2019. Chemical Storage and Use Questionnaire, 2140 Ruth Avenue. Investigative Order No. R6T-2019-0188.

⁶¹ Placer County Health and Human Services Department. 17 June 2019. South Tahoe Refuse Co., Inc. Solid Waste Facility Permit. 09-AA-0002.

TABLE 1
CORRELATIONS BETWEEN PERCHLOROETHYLENE (PCE) "HOT SPOTS" IN GROUNDWATER AND SUSPECTED OFF-SITE SOURCES

Groundwater Sample "Hot Spot" Result Reported By AECOM ¹					Suspected Off-Site Sources Responsible for Groundwater "Hot Spot"				
Sample ID	Detected PCE Concentration (µg/L)	Depth (feet bgs)	Elevation (feet msl)	Hydrostratigraphic Unit	Off-Site Source	Site Address	Former and Current Operations	Years of Operations	Chemical Use History
CPT-G01 (Continued)					Eloise Automotive & Alignment, Sierra Automotive and Marine Specialties, Engine Dynamics Co., and Tahoe Test & Tune	2143 Eloise Avenue	Automobile service and repair	Unknown	Numerous tenants have performed auto body repair or automobile service and repair at this property. ⁶² Questionnaire response submitted to Regional Board indicates metal degreasing is currently performed by Eloise Automotive & Alignment, but no chlorinated solvents are used. ⁶³ This information conflicts with the CleanHarbors generator waste report that shows waste combustible liquids being disposed as D039 PCE RCRA hazardous waste. ⁶⁴ Further, DTSC hazardous waste generator records also show Eloise Automotive & Alignment disposed of 117 to 292 pounds (i.e., 9 to 22 gallons) of PCE annually between 2013 and 2018. ⁶⁵
					Welcome's Towing, Emerald Bay Towing, and Paal-Co, Inc. Towing	948 3 rd Street	Vehicle towing	1986 to present	Questionnaire response submitted to Regional Board states no chlorinated solvents have been used at the property. John Baker, the current property owner, did not provide chemical use records of former businesses. Welcomes Towing, the current owner, employs penetrating oil, carburetor cleaner, and brake cleaner in its present operations. ⁶⁶ Formulations of these products containing chlorinated solvents may have been used by past operators of the towing service.
SONIC10	550	123-125	6144	Deeper	Former Ted's Fix-It Shop	807 Roger Avenue	Motor and electrical equipment repair	1980s to 2012	The property is adjacent to a 7-Eleven convenience store. Based upon the investigative findings reported by URS Corporation Americas ("URS"), ⁶⁷ Regional Board concluded that a "suspected-source area" is near the 7-Eleven store. ⁶⁸ Former Ted's Fix-It Shop is a possible PCE source. Questionnaire response submitted to the Regional Board indicates chlorinated solvents were used at the property. ⁶⁹ In 2001, the only year for which data are available, DTSC hazardous waste generator records indicate Ted's Fix-It Shop generated 720 pounds of an unspecified solvent mixture. ⁷⁰ Other releases may be contributing to PCE in groundwater near the 7-Eleven store. Notes documenting conversations with long-time residents of South Lake Tahoe were transmitted to Regional Board by M. Strong. Among other PCE sources, the notes identify "R&D Petroleum up Glorene in the 7-11 area." ⁷¹

⁶² Regional Board. 22 August 2019. Summary of 13267 Site History Questionnaires as of July 26, 2019, at Table 1.

⁶³ Eloise Automotive & Alignment. Chemical Storage and Use Questionnaire, 2143 Eloise Avenue. Investigative Order No. R6T-2019-0068.

⁶⁴ CleanHarbors. 23 April 2019. Generator Waste Report.

⁶⁵ DTSC. 23 September 2019. EPA ID Profile, Eloise Automotive & Alignment.

⁶⁶ John Baker. 1 May 2019. Chemical Storage and Use Questionnaire, 948 3rd Street. Investigative Order No. R6T-2019-0014.

⁶⁷ URS. 19 January 2016. Final PCE Investigation Report, South Lake Tahoe, California.

⁶⁸ Regional Board. 2 September 2016. Meeting Summary to Discuss Next Steps for the South Y PCE Investigation.

⁶⁹ Vogel Center LLC. 1 May 2019. Chemical Storage and Use Questionnaire, 807 Roger Street. Investigative Order No. R6T-2019-0184.

⁷⁰ DTSC. 18 August 1999. EPA ID Profile, Ted's Fix-It Shop.

⁷¹ See Strong, M. and Strong, G. 14 November 2019. Email to B. Grey (Regional Board) *Re Big O Tire #65 Charges* (attachments).

TABLE 1
CORRELATIONS BETWEEN PERCHLOROETHYLENE (PCE) "HOT SPOTS" IN GROUNDWATER AND SUSPECTED OFF-SITE SOURCES

Groundwater Sample "Hot Spot" Result Reported By AECOM ¹					Suspected Off-Site Sources Responsible for Groundwater "Hot Spot"				
Sample ID	Detected PCE Concentration (µg/L)	Depth (feet bgs)	Elevation (feet msl)	Hydrostratigraphic Unit	Off-Site Source	Site Address	Former and Current Operations	Years of Operations	Chemical Use History
SONIC10 (Continued)					Former Precision Auto Body, Welcomes Auto Body, KC's Automotive, and Bill's Garage	867 Eloise Avenue	Auto body repair; automobile service and repair	1970s to 2012	Various tenants have performed auto body repair or automobile service and repair at this property. Questionnaire response submitted to Regional Board indicates that chlorinated solvents may have been used in these operations. ⁷²
SONIC15 CPT-G06	320	71-74	6168	Deeper	Former Tahoe One Hour Cleaners and Vaya Clean Eco Dry Cleaning & Laundry	2301 Lake Tahoe Boulevard	Dry cleaning	1979 to 2018	Questionnaire response submitted to Regional Board does not provide information pertaining to use of chlorinated solvents. ⁷³ In 1997, the only year for which public data are available, DTSC hazardous waste generator records indicate Tahoe One Hour Cleaners generated 1,300 pounds of spent halogenated solvent, which likely consisted of approximately 99 gallons of PCE. ⁷⁴
	120	90-92	6149		Beacon Station No. 688, Flyers Beacon, LLC, South Tahoe Station, Inc., and Tahoe Station, Inc. service station	2304 Lake Tahoe Boulevard	Retail gasoline station and convenience store; automobile service and repair	Unknown	Questionnaire responses submitted to Regional Board states no chemicals were used by tenants operating the retail gasoline station and convenience store. ⁷⁵ No chemical use information associated with automobile service and repair conducted at the site was provided. Concrete sump was discovered during remodeling in 1993 and the site had an infiltration gallery that was used to percolate storm water runoff.
					Ed's Auto Body	2314 Lake Tahoe Boulevard	Auto body repair	Unknown	Questionnaire response submitted to Regional Board states no chlorinated solvents were used and no metal work or metal degreasing was performed at the property. ⁷⁶ However, a sample of solids collected from a floor drain inside the former auto body building contained 1,200 milligrams per kilogram ("mg/kg") of PCE. ⁷⁷ Groundwater at the site contained 4.3 µg/L of PCE. The scope and adequacy of the investigation pertaining to solvent releases at the property cannot be determined because no reports pertaining to site characterization are available on GeoTracker, which is the State Water Resources Control Board's data management system for sites that impact, or have the potential to impact, water quality in California.

⁷² Gil Construction Co. 11 April 2019. Chemical Storage and Use Questionnaire, 867 Eloise Avenue. Investigative Order No. R6T-2019-0031.

⁷³ Tahoe One Hour Cleaners. 23 July 2019. Dry Cleaner Operations Questionnaire and Chemical Storage and Use Questionnaire, 2301 Lake Tahoe Boulevard. Investigative Order No. R6T-2019-0172.

⁷⁴ DTSC. 8 October 2018. EPA ID Profile, Tahoe One Hour Cleaners.

⁷⁵ See Tahoe Station, Inc. 25 April 2019. Chemical Storage and Use Questionnaire, 2304 Lake Tahoe Boulevard. Investigative Order No. R6T-2019-0173; Tesoro Petroleum. 3 May 2019. Chemical Storage and Use Questionnaire, 2304 Lake Tahoe Boulevard. Investigative Order No. R6T-2019-0174.

⁷⁶ Tahoe Keys Corporation. 22 April 2019. Chemical Storage and Use Questionnaire, 2314 Lake Tahoe Boulevard. Investigative Order No. R6T-2019-0175.

⁷⁷ Regional Board. 15 July 2003. Case Closure Summary, Former Ed's Auto Body, 2314 Lake Tahoe Boulevard, South Lake Tahoe, at 4.

TABLE 1
CORRELATIONS BETWEEN PERCHLOROETHYLENE (PCE) "HOT SPOTS" IN GROUNDWATER AND SUSPECTED OFF-SITE SOURCES

Groundwater Sample "Hot Spot" Result Reported By AECOM ¹					Suspected Off-Site Sources Responsible for Groundwater "Hot Spot"				
Sample ID	Detected PCE Concentration (µg/L)	Depth (feet bgs)	Elevation (feet msl)	Hydrostratigraphic Unit	Off-Site Source	Site Address	Former and Current Operations	Years of Operations	Chemical Use History
SONIC15 CPT-G06 (Continued)					CSK Auto, Inc., Tires Plus, and O'Reilly Auto Parts, Grand Auto Inc., Wheel Works, Paccar Automotive, Inc., and Kelly-Moore Paint Company	2317 Lake Tahoe Boulevard	Automobile service and repair; retail automotive parts and tires sales	1979 to present	<p>Questionnaire response submitted to Regional Board states O'Reilly Auto Parts previously sold but did not use chlorinated solvents as part of its business.⁷⁸ The questionnaire response does not address past chemical use at the property. DTSC hazardous waste generator records show Wheel Works generated 42 to 240 pounds (i.e., 3 to 18 gallons) of PCE at the property annually between 2002 and 2004.⁷⁹</p> <p>An investigation and corrective action for a release of oil in service bay drains was completed in 2009.⁸⁰ However, these service bay drains were connected to the storm drain that discharged into an infiltration trench. A plumber reported the illegal connection to the Regional Board.⁸¹ Although no PCE was detected in grab groundwater samples collected at approximately 11 to 13 feet bgs in 2009,⁸² no sampling of deeper groundwater was performed, and no testing was conducted at locations where PCE was stored and managed on the facility. In 2008, trichloroethene, a possible anaerobic biotransformation compound of PCE, was detected at 2.5 µg/L in a grab groundwater sample collected at the same area of the site as the groundwater samples obtained in 2009.⁸³</p> <p>In 2012, petroleum hydrocarbons were found to have been released to soil at an oil/water separator and eight hydraulic hoists.⁸⁴ Soil samples were not analyzed for PCE. No groundwater sampling was performed.</p>

⁷⁸ Bloom Investment Company, LP. 3 May 2019. Chemical Storage and Use Questionnaire, 2317 Lake Tahoe Boulevard. Investigative Order No. R6T-2019-0177.

⁷⁹ DTSC. 25 May 2007. EPA ID Profile, Wheel Works.

⁸⁰ Regional Board. 15 September 2009. *No Further Action Required at the Former CSK Auto #4083, 2317 Lake Tahoe Boulevard, South Lake Tahoe, El Dorado County, SCP Case No. T6S068.*

⁸¹ Regional Board. 18 April 2008. SLIC Release/Contamination Site Report, CSK Auto. URF Tracking Number: 5280927360.

⁸² GeoTek, Inc. 26 June 2009. Groundwater Investigation, Former CSK Auto #4083, 2317 Lake Tahoe Boulevard, South Lake Tahoe, California.

⁸³ *Id.*

⁸⁴ McGinley & Associates. 19 October 2012. Results of Assessment and Remediation Activities, O'Reilly Auto Parts, 2317 Lake Tahoe Boulevard, South Lake Tahoe.

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Lake Tahoe Laundry Works Cleanup and Abatement**

Exhibit Number	Description
1.	PES. 17 November 2003. <i>Groundwater Investigation Results, Lake Tahoe Laundry Works, 1024 Lake Tahoe Boulevard, South Lake Tahoe, California</i>
2.	PES. 13 October 2004. <i>Supplemental Site Investigation Results, Lake Tahoe Laundry Works, 1024 Lake Tahoe Boulevard, South Lake Tahoe, California</i>
3.	PES. 27 May 2005. <i>Additional Site Investigation Results, Lake Tahoe Laundry Works, 1024 Lake Tahoe Boulevard, South Lake Tahoe, California</i>
4.	PES. 31 January 2006. <i>Additional Soil Investigation Results, Lake Tahoe Laundry Works, 1024 Lake Tahoe Boulevard, South Lake Tahoe, California, RWQCB SLIC CASE No. T6S043</i>
5.	Regional Board. 12 May 2017. <i>Cleanup and Abatement Order (CAO) R6T 2017 0022 Requiring Remediation and Additional Investigation of PCE Groundwater Contamination, Lake Tahoe Laundry Works, South Lake Tahoe, California, Site Cleanup Program Case T6S043</i>
6.	Regional Board. 18 April 2006. <i>Order for Corrective Action Workplan, Lake Tahoe Laundry Works, 1024 Lake Tahoe Boulevard, South Lake Tahoe, El Dorado County</i>
7.	Regional Board. 8 April 2009. <i>Investigative Order No. RGT-2009-0013 to Submit Workplan for Remediation at the Lake Tahoe Laundry Works, 1024 Lake Tahoe Boulevard, South Lake Tahoe, El Dorado County</i>
8.	Letter from Regional Board to S. Reisch (counsel for Fox) and B. Beard (counsel for Seven Springs) 1 September 2009. <i>Acceptance of Interim Remedial Action Workplan and Addendum, Lake Tahoe Laundry Works</i>
9.	Environmental Engineering, Consulting and Remediation, Inc. (E ₂ C). 4 June 2009. <i>Interim Remedial Action Workplan for SZA Groundwater Investigation, SZA Groundwater Monitoring, Interim Remedial Action Vadose Zone Soil and Shallow Groundwater Cleanup, Lake Tahoe Laundry Works, 1024 Lake Tahoe Boulevard, South Lake Tahoe</i>
10.	E ₂ C. 12 August 2010. <i>Interim Remedial System Installation/Pilot Testing Report of Findings and Draft Remedial Action Plan for Vadose Zone Soil and Shallow Groundwater Cleanup, Lake Tahoe Laundry Works, 1024 Lake Tahoe Boulevard, South Lake Tahoe, California</i>
11.	Regional Board. 15 June 2015. <i>Notification of Stipulated Agreement for Replacement Water Supply at 883 and 903 Eloise Avenue, South Lake Tahoe</i>
12.	Regional Board. 17 February 2016. <i>Satisfaction of Stipulated Agreement for Replacement Drinking Water — Lake Tahoe Laundry Works, 1024 Lake Tahoe Boulevard, South Lake Tahoe, El Dorado County</i>

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Exhibit Number	Description
13.	PES. 28 September 2018. <i>Preferential Pathway Evaluation Work Plan, Former Lake Tahoe Laundry Works, South Y Shopping Center, 1024 Lake Tahoe Boulevard, South Lake Tahoe, California</i>
14.	B. Grey (Regional Board). 16 October 2018. Email to Working Parties and Regional Board staff. Re <i>Comments on Weekly Progress Reports, Preferential Pathway Evaluation Work Plan and Revised Preliminary Planning Report</i>
15.	EKI. 19 March 2018. <i>Amended Groundwater Investigation Work Plan, Former Lake Tahoe Laundry Works Site, 1024 Lake Tahoe Boulevard, South Lake Tahoe, California</i>
16.	EKI. 4 October 2019. <i>Investigation Summary Report, Former Lake Tahoe Laundry Works, 1024 Lake Tahoe Boulevard, South Lake Tahoe, California</i>
17.	EKI. 1 April 2019. <i>Investigation Summary Report, Former Lake Tahoe Laundry Works Site, 1024 Lake Tahoe Boulevard, South Lake Tahoe, California</i>
18.	PES. 15 November 2018. <i>Request for Site Access, 1961 Lake Tahoe Boulevard APN 023 523 08 100, South Lake Tahoe, California</i>
19.	PES. 13 December 2018. <i>Follow-Up on Request for Site Access, 1961 Lake Tahoe Boulevard APN 023 523 08 100, South Lake Tahoe, California</i>
20.	PES. 14 January 2019. <i>Request for Assistance with Access, Former Big O Tires Store, 1961 Lake Tahoe Boulevard APN 023 523 08 100, South Lake Tahoe, California</i>
21.	PES and EKI. 15 January 2019. <i>Groundwater Investigation Planning and Progress Report No. 13, Former Lake Tahoe Laundry Works Site, 1024 Lake Tahoe Boulevard, South Lake Tahoe, California</i>
22.	Regional Board. 13 March 2019. <i>Lahontan Water Board Receives \$4.6 Million Grant to Investigate Perchloroethylene (PCE) Contamination in South Lake Tahoe's Groundwater. Media Release</i>
23.	AECOM Technical Services, Inc. (AECOM). June 2022. <i>Regional Plume Characterization Summary Report: South "Y" PCE Plume, 2019 2020 Field Season</i>
24.	STPUD. 2021. <i>Who We Are</i>
25.	Regional Board. 22 August 2005. <i>Staff Report, Solvent Contamination at the Big O Tires Store, 1961 Lake Tahoe Boulevard, South Lake Tahoe</i>
26.	STPUD. 23 November 2016. <i>Feasibility Study of Remedial Alternatives to Mitigate PCE Contamination. Proposition 1 Groundwater Grant Program Planning Final Application</i>

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Exhibit Number	Description
27.	Kennedy/Jenks Consultants. 22 December 2014. <i>Tahoe Valley South Basin (6-5.01) 2014 Groundwater Management Plan</i>
28.	Regional Board. 20 August 1997. <i>Agency Agreement to Support the Tahoe South “Y” PCE Investigation, at 1; Regional Board</i>
29.	Regional Board. September 1997. <i>Status Report on the “Y” Investigation in South Lake Tahoe</i>
30.	Regional Board. 25 February 1999. <i>Summary of PCE Investigations, South Lake Tahoe. FY 1997/98</i>
31.	Regional Board. 15 July 1998. <i>Campora Gas Property, 1640 Shop Street, South Lake Tahoe</i>
32.	STPUD. 20 August 1998. Letter to Regional Board regarding plugged sanitary sewer pipeline
33.	Regional Board. 17 July 1998. <i>STAGE Bus Property, 1680 Shop Street, South Lake Tahoe (El Dorado County) APN 032 312-02</i>
34.	Phase Three Environmental Management. 8 February 1999. <i>Groundwater Investigation, STAGE Bus Facility — Shop Street, South Lake Tahoe, California</i>
35.	Regional Board. 4 March 1999. <i>No Further Action at the STAGE Bus Properties, Shop Street, South Lake Tahoe, El Dorado County</i>
36.	EKI. 30 August 2017. <i>Off-Site Groundwater Investigation Data Report, South Y Area, South Lake Tahoe, California</i>
37.	PES and EKI. 13 November 2018. <i>Groundwater Investigation Planning and Progress Report No. 7, Former Lake Tahoe Laundry Works Site, 1024 Lake Tahoe Boulevard, South Lake Tahoe, California, at attached Meeting Notes</i>
38.	State Water Board. 30 March 2017. <i>South Tahoe Public Utility District Planning Grant, Groundwater Planning, Feasibility Study of Remedial Alternatives to Mitigate Tetrachloroethylene Contamination. Agreement No. D1712508</i>
39.	Shop Street/Industrial Avenue area included as Attachment A to PES and EKI. 11 January 2018. <i>Responses to Comments Regarding Revised Groundwater Investigation Work Plan, Former Lake Tahoe Laundry Works Site, 1024 Lake Tahoe Boulevard, South Lake Tahoe, California</i>
40.	Regional Board. 10 May 2019. <i>Order to Submit Technical Reports in Accordance with Section 13267 of the California Water Code, Big O Tire Store, 1961 Lake Tahoe Boulevard,</i>

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Exhibit Number	Description
	South Lake Tahoe, El Dorado County, SCP Case #T6S034, Geotracker Global ID SL0601729739
41.	Regional Board. 5 January 1996. Tahoe South Y PCE Investigation
42.	SECOR International Incorporated. 30 May 2008. <i>Site Investigation Report, Former Dry Cleaning Business, 949 Emerald Bay Drive, South Lake Tahoe, CA 96150</i>
43.	PES. 23 August 2019. <i>Comments on Previous Site Characterization and Remediation, Hurzel Properties, LLC., 945, 949, and 961 Emerald Bay Road, South Lake Tahoe, California</i>
44.	Regional Board. 10 May 2019. Order to Submit Technical Report in Accordance with Section 13267 of the California Water Code, Hurzel Properties, LLC, 961 Emerald Bay Road, South Lake Tahoe, El Dorado County, SCP Case No. T6S044, GeoTracker Global ID SL0601790916
45.	Austin, T. (State Water Board) 15 July 2020. Email to A. Giorgianni (Rodriguez Wright LLP) <i>Re 961 Emerald Bay (Trestle South Tahoe LLC)</i>
46.	URS. 19 January 2016. <i>Final PCE Investigation Report, South Lake Tahoe, California</i>
47.	Regional Board. 27 February 2020. <i>South Y PCE Technical Meeting Notes</i>
48.	U.S. EPA. September 2017. <i>Best Practices for Environmental Site Management: A Practical Guide for Applying Environmental Sequence Stratigraphy to Improve Conceptual Site Models</i> . National Risk Management Research Laboratory. EPA/600/R 17/293
49.	Hadley, P. and Newell, C. 2014. <i>The New Potential for Understanding Groundwater Contaminant Transport</i> . Groundwater. Vol. 52. No. 2
50.	PES. 15 June 2022. <i>First Quarter 2022 Monitoring Report, Former Lake Tahoe Laundry Works, 1024 Lake Tahoe Boulevard, South Lake Tahoe Boulevard, South Lake Tahoe, California</i>
51.	DTSC. June 2012. <i>Guidelines for Planning and Implementing Groundwater Characterization of Contaminated Sites</i>
52.	PES and EKI. 20 February 2020. Response to Weiss Associates Letter Regarding South Y Basin Aquifer PCE South Lake Tahoe, California
53.	EKI. 3 April 2020. Investigation Summary Report, Former Lake Tahoe Laundry Works, 1024 Lake Tahoe Boulevard, South Lake Tahoe, California

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Exhibit Number	Description
54.	PES. 16 April 2020. Comments on Kennedy Jenks Consultants Inc.'s Draft Interim Remedial Action Plan (IRATP) and South Y PCE Facilities Feasibility Study (FS), South Lake Tahoe, California
55.	U.S. EPA. 21 April 1999. Use of Monitored Natural Attenuation at Superfund, RCRA Corrective Action, and Underground Storage Tank Sites. Office of Emergency and Remedial Response. Directive 9200.4 17P
56.	NRC. 2005. Contaminants in the Subsurface: Source Zone Assessment and Remediation. National Academies Press, Washington DC
57.	U.S. EPA. January 1992. Estimating Potential for Occurrence of DNAPL at Superfund Sites. Office of Solid Waste and Emergency Response. Publication: 9355.4 07FS
58.	U.S. Department of Defense Strategic Environmental Research and Development Program (SERDP) and U.S. Department of Defense Environmental Security Technology Certification Program (ESTCP). 2014. Chlorinated Solvent Source Zone Remediation
59.	ESTCP. March 2011. A Guide for Selecting Remedies for Subsurface Releases of Chlorinated Solvents. Decision Guide. ESTCP Project ER 200530
60.	STPUD. 12 November 2002. Local Groundwater Assistance Grant Application for the Development of Groundwater Resources in the Presence of Contaminant Plumes, South Lake Tahoe, California
61.	Grey, B. (Regional Board) 29 October 2018. Email to Working Parties Re Comments on Weekly Planning and Progress Reports with Request for Face to Face Technical Meeting
62.	U.S. EPA. September 1990. Handbook, Ground Water, Volume 1: Ground Water and Contamination. Office of Research and Development. EPA/625/6 90/016a
63.	Hogan Lovells US LLP (counsel for Fox). 8 September 2016. Response to Revised Cleanup and Abatement Order for Former Lake Tahoe Laundry Works, 1024 Lake Tahoe Boulevard, South Lake Tahoe, California
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69.	L. Dernbach. (Regional Board). 20 July 2016. Email to T. Carter. (State Water Board). Re Call to Lahontan RWQCB — South Lake Tahoe — Former Lake Tahoe Laundry Works (NEW TELECON #)
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83.	Harding (ESE). 30 October 2001. Groundwater Investigation, Big-O Tire Center, 1961 South Lake Tahoe Boulevard, South Lake Tahoe, California
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92.	EKI. 3 December 2015. Response to Water Board Notification of Consideration of No Further Action; Former Big O Tires Store Site, 1961 Lake Tahoe Boulevard, South Lake Tahoe, California
93.	PES. 15 December 2020. Comments on Passive Soil Gas Investigation Report, Former Big O Tires Store Site, 1961 Lake Tahoe Boulevard, South Lake Tahoe, California
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162.	AECOM. 3 July 2019. Task 3 Work Plan — South Lake Tahoe “Y” PCE Plume — Regional Plume Characterization
163.	Index of GeoTracker pages for the Lake Tahoe Laundry Works site (Global ID No. SL0601754315), the Former Big O Tires site (Global ID No. SL0601729739), the Former Norma’s Cleaners site (Global ID No. SL0601790916), the South Y Regional Contamination (Global ID No. T10000007984), and the historical South Y PCE contamination (Global ID No. SL0601794942).