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June 17, 2022

VIA E-MAIL ONLY

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HI-SHEAR'S SUPPLEMENTAL COMMENTS TO TORRANCE'S GROUNDWATER REMOVAL ACTION WORK PLAN ("RAW")

**Re: Skypark Commercial Properties
SCP Case No. 1499; CAO No. R4-2021-0079
H&E File No.: 8360.01**

Dear Ms. Ly and Mr. Lin:

On behalf of Hi-Shear Corporation ("Hi-Shear"), this correspondence will serve to provide Hi-Shear's *supplemental* comments to the City of Torrance's ("Torrance") Groundwater Removal Action Workplan ("Groundwater RAW"), which was prepared by Terraphase Engineering, Inc. ("Terraphase") and submitted on January 31, 2022. Hi-Shear provided its initial comments to the Groundwater RAW in correspondence to the Los Angeles Regional Water Quality Control Board ("RWQCB") dated April 25, 2022.

However, since that time, the RWQCB held a telephonic meeting with Hi-Shear, Torrance, and the other Dischargers named in the June 18, 2021 Cleanup and Abatement Order No. R4-2021-0079 (the "CAO") to discuss technical comments to the Groundwater RAW and its implementation. Moreover, shortly thereafter, the RWQCB issued its May 2022 Project Updated

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and Notice of Opportunity to Comment (“Notice of Opportunity to Comment”), which requested comments on the Groundwater RAW.

Accordingly, for reasons discussed in more detail below, it is Hi-Shear’s continuing position that Torrance’s Groundwater RAW is inadequate, fails to achieve its own stated objectives, and should not be approved by the RWQCB. Instead, Hi-Shear submits that the RWQCB should order Torrance to conduct and submit a comprehensive Feasibility Study that adequately considers and analyzes all potential remedial options, including those discussed below and in Hi-Shear’s original April 25, 2022 comment letter. Only after evaluation of such a comprehensive feasibility study considering all remedial options should a remedial groundwater option be selected.

The Groundwater RAW Fails to Consider Viable Alternative Remedial Options

The Groundwater RAW fails to adequately consider the full range of remedial options available for remediating groundwater at the Skypark Commercial Properties (“SCP”). Indeed, the Groundwater RAW only considers EISB and a zero valent iron (“ZVI”) barrier along Crenshaw Boulevard¹ as remedial options for addressing the leading edge of the SCP plume and only considers pump and treat, thermal treatment, in-situ chemical oxidation, and EISB for remediating groundwater contamination at the Hi-Shear Property.

1. Groundwater Recirculation

As noted in Hi-Shear’s April 25, 2022 correspondence, Torrance’s Groundwater RAW fails to address or consider the installation and operation of a groundwater recirculation cell (extraction and reinjection system) for remediation of groundwater contamination at the SCP. This remedial option would entail the extraction of groundwater along Crenshaw Boulevard, amendment of that extracted groundwater, and reinjection into source areas on the SCP, including at the Hi-Shear Property and the East Adjacent (EA) properties. Hydraulic containment along Crenshaw Boulevard via a recirculation extraction system and reinjection system would not only stop the migration of contaminated groundwater past Crenshaw Boulevard, but would also address multiple source areas at the SCP via reinjection. Indeed, perhaps ironically, figure three of the RWQCB’s Notice of Opportunity to Comment shows a recirculation cell where

¹ As stated in Hi-Shear’s April 25, 2022 comments, the ZVI as proposed by Torrance in the Groundwater RAW does not extend far enough to the north or to the south to properly intercept the entirety of the groundwater plume migrating across Crenshaw Boulevard. Any ZVI barrier that is implemented should extend further north and south to at least MW-21.

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groundwater is extracted downgradient of the source area, treated, and is then reinjected upgradient of the source area.

While a recirculation cell may entail greater initial capital costs than the ZVI barrier selected by Torrance in the Groundwater RAW, its operation time would be less, resulting in long-term cost savings for maintenance, monitoring and oversight. However, Torrance's RAW fails to consider a groundwater recirculation cell at all, let alone provide any cost estimate or analysis of the feasibility of such a remedial alternative.

2. Air Sparging

Another remedial option that Torrance's Groundwater RAW fails to address is Air Sparging and Vapor Recovery ("ASVR") at the SCP and along Amsler Street. This technique would involve the installation of several horizontal air sparging wells running from the western edge of the SCP groundwater plume to the eastern edge of the plume along with soil vapor extraction systems above those wells located on the SCP and at Amsler Street². These horizontal wells would originate at a single ASVR compound at the western end of the SCP that would house the necessary ASVR equipment, such as an air injection compressor, blower, and treatment vessels.

An ASVR remedial alternative would be well-suited to the SCP since the site's aquifer and overlying capture zone contain ideal sediments (clean sand) for vapor transmissivity. Furthermore, an ASVR system would also treat the entire groundwater plume in a relatively short amount of time while having the dual benefit of also enhancing soil vapor extraction at the SCP.

Indeed, we note that ASVR has proven to be effective at a nearby site—the Former Honeywell Early Avenue Facility, located at 23215 Early Ave, Torrance, California, which is approximately 1 mile away from the SCP. In summary, the Honeywell ASVR was installed and operated for approximately 6.5 years, from 2015 to 2021. After that period, groundwater VOC concentrations were reduced by approximately 90% on average, with some monitoring wells showing 99% to 100% reductions in VOC concentrations. These reductions show that ASVR can be effective in similar subsurface conditions.

² Hi-Shear is already operating such an SVE system at the Hi-Shear Property and Torrance has proposed the installation and operation of an SVE system at the EA Properties.

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Additionally, Hi-Shear conducted a brief air sparge pilot test in 1998 over a 4-hour period. That pilot test resulted in PCE and TCE concentrations decreasing by almost an order of magnitude based on samples collected before and after the pilot study. It took several years for those concentrations to rise back to pre-pilot study levels, showing that even a short 4-hour pilot study could decrease VOC concentrations in groundwater for several years.

The Groundwater RAW fails to address air sparging as a remedial option, despite its successful implementation in a nearby site and a promising pilot study conducted at the Hi-Shear Property.

A Detailed Feasibility Study Is Needed Prior to Remedy Selection

As noted above and in Hi-Shear's April 25, 2022 comments, Torrance's Groundwater RAW fails to consider several alternative remedial options that are well known and have proven track records of success. As a result, the Groundwater RAW fails to take the steps necessary to insure that the appropriate remedial technology is selected, instead proposing flawed and incomplete remedial options. A comprehensive feasibility study is needed to consider all available remedial options, including a groundwater recirculation cell and air sparging. Such a study is needed not only to insure that the most efficient and effective remedy is selected, but also that the remedy selection process complies with the National Contingency Plan.

The flawed approach proposed by the Groundwater RAW will result in wasted costs, time, and resources, since the EISB injections at the Hi-Shear Property and the ZVI barrier along Crenshaw will not address the entirety of the SCP groundwater plume, meaning that further remedial options will need to be implemented to fully remediate groundwater at the SCP. Given the proposed alternatives discussed above and in Hi-Shear's April 25, 2022 comment letter, it is possible to implement a single remedial option that will comprehensively address the entire groundwater plume and the impacted soil vapor above the plume.

As such, Torrance should be ordered to conduct such a feasibility study prior to the RWQCB's approval of any remedial technology. Such a feasibility study must include, for each viable remedial technology, a detailed analysis of its short-term and long-term effectiveness, anticipated reduction of contamination, viability of implementation, identification of remaining data gaps, cost of operation, and overall impact on the entirety of the SCP Site in soil, soil vapor, and groundwater.

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Conclusion

For all the reasons discussed herein, and in Hi-Shear's comments of April 25, 2022, it is respectfully submitted that the RWQCB should refrain from approving Torrance's Groundwater RAW, and should order Torrance to conduct a detailed feasibility study that properly considers all available remedial options. Hi-Shear continues to stand ready to work collaboratively with Torrance, Terraphase, and the other Dischargers to discuss the remedial options detailed above.

Very truly yours,

/s/ Thomas P. Schmidt

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