# Appendix E

Soil Vapor Investigation Report



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October 3, 2017

Nicholas Taylor City of Anaheim 200 South Anaheim Boulevard Suite 162 Anaheim, CA 92805

Subject: Submittal – Soil Vapor Investigation Report for Former E-Z Service Station, 3175 West Ball Road, Anaheim, CA

Dear Mr. Taylor:

Attached please find the soil vapor investigation report for the Former E-Z Service Station, located at 3175 West Ball Road in Anaheim, California. The report includes the results of the soil vapor sampling conducted at the site and the human health risk assessment. A draft report was reviewed by Dr. Jill Ryer-Powder, a Board-certified toxicologist. Dr. Ryer-Powder's comments were incorporated into this final report.

If you have any questions, please feel free to contact me at 760-479-4152 or npeacock@dudek.com.

Sincerely,

Nicole Peacock Senior Engineer

Nial Pek

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## Soil Vapor Investigation Report for Former E-Z Service Station 3175 West Ball Road Anaheim, California

Development Case No. 2016-00074

**Prepared for:** 

City of Anaheim

200 South Anaheim Boulevard

Anaheim, California

Prepared by:

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Nicole Peacock, P.E., P.G. Senior Environmental Engineer

October 2017

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#### 1. Introduction

This soil vapor investigation report has been prepared by Dudek on behalf of the City of Anaheim for the property located at 3175 West Ball Road in Anaheim, California (the site; Figure 1). The site is a former E-Z Service Gas Station. A release of gasoline at the site was monitored and remediated, leading to case closure by the Regional Water Quality Control Board (RWQCB). The case closure was based on continued commercial/industrial land use.

Soil vapor sampling and a vapor human health risk assessment were proposed to satisfy the RWQCB requirements associated with the proposed land use change at the site from commercial to residential (RM4). This analysis does not contemplate the human health risk for a subgrade structure. If a subgrade structure, such as an underground parking garage, were to be proposed, the vapor human health risk assessment should be reevaluated.

Dudek prepared a soil vapor sampling work plan dated July 2017 (Dudek 2017). The work performed during this soil vapor investigation was performed in accordance with the July 2017 Soil Vapor Sampling Work Plan and the Department of Toxic Substances Control (DTSC) Soil Gas Advisory (DTSC 2015).

The purpose of the soil vapor investigation was to collect data to estimate the potential human health risk to future building occupants due to vapor intrusion of gasoline-related volatile organic compounds (VOCs) from the subsurface.

## 2. Site Description

#### 2.1. Location

The site is located at 3175 West Ball Road in Anaheim, California, in a mixed commercial and multi-family residential setting (Figure 1). According to the Orange County Tax Assessor online database, the site is located within Assessor's Parcel Number 079-882-34.

#### 2.2. Site History

The site was operated as an E-Z Serve gasoline service station from 1963 through 1988. In 1988, three 10,000-gallon capacity underground storage tanks (USTs) and one 500-gallon capacity used oil UST were removed from the site. During tank removal, tanks were found to be corroded and leaking; free product was observed in the tank excavation.

From 1988 to 2000, site characterization and remediation efforts included soil borings, hydropunch sampling, installation and sampling of groundwater monitoring wells, and a brief dual-phase vapor extraction/air sparge pilot test.

In 2000, more than 3,000 tons of petroleum-contaminated soil were removed from the site. The excavation floor was treated with oxygen-release compound (ORC) and a SoilKleen/water mixture to facilitate microbial breakdown of residual petroleum. More than 1,000 gallons of free product and nearly 60,000 gallons of impacted groundwater were removed during the excavation dewatering activities in 2000.

From 2006 through 2011, intermittent remedial efforts included oxygen injection and use of a high vacuum dual-phase extraction (HVDPE) system to extract hydrocarbon vapor and impacted groundwater from the site. Groundwater monitoring continued through 2011, with the final round of sampling occurring in November 2011. Based on the final sampling data in 2011, residual petroleum contamination is expected along the western and southern site boundaries and beneath the adjacent Western Avenue and West Ball Road right-of-ways (Figure 2).

In 2012, the groundwater monitoring wells and oxygen injection wells were decommissioned and the RWQCB issued a site closure letter based on the current land use (commercial use; RWQCB 2012).

## 2.3. Previous Investigations

Previous investigations conducted on the site include the following:

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- Multiple investigations and remedial actions were conducted at the site from 1988 through 2011. Documentation of activities prior to 2004 was not available in the Geotracker database. Details of these investigations are summarized in the closure letter; select historical groundwater data is included in the routine groundwater monitoring reports. The reports indicate that free product gasoline was detected in several on-site wells in the past (MW-2, -3, and -4).
- Delta Environmental Consultants, Inc. Quarterly Groundwater Monitoring Report Third Quarter 2004

This is the earliest groundwater monitoring report available in the Geotracker database. Ten wells were sampled in October 2004. Depth to groundwater ranged from approximately 8.5 to 11 feet below ground surface (bgs). The maximum gasoline-range petroleum hydrocarbon concentration detected during this event was 36,000 micrograms per liter ( $\mu$ g/L) from MW-7. The report concluded that there were no significant changes in petroleum hydrocarbon concentrations over the past 12 months.

 GeoEnviro Services, Inc. Semi-Annual Groundwater Monitoring and Sampling, Fourth Quarter 2011

This is the most recent groundwater monitoring data available in the Geotracker database. Sixteen groundwater wells were sampled in November 2011, including onsite and off-site monitoring wells and onsite oxygen injection wells. Depths to groundwater were reported to range from approximately 6 to 8 feet bgs. Seven of the 16 wells had no detectable levels of total petroleum hydrocarbons (TPH) gasoline or related constituents. The maximum TPH gasoline concentration detected was 28,400 µg/L from well MW-7, located just outside the southwest corner of the property, on West Ball Road. The maximum benzene, toluene, ethylbenzene, and xylenes (BTEX) detections also occurred at off-site well MW-7, where benzene was detected at a concentration of 7,400 µg/L, toluene at 660 μg/L, ethylbenzene at 1,300 μg/L, and total xylenes at 2,200 μg/L. Other wells in which TPH gasoline was detected above the reporting limit include MW-3R and MW-11, located on-site, near the southern border of the site, MW-4 (off-site), and OI-4 (on-site), located near the west border of the site. Well MW-13 was not sampled and MW-8 was destroyed in 2008 after nine consecutive quarters of nondetects. The highest on-site benzene concentration reported in November 2011 was 2,300 µg/L, at MW-11. Benzene concentrations are shown on Figure 2.

• SWRCB Underground Storage Tank Cleanup Fund 5-Year Review Summary 4<sup>th</sup> Review, USTCF Claim No.: 9162. January 2011

This document provides basic information including a table of well construction dates and screen intervals. Most site-related groundwater monitoring wells were

screened from 5 to 20 feet bgs. Three oxygen injection wells were screened at 10 to 30 feet bgs, and one oxygen injection well was screened 20 to 30 feet bgs. Soil types are described as interbedded silts and sands with lesser amounts of clay.

• RWQCB Closure Summary, Former E-Z Service Station No. #100842, April 2012.

This summary provides a detailed overview of site activities beginning with release discovery in 1988 through site closure in 2012. The reported history of site characterization and remediation activities is summarized in Section 2.2 of this Work Plan. Maximum pre- and post-remediation contaminant concentrations in groundwater are discussed below.

Free product was last observed in site monitoring wells in 2005. Aside from free product observations, the maximum detections of TPH gasoline, BTEX, and selected additives are provided in the table below.

Table 1
Historical Groundwater Sampling Results (micrograms per liter, µg/L)

|                        | Historical       | Maximum            | Maximum On-Site    |
|------------------------|------------------|--------------------|--------------------|
|                        | Maximum          | Detection at Final | Detection at Final |
|                        |                  |                    |                    |
| Chemical               | Detection        | Sampling,          | Sampling,          |
|                        | (location, year) | November 2011      | November 2011      |
|                        | 1991 through     | (location)         | (location)         |
|                        | 2011             |                    |                    |
| TPH Gasoline           | 250,000          | 28,400 (MW-7)      | 7,670 (OI-4)       |
|                        | (MW-2, 1993)     |                    |                    |
| Benzene                | 32,000           | 7,400 (MW-7)       | 2,300 (MW-11)      |
|                        | (MW-2, 1993)     | , , ,              |                    |
| Toluene                | 24,000           | 660 (MW-7)         | 280 (OI-4)         |
|                        | (MW-7, 1994)     | ,                  |                    |
| Ethylbenzene           | 53,000           | 1,300 (MW-7)       | 400 (OI-4)         |
|                        | (MW-2, 1993)     |                    |                    |
| Total Xylenes          | 35,600           | 2,200 (MW-7)       | 520 (OI-4)         |
|                        | (MW-2, 1992)     |                    |                    |
| MTBE                   | 5,400            | Not detected       | Not detected       |
|                        | (MW-7, 2000)     |                    |                    |
| Tert butanol (TBA)     | 160              | Not detected       | Not detected       |
| , , ,                  | (MW-7, 2002)     |                    |                    |
| Di-isopropyl ether     | 93               | Not detected       | Not detected       |
| (DIPE)                 | (MW-3, 2002)     |                    |                    |
| Ethyl-tert-butyl-ether | 89               | Not detected       | Not detected       |
| (ETBE)                 | (MW-3, 2002)     |                    |                    |
| Tert-amyl methyl ether | 110              | Not detected       | Not detected       |
| (TAME)                 | (MW-3, 2002)     |                    |                    |

## 3. Environmental Setting

#### 3.1. Site Topography

The subject property is currently vacant, with no remaining pavement or structures. The site consists of approximately 0.35 acres and is relatively flat, with an average elevation of 64 feet above mean sea level (amsl).

#### 3.2. Site Geology and Soil Type

During the 2008 installation of oxygen injection wells, subsurface soils were continuously logged; boring logs were available from the Geotracker database. Based on the soil descriptions from the 2011 RWQCB 5-Year Review documents, soils are typically interbedded layers of silt and sand. Based on the three available boring logs, soil in the upper 5 feet bgs is silty sand to sandy silt.

#### 3.3. Site Hydrogeologic Setting

According to the 2012 closure letter, no active beneficial use groundwater wells are located down-gradient of the site within a one-mile radius.

The depth to groundwater during the November 2011 groundwater sampling event was approximately 6 to 8 feet bgs. Historical groundwater measurements range from 5.4 to 17.8 feet bgs since the site has been under investigation. The groundwater flow direction based on water levels measured in the monitoring wells is typically southwest but can vary from south to west.

## 4. Sampling Activities

#### 4.1. Utility Clearance

Dudek marked each of the 16 soil vapor probe locations on-site with white flags. On July 13, 2017, a private utility locator, ULS Services Corporation, of San Diego, California, conducted a utility survey at the site. ULS Services marked the locations of public utilities and other subsurface conflicts in the vicinity of the boring locations. Dudek also contacted Underground Service Alert (USA) and notified them of pending soil boring activities. Dudek did not encounter subsurface utilities during drilling activities.

#### 4.2. Soil Vapor Probe Installation

Sixteen temporary soil vapor probes were installed on July 18, 2017 by Millennium Environmental, Inc. (C-57 License # 876595) using a limited access direct push drill rig. The soil vapor probes were installed to a depth of 5 feet bgs and were completed with 1/4-inch nylon-based tubing. Filter pack was placed 0.5 feet above and below the probe tip, with a hydrated bentonite seal at the surface. Each probe was secured with a valve. The 16 soil vapor probes were installed under Anaheim Public Utilities Permit #UWP-0001576. The soil vapor probe locations are presented on Figure 3.

## 4.3. Soil Vapor Probe Sampling Activities

The soil vapor sampling was conducted on July 18, 2017 in accordance with DTSC soil vapor sampling guidance (DTSC, 2015). During the sampling event, the soil vapor probes were sampled following a minimum of 2 hours after they had been installed. The soil vapor samples were collected using a glass syringe and were analyzed onsite by Jones Environmental via mobile laboratory. The soil vapor samples were analyzed for VOCs using Environmental Protection Agency (EPA) Method 8260B within 30 minutes of collection.

Prior to sample collection, a tracer gas mixture of n-pentane, n-hexane, and n-heptane was placed at the tubing-surface interface to verify that the wells were properly sealed. Soil vapor samples were collected from each of the probes by the mobile laboratory operator using glass, gas-tight syringes with Teflon plungers. Three sample volumes were purged prior to sample collection.

Soil samples were also collected from six soil vapor sample locations (Figure 3) during boring advancement using the limited access rig. Soil samples were collected in acetate sleeves, stored in a cooler on ice, and analyzed by Jones Environmental.

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The weather conditions during the sampling event were sunny and warm.

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## 4.4. Investigation Derived Waste

No investigation derived waste was produced during the soil vapor and soil sampling event.

October 2017

## 5. Analytical Results

The soil vapor samples collected during the sampling event were collected and analyzed by Jones Environmental using an on-site mobile laboratory. The soil vapor samples were analyzed for VOCs by EPA Method 8260B. Analytical results are summarized in Table 2. Sample locations are shown on Figure 3. The complete laboratory analytical reports are presented in Appendix A.

During the soil vapor sampling event, VOCs were detected in all 16 soil vapor probes (Table 2).

Table 2 Soil Vapor Sampling Analytical Results

| VOCs by EPA Method 8260B (micrograms per cubic meter, μg/m³) |                     |         |            |              |                  |         |         |            |          |
|--|---------------------|---------|------------|--------------|------------------|---------|---------|------------|----------|
| Sample<br>Identifier   | Date<br>Sampled     | Benzene | Chloroform | Ethylbenzene | Isopropylbenzene | Styrene | Toluene | m,p-Xylene | o-Xylene |
| SV1-5'   | 07/18/17            | <8      | 8          | <8           | <8               | <8      | 40      | <8         | <8       |
| SV2-5'   | 07/18/17            | <8      | <8         | <8           | <8               | <8      | 83      | <8         | <8       |
| SV3-5'   | 07/18/17            | <8      | <8         | 9            | <8               | <8      | 118     | 8          | <8       |
| SV4-5'   | 07/18/17            | <8      | <8         | <8           | <8               | <8      | 56      | <8         | <8       |
| SV5-5'   | 07/18/17            | 14      | <8         | 14           | 12               | <8      | 148     | 20         | <8       |
| SV6-5'   | 07/18/17            | <8      | <8         | 9            | <8               | 8       | 80      | <8         | <8       |
| SV7-5'   | 07/18/17            | <8      | <8         | <8           | <8               | <8      | 26      | <8         | <8       |
| SV8-5'   | 07/18/17            | 64      | <8         | 25           | 12               | 15      | 196     | 41         | 14       |
| SV8-5'<br>REP  | 07/18/17            | 53      | <8         | 22           | <8               | 12      | 185     | 45         | 13       |
| SV9-5'   | 07/18/17            | 35      | <8         | 20           | 9                | <8      | 194     | 46         | 13       |
| SV10-5'  | 07/18/17            | 26      | <8         | 11           | <8               | <8      | 100     | 23         | <8       |
| SV11-5'  | 07/18/17            | <8      | <8         | <8           | <8               | <8      | 43      | <8         | <8       |
| SV12-5'  | 07/18/17            | 35      | <8         | 28           | <8               | 13      | 196     | 49         | 15       |
| SV13-5'  | 07/18/17            | 16      | <8         | 15           | <8               | <8      | 129     | 27         | <8       |
| SV14-5'  | 07/18/17            | 18      | <8         | 11           | <8               | <8      | 114     | 18         | <8       |
| SV15-5'  | 07/18/17            | <8      | <8         | <8           | <8               | <8      | 54      | 16         | <8       |
| SV16-5'  | 07/18/17            | 23      | <8         | 20           | <8               | <8      | 175     | 42         | 12       |
| DTSC HEI<br>Screening<br>Reside                              | g Level -<br>ential | 97      | 120*       | 1,100*       | 420,000*         | 940,000 | 310,000 | 100,000*   | 100,000* |

Notes: Detections are in bold type

DTSC HERO Note 3 Screening Levels assume a 1,000-fold attenuation factor for soil vapor to air (DTSC 2011)

<sup>&</sup>lt;8 = less than the laboratory reporting limit

VOCs not listed were not detected above laboratory reporting limits

Complete results can be found in Appendix A

\* EPA Regional Screening Level, assuming a 1,000-fold attenuation factor for soil vapor to air (DTSC 2011) µg/m3 = micrograms per cubic meter

All six soil samples were non-detect for all VOCs.

#### 5.1. Quality Assurance/Quality Control

Field and laboratory quality assurance measures included leak checks, duplicate sample collection and analysis, evaluation of surrogate percent recovery, and analysis of blank samples.

Leak checks were conducted at every sample location during the soil vapor probe sampling event. The leak check compound, a gas mixture of n-pentane, n-hexane, and n-heptane, was placed at the tubing-surface interface before sampling to ensure a leak free soil vapor probe. No n-pentane, n-hexane, or n-heptane were found in any of the soil vapor samples.

A duplicate soil vapor sample was collected from SV8-5' during the sampling event. The relative percent difference (RPD) for all detections, except isopropylbenzene, between the original and the duplicate sample detections ranged between 0% and 22.2%, which is within acceptable precision. The RPD for isopropylbenzene could not be calculated as the compound was not detected in the duplicate sample.

As part of the laboratory quality assurance, the surrogates dibromofluoromethane, toluene-d<sub>8</sub>, and 4-bromofluorobenzene were added to each sample at known concentrations. Analytical results were compared to the known concentration of each surrogate added and reported as a percent recovered. The percent recoveries for all surrogates were within the acceptable range of 60% to 140%, indicating acceptable accuracy.

The method blank samples analyzed by the laboratory for the soil vapor sampling event did not contain VOCs above the laboratory reporting limits.

This quality assurance and quality control evaluation indicates that the data were of acceptable quality.

#### 6. Human Health Risk Assessment

A human health risk assessment was performed using the maximum detected soil vapor concentrations of all detected VOCs during the sampling event (Table 2). These data were input into the DTSC Screening-Level Risk Model (DTSC 2014). The purpose of the risk assessment is to evaluate the carcinogenic and non-carcinogenic risk to future site receptors.

This human health risk assessment considers the exposure pathways of vapor intrusion and direct contact. However, as no contaminants were detected in the soil samples collected, vapor intrusion is the only applicable exposure pathway.

Default model parameters were used in the risk calculations. These default values for the residential scenario assume exposure 24 hours a day, 350 days per year, for 26 years. Default soil properties values were used because future building construction could modify the shallow soils, rendering the existing site soils properties inapplicable. Risk model input values and calculations are provided in Appendix B.

#### 6.1. Risk Assessment Results

The modeled excess carcinogenic risk for the site is  $1 \times 10^{-6}$  (Table 3). This is equal to the *de minimus* human health risk threshold of  $1 \times 10^{-6}$ .

Table 3 Human Health Risk Assessment

| VOC                          | Input Value into Risk<br>Model (μg/m3 vapor) | Carcinogenic<br>Risk | Non-Carcinogenic<br>Hazard Risk |
|------------------------------|--|----------------------|---------------------------------|
| Benzene                      | 64   | 9.1E-07              | 2.8E-02                         |
| Chloroform                   | 8  | 8.4E-08              | 1.0E <b>-</b> 04                |
| Ethylbenzene                 | 28   | 3.0E-08              | 3.2E-05                         |
| Isopropylbenzene<br>(Cumene) | 12   | NA                   | 3.3E-05                         |
| Styrene                      | 15   | NA                   | 2.0E-05                         |
| Toluene                      | 196  | NA                   | 8.1E <b>-</b> 04                |
| Xylene m,p                   | 49   | NA                   | 5.7E-04                         |
| Xylene o                     | 15   | NA                   | 1.7E <b>-</b> 04                |
| Tota                         | Total Risk                                   |                      | 0.03                            |
| Human Health De Mi           | Human Health De Minimus Risk Threshold       |                      | 1.0                             |

Notes: V

VOC = Volatile Organic Compound

 $\mu g/m3 = micrograms per cubic meter$ 

The cumulative non-carcinogenic health hazard index at the site was calculated as 0.03. This hazard index value is below the threshold value of 1.0. Therefore, the non-carcinogenic health hazard index is considered less than significant.

#### 6.2. Risk Assessment Discussions

Uncertainties in the risk assessment can arise from only collecting one round of soil vapor data or from using the default model values. Due to uncertainties inherent in the risk calculation, it is appropriate to conservatively pad the risk calculation.

The risk assessment was conservative in that it uses the maximum concentrations for each detected contaminant at the site. This makes the conservative assumption that the maximum concentration detected at the site is present under the entire building footprint. Additionally, it makes the conservative assumption that a compound (e.g. chloroform) that was only detected in one of the 16 site samples is present under the entire building footprint. These conservative assumptions increase the calculated risk level, such that the risk level would be less than the de minimus level of one in a million if the 95% upper confidence level of the mean was used instead of maximum concentrations or if chloroform was not included as it was only detected in one of 16 samples.

As the risk level is equal to the de minimus level, mitigation is not required for residential use. However, in consideration of the uncertainties noted, mitigation of vapor intrusion into future residences could be implemented. Mitigation could include any of the following:

- Limiting vapor intrusion into future residences through use of a wellventilated ground-level garage that is not intended for human occupation; or
- Installation of a sub-slab liner/passive ventilation to limit vapor intrusion to the future residences.

#### 7. Conclusions

The site is a former E-Z Service Gas Station. A release of gasoline at the site was monitored and remediated, leading to case closure by the RWQCB. The case closure was based on continued commercial/industrial land use. The proposed residential use of the site requires re-evaluation of the site contamination.

Based on the presence of VOCs in groundwater at the time of case closure (2012), there was a potential for vapor intrusion of VOCs to the site building. Soil vapor sampling was conducted to determine the concentrations of VOCs in the shallow subsurface that have the potential to migrate to the future site building and impact human health.

Soil vapor sampling conducted on July 18, 2017 indicated the presence of VOCs (mainly the gasoline constituents benzene, ethylbenzene, toluene, and xylenes) in the subsurface at the site. Concentrations of chloroform, isopropylbenzene, and styrene were also detected above the laboratory reporting limits.

As a conservative estimate of human health risk, Dudek used the maximum concentrations of each detected compound in the DTSC Screening-Level Risk Model. A carcinogenic risk of  $1 \times 10^{-6}$  and a non-carcinogenic health hazard index of 0.03 were calculated using these values. While the hazard index is within the acceptable threshold of less than 1.0, the cancer risk is equal to the de minimus cancer risk level of one in a million ( $1 \times 10^{-6}$ ).

As the risk level is equal to the de minimus level, mitigation is not required for residential use. However, in consideration of the uncertainties noted, mitigation of vapor intrusion into future residences could be implemented. Mitigation could include either or both of the following:

- Limiting vapor intrusion into future residences through use of a wellventilated ground-level garage that is not intended for human occupation; or
- Installation of a sub-slab liner/passive ventilation to limit vapor intrusion to the future residences.

In addition to the recommended mitigation for future development, Dudek recommends the following mitigation during construction activities:

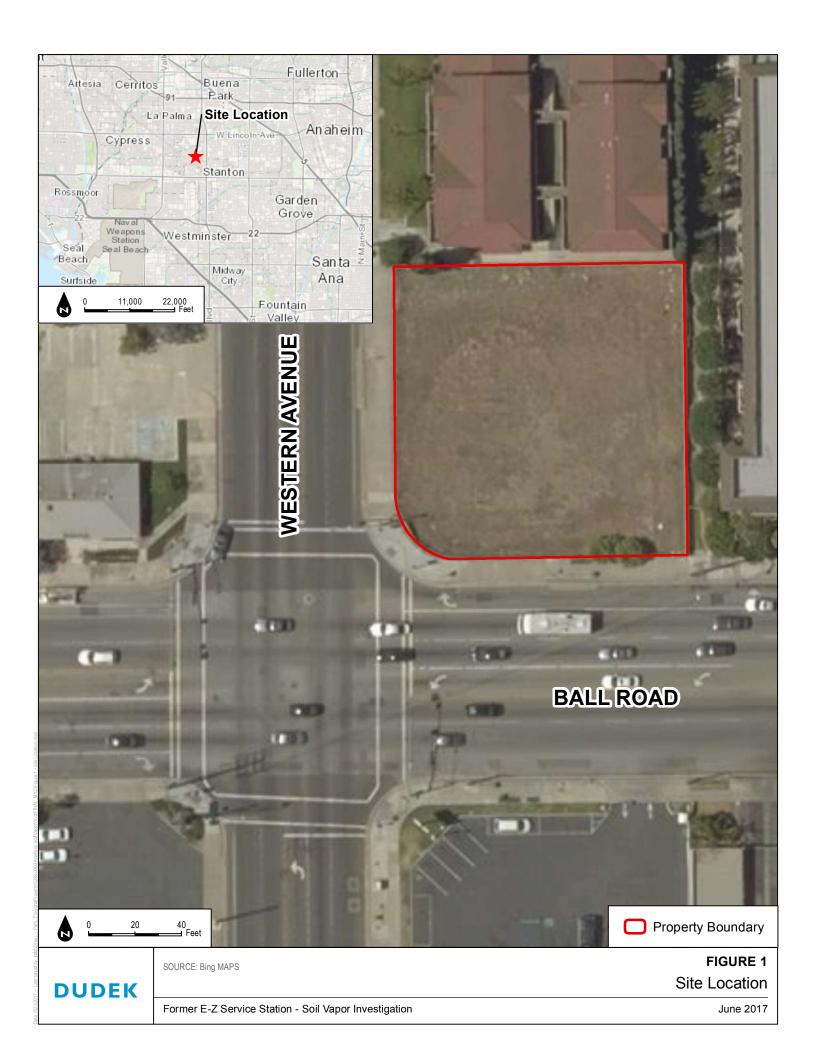
- Protection of worker health and safety through implementation of a health and safety plan.
- Based on the soil sampling conducted at the site and based on the site remediation, impacted soils are not anticipated to be encountered during construction activities. However, depending on the depth of excavation required for the construction work, impacted groundwater may be encountered. Any extracted groundwater should be managed in

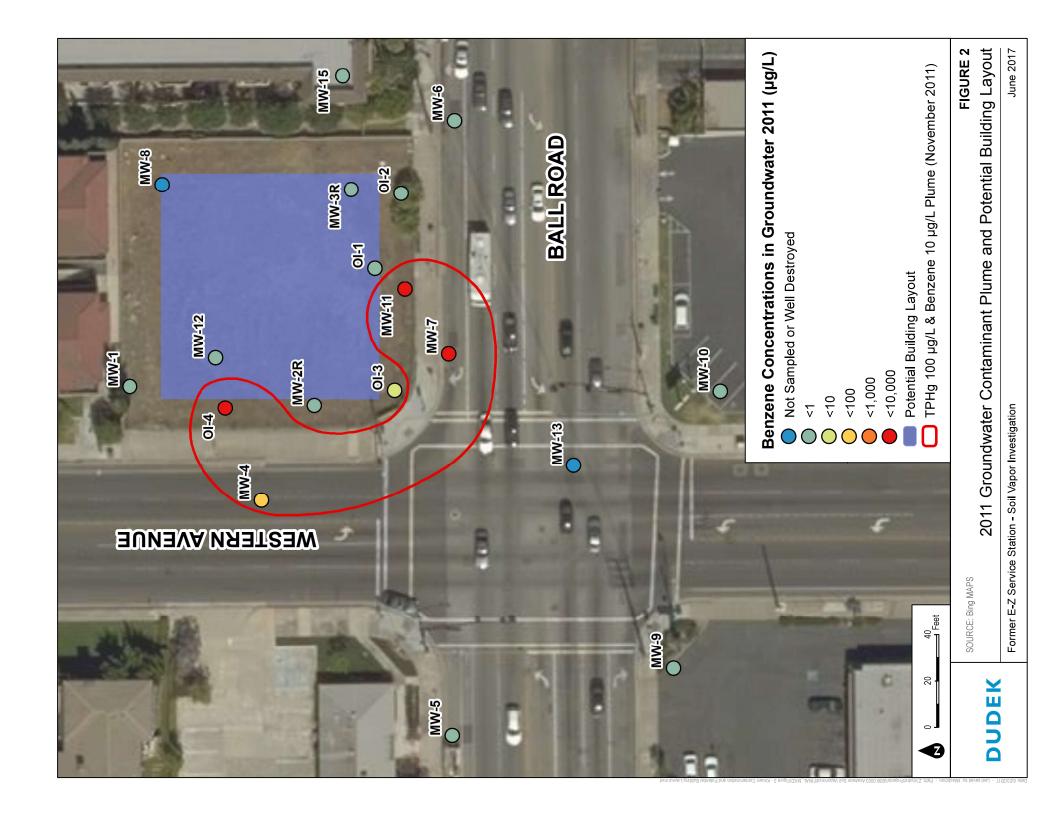
Dudek

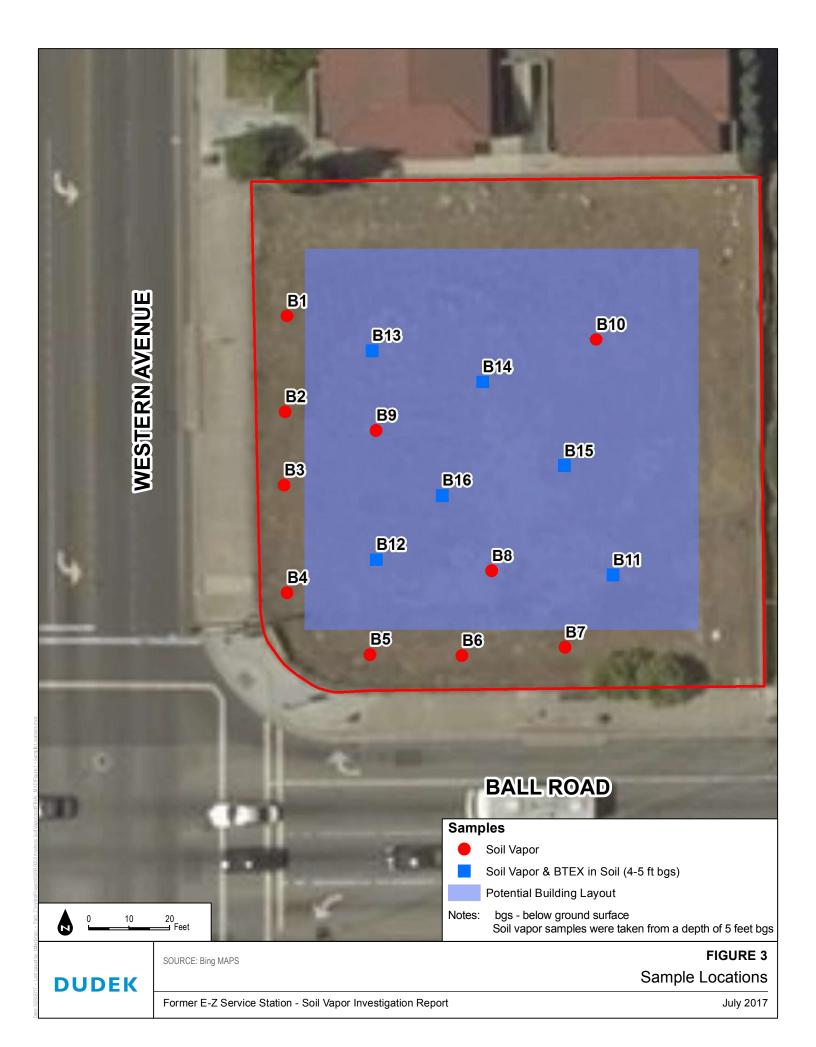
accordance with the National Pollutant Discharge Elimination System (NPDES) permit for construction dewatering.

#### 8. References

- DTSC, 2011. Guidance for the Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air (Vapor Intrusion Guidance). October.
- DTSC, 2014. Screening-Level Model for Soil Gas Contamination. Updated December.
- DTSC, 2015. Advisory Active Soil Gas Investigations. California Environmental Protection Agency, Department of Toxic Substances Control, Los Angeles Regional Water Quality Control Board, San Francisco Water Quality Control Board.
- Dudek, 2017. Soil Vapor Sampling Work Plan for Former E-Z Service Station 3175 West Ball Road, Anaheim, California. July.
- RWQCB, 2012. Letter RE: Case Closure and Well Destruction Approval, Former E-Z Service #100842, 3175 W. Ball Road, Anaheim, California. April 9.







APPENDIX A

Laboratory Reports

714-449-9937 | 11007 FOREST PLACE 562-646-1611 | SANTA FE SPRINGS, CA 90670 805-399-0060 | WWW.JONESENV.COM

## JONES ENVIRONMENTAL LABORATORY RESULTS

Client: Dudek

Client Address: 605 3rd Street

Encinitas, CA 92024

**Attn:** Nicole Peacock

Project Address: 3175 West Ball Rd

Anaheim, CA

**Report date:** 7/18/2017 **JEL Ref. No.:** F-0030 **Client Ref. No.:** 9289.003

**Date Sampled:** 7/18/2017

**Date Received:** 7/18/2017 **Date Analyzed:** 7/18/2017

Physical State: Soil Gas

#### ANALYSES REQUESTED

1. EPA 8260B – Volatile Organics by GC/MS + Oxygenates

Sampling – Soil Gas samples were collected in glass gas-tight syringes equipped with Teflon plungers.

A tracer gas mixture of n-pentane, n-hexane, and n-heptane was placed at the tubing-surface interface before sampling. These compounds were analyzed during the 8260B analytical run to determine if there were surface leaks into the subsurface due to improper installation of the probe. No n-pentane, n-hexane, or n-heptane was found in any of the samples reported herein.

The sampling rate was approximately 200 cc/min, except when noted differently on the chain of custody record, using a glass gas-tight syringe. Purging was completed using a pump set at approximately 200 cc/min, except when noted differently on the chain of custody record. A default of 3 purge volumes was used as recommended by July 2015 DTSC/RWQCB guidance documents.

Prior to purging and sampling of soil gas at each point, a shut-in test was conducted to check for leaks in the above ground fittings. The shut-in test was performed on the above ground apparatus by evacuating the line to a vacuum of 100 inches of water, sealing the entire system and watching the vacuum for at least one minute. A vacuum gauge attached in parallel to the apparatus measured the vacuum. If there was any observable loss of vacuum, the fittings were adjusted as needed until the vacuum did not change noticeably. The soil gas sample was then taken.

No flow conditions occur when a sampling rate greater than 10 mL/min cannot be maintained without applying a vacuum greater than 100 inches of water to the sampling train. The sampling train is left at a vacuum for no less than three minutes. If the vacuum does not subside appreciably after three minutes, the sample location is determined to be a no flow sample.

Analytical – Soil Gas samples were analyzed using EPA Method 8260 that includes extra compounds required by DTSC/RWQCB (such as Freon 113). Instrument Continuing Calibration Verification, QC Reference Standards, Instrument Blanks and Sampling Blanks were analyzed every 12 hours as prescribed by the method. In addition, a Laboratory Control Sample (LCS) and Laboratory Control Sample Duplicate (LCSD) were analyzed with each batch of Soil Gas samples. A duplicate/replicate sample was analyzed each day of the sampling activity. All samples were injected into the GC/MS system within 30 minutes of sampling.

Approval:

Colby Wakeman QA/QC Manager

714-449-9937 | 11007 FOREST PLACE 562-646-1611 | SANTA FE SPRINGS, CA 90670 805-399-0060 | WWW.JONESENV.COM

#### JONES ENVIRONMENTAL LABORATORY RESULTS

Client: Dudek Report date: 7/18/2017

Client Address: 605 3rd Street JEL Ref. No.: F-0030

Encinitas, CA 92024 Client Ref. No.: 9289.003

SV4-5'

SV5-5'

Attn: Nicole Peacock Date Sampled: 7/18/2017

**Date Received:** 7/18/2017 **Date Analyzed:** 7/18/2017

Project Address: 3175 West Ball Rd Physical State: Soil Gas

SV3-5'

Anaheim, CA

SV1-5'

Sample ID:

SV2-5'

#### EPA 8260B - Volatile Organics by GC/MS + Oxygenates

| JEL ID:                     | F-0030-01 | F-0030-02 | F-0030-03 | F-0030-04 | F-0030-05 | Practical                    | T.T          |
|-----------------------------|-----------|-----------|-----------|-----------|-----------|------------------------------|--------------|
| Analytes:                   |           |           |           |           |           | <u>Quantitation</u><br>Limit | <u>Units</u> |
| Benzene                     | ND        | ND        | ND        | ND        | 14        | 8                            | μg/m3        |
|                             | ND<br>ND  | ND<br>ND  | ND<br>ND  | ND<br>ND  | ND        | 8                            |              |
| Bromobenzene                |           |           | ND<br>ND  |           |           | 8                            | μg/m3        |
| Bromodichloromethane        | ND        | ND        |           | ND        | ND        | 8                            | μg/m3        |
| Bromoform                   | ND        | ND        | ND        | ND        | ND        |                              | μg/m3        |
| n-Butylbenzene              | ND        | ND        | ND        | ND        | ND        | 8                            | μg/m3        |
| sec-Butylbenzene            | ND        | ND        | ND        | ND        | ND        | 8                            | μg/m3        |
| tert-Butylbenzene           | ND        | ND        | ND        | ND        | ND        | 8                            | $\mu g/m3$   |
| Carbon tetrachloride        | ND        | ND        | ND        | ND        | ND        | 8                            | μg/m3        |
| Chlorobenzene               | ND        | ND        | ND        | ND        | ND        | 8                            | μg/m3        |
| Chloroform                  | 8         | ND        | ND        | ND        | ND        | 8                            | $\mu g/m3$   |
| 2-Chlorotoluene             | ND        | ND        | ND        | ND        | ND        | 8                            | μg/m3        |
| 4-Chlorotoluene             | ND        | ND        | ND        | ND        | ND        | 8                            | μg/m3        |
| Dibromochloromethane        | ND        | ND        | ND        | ND        | ND        | 8                            | μg/m3        |
| 1,2-Dibromo-3-chloropropane | ND        | ND        | ND        | ND        | ND        | 8                            | μg/m3        |
| 1,2-Dibromoethane (EDB)     | ND        | ND        | ND        | ND        | ND        | 8                            | μg/m3        |
| Dibromomethane              | ND        | ND        | ND        | ND        | ND        | 8                            | μg/m3        |
| 1,2- Dichlorobenzene        | ND        | ND        | ND        | ND        | ND        | 8                            | μg/m3        |
| 1,3-Dichlorobenzene         | ND        | ND        | ND        | ND        | ND        | 8                            | μg/m3        |
| 1,4-Dichlorobenzene         | ND        | ND        | ND        | ND        | ND        | 8                            | μg/m3        |
| Dichlorodifluoromethane     | ND        | ND        | ND        | ND        | ND        | 8                            | μg/m3        |
| 1,1-Dichloroethane          | ND        | ND        | ND        | ND        | ND        | 8                            | μg/m3        |
| 1,2-Dichloroethane          | ND        | ND        | ND        | ND        | ND        | 8                            | μg/m3        |
| 1,1-Dichloroethene          | ND        | ND        | ND        | ND        | ND        | 8                            | μg/m3        |
| cis-1,2-Dichloroethene      | ND        | ND        | ND        | ND        | ND        | 8                            | μg/m3        |
| trans-1,2-Dichloroethene    | ND        | ND        | ND        | ND        | ND        | 8                            | μg/m3        |
| 1,2-Dichloropropane         | ND        | ND        | ND        | ND        | ND        | 8                            | μg/m3        |
| 1,3-Dichloropropane         | ND        | ND        | ND        | ND        | ND        | 8                            | μg/m3        |
| 2,2-Dichloropropane         | ND        | ND        | ND        | ND        | ND        | 8                            | μg/m3        |
| 1,1-Dichloropropene         | ND        | ND        | ND        | ND        | ND<br>ND  | 8                            | μg/m3        |
| 1,1-Diemoropropene          | ND        | ND        | ND        | ND        | TID       | 3                            | MB/1113      |

## JONES ENVIRONMENTAL LABORATORY RESULTS

| EPA 8260B – Volatile Organics by GC/MS + Oxygenates |           |           |           |           |             |                         |                  |
|---|-----------|-----------|-----------|-----------|-------------|-------------------------|------------------|
| Sample ID:  | SV1-5'    | SV2-5'    | SV3-5'    | SV4-5'    | SV5-5'      |                         |                  |
| JEL ID:   | F-0030-01 | F-0030-02 | F-0030-03 | F-0030-04 | F-0030-05   | Practical  Quantitation | <u>Units</u>     |
| Analytes:   | N.D.      | N.ID      | N.ID      | N.ID      | NID         | <u>Limit</u>            | / 2              |
| cis-1,3-Dichloropropene                             | ND        | ND        | ND        | ND        | ND          | 8                       | μg/m3            |
| trans-1,3-Dichloropropene                           | ND        | ND        | ND        | ND        | ND          | 8                       | μg/m3            |
| Ethylbenzene  | ND<br>ND  | ND<br>ND  | 9<br>ND   | ND<br>ND  | 14<br>ND    | 8<br>40                 | μg/m3            |
| Freon 113   | ND<br>ND  | ND<br>ND  | ND<br>ND  | ND<br>ND  | ND<br>ND    | 8                       | μg/m3            |
| Hexachlorobutadiene                                 | ND<br>ND  | ND<br>ND  | ND<br>ND  | ND<br>ND  | 12          | 8                       | μg/m3            |
| Isopropylbenzene                                    | ND<br>ND  | ND<br>ND  | ND<br>ND  | ND<br>ND  | ND          | 8                       | μg/m3            |
| 4-Isopropyltoluene                                  |           | ND<br>ND  | ND<br>ND  | ND<br>ND  | ND<br>ND    | 8                       | μg/m3            |
| Methylene chloride                                  | ND<br>ND  | ND<br>ND  | ND<br>ND  | ND<br>ND  | ND<br>ND    | 40                      | μg/m3            |
| Naphthalene   |           | ND<br>ND  | ND<br>ND  | ND<br>ND  | ND<br>ND    | 8                       | μg/m3<br>μg/m3   |
| n-Propylbenzene                                     | ND<br>ND  | ND<br>ND  | ND<br>ND  | ND<br>ND  | ND<br>ND    | 8                       |                  |
| Styrene 1,1,1,2-Tetrachloroethane                   | ND<br>ND  | ND<br>ND  | ND<br>ND  | ND<br>ND  | ND<br>ND    | 8                       | μg/m3<br>μg/m3   |
| 1,1,2,2-Tetrachloroethane                           | ND<br>ND  | ND<br>ND  | ND<br>ND  | ND<br>ND  | ND<br>ND    | 8                       | μg/1113<br>μg/m3 |
| Tetrachloroethylene                                 | ND<br>ND  | ND<br>ND  | ND        | ND        | ND<br>ND    | 8                       | μg/m3<br>μg/m3   |
| Toluene   | 40        | 83        | 118       | 56        | 148         | 8                       | μg/m3<br>μg/m3   |
| 1,2,3-Trichlorobenzene                              | ND        | ND        | ND        | ND        | ND          | 40                      | μg/m3<br>μg/m3   |
| 1,2,4-Trichlorobenzene                              | ND<br>ND  | ND        | ND        | ND        | ND<br>ND    | 8                       | μg/m3<br>μg/m3   |
| 1,1,1-Trichloroethane                               | ND<br>ND  | ND        | ND        | ND        | ND          | 8                       | μg/m3<br>μg/m3   |
| 1,1,2-Trichloroethane                               | ND<br>ND  | ND        | ND        | ND        | ND<br>ND    | 8                       | μg/m3<br>μg/m3   |
| Trichloroethylene                                   | ND        | ND        | ND        | ND        | ND<br>ND    | 8                       | μg/m3<br>μg/m3   |
| Trichlorofluoromethane                              | ND<br>ND  | ND        | ND        | ND        | ND          | 8                       | μg/m3<br>μg/m3   |
| 1,2,3-Trichloropropane                              | ND<br>ND  | ND        | ND        | ND        | ND<br>ND    | 8                       | μg/m3<br>μg/m3   |
| 1,2,4-Trimethylbenzene                              | ND<br>ND  | ND        | ND        | ND        | ND<br>ND    | 8                       | μg/m3<br>μg/m3   |
| 1,3,5-Trimethylbenzene                              | ND        | ND        | ND        | ND        | ND<br>ND    | 8                       | μg/m3            |
| Vinyl chloride                                      | ND        | ND        | ND        | ND        | ND<br>ND    | 8                       | μg/m3            |
| m,p-Xylene  | ND        | ND        | 8         | ND        | 20          | 8                       | μg/m3            |
| o-Xylene  | ND        | ND        | ND        | ND        | ND          | 8                       | μg/m3            |
| MTBE  | ND        | ND        | ND        | ND        | ND          | 40                      | μg/m3            |
| Ethyl-tert-butylether                               | ND        | ND        | ND        | ND        | ND          | 40                      | μg/m3            |
| Di-isopropylether                                   | ND        | ND        | ND        | ND        | ND          | 40                      | μg/m3            |
| tert-amylmethylether                                | ND        | ND        | ND        | ND        | ND          | 40                      | μg/m3            |
| tert-Butylalcohol                                   | ND        | ND        | ND        | ND        | ND          | 400                     | μg/m3            |
| TIC:  |           |           |           |           |             |                         |                  |
| n-pentane   | ND        | ND        | ND        | ND        | ND          | 400                     | $\mu g/m3$       |
| n-hexane  | ND        | ND        | ND        | ND        | ND          | 400                     | μg/m3            |
| n-heptane   | ND        | ND        | ND        | ND        | ND          | 400                     | μg/m3            |
| <b>Dilution Factor</b>                              | 1         | 1         | 1         | 1         | 1           |                         |                  |
| Surrogate Recoveries:                               |           | 0.5.7.1   | 40.77     | 40        | 40.55       | QC Lim                  |                  |
| Dibromofluoromethane                                | 102%      | 99%       | 104%      | 102%      | 104%        | 60 - 14                 |                  |
| Toluene-d <sub>8</sub>                              | 100%      | 104%      | 103%      | 104%      | 102%        | 60 - 14                 |                  |
| 4-Bromofluorobenzene                                | 92%       | 97%       | 95%       | 98%       | 101%        | 60 - 14                 | 0                |
|   |           |           |           |           | F-071817-F- |                         |                  |
|   | 0030      | 0030      | 0030      | 0030      | 0030        |                         |                  |

ND= Not Detected

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#### JONES ENVIRONMENTAL LABORATORY RESULTS

Client: Dudek Report date: 7/18/2017

Client Address: 605 3rd Street JEL Ref. No.: F-0030

Encinitas, CA 92024 Client Ref. No.: 9289.003

Attn: Nicole Peacock Date Sampled: 7/18/2017

**Date Received:** 7/18/2017 **Date Analyzed:** 7/18/2017

Project Address: 3175 West Ball Rd Physical State: Soil Gas

SV8-5'

Anaheim, CA

SV6-5'

SV7-5'

Sample ID:

#### EPA 8260B - Volatile Organics by GC/MS + Oxygenates

SV8-5' REP

SV9-5'

**Practical JEL ID:** F-0030-06 F-0030-07 F-0030-08 F-0030-09 F-0030-10 Quantitation **Units** Limit **Analytes:** ND 8 Benzene ND 64 53 35 μg/m3 Bromobenzene ND ND ND ND ND 8  $\mu g/m3$ Bromodichloromethane ND ND ND ND ND 8  $\mu g/m3$ ND ND ND ND 8  $\mu g/m3$ Bromoform ND 8 n-Butylbenzene ND ND ND ND ND  $\mu g/m3$  $\mu g/m3$ ND ND ND 8 sec-Butylbenzene ND ND 8 ND ND ND tert-Butylbenzene ND ND μg/m3 8 ND ND ND Carbon tetrachloride ND ND μg/m3 8 Chlorobenzene ND ND ND ND ND μg/m3 8 Chloroform ND ND ND ND ND μg/m3 8 ND ND ND ND ND 2-Chlorotoluene  $\mu g/m3$ 8 4-Chlorotoluene ND ND ND ND ND  $\mu g/m3$ 8 ND ND ND ND  $\mu g/m3$ Dibromochloromethane ND 8 ND ND ND ND ND  $\mu g/m3$ 1,2-Dibromo-3-chloropropane 8 1,2-Dibromoethane (EDB) ND ND ND ND ND μg/m3 8 Dibromomethane ND ND ND ND ND  $\mu g/m3$ 8 1.2- Dichlorobenzene ND ND ND ND ND  $\mu g/m3$ 8 1,3-Dichlorobenzene ND ND ND ND ND μg/m3 8 1,4-Dichlorobenzene ND ND ND ND ND μg/m3 8 Dichlorodifluoromethane ND ND ND ND ND μg/m3 1.1-Dichloroethane ND ND ND ND ND 8 μg/m3 8 ND ND μg/m3 1,2-Dichloroethane ND ND ND 8 1,1-Dichloroethene ND ND ND ND ND μg/m3 8 ND ND ND ND ND μg/m3 cis-1.2-Dichloroethene 8 ND ND ND ND ND  $\mu g/m3$ trans-1,2-Dichloroethene 8 ND 1,2-Dichloropropane ND ND ND ND  $\mu g/m3$ 8 1,3-Dichloropropane ND ND ND ND ND  $\mu g/m3$ μg/m3 8 2,2-Dichloropropane ND ND ND ND ND 8 ND ND ND 1,1-Dichloropropene ND ND  $\mu g/m3$ 

## JONES ENVIRONMENTAL LABORATORY RESULTS

| EPA 8260B – | Volatile ( | Organics | by GC/MS | + Oxygenates |
|-------------|------------|----------|----------|--------------|
|             |            |          |          |              |

| Sample ID:                   | SV6-5'    | SV7-5'    | SV8-5'    | SV8-5' REP    | SV9-5'    |   |                |
|------------------------------|-----------|-----------|-----------|---------------|-----------|---|----------------|
| <u>JEL ID:</u><br>Analytes:  | F-0030-06 | F-0030-07 | F-0030-08 | F-0030-09     | F-0030-10 | <u>Practical</u><br><u>Quantitation</u><br><u>Limit</u> | <u>Units</u>   |
| cis-1,3-Dichloropropene      | ND        | ND        | ND        | ND            | ND        | 8   | μg/m3          |
| trans-1,3-Dichloropropene    | ND        | ND        | ND        | ND            | ND        | 8   | μg/m3          |
| Ethylbenzene                 | 9         | ND        | 25        | 22            | 20        | 8   | μg/m3          |
| Freon 113                    | ND        | ND        | ND        | ND            | ND        | 40  | μg/m3          |
| Hexachlorobutadiene          | ND        | ND        | ND        | ND            | ND        | 8   | μg/m3          |
| Isopropylbenzene             | ND        | ND        | 12        | ND            | ND        | 8   | μg/m3          |
| 4-Isopropyltoluene           | ND        | ND        | ND        | ND            | ND        | 8   | μg/m3          |
| Methylene chloride           | ND        | ND        | ND        | ND            | ND        | 8   | μg/m3          |
| Naphthalene                  | ND        | ND        | ND        | ND            | ND        | 40  | μg/m3          |
| n-Propylbenzene              | ND        | ND        | ND        | ND            | ND        | 8   | μg/m3          |
| Styrene                      | 8         | ND        | 15        | 12            | 9         | 8   | μg/m3          |
| 1,1,1,2-Tetrachloroethane    | ND        | ND        | ND        | ND            | ND        | 8   | μg/m3          |
| 1,1,2,2-Tetrachloroethane    | ND        | ND        | ND        | ND            | ND        | 8   | μg/m3          |
| Tetrachloroethylene          | ND        | ND        | ND        | ND            | ND        | 8   | μg/m3          |
| Toluene                      | 80        | 26        | 196       | 185           | 194       | 8   | μg/m3          |
| 1,2,3-Trichlorobenzene       | ND        | ND        | ND        | ND            | ND        | 40  | μg/m3          |
| 1,2,4-Trichlorobenzene       | ND        | ND        | ND        | ND            | ND        | 8   | μg/m3          |
| 1,1,1-Trichloroethane        | ND        | ND        | ND        | ND<br>ND      | ND        | 8   | μg/m3<br>μg/m3 |
| 1,1,2-Trichloroethane        | ND        | ND        | ND        | ND<br>ND      | ND        | 8   | μg/m3<br>μg/m3 |
| Trichloroethylene            | ND        | ND        | ND        | ND            | ND        | 8   | μg/m3<br>μg/m3 |
| Trichlorofluoromethane       | ND<br>ND  | ND        | ND        | ND<br>ND      | ND        | 8   | μg/m3<br>μg/m3 |
| 1,2,3-Trichloropropane       | ND<br>ND  | ND        | ND        | ND<br>ND      | ND        | 8   | μg/m3<br>μg/m3 |
| 1,2,4-Trimethylbenzene       | ND<br>ND  | ND<br>ND  | ND        | ND<br>ND      | ND<br>ND  | 8   | μg/m3<br>μg/m3 |
| 1,3,5-Trimethylbenzene       | ND<br>ND  | ND        | ND        | ND            | ND<br>ND  | 8   | μg/m3<br>μg/m3 |
| Vinyl chloride               | ND<br>ND  | ND<br>ND  | ND        | ND<br>ND      | ND<br>ND  | 8   | μg/m3          |
| <del>-</del>                 | ND<br>ND  | ND<br>ND  | 41        | 45            | 46        | 8   | μg/m3<br>μg/m3 |
| m,p-Xylene                   | ND<br>ND  | ND<br>ND  | 14        | 45<br>13      | 13        | 8   | μg/m3<br>μg/m3 |
| o-Xylene<br>MTBE             | ND<br>ND  | ND<br>ND  | ND        | ND            | ND        | 40  | μg/m3<br>μg/m3 |
|                              | ND<br>ND  | ND<br>ND  | ND<br>ND  | ND<br>ND      | ND<br>ND  | 40  | μg/m3<br>μg/m3 |
| Ethyl-tert-butylether        | ND<br>ND  | ND<br>ND  | ND<br>ND  | ND<br>ND      | ND<br>ND  | 40  | μg/m3<br>μg/m3 |
| Di-isopropylether            | ND<br>ND  | ND<br>ND  | ND<br>ND  | ND<br>ND      | ND<br>ND  | 40  | μg/m3<br>μg/m3 |
| tert-amylmethylether         | ND<br>ND  | ND<br>ND  | ND<br>ND  | ND<br>ND      | ND<br>ND  | 400   | μg/m3<br>μg/m3 |
| tert-Butylalcohol            | ND        | ND        | ND        | ND            | ND        | 400   | μg/III3        |
| TIC:                         | N.E.      | ND        | N.IID     | NED           | ND        | 400   | / 2            |
| n-pentane                    | ND        | ND        | ND        | ND            | ND        | 400   | μg/m3          |
| n-hexane                     | ND        | ND        | ND        | ND            | ND        | 400   | μg/m3          |
| n-heptane                    | ND        | ND        | ND        | ND            | ND        | 400   | μg/m3          |
| <b>Dilution Factor</b>       | 1         | 1         | 1         | 1             | 1         |   |                |
| <b>Surrogate Recoveries:</b> |           |           |           |               |           | QC Lim  |                |
| Dibromofluoromethane         | 102%      | 103%      | 99%       | 103%          | 105%      | 60 - 140  |                |
| Toluene-d <sub>8</sub>       | 103%      | 104%      | 103%      | 104%          | 106%      | 60 - 140  |                |
| 4-Bromofluorobenzene         | 96%       | 96%       | 99%       | 98%           | 99%       | 60 - 140  | )              |
|                              |           |           |           | - F-071817-F- |           |   |                |
|                              | 0030      | 0030      | 0030      | 0030          | 0030      |   |                |
| NID NI ID ( I I              |           |           |           |               |           |   |                |

ND= Not Detected

714-449-9937 | 11007 FOREST PLACE 562-646-1611 | SANTA FE SPRINGS, CA 90670 805-399-0060 | WWW.JONESENV.COM

#### JONES ENVIRONMENTAL LABORATORY RESULTS

Client: Dudek Report date: 7/18/2017

Client Address: 605 3rd Street JEL Ref. No.: F-0030

Encinitas, CA 92024 Client Ref. No.: 9289.003

Attn: Nicole Peacock Date Sampled: 7/18/2017

 Date Received:
 7/18/2017

 Date Analyzed:
 7/18/2017

Project Address: 3175 West Ball Rd Physical State: Soil Gas

Anaheim, CA

#### EPA 8260B – Volatile Organics by GC/MS + Oxygenates

| Sample ID:                  | SV10-5'   | SV11-5'   | SV12-5'   | SV13-5'   | SV14-5'   |  |              |
|-----------------------------|-----------|-----------|-----------|-----------|-----------|--|--------------|
| JEL ID: Analytes:           | F-0030-11 | F-0030-12 | F-0030-13 | F-0030-14 | F-0030-15 | <u>Practical</u><br><u>Quantitation</u><br>Limit | <u>Units</u> |
| Benzene                     | 26        | ND        | 35        | 16        | 18        | 8  | μg/m3        |
| Bromobenzene                | ND        | ND        | ND        | ND        | ND        | 8  | μg/m3        |
| Bromodichloromethane        | ND        | ND        | ND        | ND        | ND        | 8  | μg/m3        |
| Bromoform                   | ND        | ND        | ND        | ND        | ND        | 8  | μg/m3        |
| n-Butylbenzene              | ND        | ND        | ND        | ND        | ND        | 8  | μg/m3        |
| sec-Butylbenzene            | ND        | ND        | ND        | ND        | ND        | 8  | μg/m3        |
| tert-Butylbenzene           | ND        | ND        | ND        | ND        | ND        | 8  | μg/m3        |
| Carbon tetrachloride        | ND        | ND        | ND        | ND        | ND        | 8  | μg/m3        |
| Chlorobenzene               | ND        | ND        | ND        | ND        | ND        | 8  | μg/m3        |
| Chloroform                  | ND        | ND        | ND        | ND        | ND        | 8  | μg/m3        |
| 2-Chlorotoluene             | ND        | ND        | ND        | ND        | ND        | 8  | μg/m3        |
| 4-Chlorotoluene             | ND        | ND        | ND        | ND        | ND        | 8  | μg/m3        |
| Dibromochloromethane        | ND        | ND        | ND        | ND        | ND        | 8  | μg/m3        |
| 1,2-Dibromo-3-chloropropane | ND        | ND        | ND        | ND        | ND        | 8  | μg/m3        |
| 1,2-Dibromoethane (EDB)     | ND        | ND        | ND        | ND        | ND        | 8  | μg/m3        |
| Dibromomethane              | ND        | ND        | ND        | ND        | ND        | 8  | μg/m3        |
| 1,2- Dichlorobenzene        | ND        | ND        | ND        | ND        | ND        | 8  | μg/m3        |
| 1,3-Dichlorobenzene         | ND        | ND        | ND        | ND        | ND        | 8  | μg/m3        |
| 1,4-Dichlorobenzene         | ND        | ND        | ND        | ND        | ND        | 8  | μg/m3        |
| Dichlorodifluoromethane     | ND        | ND        | ND        | ND        | ND        | 8  | μg/m3        |
| 1,1-Dichloroethane          | ND        | ND        | ND        | ND        | ND        | 8  | μg/m3        |
| 1,2-Dichloroethane          | ND        | ND        | ND        | ND        | ND        | 8  | μg/m3        |
| 1,1-Dichloroethene          | ND        | ND        | ND        | ND        | ND        | 8  | μg/m3        |
| cis-1,2-Dichloroethene      | ND        | ND        | ND        | ND        | ND        | 8  | μg/m3        |
| trans-1,2-Dichloroethene    | ND        | ND        | ND        | ND        | ND        | 8  | μg/m3        |
| 1,2-Dichloropropane         | ND        | ND        | ND        | ND        | ND        | 8  | μg/m3        |
| 1,3-Dichloropropane         | ND        | ND        | ND        | ND        | ND        | 8  | μg/m3        |
| 2,2-Dichloropropane         | ND        | ND        | ND        | ND        | ND        | 8  | μg/m3        |
| 1,1-Dichloropropene         | ND        | ND        | ND        | ND        | ND        | 8  | μg/m3        |

## JONES ENVIRONMENTAL LABORATORY RESULTS

| EPA 8260B – Volatile Organics by GC/MS + Oxygenates |           |           |           |           |             |                        |              |
|---|-----------|-----------|-----------|-----------|-------------|------------------------|--------------|
| Sample ID:  | SV10-5'   | SV11-5'   | SV12-5'   | SV13-5'   | SV14-5'     |                        |              |
| JEL ID:   | F-0030-11 | F-0030-12 | F-0030-13 | F-0030-14 | F-0030-15   | Practical Quantitation | <u>Units</u> |
| Analytes:   | NID       | NID       | NID       | NID       | NID         | <u>Limit</u>           |              |
| cis-1,3-Dichloropropene                             | ND        | ND        | ND        | ND        | ND          | 8                      | μg/m3        |
| trans-1,3-Dichloropropene                           | ND        | ND        | ND        | ND        | ND          | 8                      | μg/m3        |
| Ethylbenzene  | 11<br>ND  | ND        | 28        | 15<br>ND  | 11<br>ND    | 8                      | μg/m3        |
| Freon 113   | ND        | ND        | ND        | ND        | ND          | 40                     | μg/m3        |
| Hexachlorobutadiene                                 | ND        | ND        | ND        | ND        | ND          | 8                      | μg/m3        |
| Isopropylbenzene                                    | ND        | ND        | ND        | ND        | ND          | 8                      | μg/m3        |
| 4-Isopropyltoluene                                  | ND        | ND        | ND        | ND        | ND          | 8                      | μg/m3        |
| Methylene chloride                                  | ND        | ND        | ND        | ND        | ND          | 8                      | μg/m3        |
| Naphthalene   | ND        | ND        | ND        | ND        | ND          | 40                     | μg/m3        |
| n-Propylbenzene                                     | ND        | ND        | ND        | ND        | ND          | 8                      | μg/m3        |
| Styrene   | ND        | ND        | 13        | ND        | ND          | 8                      | μg/m3        |
| 1,1,1,2-Tetrachloroethane                           | ND        | ND        | ND        | ND        | ND          | 8                      | μg/m3        |
| 1,1,2,2-Tetrachloroethane                           | ND        | ND        | ND        | ND        | ND          | 8                      | μg/m3        |
| Tetrachloroethylene                                 | ND        | ND        | ND        | ND        | ND          | 8                      | μg/m3        |
| Toluene   | 100       | 43        | 196       | 129       | 114         | 8                      | μg/m3        |
| 1,2,3-Trichlorobenzene                              | ND        | ND        | ND        | ND        | ND          | 40                     | μg/m3        |
| 1,2,4-Trichlorobenzene                              | ND        | ND        | ND        | ND        | ND          | 8                      | μg/m3        |
| 1,1,1-Trichloroethane                               | ND        | ND        | ND        | ND        | ND          | 8                      | μg/m3        |
| 1,1,2-Trichloroethane                               | ND        | ND        | ND        | ND        | ND          | 8                      | μg/m3        |
| Trichloroethylene                                   | ND        | ND        | ND        | ND        | ND          | 8                      | μg/m3        |
| Trichlorofluoromethane                              | ND        | ND        | ND        | ND        | ND          | 8                      | μg/m3        |
| 1,2,3-Trichloropropane                              | ND        | ND        | ND        | ND        | ND          | 8                      | μg/m3        |
| 1,2,4-Trimethylbenzene                              | ND        | ND        | ND        | ND        | ND          | 8                      | μg/m3        |
| 1,3,5-Trimethylbenzene                              | ND        | ND        | ND        | ND        | ND          | 8                      | μg/m3        |
| Vinyl chloride                                      | ND        | ND        | ND        | ND        | ND          | 8                      | μg/m3        |
| m,p-Xylene  | 23        | ND        | 49        | 27        | 18          | 8                      | μg/m3        |
| o-Xylene  | ND        | ND        | 15        | ND        | ND          | 8                      | μg/m3        |
| MTBE  | ND        | ND        | ND        | ND        | ND          | 40                     | $\mu g/m3$   |
| Ethyl-tert-butylether                               | ND        | ND        | ND        | ND        | ND          | 40                     | $\mu g/m3$   |
| Di-isopropylether                                   | ND        | ND        | ND        | ND        | ND          | 40                     | μg/m3        |
| tert-amylmethylether                                | ND        | ND        | ND        | ND        | ND          | 40                     | μg/m3        |
| tert-Butylalcohol                                   | ND        | ND        | ND        | ND        | ND          | 400                    | $\mu g/m3$   |
| TIC:  |           |           |           |           |             | 400                    | / 0          |
| n-pentane   | ND        | ND        | ND        | ND        | ND          | 400                    | μg/m3        |
| n-hexane  | ND        | ND        | ND        | ND        | ND          | 400                    | μg/m3        |
| n-heptane   | ND        | ND        | ND        | ND        | ND          | 400                    | μg/m3        |
| <b>Dilution Factor</b>                              | 1         | 1         | 1         | 1         | 1           |                        |              |
| Surrogate Recoveries:                               |           |           |           |           |             | <u>QC Lim</u>          | <u>its</u>   |
| Dibromofluoromethane                                | 103%      | 101%      | 103%      | 102%      | 103%        | 60 - 14                | 0            |
| Toluene-d <sub>8</sub>                              | 101%      | 99%       | 101%      | 102%      | 103%        | 60 - 14                | 0            |
| 4-Bromofluorobenzene                                | 94%       | 94%       | 97%       | 94%       | 94%         | 60 - 14                | 0            |
|   |           |           |           |           | F-071817-F- |                        |              |
|   | 0030      | 0030      | 0030      | 0030      | 0030        |                        |              |
| ND= Not Detected                                    |           |           |           |           |             |                        |              |

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#### JONES ENVIRONMENTAL LABORATORY RESULTS

Client: Dudek Report date: 7/18/2017

Client Address: 605 3rd Street JEL Ref. No.: F-0030

Encinitas, CA 92024 Client Ref. No.: 9289.003

Attn: Nicole Peacock Date Sampled: 7/18/2017

 Date Received:
 7/18/2017

 Date Analyzed:
 7/18/2017

Project Address: 3175 West Ball Rd Physical State: Soil Gas

Anaheim, CA

#### EPA 8260B - Volatile Organics by GC/MS + Oxygenates

**Sample ID:** SV15-5' SV16-5'

| JEL ID:                     | F-0030-16 | F-0030-17 | <u>Practical</u>    |              |
|-----------------------------|-----------|-----------|---------------------|--------------|
| JEL ID.                     | 1-0050-10 | 1-0050-17 | <u>Quantitation</u> | <u>Units</u> |
| Analytes:                   |           |           | <u>Limit</u>        |              |
| Benzene                     | ND        | 23        |                     | μg/m3        |
| Bromobenzene                | ND        | ND        |                     | μg/m3        |
| Bromodichloromethane        | ND        | ND        |                     | μg/m3        |
| Bromoform                   | ND        | ND        |                     | μg/m3        |
| n-Butylbenzene              | ND        | ND        |                     | μg/m3        |
| sec-Butylbenzene            | ND        | ND        |                     | μg/m3        |
| tert-Butylbenzene           | ND        | ND        | 8                   | μg/m3        |
| Carbon tetrachloride        | ND        | ND        |                     | μg/m3        |
| Chlorobenzene               | ND        | ND        |                     | μg/m3        |
| Chloroform                  | ND        | ND        |                     | μg/m3        |
| 2-Chlorotoluene             | ND        | ND        |                     | μg/m3        |
| 4-Chlorotoluene             | ND        | ND        |                     | μg/m3        |
| Dibromochloromethane        | ND        | ND        |                     | $\mu g/m3$   |
| 1,2-Dibromo-3-chloropropane | ND        | ND        |                     | μg/m3        |
| 1,2-Dibromoethane (EDB)     | ND        | ND        |                     | μg/m3        |
| Dibromomethane              | ND        | ND        |                     | μg/m3        |
| 1,2- Dichlorobenzene        | ND        | ND        |                     | μg/m3        |
| 1,3-Dichlorobenzene         | ND        | ND        |                     | μg/m3        |
| 1,4-Dichlorobenzene         | ND        | ND        |                     | μg/m3        |
| Dichlorodifluoromethane     | ND        | ND        |                     | μg/m3        |
| 1,1-Dichloroethane          | ND        | ND        |                     | μg/m3        |
| 1,2-Dichloroethane          | ND        | ND        |                     | μg/m3        |
| 1,1-Dichloroethene          | ND        | ND        |                     | μg/m3        |
| cis-1,2-Dichloroethene      | ND        | ND        |                     | μg/m3        |
| trans-1,2-Dichloroethene    | ND        | ND        |                     | μg/m3        |
| 1,2-Dichloropropane         | ND        | ND        |                     | μg/m3        |
| 1,3-Dichloropropane         | ND        | ND        |                     | μg/m3        |
| 2,2-Dichloropropane         | ND        | ND        |                     | $\mu g/m3$   |
| 1,1-Dichloropropene         | ND        | ND        | 8                   | μg/m3        |

#### JONES ENVIRONMENTAL LABORATORY RESULTS

## **EPA 8260B – Volatile Organics by GC/MS + Oxygenates**

Sample ID:

ND= Not Detected

SV15-5'

SV16-5'

| Sample 1D.                | 5 V 13-3    | 3 1 10-3    |                           |
|---------------------------|-------------|-------------|---------------------------|
| IEL ID.                   | F-0030-16   | E 0020 17   | <u>Practical</u>          |
| JEL ID:                   | F-0030-16   | F-0030-17   | <b>Quantitation Units</b> |
| Analytes:                 |             |             | <u>Limit</u>              |
| cis-1,3-Dichloropropene   | ND          | ND          | 8 $\mu g/m3$              |
| trans-1,3-Dichloropropene | ND          | ND          | 8 $\mu g/m3$              |
| Ethylbenzene              | ND          | 20          | 8 $\mu g/m3$              |
| Freon 113                 | ND          | ND          | $40 	 \mu g/m3$           |
| Hexachlorobutadiene       | ND          | ND          | 8 μg/m3                   |
| Isopropylbenzene          | ND          | ND          | $8 	 \mu g/m3$            |
| 4-Isopropyltoluene        | ND          | ND          | $8 	 \mu g/m3$            |
| Methylene chloride        | ND          | ND          | $8 	 \mu g/m3$            |
| Naphthalene               | ND          | ND          | $40 	 \mu g/m3$           |
| n-Propylbenzene           | ND          | ND          | 8 μg/m3                   |
| Styrene                   | ND          | ND          | 8 μg/m3                   |
| 1,1,1,2-Tetrachloroethane | ND          | ND          | 8 μg/m3                   |
| 1,1,2,2-Tetrachloroethane | ND          | ND          | 8 μg/m3                   |
| Tetrachloroethylene       | ND          | ND          | 8 μg/m3                   |
| Toluene                   | 54          | 175         | 8 μg/m3                   |
| 1,2,3-Trichlorobenzene    | ND          | ND          | 40 μg/m3                  |
| 1,2,4-Trichlorobenzene    | ND          | ND          | 8 μg/m3                   |
| 1,1,1-Trichloroethane     | ND          | ND          | 8 μg/m3                   |
| 1,1,2-Trichloroethane     | ND          | ND          | 8 μg/m3                   |
| Trichloroethylene         | ND          | ND          | 8 μg/m3                   |
| Trichlorofluoromethane    | ND          | ND          | 8 μg/m3                   |
| 1,2,3-Trichloropropane    | ND          | ND          | 8 μg/m3                   |
| 1,2,4-Trimethylbenzene    | ND          | ND          | 8 μg/m3                   |
| 1,3,5-Trimethylbenzene    | ND          | ND          | 8 μg/m3                   |
| Vinyl chloride            | ND          | ND          | 8 μg/m3                   |
| m,p-Xylene                | 16          | 42          | 8 μg/m3                   |
| o-Xylene                  | ND          | 12          | 8 μg/m3                   |
| MTBE                      | ND          | ND          | 40 μg/m3                  |
| Ethyl-tert-butylether     | ND          | ND          | 40 μg/m3                  |
| Di-isopropylether         | ND          | ND          | 40 μg/m3                  |
| tert-amylmethylether      | ND          | ND          | 40 μg/m3                  |
| tert-Butylalcohol         | ND          | ND          | 400 μg/m3                 |
| tert-Butyrareonor         | ND          | ND          | μετιισ                    |
| TIC:                      |             |             |                           |
| n-pentane                 | ND          | ND          | 400 μg/m3                 |
| n-hexane                  | ND          | ND          | 400 μg/m3                 |
| n-heptane                 | ND          | ND          | 400 μg/m3                 |
| <b>Dilution Factor</b>    | 1           | 1           |                           |
| Surrogate Recoveries:     |             |             | <b>QC Limits</b>          |
| Dibromofluoromethane      | 109%        | 102%        | 60 <b>-</b> 140           |
| Toluene-d <sub>8</sub>    | 102%        | 102%        | 60 - 140                  |
| 4-Bromofluorobenzene      | 95%         | 97%         | 60 - 140                  |
|                           | F-071817-F- | F-071817-F- |                           |
|                           | 0030        | 0030        |                           |
|                           |             | -           |                           |

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#### JONES ENVIRONMENTAL QUALITY CONTROL INFORMATION

Client: Dudek Report date: 7/18/2017

Client Address: 605 3rd Street JEL Ref. No.: F-0030

Encinitas, CA 92024 Client Ref. No.: 9289.003

Attn: Nicole Peacock Date Sampled: 7/18/2017

 Date Received:
 7/18/2017

 Date Analyzed:
 7/18/2017

Project Address: 3175 West Ball Rd Physical State: Soil Gas

Anaheim, CA

#### EPA 8260B – Volatile Organics by GC/MS + Oxygenates

| Sample ID:                  | METHOD<br>BLANK  | SAMPLING<br>BLANK |   |              |
|-----------------------------|------------------|-------------------|---|--------------|
| JEL ID:                     | 071817-<br>F1MB1 | 071817-<br>F1SB1  | <u>Practical</u><br><u>Quantitation</u> | <u>Units</u> |
| Analytes:                   |                  |                   | <u>Limit</u>                            |              |
| Benzene                     | ND               | ND                | 8                                       | μg/m3        |
| Bromobenzene                | ND               | ND                | 8                                       | μg/m3        |
| Bromodichloromethane        | ND               | ND                | 8                                       | μg/m3        |
| Bromoform                   | ND               | ND                | 8                                       | μg/m3        |
| n-Butylbenzene              | ND               | ND                | 8                                       | $\mu g/m3$   |
| sec-Butylbenzene            | ND               | ND                | 8                                       | $\mu g/m3$   |
| tert-Butylbenzene           | ND               | ND                | 8                                       | $\mu g/m3$   |
| Carbon tetrachloride        | ND               | ND                | 8                                       | μg/m3        |
| Chlorobenzene               | ND               | ND                | 8                                       | μg/m3        |
| Chloroform                  | ND               | ND                | 8                                       | $\mu g/m3$   |
| 2-Chlorotoluene             | ND               | ND                | 8                                       | μg/m3        |
| 4-Chlorotoluene             | ND               | ND                | 8                                       | $\mu g/m3$   |
| Dibromochloromethane        | ND               | ND                | 8                                       | $\mu g/m3$   |
| 1,2-Dibromo-3-chloropropane | ND               | ND                | 8                                       | $\mu g/m3$   |
| 1,2-Dibromoethane (EDB)     | ND               | ND                | 8                                       | μg/m3        |
| Dibromomethane              | ND               | ND                | 8                                       | $\mu g/m3$   |
| 1,2- Dichlorobenzene        | ND               | ND                | 8                                       | μg/m3        |
| 1,3-Dichlorobenzene         | ND               | ND                | 8                                       | μg/m3        |
| 1,4-Dichlorobenzene         | ND               | ND                | 8                                       | μg/m3        |
| Dichlorodifluoromethane     | ND               | ND                | 8                                       | μg/m3        |
| 1,1-Dichloroethane          | ND               | ND                | 8                                       | μg/m3        |
| 1,2-Dichloroethane          | ND               | ND                | 8                                       | μg/m3        |
| 1,1-Dichloroethene          | ND               | ND                | 8                                       | $\mu g/m3$   |
| cis-1,2-Dichloroethene      | ND               | ND                | 8                                       | μg/m3        |
| trans-1,2-Dichloroethene    | ND               | ND                | 8                                       | μg/m3        |
| 1,2-Dichloropropane         | ND               | ND                | 8                                       | $\mu g/m3$   |
| 1,3-Dichloropropane         | ND               | ND                | 8                                       | $\mu g/m3$   |
| 2,2-Dichloropropane         | ND               | ND                | 8                                       | $\mu g/m3$   |
| 1,1-Dichloropropene         | ND               | ND                | 8                                       | $\mu g/m3$   |

## JONES ENVIRONMENTAL QUALITY CONTROL INFORMATION

| EPA 8260B - | Volatile | <b>Organics</b> | by GC/MS | S + Oxygenates |
|-------------|----------|-----------------|----------|----------------|
|             |          |                 |          |                |

| Sample ID:                                       | METHOD<br>BLANK  | SAMPLING<br>BLANK |   |                |
|--|------------------|-------------------|---|----------------|
| JEL ID:  | 071817-<br>F1MB1 | 071817-<br>F1SB1  | <u>Practical</u><br><u>Quantitation</u> | <u>Units</u>   |
| Analytes:  |                  |                   | <u>Limit</u>                            |                |
| cis-1,3-Dichloropropene                          | ND               | ND                | 8                                       | μg/m3          |
| trans-1,3-Dichloropropene                        | ND               | ND                |   | μg/m3          |
| Ethylbenzene                                     | ND               | ND                |   | μg/m3          |
| Freon 113  | ND               | ND                |   | μg/m3          |
| Hexachlorobutadiene                              | ND               | ND                | •                                       | μg/m3          |
| Isopropylbenzene                                 | ND               | ND                | · ·                                     | μg/m3          |
| 4-Isopropyltoluene                               | ND               | ND                | · · · · · · · · · · · · · · · · · · ·   | μg/m3          |
| Methylene chloride                               | ND               | ND                | · · · · · · · · · · · · · · · · · · ·   | μg/m3          |
| Naphthalene                                      | ND               | ND                |   | μg/m3          |
| n-Propylbenzene                                  | ND               | ND                |   | μg/m3          |
| Styrene  | ND               | ND                | ·                                       | μg/m3          |
| 1,1,1,2-Tetrachloroethane                        | ND               | ND                |   | μg/m3          |
| 1,1,2,2-Tetrachloroethane                        | ND               | ND                | ·                                       | μg/m3          |
| Tetrachloroethylene                              | ND               | ND                | ·                                       | μg/m3          |
| Toluene  | ND               | ND                |   | μg/m3          |
| 1,2,3-Trichlorobenzene                           | ND               | ND                |   | μg/m3          |
| 1,2,4-Trichlorobenzene                           | ND               | ND                |   | μg/m3          |
| 1,1,1-Trichloroethane                            | ND               | ND                |   | μg/m3<br>μg/m3 |
| 1,1,2-Trichloroethane                            | ND               | ND                |   | μg/m3<br>μg/m3 |
| Trichloroethylene                                | ND               | ND                |   | μg/m3<br>μg/m3 |
| Trichlorofluoromethane                           | ND               | ND                |   | μg/m3<br>μg/m3 |
|  | ND<br>ND         | ND<br>ND          | ·                                       | μg/m3<br>μg/m3 |
| 1,2,3-Trichloropropane<br>1,2,4-Trimethylbenzene | ND<br>ND         | ND<br>ND          |   | μg/m3<br>μg/m3 |
| 1,3,5-Trimethylbenzene                           | ND<br>ND         | ND<br>ND          | ·                                       | μg/m3<br>μg/m3 |
| · · ·  | ND<br>ND         | ND<br>ND          | ·                                       | μg/m3<br>μg/m3 |
| Vinyl chloride                                   | ND<br>ND         | ND<br>ND          | ·                                       | μg/m3<br>μg/m3 |
| m,p-Xylene                                       | ND<br>ND         | ND<br>ND          |   | μg/m3<br>μg/m3 |
| o-Xylene   | ND<br>ND         | ND<br>ND          | ·                                       |                |
| MTBE   |                  |                   | •                                       | μg/m3          |
| Ethyl-tert-butylether                            | ND               | ND                |   | μg/m3          |
| Di-isopropylether                                | ND               | ND                | · ·                                     | μg/m3          |
| tert-amylmethylether                             | ND               | ND                |   | μg/m3          |
| tert-Butylalcohol                                | ND               | ND                | 400                                     | μg/m3          |
| TIC:   | N.T.             | N.T.              | 400                                     | / 2            |
| n-pentane  | ND               | ND                |   | μg/m3          |
| n-hexane   | ND               | ND                |   | μg/m3          |
| n-heptane  | ND               | ND                | 400                                     | μg/m3          |
| <b>Dilution Factor</b>                           | 1                | 1                 |   |                |
| Surrogate Recoveries:                            |                  |                   | OC Limits                               |                |
| Dibromofluoromethane                             | 106%             | 107%              | 60 - 140                                |                |
| Toluene-d <sub>8</sub>                           | 100%             | 102%              | 60 - 140                                |                |
| 4-Bromofluorobenzene                             | 91%              | 192%              | 60 - 140                                |                |
|  |                  | - F-071817-F-     |   |                |
|  | 0030             | 0030              |   |                |

ND= Not Detected

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#### JONES ENVIRONMENTAL QUALITY CONTROL INFORMATION

Client: Dudek

Client Address: 605 3rd Street

Encinitas, CA 92024

Attn: Nicole Peacock

**Project Address:** 3175 West Ball Rd

Anaheim, CA

JEL Ref. No.: F-0030 Client Ref. No.: 9289.003

7/18/2017

Report date:

**Date Sampled:** 7/18/2017 **Date Received:** 7/18/2017

Date Analyzed: 7/18/2017
Physical State: Soil Gas

### EPA 8260B – Volatile Organics by GC/MS + Oxygenates

**Batch ID:** F-071817-F-0030

| JEL ID:                | 071817-F1LCS1 | 071817-F1LCSD1 |            | 07            | 71817-F1CC | V1            |
|------------------------|---------------|----------------|------------|---------------|------------|---------------|
|                        | LCS           | LCSD           |            | Acceptability |            | Acceptability |
| <u>Parameter</u>       | Recovery (%)  | Recovery (%)   | <u>RPD</u> | Range (%)     | <u>CCV</u> | Range (%)     |
| Vinyl Chloride         | 230%          | 216%           | 6.3%       | 70 - 130      | 157%       | 80 - 120      |
| 1,1-Dichloroethylene   | 116%          | 107%           | 7.9%       | 70 - 130      | 104%       | 80 - 120      |
| Cis-1,2-Dichloroethene | 106%          | 100%           | 5.3%       | 70 - 130      | 107%       | 80 - 120      |
| 1,1,1-Trichloroethane  | 107%          | 99%            | 7.9%       | 70 - 130      | 97%        | 80 - 120      |
| Benzene                | 120%          | 111%           | 7.5%       | 70 - 130      | 109%       | 80 - 120      |
| Trichloroethylene      | 106%          | 98%            | 8.5%       | 70 - 130      | 95%        | 80 - 120      |
| Toluene                | 118%          | 112%           | 5.3%       | 70 - 130      | 110%       | 80 - 120      |
| Tetrachloroethene      | 88%           | 84%            | 4.1%       | 70 - 130      | 83%        | 80 - 120      |
| Chlorobenzene          | 112%          | 103%           | 8.7%       | 70 - 130      | 106%       | 80 - 120      |
| Ethylbenzene           | 114%          | 108%           | 5.4%       | 70 - 130      | 110%       | 80 - 120      |
| 1,2,4 Trimethylbenzene | 88%           | 84%            | 5.2%       | 70 - 130      | 85%        | 80 - 120      |
|                        |               |                |            |               |            |               |
| Surrogate Recovery:    |               |                |            |               |            |               |
| Dibromofluoromethane   | 99%           | 100%           |            | 60 - 140      | 94%        | 60 - 140      |
| Toluene-d <sub>8</sub> | 106%          | 105%           |            | 60 - 140      | 106%       | 60 - 140      |
| 4-Bromofluorobenzene   | 101%          | 104%           |            | 60 - 140      | 103%       | 60 - 140      |

LCS = Laboratory Control Sample

LCSD = Laboratory Control Sample Duplicate

CCV = Continuing Calibration Verification

RPD = Relative Percent Difference; Acceptability range for RPD is ≤ 15%



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# Record of Sample Collection

| Client DUDEK                               |                 |                 |           |                              | Date 7/18/2                | 2017   | Report O   | ptions:     |                       |                            |           |      |                    |      |                          |               | JEL Project #  |
|--|-----------------|-----------------|-----------|------------------------------|----------------------------|--|------------|-------------|-----------------------|----------------------------|-----------|------|--------------------|------|--------------------------|---------------|--|
| Project Name                               |                 |                 |           |                              | Client Pr                  | OSA DERMI                                    | -EDD       |             |                       |                            |           |      |                    |      |                          |               | F-0030   |
| 3175 WEST BALL RD                          |                 |                 |           |                              | ESSENSED VI S              | 9.003  | EDF - 10%  | % Surcharge | <b>8</b>              |                            |           |      |                    |      |                          |               | Page   |
| Project Address 3175 WEST BALL RD          |                 |                 |           |                              | Turn A                     | Around Requested:                            | Tra        | acer:       | Shut In Test          | 1                          | Α         | naly | sis Re             | ques | sted                     |               | 1 of 2   |
| ANAHEIM, CA                                |                 |                 |           |                              | □ lmm                      | nediate Attention                            | □ n-prop   | oanol       | Y/ N                  | Gas                        |           |      |                    |      |                          |               | Lab Use Only   |
| Email                                      |                 |                 |           |                              |                            | h 24 Hours<br>h 48 Hours                     | □ n-pen    |             | Purge Number          | Soil                       |           |      |                    |      |                          |               | Sample Condition as Recieved: Chilled □ yes □ no                           |
| Phone <b>760-419-5592</b>                  |                 |                 |           |                              | □ Rus                      | h 72 Hours<br>mal                            | □ Heliur   |             | □ 1P (x 3P □ 7P □ 10P | Aqueous (A),               |           |      |                    |      | (in/H 2O)                | ø             | Sealed □ yes □ no  |
| Report To NICOLE PEACOCK                   | Sampler<br>ANNA | LISE            | )'TOOL    | E                            | A Mob                      | ile Lab                                      | n-De       | ntano       |                       | Matrix:<br>Sludge (SL), Aq |           |      |                    |      | Magnehelic Reading (in/H | of Containers |  |
| Sample ID                                  | Purge<br>Number | Purge<br>Volume | Date      | Sample<br>Collection<br>Time | Sample<br>Analysis<br>Time | Laboratory Sample ID                         | Purge Rate | Pump Used   | Magnehelic            | Sample N<br>Soil (S), Slt  | EPA 8260B |      |                    |      | Magnehe                  | Number of     | Remarks & Special Instructions   |
| SV1-5'                                     | 3               | 1630            | 7/18/17   | 9:34                         | 9:36                       | F-0030-01                                    | ~200cc/min | ANNALISE.1  | M100.112              | SG                         | Х         |      |                    |      | <2                       | 2             |  |
| SV2-5'                                     | 3               | 1630            | 7/18/17   | 9:48                         | 9:57                       | F-0030-02                                    | ~200cc/min | ANGELA.2    | M100.105              | SG                         | х         |      |                    |      | <2                       | 2             |  |
| SV3-5'                                     | 3               | 1630            | 7/18/17   | 10:07                        | 10:15                      | F-0030-03                                    | ~200cc/min | ANNALISE.1  | M100.112              | SG                         | Х         |      |                    |      | 4                        | 2             |  |
| SV4-5'                                     | 3               | 1630            | 7/18/17   | 10:25                        | 10:34                      | F-0030-04                                    | ~200cc/min | ANGELA.2    | M100.105              | SG                         | х         |      |                    |      | <2                       | 2             | -  |
| SV5-5'                                     | 3               | 1630            | 7/18/17   | 10:45                        | 10:53                      | F-0030-05                                    | ~200cc/min | ANNALISE.1  | M100.112              | SG                         | х         |      |                    |      | 4                        | 2             |  |
| SV6-5'                                     | 3               | 1630            | 7/18/17   | 11:02                        | 11:12                      | F-0030-06                                    | ~200cc/min | ANGELA.2    | M100.105              | SG                         | Х         |      |                    |      | 2                        | 2             |  |
| SV7-5'                                     | 3               | 1630            | 7/18/17   | 11:23                        | 11:31                      | F-0030-07                                    | ~200cc/min | ANNALISE.1  | M100.112              | SG                         | X         |      |                    |      | 4                        | 2             |  |
| SV8-5'                                     | 3               | 1630            | 7/18/17   | 11:43                        | 11:50                      | F-0030-08                                    | ~200cc/min | ANGELA.2    | M100.105              | SG                         | х         |      |                    |      | 4                        | 2             |  |
| SV8-5' REP                                 | 3               | 1630            | 7/18/17   | 12:02                        | 12:09                      | F-0030-09                                    | ~200cc/min | ANGELA.2    | M100.105              | SG                         | X         |      |                    |      | 4                        | 2             | V  |
| SV9-5'                                     | 3               | 1630            | 7/18/17   | 12:20                        | 12:28                      | F-0030-10                                    | ~200cc/min | ANNALISE.1  | M100.112              | SG                         | х         |      |                    |      | 6                        | 2             |  |
| Relinquished By (Signature):               | 1/              |                 | Date: 7/1 | 8/17                         |                            | Recieved By (Signature):                     | 100        | Ze.         |                       |                            |           | 7-   | ate:<br>-18 -      | 17   |                          | 20            | Total Number of Containers   |
| Company  OVA  Relinquished By (Signature): |                 |                 | Time:     | 507                          |                            | Jones Environmer<br>Recieved By (Signature): |            |             |                       |                            |           | 1    | me:<br>SOT<br>ate: |      |                          | Colle         | signature on this Record of Sampling ction form constitutes aknowledgement |
| Company                                    |                 |                 | Time:     |                              |                            | Company                                      |            |             |                       |                            |           | ті   | me:                |      |                          | that          | tithe analyses above were performed.                                       |



11007 Forest PI. Santa Fe Springs, CA 90670 (714) 449-9937 Fax (714) 449-9685 www.jonesenv.com

# Record of Sample Collection

| Client DUDEK                 |                 |                 |         |                              | Date 7/18/2                | 2017                     | Report O   | ptions:             |              |   |           |      |           |      |                    |                      | JEL Project #  |
|------------------------------|-----------------|-----------------|---------|------------------------------|----------------------------|--------------------------|------------|---------------------|--------------|---|-----------|------|-----------|------|--------------------|----------------------|--|
| Project Name                 |                 |                 |         |                              | Client Pr                  | 1977 (0.01)              | -EDD       | • Conversion to the |              |   |           |      |           |      |                    |                      | F-0030   |
| 3175 WEST BALL RD            |                 |                 |         |                              |                            | 59 OB                    | EDF - 109  | % Surcharge         | <b>9</b>     |   |           |      |           |      |                    |                      | Page   |
| Project Address              |                 |                 |         |                              | 12,                        | 3100                     |            |                     |              |   |           |      |           |      |                    |                      |  |
| 3175 WEST BALL RD            |                 |                 |         |                              | Turn A                     | Around Requested:        | Tra        | acer:               | Shut in Test | ı   |           | naly | sis R     | eque | sted               | 1                    | 2 of 2   |
| ANAHEIM, CA                  |                 |                 |         |                              | □ lmm                      | ediate Attention         | □ n-prop   | panol               | ( N          | Gas                                       |           |      |           |      |                    |                      | Lab Use Only   |
| Email                        |                 |                 |         |                              | 1                          | h 24 Hours<br>h 48 Hours | □ n-pen    |                     | 0            | Soil G                                    |           |      |           |      |                    |                      | Sample Condition as Recieved: Chilled □ yes □ no   |
| Phone                        | - Hardin        |                 | -       |                              |                            | h 72 Hours               | □ 1,1-Di   |                     | Purge Number | 8   |           |      |           |      | <sup>2</sup> 0     |                      | Sealed □ yes □ no  |
| 760-419-5592                 |                 |                 |         |                              | □ Norr                     |                          |            | exave               | □ 7P □ 10P   | neon                                      |           |      | İ         |      | (in/H 20)          | (0)                  |  |
| Report To NICOLE PEACOCK     | Sampler<br>ANNA | LISE (          | )'TOOL  | E.                           | Mob                        | ile Lab                  | N-De       | epran               | 2            | Matrix:<br>Sludge (SL), Aqueous (A), Soil | m         |      |           | 1    | Reading            | Container            |  |
| Sample ID                    | Purge<br>Number | Purge<br>Volume | Date    | Sample<br>Collection<br>Time | Sample<br>Analysis<br>Time | Laboratory Sample ID     | Purge Rate | Pump Used           | Magnehelic   | Sample Ma<br>Soil (S), Sluc               | EPA 8260B |      |           |      | Magnehelic Reading | Number of Containers | Remarks & Special Instructions   |
| SV10-5'                      | 3               | 1630            | 7/18/17 | 12:39                        | 12:46                      | F-0030-11                | ~200cc/min | ANNALISE.1          | M100.112     | SG  |           |      |           |      | <2                 | 2                    |  |
| SV11-5'                      | 3               | 1630            | 7/18/17 | 12:58                        | 13:04                      | F-0030-12                | ~200cc/min | ANGELA.2            | M100.105     | SG  | х         |      |           |      | <2                 | 2                    |  |
| SV12-5'                      | 3               | 1630            | 7/18/17 | 13:15                        | 13:23                      | F-0030-13                | ~200cc/min | ANNALISE.1          | M100.112     | SG  | х         |      | 1         |      | 4                  | 2                    |  |
| SV13-5'                      | 3               | 1630            | 7/18/17 | 13:33                        | 13:42                      | F-0030-14                | ~200cc/min | ANGELA.2            | M100.105     | SG  | х         |      |           |      | 6                  | 2                    | 14   |
| SV14-5'                      | 3               | 1630            | 7/18/17 | 13:52                        | 14:00                      | F-0030-15                | ~200cc/min | ANNALISE.1          | M100.112     | SG  | х         |      |           |      | 10                 | 2                    |  |
| SV15-5'                      | 3               | 1630            | 7/18/17 | 14:10                        | 14:18                      | F-0030-16                | ~200cc/min | ANGELA.2            | M100.105     | SG  | х         |      |           |      | 4                  | 2                    |  |
| SV16-5'                      | 3               | 1630            | 7/18/17 | 14:29                        | 14:36                      | F-0030-17                | ~200cc/min | ANNALISE.1          | M100.112     | SG  | х         |      |           |      | 8                  | 2                    |  |
|                              |                 |                 |         |                              |                            |                          |            |                     |              |   |           |      | -         | +    | +                  |                      |  |
| Laconstitut                  |                 |                 |         |                              |                            |                          |            |                     |              |   |           |      |           | +    | $\vdash$           |                      |  |
| Relinquished By (Signature): | Uh)             | /               |         | /18/                         | 17                         | Recieved By (Signature): |            | ne                  |              |   |           |      | ate:      | 17   |                    | 14                   | Total Number of Containers   |
| Dude k                       |                 |                 | Time:   | つア                           | /                          | Company Jones Environmer | ital, Inc. |                     |              |   |           |      | me:<br>SU | 7    |                    |                      |  |
| Relinquished By (Signature): |                 |                 | Date:   |                              |                            | Recieved By (Signature): |            |                     |              |   |           | D    | ate:      |      |                    | Colle                | e signature on this Record of Sampling<br>ection form constitutes aknowledgement<br>the analyses above were performed. |
| Company                      |                 |                 | Time:   |                              |                            | Company                  |            |                     |              |   |           | Ti   | me:       |      |                    | trial                | ите апатувев авоче were репогтед.  |

714-449-9937 562-646-1611 805-399-0060 11007 FOREST PLACE SANTA FE SPRINGS, CA 90670 WWW.JONESENV.COM

# JONES ENVIRONMENTAL LABORATORY RESULTS

Client: Dudek & Associates, Inc.

Client Address: 605 Third Street

Encinitas, CA 92024

Attn: Nicole Peacock

**Project:** Former E-Z

**Project Address:** 3175 West Ball Road

Anaheim, CA

**Client Ref. No:** 9289.0003

Report date:

JEL Ref. No.:

**Date Sampled:** 7/18/2017 **Date Received:** 7/18/2017

**Date Received:** 7/18/2017 **Date Analyzed:** 7/18/2017

7/18/2017

ST-10924

Physical State: Soil

# ANALYSES REQUESTED

1. EPA 8260B by 5035 – BTEX by GC/MS

Approval:

Carolyn Carroll Stationary Lab Manager Anaheim, CA

B11

Sample ID:

714-449-9937 11007 FOREST PLACE 562-646-1611 SANTA FE SPRINGS, CA 90670 805-399-0060 WWW.JONESENV.COM

#### JONES ENVIRONMENTAL LABORATORY RESULTS

**Client:** Dudek & Associates, Inc. Report date: 7/18/2017 **Client Address:** 605 Third Street JEL Ref. No.: ST-10924

Encinitas, CA 92024 Client Ref. No.: 9289.0003

**B14** 

**B15** 

Nicole Peacock Attn: **Date Sampled:** 7/18/2017

> **Date Received:** 7/18/2017 **Date Analyzed:** 7/18/2017

Former E-Z **Project:** 

3175 West Ball Road **Physical State: Project Address:** Soil

**B13** 

**EPA 8260B by 5035 – BTEX by GC/MS** 

Practical ST-10924-01 ST-10924-02 ST-10924-03 ST-10924-04 ST-10924-05 **JEL ID:** 

**B12** 

| OLL ID.                     | 01 10,2.01 | 21 10721 02 | 21 10/2: 00 | 51 10,2.0. | 01 10,2.00 | <b>Quantitation</b> | <u>Units</u> |
|-----------------------------|------------|-------------|-------------|------------|------------|---------------------|--------------|
| Analytes:                   |            |             |             |            |            | <u>Limit</u>        |              |
| Benzene                     | ND         | ND          | ND          | ND         | ND         | 1.0                 | μg/kg        |
| Bromobenzene                | ND         | ND          | ND          | ND         | ND         | 1.0                 | μg/kg        |
| Bromodichloromethane        | ND         | ND          | ND          | ND         | ND         | 1.0                 | μg/kg        |
| Bromoform                   | ND         | ND          | ND          | ND         | ND         | 1.0                 | μg/kg        |
| n-Butylbenzene              | ND         | ND          | ND          | ND         | ND         | 1.0                 | μg/kg        |
| sec-Butylbenzene            | ND         | ND          | ND          | ND         | ND         | 1.0                 | μg/kg        |
| tert-Butylbenzene           | ND         | ND          | ND          | ND         | ND         | 1.0                 | μg/kg        |
| Carbon tetrachloride        | ND         | ND          | ND          | ND         | ND         | 1.0                 | μg/kg        |
| Chlorobenzene               | ND         | ND          | ND          | ND         | ND         | 1.0                 | μg/kg        |
| Chloroform                  | ND         | ND          | ND          | ND         | ND         | 1.0                 | μg/kg        |
| 2-Chlorotoluene             | ND         | ND          | ND          | ND         | ND         | 1.0                 | μg/kg        |
| 4-Chlorotoluene             | ND         | ND          | ND          | ND         | ND         | 1.0                 | μg/kg        |
| Dibromochloromethane        | ND         | ND          | ND          | ND         | ND         | 1.0                 | μg/kg        |
| 1,2-Dibromo-3-chloropropane | ND         | ND          | ND          | ND         | ND         | 1.0                 | μg/kg        |
| 1,2-Dibromoethane (EDB)     | ND         | ND          | ND          | ND         | ND         | 1.0                 | μg/kg        |
| Dibromomethane              | ND         | ND          | ND          | ND         | ND         | 1.0                 | μg/kg        |
| 1,2- Dichlorobenzene        | ND         | ND          | ND          | ND         | ND         | 1.0                 | μg/kg        |
| 1,3-Dichlorobenzene         | ND         | ND          | ND          | ND         | ND         | 1.0                 | μg/kg        |
| 1,4-Dichlorobenzene         | ND         | ND          | ND          | ND         | ND         | 1.0                 | μg/kg        |
| Dichlorodifluoromethane     | ND         | ND          | ND          | ND         | ND         | 5.0                 | μg/kg        |
| 1,1-Dichloroethane          | ND         | ND          | ND          | ND         | ND         | 1.0                 | μg/kg        |
| 1,2-Dichloroethane          | ND         | ND          | ND          | ND         | ND         | 1.0                 | μg/kg        |
| 1,1-Dichloroethene          | ND         | ND          | ND          | ND         | ND         | 1.0                 | μg/kg        |
| cis-1,2-Dichloroethene      | ND         | ND          | ND          | ND         | ND         | 1.0                 | μg/kg        |
| trans-1,2-Dichloroethene    | ND         | ND          | ND          | ND         | ND         | 1.0                 | μg/kg        |
| 1,2-Dichloropropane         | ND         | ND          | ND          | ND         | ND         | 1.0                 | μg/kg        |
| 1,3-Dichloropropane         | ND         | ND          | ND          | ND         | ND         | 1.0                 | μg/kg        |
| 2,2-Dichloropropane         | ND         | ND          | ND          | ND         | ND         | 1.0                 | μg/kg        |
| 1,1-Dichloropropene         | ND         | ND          | ND          | ND         | ND         | 1.0                 | μg/kg        |

# JONES ENVIRONMENTAL LABORATORY RESULTS

# **EPA 8260B by 5035 – BTEX by GC/MS**

| Sample ID: | B11 | B12 | B13 | B14 | B15 |
|------------|-----|-----|-----|-----|-----|
|            |     |     |     |     |     |

| JEL ID:                   | ST-10924-01  | ST-10924-02  | ST-10924-03  | ST-10924-04  | ST-10924-05  | <u>Practical</u><br><u>Quantitation</u> | <u>Units</u> |
|---------------------------|--------------|--------------|--------------|--------------|--------------|---|--------------|
| Analytes:                 |              |              |              |              |              | <u>Limit</u>                            |              |
| cis-1,3-Dichloropropene   | ND           | ND           | ND           | ND           | ND           | 1.0                                     | μg/kg        |
| trans-1,3-Dichloropropene | ND           | ND           | ND           | ND           | ND           | 1.0                                     | μg/kg        |
| Ethylbenzene              | ND           | ND           | ND           | ND           | ND           | 1.0                                     | μg/kg        |
| Freon 113                 | ND           | ND           | ND           | ND           | ND           | 5.0                                     | μg/kg        |
| Hexachlorobutadiene       | ND           | ND           | ND           | ND           | ND           | 1.0                                     | μg/kg        |
| Isopropylbenzene          | ND           | ND           | ND           | ND           | ND           | 1.0                                     | μg/kg        |
| 4-Isopropyltoluene        | ND           | ND           | ND           | ND           | ND           | 1.0                                     | μg/kg        |
| Methylene chloride        | ND           | ND           | ND           | ND           | ND           | 1.0                                     | μg/kg        |
| Naphthalene               | ND           | ND           | ND           | ND           | ND           | 1.0                                     | μg/kg        |
| n-Propylbenzene           | ND           | ND           | ND           | ND           | ND           | 1.0                                     | μg/kg        |
| Styrene                   | ND           | ND           | ND           | ND           | ND           | 1.0                                     | μg/kg        |
| 1,1,1,2-Tetrachloroethane | ND           | ND           | ND           | ND           | ND           | 1.0                                     | μg/kg        |
| 1,1,2,2-Tetrachloroethane | ND           | ND           | ND           | ND           | ND           | 1.0                                     | μg/kg        |
| Tetrachloroethylene       | ND           | ND           | ND           | ND           | ND           | 1.0                                     | μg/kg        |
| Toluene                   | ND           | ND           | ND           | ND           | ND           | 1.0                                     | μg/kg        |
| 1,2,3-Trichlorobenzene    | ND           | ND           | ND           | ND           | ND           | 1.0                                     | μg/kg        |
| 1,2,4-Trichlorobenzene    | ND           | ND           | ND           | ND           | ND           | 1.0                                     | μg/kg        |
| 1,1,1-Trichloroethane     | ND           | ND           | ND           | ND           | ND           | 1.0                                     | μg/kg        |
| 1,1,2-Trichloroethane     | ND           | ND           | ND           | ND           | ND           | 1.0                                     | μg/kg        |
| Trichloroethylene         | ND           | ND           | ND           | ND           | ND           | 1.0                                     | μg/kg        |
| Trichlorofluoromethane    | ND           | ND           | ND           | ND           | ND           | 5.0                                     | μg/kg        |
| 1,2,3-Trichloropropane    | ND           | ND           | ND           | ND           | ND           | 1.0                                     | μg/kg        |
| 1,2,4-Trimethylbenzene    | ND           | ND           | ND           | ND           | ND           | 1.0                                     | μg/kg        |
| 1,3,5-Trimethylbenzene    | ND           | ND           | ND           | ND           | ND           | 1.0                                     | μg/kg        |
| Vinyl chloride            | ND           | ND           | ND           | ND           | ND           | 1.0                                     | μg/kg        |
| m,p-Xylene                | ND           | ND           | ND           | ND           | ND           | 1.0                                     | μg/kg        |
| o-Xylene                  | ND           | ND           | ND           | ND           | ND           | 1.0                                     | μg/kg        |
| MTBE                      | ND           | ND           | ND           | ND           | ND           | 5.0                                     | μg/kg        |
| Ethyl-tert-butylether     | ND           | ND           | ND           | ND           | ND           | 5.0                                     | μg/kg        |
| Di-isopropylether         | ND           | ND           | ND           | ND           | ND           | 5.0                                     | μg/kg        |
| tert-amylmethylether      | ND           | ND           | ND           | ND           | ND           | 5.0                                     | μg/kg        |
| tert-Butylalcohol         | ND           | ND           | ND           | ND           | ND           | 50.0                                    | μg/kg        |
| <b>Dilution Factor</b>    | 1            | 1            | 1            | 1            | 1            |   |              |
| Surrogate Recoveries:     |              |              |              |              |              | QC Limi                                 |              |
| Dibromofluoromethane      | 108%         | 112%         | 103%         | 109%         | 111%         | 60 - 140                                |              |
| Toluene-d <sub>8</sub>    | 101%         | 105%         | 100%         | 103%         | 103%         | 60 - 140                                | )            |
| 4-Bromofluorobenzene      | 109%         | 114%         | 112%         | 111%         | 113%         | 60 - 140                                | )            |
|                           | VOC3-071817- | VOC3-071817- | VOC3-071817- | VOC3-071817- | VOC3-071817- |   |              |

ND= Not Detected

CHECKS\_1

CHECKS\_1

CHECKS\_1

CHECKS\_1

CHECKS\_1

Anaheim, CA

714-449-9937 11007 FOREST PLACE 562-646-1611 SANTA FE SPRINGS, CA 90670 805-399-0060 WWW.JONESENV.COM

#### JONES ENVIRONMENTAL LABORATORY RESULTS

**Client:** Dudek & Associates, Inc. Report date: 7/18/2017 **Client Address:** 605 Third Street JEL Ref. No.: ST-10924

> Encinitas, CA 92024 Client Ref. No.: 9289.0003

Nicole Peacock 7/18/2017 Attn: **Date Sampled:** 

> **Date Received:** 7/18/2017 **Date Analyzed:** 7/18/2017

> > **Practical**

Former E-Z **Project:** 

3175 West Ball Road **Physical State: Project Address:** Soil

#### **EPA 8260B by 5035 – BTEX by GC/MS**

**Sample ID: B**16

| JEL ID:                     | ST-10924-06 | <u> Practical</u>   |              |
|-----------------------------|-------------|---------------------|--------------|
|                             |             | <b>Quantitation</b> | <u>Units</u> |
| Analytes:                   |             | <u>Limit</u>        |              |
| Benzene                     | ND          | 1.0                 | μg/kg        |
| Bromobenzene                | ND          | 1.0                 | μg/kg        |
| Bromodichloromethane        | ND          | 1.0                 | μg/kg        |
| Bromoform                   | ND          | 1.0                 | μg/kg        |
| n-Butylbenzene              | ND          | 1.0                 | μg/kg        |
| sec-Butylbenzene            | ND          | 1.0                 | μg/kg        |
| tert-Butylbenzene           | ND          | 1.0                 | μg/kg        |
| Carbon tetrachloride        | ND          | 1.0                 | μg/kg        |
| Chlorobenzene               | ND          | 1.0                 | μg/kg        |
| Chloroform                  | ND          | 1.0                 | μg/kg        |
| 2-Chlorotoluene             | ND          | 1.0                 | μg/kg        |
| 4-Chlorotoluene             | ND          | 1.0                 | μg/kg        |
| Dibromochloromethane        | ND          | 1.0                 | μg/kg        |
| 1,2-Dibromo-3-chloropropane | ND          | 1.0                 | μg/kg        |
| 1,2-Dibromoethane (EDB)     | ND          | 1.0                 | μg/kg        |
| Dibromomethane              | ND          | 1.0                 | μg/kg        |
| 1,2- Dichlorobenzene        | ND          | 1.0                 | μg/kg        |
| 1,3-Dichlorobenzene         | ND          | 1.0                 | μg/kg        |
| 1,4-Dichlorobenzene         | ND          | 1.0                 | μg/kg        |
| Dichlorodifluoromethane     | ND          | 5.0                 | μg/kg        |
| 1,1-Dichloroethane          | ND          | 1.0                 | μg/kg        |
| 1,2-Dichloroethane          | ND          | 1.0                 | μg/kg        |
| 1,1-Dichloroethene          | ND          | 1.0                 | μg/kg        |
| cis-1,2-Dichloroethene      | ND          | 1.0                 | μg/kg        |
| trans-1,2-Dichloroethene    | ND          | 1.0                 | μg/kg        |
| 1,2-Dichloropropane         | ND          | 1.0                 | μg/kg        |
| 1,3-Dichloropropane         | ND          | 1.0                 | μg/kg        |
| 2,2-Dichloropropane         | ND          | 1.0                 | μg/kg        |
| 1,1-Dichloropropene         | ND          | 1.0                 | μg/kg        |

# JONES ENVIRONMENTAL LABORATORY RESULTS

# **EPA 8260B by 5035 – BTEX by GC/MS**

# Sample ID: B16

| JEL ID:                   | ST-10924-06  |              | <u>Units</u> |
|---------------------------|--------------|--------------|--------------|
| Analytes:                 |              | <u>Limit</u> |              |
| cis-1,3-Dichloropropene   | ND           |              | μg/kg        |
| trans-1,3-Dichloropropene | ND           |              | μg/kg        |
| Ethylbenzene              | ND           |              | μg/kg        |
| Freon 113                 | ND           |              | μg/kg        |
| Hexachlorobutadiene       | ND           |              | μg/kg        |
| Isopropylbenzene          | ND           |              | μg/kg        |
| 4-Isopropyltoluene        | ND           |              | μg/kg        |
| Methylene chloride        | ND           |              | μg/kg        |
| Naphthalene               | ND           |              | μg/kg        |
| n-Propylbenzene           | ND           |              | μg/kg        |
| Styrene                   | ND           |              | μg/kg        |
| 1,1,1,2-Tetrachloroethane | ND           |              | μg/kg        |
| 1,1,2,2-Tetrachloroethane | ND           |              | μg/kg        |
| Tetrachloroethylene       | ND           |              | μg/kg        |
| Toluene                   | ND           |              | μg/kg        |
| 1,2,3-Trichlorobenzene    | ND           |              | μg/kg        |
| 1,2,4-Trichlorobenzene    | ND           |              | μg/kg        |
| 1,1,1-Trichloroethane     | ND           |              | μg/kg        |
| 1,1,2-Trichloroethane     | ND           |              | μg/kg        |
| Trichloroethylene         | ND           |              | μg/kg        |
| Trichlorofluoromethane    | ND           |              | μg/kg        |
| 1,2,3-Trichloropropane    | ND           |              | μg/kg        |
| 1,2,4-Trimethylbenzene    | ND           |              | μg/kg        |
| 1,3,5-Trimethylbenzene    | ND           |              | μg/kg        |
| Vinyl chloride            | ND           |              | μg/kg        |
| m,p-Xylene                | ND           |              | μg/kg        |
| o-Xylene                  | ND           |              | μg/kg        |
| MTBE                      | ND           |              | μg/kg        |
| Ethyl-tert-butylether     | ND           |              | μg/kg        |
| Di-isopropylether         | ND           |              | μg/kg        |
| tert-amylmethylether      | ND           |              | μg/kg        |
| tert-Butylalcohol         | ND           | 50.0         | μg/kg        |
| <b>Dilution Factor</b>    | 1            |              |              |
| Surrogate Recoveries:     |              | OC Limits    |              |
| Dibromofluoromethane      | 107%         | 60 - 140     |              |
| Toluene-d <sub>8</sub>    | 101%         | 60 - 140     |              |
| 4-Bromofluorobenzene      | 107%         | 60 - 140     |              |
|                           | VOC3-071817- |              |              |
|                           | CHECKS 1     |              |              |

ND= Not Detected

CHECKS\_1

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#### JONES ENVIRONMENTAL QUALITY CONTROL INFORMATION

Dudek & Associates, Inc. **Client:** Report date: 7/18/2017 **Client Address:** 605 Third Street JEL Ref. No.: ST-10924

> Encinitas, CA 92024 Client Ref. No.: 9289.0003

Nicole Peacock 7/18/2017 Attn: **Date Sampled:** 

> **Date Received:** 7/18/2017

Former E-Z 7/18/2017 **Project: Date Analyzed:** 

**Project Address:** 3175 West Ball Road **Physical State:** Soil

Anaheim, CA

#### **EPA 8260B by 5035 – BTEX by GC/MS**

| Sample ID:                  | METHOD<br>BLANK  |                        |              |
|-----------------------------|------------------|------------------------|--------------|
| JEL ID:                     | 071817-<br>V3MB1 | Practical Quantitation | <u>Units</u> |
| Analytes:                   |                  | <u>Limit</u>           |              |
| Benzene                     | ND               | 1.0                    | μg/kg        |
| Bromobenzene                | ND               | 1.0                    | μg/kg        |
| Bromodichloromethane        | ND               | 1.0                    | μg/kg        |
| Bromoform                   | ND               | 1.0                    | μg/kg        |
| n-Butylbenzene              | ND               | 1.0                    | μg/kg        |
| sec-Butylbenzene            | ND               | 1.0                    | μg/kg        |
| tert-Butylbenzene           | ND               | 1.0                    | μg/kg        |
| Carbon tetrachloride        | ND               | 1.0                    | μg/kg        |
| Chlorobenzene               | ND               | 1.0                    | μg/kg        |
| Chloroform                  | ND               | 1.0                    | μg/kg        |
| 2-Chlorotoluene             | ND               | 1.0                    | μg/kg        |
| 4-Chlorotoluene             | ND               | 1.0                    | μg/kg        |
| Dibromochloromethane        | ND               | 1.0                    | μg/kg        |
| 1,2-Dibromo-3-chloropropane | ND               | 1.0                    | μg/kg        |
| 1,2-Dibromoethane (EDB)     | ND               | 1.0                    | μg/kg        |
| Dibromomethane              | ND               | 1.0                    | μg/kg        |
| 1,2- Dichlorobenzene        | ND               | 1.0                    | μg/kg        |
| 1,3-Dichlorobenzene         | ND               | 1.0                    | μg/kg        |
| 1,4-Dichlorobenzene         | ND               | 1.0                    | μg/kg        |
| Dichlorodifluoromethane     | ND               | 5.0                    | μg/kg        |
| 1,1-Dichloroethane          | ND               | 1.0                    | μg/kg        |
| 1,2-Dichloroethane          | ND               | 1.0                    | μg/kg        |
| 1,1-Dichloroethene          | ND               | 1.0                    | μg/kg        |
| cis-1,2-Dichloroethene      | ND               | 1.0                    | μg/kg        |
| trans-1,2-Dichloroethene    | ND               | 1.0                    | μg/kg        |
| 1,2-Dichloropropane         | ND               | 1.0                    | μg/kg        |
| 1,3-Dichloropropane         | ND               | 1.0                    | μg/kg        |
| 2,2-Dichloropropane         | ND               | 1.0                    | μg/kg        |
| 1,1-Dichloropropene         | ND               | 1.0                    | μg/kg        |

# JONES ENVIRONMENTAL QUALITY CONTROL INFORMATION

# **EPA 8260B by 5035 – BTEX by GC/MS**

| Sample ID:                | METHOD<br>BLANK  |   |              |
|---------------------------|------------------|---|--------------|
| JEL ID:                   | 071817-<br>V3MB1 | <u>Practical</u><br><u>Quantitation</u> | <u>Units</u> |
| Analytes:                 |                  | <u>Limit</u>                            |              |
| cis-1,3-Dichloropropene   | ND               |   | μg/kg        |
| trans-1,3-Dichloropropene | ND               |   | μg/kg        |
| Ethylbenzene              | ND               |   | μg/kg        |
| Freon 113                 | ND               |   | μg/kg        |
| Hexachlorobutadiene       | ND               |   | μg/kg        |
| Isopropylbenzene          | ND               |   | μg/kg        |
| 4-Isopropyltoluene        | ND               |   | μg/kg        |
| Methylene chloride        | ND               |   | μg/kg        |
| Naphthalene               | ND               |   | μg/kg        |
| n-Propylbenzene           | ND               |   | μg/kg        |
| Styrene                   | ND               |   | μg/kg        |
| 1,1,1,2-Tetrachloroethane | ND               |   | μg/kg        |
| 1,1,2,2-Tetrachloroethane | ND               |   | μg/kg        |
| Tetrachloroethylene       | ND               | 1.0                                     | μg/kg        |
| Toluene                   | ND               | 1.0                                     | μg/kg        |
| 1,2,3-Trichlorobenzene    | ND               | 1.0                                     | μg/kg        |
| 1,2,4-Trichlorobenzene    | ND               | 1.0                                     | μg/kg        |
| 1,1,1-Trichloroethane     | ND               | 1.0                                     | μg/kg        |
| 1,1,2-Trichloroethane     | ND               | 1.0                                     | μg/kg        |
| Trichloroethylene         | ND               | 1.0                                     | μg/kg        |
| Trichlorofluoromethane    | ND               | 5.0                                     | μg/kg        |
| 1,2,3-Trichloropropane    | ND               | 1.0                                     | μg/kg        |
| 1,2,4-Trimethylbenzene    | ND               | 1.0                                     | μg/kg        |
| 1,3,5-Trimethylbenzene    | ND               | 1.0                                     | μg/kg        |
| Vinyl chloride            | ND               | 1.0                                     | μg/kg        |
| m,p-Xylene                | ND               | 1.0                                     | μg/kg        |
| o-Xylene                  | ND               | 1.0                                     | μg/kg        |
| MTBE                      | ND               |   | μg/kg        |
| Ethyl-tert-butylether     | ND               | 5.0                                     | μg/kg        |
| Di-isopropylether         | ND               |   | μg/kg        |
| tert-amylmethylether      | ND               | 5.0                                     | μg/kg        |
| tert-Butylalcohol         | ND               |   | μg/kg        |
| <b>Dilution Factor</b>    | 1                |   |              |
| Surrogate Recoveries:     |                  | OC Limits                               |              |
| Dibromofluoromethane      | 115%             | 60 - 140                                |              |
| Toluene-d <sub>8</sub>    | 101%             | 60 - 140                                |              |
| 4-Bromofluorobenzene      | 107%             | 60 - 140                                |              |
|                           | VOC3-071817-     |   |              |
|                           | CHECKS_1         |   |              |

ND= Not Detected

# JONES ENVIRONMENTAL QUALITY CONTROL INFORMATION

Client:Dudek & Associates, Inc.Report date:7/18/2017Client Address:605 Third StreetJEL Ref. No.:ST-10924

Encinitas, CA 92024 Client Ref. No.: 9289.0003

Attn: Nicole Peacock Date Sampled: 7/18/2017

 Project:
 Former E-Z
 Date Received:
 7/18/2017

 Date Analyzed:
 7/18/2017

Project Address: 3175 West Ball Road Physical State: Soil

Anaheim, CA

#### **EPA 8260B by 5035 – BTEX by GC/MS**

| Sample Spiked:         | CLEAN        | SOIL          | GC#:       | VOC3-071817-0 | CHECKS_1   |                 |
|------------------------|--------------|---------------|------------|---------------|------------|-----------------|
| JEL ID:                | 071817-V3MS1 | 071817-V3MSD1 |            | 07            | 71817-V3LC | S1              |
|                        | MS           | MSD           |            | Acceptability |            | Acceptability   |
| <u>Parameter</u>       | Recovery (%) | Recovery (%)  | <u>RPD</u> | Range (%)     | <u>LCS</u> | Range (%)       |
| Vinyl Chloride         | 116%         | 113%          | 2.0%       | 60 - 140      | 119%       | 70 - 130        |
| 1,1-Dichloroethylene   | 94%          | 92%           | 1.9%       | 60 - 140      | 96%        | 70 - 130        |
| Cis-1,2-Dichloroethene | 114%         | 111%          | 2.4%       | 70 - 130      | 112%       | 70 - 130        |
| 1,1,1-Trichloroethane  | 110%         | 105%          | 4.4%       | 70 - 130      | 108%       | 70 - 130        |
| Benzene                | 110%         | 109%          | 1.5%       | 70 - 130      | 109%       | 70 - 130        |
| Trichloroethylene      | 106%         | 101%          | 4.7%       | 70 - 130      | 107%       | 70 - 130        |
| Toluene                | 115%         | 114%          | 1.0%       | 70 - 130      | 113%       | 70 - 130        |
| Tetrachloroethene      | 117%         | 119%          | 1.6%       | 70 - 130      | 117%       | 70 - 130        |
| Chlorobenzene          | 106%         | 106%          | 0.2%       | 70 - 130      | 106%       | 70 - 130        |
| Ethylbenzene           | 110%         | 111%          | 1.4%       | 70 - 130      | 111%       | 70 - 130        |
| 1,2,4 Trimethylbenzene | 114%         | 114%          | 0.2%       | 70 - 130      | 114%       | 70 - 130        |
| Surrogate Recovery:    |              |               |            |               |            |                 |
| Dibromofluoromethane   | 107%         | 106%          |            | 60 - 140      | 105%       | 60 - 140        |
| Toluene-d <sub>8</sub> | 107%         | 106%          |            | 60 - 140      | 106%       | 60 - 140        |
| 4-Bromofluorobenzene   | 108%         | 109%          |            | 60 - 140      | 108%       | 60 <b>-</b> 140 |

MS = Matrix Spike

MSD = Matrix Spike Duplicate

RPD = Relative Percent Difference; Acceptability range for RPD is ≤ 15%

DUDEK Chain - of - Custody Form Laboratory: Jones Environmental Lab Job #: Encinitas, CA 92024 Lab Contact: Shipping Method: Tel: 760-942-5147 PM Email: Project Manager: Fax: 760-942-5206 Nicole Peacock npeacock @dudek.com Project Name: Job Number: Type of Analysis to be Performed Special Instructions EPA 8270 EPA 8081A EPA 8015M EPA 8270C 6010B/7471 9289.0003 72 hr Sampler Signature: Standard Turn-Around Time 24 hr 48 hr TPH (CC/ GRO/ DRO/ Motor Oil) Chlorinated Pesticides Sample Collection Matrix Method Preserved Number of Sample Container oz. Glass Jar Filtered (Y/ N) 1 40 mL glass VOA 1,4-Dioxane NONE VOCs Metals HNO3 Other: Water TDS Soil Sample ID Date Time 7/8/17 0825 A ST-10924-01 X B12 0832 ST-10924-02 3 RIZ 0839 ST-10924-03 ST-10924-04 0846 6855 B15 X 3 ST-10924-05 7/8/12 B16 0900 3 X ST-10924-06

Total # of containers per type Total # of containers Please return original COC to Dudek Company Date Time Company Date Relinquished by: Received by: Sample Receipt Time 7-18-17 Samples Intact 1508 1508 Tomes Cooler Temp: 7.6 °C 1345 Tarus 7/18/17 Dora Com 6 Toves 7-18-17 15 45 Conforms to COC



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| CHENT  | WASSING TO THE PARTY OF THE PAR | 1               |           |
|--|--|-----------------|-----------|
| CLIENT: Dulek DATE/T   | TIME: 7-8  |                 | 45        |
| Delivered by: ☐ Client ☐ Jones Courier ☐ UPS / FedEx / US  | ES (450 500 500 500 500 500 500 500 500 500  |                 |           |
| TEMPERATURE: Temp Criteria = 6°C > Temp > 0°C (NO frozen containe                                    | ers)   |                 |           |
|  | Blank  | Sample          |           |
| Temperature Cooler #2°C ± 0.1°C  | Blank  | Sample          |           |
| Sample(s) outside temperature criteria but received on ice/chille                                    | d on same d  | ay of sampling. |           |
| ☐ Sample(s) outside temperature criteria. *  |  |                 |           |
| ☐ Samples not received on ice.*  |  |                 |           |
| Ambient Temperature: 31.2°C  |  | Checked by:     | 7         |
|  |  |                 |           |
| SAMPLE CONDITION:  | YES  | NO*             | N/A       |
| Chain of Custody (COC) document(s) received complete with samples                                    | - \(\nn_{}\)   |                 |           |
| Collection date, collection time, matrix, and/or # of containers logged in base                      |  |                 | ircle)    |
| □ No analysis requested. □ Not relinquished. □ No dat  Sample container label(s) consistent with COC | e/time relinqu   | uished.         |           |
|  |  |                 |           |
| Total number of containers received match COC  | 4  |                 |           |
| Sample container(s) intact and in good condition   | 4  |                 |           |
| Proper containers and sufficient volume for analyses requested                                       | 7  |                 |           |
| Volatile analysis container(s) free of headspace   | - 6  |                 | Ø         |
| Proper preservation for analyses requested   | . 🗆  | abla            |           |
| Custody Seals Intact on Cooler/Sample  |  |                 | $\square$ |
| CONTAINER TYPE:  |  |                 |           |
| Solid: VOAS / Acetate sleeve Aqueous:  |  |                 |           |
| •  |  |                 |           |
| *Complete Non-Conformance if checked   | (  | Checked by:     | 20        |
|  |  |                 |           |
| ments:   |  |                 |           |

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|  | SAMPLE NO  | N-C | CONFORMANCE Jones ID:   |
|--|--|-----|---|
|  | CLIENT: Dulek PROJECT: Former E-Z  |     | DATE/TIME: 7-18-17 / 1545 REPORTED BY: 5  |
| *  |  |     | Non-Conformance ID:   |
| <ul><li>1)</li><li>2)</li><li>3)</li><li>4)</li><li>5)</li></ul> | Coolers  a) Not received (received COC only)  b) Leaking/Damaged c) Other: Custody Seals a) None b) Not intact Temperature (Temp criteria = 6°C > Temp > 0°C) a) Sample Temp(s) b) Cooler Temp(s) c) Temperature Blank(s) Chain of Custody (COC) a) Not relinquished by client b) No date/time relinquished c) Incomplete information provided d) COC not received — notify PM Containers a) Leaking b) Broken c) Extra d) Missing | 6)  | a) Not the same sample ID / info as on the COC b) Incomplete information c) Markings / Info illegible Samples a) Incorrect sample ID b) Incorrect sampling Date/Time c) Samples not received but listed on COC d) Samples received but not listed on COC e) Logged based on Label Information and not COC f) Logged according to Work Plan and not COC g) Logged in, on hold until further notice h) Insufficient quantities for analysis i) Improper container used j) Mislabeled as to tests, preservatives, etc. k) Holding time expired — list sample ID and test l) Not preserved/Improper preservative used m) Without labels, no information on containers n) Other (see comments) |
| Cor  | nments:  Preservatives not rention   |     | Checked by:   |
|  | Preservatives not rention  | eJ  | on COC  |

# APPENDIX B DTSC Risk Model Inputs and Outputs

# Department of Toxic Substances Control Vapor Intrusion Screening Model - Soil Gas

DATA ENTRY SHEET

Scenario: Residential Chemical: Benzene

|                      |   | Soil                                     | Gas Concentration   | n Data   |  |  |                    | Result             | s Summary        |         |           |
|----------------------|---|--|---|--|--|--|--------------------|--------------------|------------------|---------|-----------|
|                      | ENTER   | ENTER                                    | Cao Concentration   | ENTER  |  |  | Soil Gas Conc.     | Attenuation Factor | Indoor Air Conc. | Cancer  | Noncancer |
| Reset to             |   | Soil                                     |   | Soil   |  |  | (µg/m³)            | (unitless)         | (µg/m³)          | Risk    | Hazard    |
| Defaults             | Chemical  | gas                                      | OR  | gas  |  |  | 6.40E+01           | 1.4E-03            | 8.8E-02          | 9.1E-07 | 2.8E-02   |
|                      | CAS No.   | conc.,                                   |   | conc.,   |  |  |                    |                    |                  |         |           |
|                      | (numbers only,  | C <sub>g</sub>                           |   | $C_g$  |  |  |                    |                    |                  |         |           |
|                      | no dashes)  | (μ <b>g</b> /m³)                         |   | (ppmv)   | Chemical                                     |  |                    | =                  |                  |         |           |
|                      | 1 74400   |  |   |  |  |  |                    | =                  |                  |         |           |
|                      | 71432   | 6.40E+01                                 |   |  | Benzene                                      |  |                    | _                  |                  |         |           |
|                      |   |  |   |  | MESSAGE: See VLC<br>and/or toxicity criteria | OKUP table comments on ch<br>for this chemical.                  | iemical properties |                    |                  |         |           |
|                      | ENTER   | ENTER                                    | ENTER   | ENTER  |  | ENTER  |                    |                    |                  |         |           |
|                      | Depth   |  |   |  |  |  |                    |                    |                  |         |           |
| MORE                 | below grade   | Soil gas                                 |   | Vadose zone  |  | User-defined   |                    |                    |                  |         |           |
| Ψ                    | to bottom   | sampling                                 | Average   | SCS  |  | vadose zone  |                    |                    |                  |         |           |
|                      | of enclosed space floor,                                | depth<br>below grade,                    | soil temperature,   | soil type (used to estimate                                | OR   | soil vapor permeability,   |                    |                    |                  |         |           |
|                      | L <sub>F</sub>  | L <sub>s</sub>                           | T <sub>S</sub>  | soil vapor   | OK   | k <sub>v</sub>   |                    |                    |                  |         |           |
|                      | (15 or 200 cm)  |  | (°C)  | · ·  |  | (cm <sup>2</sup> )   |                    |                    |                  |         |           |
|                      | (15 OF 200 CITI)  | (cm)                                     | ( 0)  | permeability)  | i  | (СПТ)  |                    |                    |                  |         |           |
|                      | 15  | 152                                      | 24  | S  |  |  |                    |                    |                  |         |           |
| MORE<br>↓            | ENTER Vandose zone SCS soil type Lookup Soil Parameters | ENTER Vadose zone soil dry bulk density, | ENTER<br>Vadose zone<br>soil total<br>porosity,<br>n <sup>V</sup> | ENTER Vadose zone soil water-filled porosity, $\theta_w^V$ |  | ENTER Average vapor flow rate into bldg. (Leave blank to calcula | ate)               |                    |                  |         |           |
|                      | - Gramotore   | (g/cm <sup>3</sup> )                     | (unitless)  | (cm <sup>3</sup> /cm <sup>3</sup> )                        | i  | (L/m)  |                    |                    |                  |         |           |
|                      | S   | 1.66                                     | 0.375   | 0.054  |  | 5  |                    |                    |                  |         |           |
|                      |   |  |   |  | ı  |  |                    |                    |                  |         |           |
| MORE<br><del>V</del> | ENTER<br>Averaging<br>time for                          | ENTER<br>Averaging<br>time for           | ENTER Exposure  | ENTER<br>Exposure  | ENTER Exposure                               | ENTER Air Exchange   |                    |                    |                  |         |           |
| Lookup Receptor      | carcinogens,  | noncarcinogens,                          | duration,<br>ED   | frequency,<br>EF   | Time<br>ET                                   | Rate<br>ACH  |                    |                    |                  |         |           |
| Parameters           |   | AT <sub>NC</sub>                         |   |  |  |  |                    |                    |                  |         |           |
|                      | (yrs)   | (yrs)                                    | (yrs)   | (days/yr)  | (hrs/day)                                    | (hour) <sup>-1</sup>   |                    |                    |                  |         |           |
| NEW=> Residential    | 70  | 26                                       | 26  | 350  | 24   | 0.5  |                    |                    |                  |         |           |
|                      | •   |  |   | ,  | (NEW)  | (NEW)  |                    |                    |                  |         |           |
| END                  |   |  |   |  |  |  |                    |                    |                  |         |           |

# **Department of Toxic Substances Control** Vapor Intrusion Screening Model - Soil Gas

DATA ENTRY SHEET

Scenario: Residential Chemical: Chloroform

Results Summary

Indoor Air Conc.

(µg/m³) 1.0E-02

Cancer

Risk

8.4E-08

Noncancer

Hazard

1.0E-04

|                               |   | Soil   | Gas Concentration                                    | n Data   |            |  |                | Result             |
|-------------------------------|---|--|--|--|------------|--|----------------|--------------------|
|                               | ENTER   | ENTER  |  | ENTER  |            |  | Soil Gas Conc. | Attenuation Factor |
| Reset to                      |   | Soil   |  | Soil   |            |  | (µg/m³)        | (unitless)         |
| Defaults                      | Chemical  | gas  | OR   | gas  |            |  | 8.00E+00       | 1.3E-03            |
|                               | CAS No.   | conc.,   |  | conc.,   |            | ц  |                |                    |
|                               | (numbers only,  | $C_{g}$  |  | $C_{g}$  |            |  |                |                    |
|                               | no dashes)  | (μg/m³)  |  | (ppmv)   | Chemical   |  |                |                    |
|                               | no dasnes)  | (µg/III )  | =  | (ррпіч)  | Chemical   |  |                | =                  |
|                               | 67663   | 8.00E+00   | ]  |  | Chloroform |  |                | -<br>-             |
|                               |   |  |  |  |            |  |                |                    |
|                               | ENTER   | ENTER  | ENTER  | ENTER  |            | ENTER  |                |                    |
| MORE                          | Depth<br>below grade                                    | Soil gas   |  | Vadose zone  |            | User-defined   |                |                    |
| Ψ.                            | to bottom   | sampling   | Average  | SCS  |            | vadose zone  |                |                    |
|                               | of enclosed   | depth  | soil   | soil type  |            | soil vapor   |                |                    |
|                               | space floor,  | below grade,   | temperature,   | (used to estimate  | OR         | permeability,  |                |                    |
|                               | L <sub>F</sub>  | L <sub>s</sub>   | Ts   | soil vapor   |            | k <sub>v</sub>   |                |                    |
|                               | (15 or 200 cm)  | (cm)   | (°C)   | permeability)  |            | (cm <sup>2</sup> )   |                |                    |
|                               | (10 01 200 011)   | (6)  | ( - /  | pormous(y)   |            |  |                |                    |
|                               | 15  | 152  | 24   | S  |            |  |                |                    |
| MORE<br>¥                     | ENTER Vandose zone SCS soil type Lookup Soil Parameters | ENTER Vadose zone soil dry bulk density, Pb <sup>A</sup> (g/cm³) | ENTER Vadose zone soil total porosity, n  (unitless) | ENTER Vadose zone soil water-filled porosity, $\theta_w^V$ $(cm^3/cm^3)$ |            | ENTER Average vapor flow rate into bldg. (Leave blank to calcula Q <sub>soil</sub> (L/m) | ite)           |                    |
|                               | S   | 1.66   | 0.375  | 0.054  |            | 5  |                |                    |
|                               |   | 1.00   | 0.070  | 0.004  |            |  |                |                    |
| MORE                          |   |  |  |  |            |  |                |                    |
| <b>4</b>                      | ENTER   | ENTER  | ENTER  | ENTER  | ENTER      | ENTER  |                |                    |
|                               | Averaging   | Averaging  | _  | _  | _          | A: = .   |                |                    |
|                               | time for  | time for   | Exposure   | Exposure   | Exposure   | Air Exchange   |                |                    |
| Laslum Dasarta                | carcinogens,  | noncarcinogens,  | duration,  | frequency,   | Time       | Rate   |                |                    |
| Lookup Receptor<br>Parameters | AT <sub>C</sub>   | AT <sub>NC</sub>   | ED   | EF   | ET         | ACH  |                |                    |
| . didilictors                 | (yrs)   | (yrs)  | (yrs)  | (days/yr)  | (hrs/day)  | (hour) <sup>-1</sup>   |                |                    |
|                               |   | ·  |  |  |            |  |                |                    |

Residential

END

70

26

26

350

24

(NEW)

0.5

(NEW)

# **Department of Toxic Substances Control** Vapor Intrusion Screening Model - Soil Gas

DATA ENTRY SHEET

Scenario: Residential Chemical: Ethylbenzene

Results Summary

Indoor Air Conc.

(µg/m³) **3.4E-02** 

Cancer

Risk

3.0E-08

Noncancer

Hazard

3.2E-05

| Soil Gas Concentration Data |   |   |  |  |              |  |                | Result             |
|-----------------------------|---|---|--|--|--------------|--|----------------|--------------------|
| Desert to                   | ENTER   | ENTER   |  | ENTER  |              |  | Soil Gas Conc. | Attenuation Factor |
| Reset to                    |   | Soil  |  | Soil   |              |  | (µg/m³)        | (unitless)         |
| Defaults                    | Chemical  | gas   | OR   | gas  |              |  | 2.80E+01       | 1.2E-03            |
|                             | CAS No.   | conc.,  |  | conc.,   |              | •  |                |                    |
|                             | (numbers only,  | $C_g$   |  | $C_g$  |              |  |                |                    |
|                             | no dashes)  | (μg/m³)   |  | (ppmv)   | Chemical     |  |                |                    |
|                             |   |   |  |  |              |  |                |                    |
|                             | 100414  | 2.80E+01  |  |  | Ethylbenzene |  |                |                    |
|                             |   |   |  |  |              |  |                |                    |
|                             | ENTER   | ENTER   | ENTER  | ENTER  |              | ENTER  |                |                    |
|                             | Depth   |   |  |  |              |  |                |                    |
| MORE                        | below grade   | Soil gas  |  | Vadose zone  |              | User-defined   |                |                    |
| ₩                           | to bottom   | sampling  | Average  | SCS  |              | vadose zone  |                |                    |
|                             | of enclosed   | depth   | soil   | soil type  |              | soil vapor   |                |                    |
|                             | space floor,  | below grade,  | temperature,   | (used to estimate  | OR           | permeability,  |                |                    |
|                             | $L_F$   | $L_s$   | Ts   | soil vapor   |              | $k_v$  |                |                    |
|                             | (15 or 200 cm)  | (cm)  | (°C)   | permeability)  |              | (cm <sup>2</sup> )   |                |                    |
|                             |   | 450   |  |  |              |  |                |                    |
|                             | 15  | 152   | 24   | S  |              |  |                |                    |
| MORE<br>Ψ                   | ENTER Vandose zone SCS Soil type Lookup Soil Parameters | ENTER Vadose zone soil dry bulk density, Pb (g/cm³) | ENTER Vadose zone soil total porosity, n <sup>V</sup> (unitless) | ENTER Vadose zone soil water-filled porosity, $\theta_w^V$ $(cm^3/cm^3)$ |              | ENTER Average vapor flow rate into bldg. (Leave blank to calcula Q <sub>soil</sub> (L/m) | ate)           |                    |
|                             | S   | 1.66  | 0.375  | 0.054  |              | 5  |                |                    |
|                             |   |   |  |  |              |  |                |                    |
| MORE<br><b>↓</b>            | ENTER<br>Averaging                                      | ENTER<br>Averaging                                  | ENTER  | ENTER  | ENTER        | ENTER  |                |                    |
|                             | time for  | time for  | Exposure   | Exposure   | Exposure     | Air Exchange   |                |                    |
|                             | carcinogens,  | noncarcinogens,                                     | duration,  | frequency,   | Time         | Rate   |                |                    |
| Lookup Receptor             | AT <sub>C</sub>   | AT <sub>NC</sub>                                    | ED   | EF   | ET           | ACH  |                |                    |
| Parameters                  | (yrs)   | (yrs)   | (yrs)  | (days/yr)  | (hrs/day)    | (hour) <sup>-1</sup>   |                |                    |
|                             | (3/   | ()/   | ()/  | ())-/  | ()/          | \ /  |                |                    |
| Residential                 | 70  | 26  | 26   | 350  | 24           | 0.5  |                |                    |
|                             |   |   |  |  | (NEW)        | (NEW)  |                |                    |
| END                         |   |   |  |  |              | , ,  |                |                    |

END

# Department of Toxic Substances Control Vapor Intrusion Screening Model - Soil Gas

DATA ENTRY SHEET

Scenario: Residential Chemical: Cumene

|                                     |   | Soil  | Gas Concentratio                                     | n Data  |                                  | İ  |                    | Result             | ts Summary       |        |           |
|-------------------------------------|---|---|--|---|----------------------------------|--|--------------------|--------------------|------------------|--------|-----------|
|                                     | ENTER   | ENTER   | Gas Concentratio                                     | n Data<br>ENTER   | 1                                |  | Soil Gas Conc.     | Attenuation Factor | Indoor Air Conc. | Cancer | Noncancer |
| Reset to                            |   | Soil  |  | Soil  |                                  |  | (µg/m³)            | (unitless)         | (µg/m³)          | Risk   | Hazard    |
| Defaults                            | Chemical  | gas   | OR   | gas   |                                  |  | 1.20E+01           | 1.1E-03            | 1.4E-02          | NA     | 3.3E-05   |
|                                     | CAS No.   | conc.,  |  | conc.,  |                                  |  |                    |                    |                  |        |           |
|                                     | (numbers only,  | $C_g$   |  | $C_{g}$   |                                  |  |                    |                    |                  |        |           |
|                                     | no dashes)  | (μg/m³)   |  | (ppmv)  | Chemical                         |  |                    | =                  |                  |        |           |
|                                     | <b>l</b> 98828  | 1.20E+01  |  |   | Cumene                           |  |                    | _                  |                  |        |           |
|                                     |   | 1.202.01  |  | 1   | MESSAGE: See VLC                 | OKUP table comments on ch  | nemical properties | _                  |                  |        |           |
|                                     | ENTER   | ENTER   | ENTER  | ENTER   | and/or toxicity criteria         | for this chemical.  ENTER  | 1                  |                    |                  |        |           |
|                                     | Depth   | ENTER   | ENTER  | ENTER   |                                  | ENTER  |                    |                    |                  |        |           |
| MORE                                | below grade   | Soil gas  |  | Vadose zone   |                                  | User-defined   |                    |                    |                  |        |           |
| •                                   | to bottom   | sampling  | Average  | SCS   |                                  | vadose zone  |                    |                    |                  |        |           |
|                                     | of enclosed   | depth   | soil   | soil type   |                                  | soil vapor   |                    |                    |                  |        |           |
|                                     | space floor,  | below grade,  | temperature,   | (used to estimate   | OR                               | permeability,  |                    |                    |                  |        |           |
|                                     | L <sub>F</sub>  | L <sub>s</sub>  | T <sub>S</sub>                                       | soil vapor  |                                  | k <sub>v</sub>   |                    |                    |                  |        |           |
|                                     | (15 or 200 cm)  | (cm)  | (°C)   | permeability)   | =                                | (cm <sup>2</sup> )   |                    |                    |                  |        |           |
|                                     | 15  | 152   | 24   | S   | 1                                |  |                    |                    |                  |        |           |
|                                     | 10  | 102   |  |   | ı                                |  | ı                  |                    |                  |        |           |
| MORE<br>↓                           | ENTER Vandose zone SCS soil type Lookup Soil Parameters     | ENTER Vadose zone soil dry bulk density, Pb (g/cm³)             | ENTER Vadose zone soil total porosity, n  (unitless) | ENTER  Vadose zone soil water-filled porrosity, $\theta_w^{\vee}$ $(cm^3/cm^3)$ | <u>.</u>                         | ENTER Average vapor flow rate into bldg. (Leave blank to calcula Q <sub>soil</sub> (L/m) | ate)               |                    |                  |        |           |
|                                     | S   | 1.66  | 0.375  | 0.054   |                                  | 5  |                    |                    |                  |        |           |
| MORE  ↓  Lookup Receptor Parameters | ENTER Averaging time for carcinogens, AT <sub>C</sub> (yrs) | ENTER Averaging time for noncarcinogens, AT <sub>NC</sub> (yrs) | ENTER Exposure duration, ED (yrs)                    | ENTER  Exposure frequency, EF (days/yr)   | ENTER Exposure Time ET (hrs/day) | ENTER  Air Exchange Rate ACH (hour) <sup>-1</sup>  | :                  |                    |                  |        |           |
| NEW=> Residential                   | 70  | 26  | 26   | 350   | 24                               | 0.5  |                    |                    |                  |        |           |
| END                                 |   |   |  |   | (NEW)                            | (NEW)  |                    |                    |                  |        |           |

# **Department of Toxic Substances Control** Vapor Intrusion Screening Model - Soil Gas

DATA ENTRY SHEET

Scenario: Residential Chemical: m-Xylene

Results Summary

Indoor Air Conc.

(µg/m³) **5.9E-02** 

Cancer

Risk

NA

Noncancer

Hazard

5.7E-04

| Chemical CAS No. umbers only,                          | ENTER Soil gas conc.,   | Gas Concentration  | ENTER  |  |  |   |   |
|--|---|--|--|--|--|---|---|
| CAS No.<br>umbers only,                                | gas   |  |  |  |  | Soil Gas Conc.  | Attenuation Factor  |
| CAS No.<br>umbers only,                                | -   |  | Soil   |  |  | (µg/m³)   | (unitless)  |
| umbers only,   | conc  | OR   | gas  |  |  | 4.90E+01  | 1.2E-03   |
| **   |   |  | conc.,   |  | _  |   |   |
|  | $C_g$   |  | $C_g$  |  |  |   |   |
| no dashes)   | (μg/m³)   |  | (ppmv)   | Chemical   |  |   |   |
|  |   |  | ,  |  |  |   | •   |
| 108383   | 4.90E+01  |  |  | m-Xylene   |  |   | •   |
|  |   |  |  |  |  |   |   |
| ENTER  | ENTER   | ENTER  | ENTER  |  | ENTER  |   |   |
|  | Soil goo  |  | Vadaga zana  |  | Lloor defined  |   |   |
|  |   | Average  |  |  |  |   |   |
|  |   |  |  |  |  |   |   |
|  |   |  |  | OR   |  |   |   |
| L <sub>F</sub>   |   |  | soil vapor   |  |  |   |   |
| 5 or 200 cm)   |   |  | nermeability)  |  |  |   |   |
| 0 0. 200 0,  | (0)   | ( - /  | pormousmey)  |  |  |   |   |
| 15   | 152   | 24   | S  |  |  |   |   |
| ENTER andose zone SCS soil type Lookup Soil Parameters | ENTER Vadose zone soil dry bulk density, Pb (g/cm³)   | ENTER Vadose zone soil total porosity, n (unitless)  | ENTER Vadose zone soil water-filled porosity, $\theta_w^{\vee}$ $(cm^3/cm^3)$  |  | ENTER Average vapor flow rate into bldg. (Leave blank to calcula Q <sub>soil</sub> (L/m)   | ite)  |   |
|  | 1.66  | 0.375  | 0.054  |  | 5  |   |   |
|  | ENTER Depth Delow grade to bottom of enclosed space floor, L <sub>F</sub> 5 or 200 cm)  15  ENTER andose zone SCS soil type Lookup Soil | ENTER Depth below grade to bottom of enclosed space floor, L <sub>F</sub> 5 or 200 cm)  ENTER andose zone SCS soil gas sampling depth below grade, L <sub>s</sub> (cm)  ENTER Vadose zone soil dry bulk density, Pb <sup>A</sup> | ENTER Depth below grade to bottom space floor, LF 15 152  ENTER  ENTER Soil gas soil depth below grade, LS 5 or 200 cm)  ENTER  ENTER Andose zone SCS Soil dry Soil dry Soil dry Soil dry Soil total Soil type Lookup Soil  ENTER  ENTER LS ENTER Vadose zone SCS Soil dry Soil total Soil type Lookup Soil  ENTER  ENTER LS ENTER Vadose zone SCS Soil dry Soil total Soil type Lookup Soil  ENTER LS ENTER Vadose zone SCS Soil dry Soil total Soil type Lookup Soil | ENTER Depth below grade soil gas soil to bottom sampling Average soil type (used to estimate soil vapor permeability)  ENTER ENTER ENTER ENTER (used to estimate soil vapor permeability)  ENTER ENTER ENTER ENTER Soil vapor permeability)  ENTER ENTER ENTER ENTER Soil vapor permeability)  ENTER ENTER ENTER ENTER Soil vapor permeability)  ENTER ENTER ENTER Soil vapor valose zone soil dry soil total soil water-filled soil water-filled porosity, po | ENTER Depth Depth Depth Depth Delow grade Soil gas Soil g | ENTER Depth  Depth  Delow grade Soil gas  of enclosed depth soil  Space floor, below grade, L <sub>s</sub> T <sub>S</sub> 5 or 200 cm)  ENTER  ENTER  ENTER  ENTER  ENTER  Soil vapor  (cm²)  ENTER  User-defined vadose zone soil vapor soil vapor permeability, k <sub>v</sub> (cm²)  ENTER  Soil vapor  permeability)  (cm²)  ENTER  ENTER  Average vapor  Soil vapor  permeability)  (cm²) | ENTER Depth |

Residential

END

70

26

26

350

24

(NEW)

0.5

# **Department of Toxic Substances Control** Vapor Intrusion Screening Model - Soil Gas

DATA ENTRY SHEET

Scenario: Residential Chemical: o-Xylene

Results Summary

Indoor Air Conc.

(µg/m³) 1.8E-02

Cancer

Risk

NA

Noncancer

Hazard

1.7E-04

|           |  | Soil (  | Gas Concentration  | n Data   |                           |   |                | Result             |
|-----------|--|---|--|--|---------------------------|---|----------------|--------------------|
| D         | ENTER  | ENTER   |  | ENTER  |                           | <del> </del>  | Soil Gas Conc. | Attenuation Factor |
| Reset to  |  | Soil  |  | Soil   |                           |   | (µg/m³)        | (unitless)         |
| Defaults  | Chemical   | gas   | OR   | gas  |                           |   | 1.50E+01       | 1.2E-03            |
|           | CAS No.  | conc.,  |  | conc.,   |                           | _   |                |                    |
|           | (numbers only,   | C <sub>g</sub>  |  | $C_g$  |                           |   |                |                    |
|           | no dashes)   | (μ <b>g</b> /m³)  |  | (ppmv)   | Chemical                  |   |                |                    |
|           |  |   |  |  |                           |   |                |                    |
|           | 95476  | 1.50E+01  |  |  | o-Xylene                  |   |                |                    |
|           |  |   |  |  |                           |   |                |                    |
|           | ENTER  | ENTER   | ENTER  | ENTER  |                           | ENTER   |                |                    |
|           | Depth  |   |  |  |                           |   |                |                    |
| MORE      | below grade  | Soil gas  |  | Vadose zone  |                           | User-defined  |                |                    |
| ₩         | to bottom  | sampling  | Average  | SCS  |                           | vadose zone   |                |                    |
|           | of enclosed  | depth   | soil   | soil type  |                           | soil vapor  |                |                    |
|           | space floor,   | below grade,  | temperature,   | (used to estimate  | OR                        | permeability,   |                |                    |
|           | $L_F$  | $L_s$   | Ts   | soil vapor   |                           | k <sub>v</sub>  |                |                    |
|           | (15 or 200 cm)   | (cm)  | (°C)   | permeability)  |                           | (cm <sup>2</sup> )  |                |                    |
|           | 15   | 152   | 24   | S  |                           |   |                |                    |
|           |  |   |  |  |                           |   |                |                    |
| MORE<br>↓ | ENTER Vandose zone SCS soil type Lookup Soil Parameters                                      | ENTER Vadose zone soil dry bulk density, Pb <sup>A</sup> (g/cm³)                              | ENTER Vadose zone soil total porosity, n <sup>V</sup> (unitless)                 | ENTER Vadose zone soil water-filled porosity, $\theta_w^V$ $(cm^3/cm^3)$                   |                           | ENTER Average vapor flow rate into bldg. (Leave blank to calculat Q <sub>soll</sub> (L/m) | te)            |                    |
|           | Vandose zone<br>SCS<br>soil type<br>Lookup Soil  | Vadose zone<br>soil dry<br>bulk density,<br>Pb  | Vadose zone<br>soil total<br>porosity,<br>n <sup>V</sup>                         | Vadose zone soil water-filled porosity, $\theta_w^{\ \ \ \ \ \ \ }$                        |                           | Average vapor flow rate into bldg. (Leave blank to calculat $Q_{\text{soil}}$             | de)            |                    |
| ₩ORE      | Vandose zone SCS soil type  Lookup Soil Parameters  S  ENTER Averaging time for carcinogens, | Vadose zone soil dry bulk density, pb (g/cm³)  1.66  ENTER Averaging time for noncarcinogens, | Vadose zone soil total porosity, nV (unitless)  0.375  ENTER  Exposure duration, | Vadose zone soil water-filled porosity, $\theta_w^{\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ $ | ENTER<br>Exposure<br>Time | Average vapor flow rate into bldg. (Leave blank to calculat Q <sub>soil</sub> (L/m) 5     | te)            |                    |
| ₩ORE      | Vandose zone SCS soil type  Lookup Soil Parameters  S  ENTER Averaging time for              | Vadose zone soil dry bulk density, Pb A (g/cm³)  1.66  ENTER Averaging time for               | Vadose zone soil total porosity, n (unitless)  0.375  ENTER  Exposure            | Vadose zone soil water-filled porosity, $\theta_w^V$ $(cm^3/cm^3)$ 0.054                   | <b>ENTER</b> Exposure     | Average vapor flow rate into bldg. (Leave blank to calculat Q <sub>soil</sub> (L/m) 5     | de)            |                    |

Residential

END

70

26

26

350

24

(NEW)

0.5

(NEW)

# **Department of Toxic Substances Control** Vapor Intrusion Screening Model - Soil Gas

DATA ENTRY SHEET

Scenario: Residential Chemical: Styrene

**Results Summary** 

Indoor Air Conc.

(µg/m³)

1.9E-02

Noncancer

Hazard

2.0E-05

Cancer

Risk

NA

|          |                | Soil                 | Gas Concentration | n Data                              |          |                       |                | Result             |
|----------|----------------|----------------------|-------------------|-------------------------------------|----------|-----------------------|----------------|--------------------|
| Desetts  | ENTER          | ENTER                |                   | ENTER                               |          |                       | Soil Gas Conc. | Attenuation Factor |
| Reset to |                | Soil                 |                   | Soil                                |          |                       | (µg/m³)        | (unitless)         |
| Defaults | Chemical       | gas                  | OR                | gas                                 |          |                       | 1.50E+01       | 1.2E-03            |
|          | CAS No.        | conc.,               |                   | conc.,                              |          |                       |                |                    |
|          | (numbers only, | $C_g$                |                   | $C_g$                               |          |                       |                |                    |
|          | no dashes)     | (μg/m³)              | =                 | (ppmv)                              | Chemical |                       |                |                    |
|          | 100425         | 1.50E+01             | ]                 |                                     | Styrene  |                       |                |                    |
|          | ENTER          | ENTER                | ENTER             | ENTER                               |          | ENTER                 | 1              |                    |
|          | Depth          |                      |                   |                                     |          |                       |                |                    |
| MORE     | below grade    | Soil gas             |                   | Vadose zone                         |          | User-defined          |                |                    |
| Ψ        | to bottom      | sampling             | Average           | SCS                                 |          | vadose zone           |                |                    |
|          | of enclosed    | depth                | soil              | soil type                           |          | soil vapor            |                |                    |
|          | space floor,   | below grade,         | temperature,      | (used to estimate                   | OR       | permeability,         |                |                    |
|          | $L_{F}$        | $L_s$                | T <sub>S</sub>    | soil vapor                          |          | $k_{v}$               |                |                    |
|          | (15 or 200 cm) | (cm)                 | (°C)              | permeability)                       |          | (cm <sup>2</sup> )    | 1              |                    |
|          | 15             | 152                  | 24                | S                                   |          |                       | }              |                    |
|          |                |                      |                   |                                     |          |                       |                |                    |
|          | ENTER          | ENTER                | ENTER             | ENTER                               |          | ENTER                 |                |                    |
| MORE     | Vandose zone   | Vadose zone          | Vadose zone       | Vadose zone                         |          | Average vapor         |                |                    |
| ₩ .      | SCS            | soil dry             | soil total        | soil water-filled                   |          | flow rate into bldg   |                |                    |
|          | soil type      | bulk density,        | porosity,         | porosity,                           |          | (Leave blank to calcu | late)          |                    |
|          | Lookup Soil    | Pb <sup>A</sup>      | n <sup>V</sup>    | $\theta_{\mathbf{w}}^{V}$           |          | $Q_{soil}$            |                |                    |
|          | Parameters     | (g/cm <sup>3</sup> ) | (unitless)        | (cm <sup>3</sup> /cm <sup>3</sup> ) |          | (L/m)                 | =              |                    |
|          | S              | 1.66                 | 0.375             | 0.054                               |          | 5                     | 1              |                    |
|          |                |                      | •                 |                                     |          |                       | -              |                    |
| MORE     |                |                      |                   |                                     |          |                       |                |                    |
| <b>.</b> | ENTER          | ENTER                | ENTER             | ENTER                               | ENTER    | ENTER                 |                |                    |

Lookup Receptor

Parameters

Residential

END

Averaging

time for

carcinogens,

 $AT_{C}$ 

(yrs)

70

Averaging

time for

noncarcinogens,

 $\mathsf{AT}_{\mathsf{NC}}$ 

(yrs)

26

Exposure

duration.

ED

(yrs)

26

Exposure

frequency,

EF

(days/yr)

350

Exposure

Time

ET

(hrs/day)

24

(NEW)

Air Exchange

Rate

ACH

(hour)-1

0.5

(NEW)

# **Department of Toxic Substances Control** Vapor Intrusion Screening Model - Soil Gas

DATA ENTRY SHEET

Scenario: Residential Chemical: Toluene

**Results Summary** 

Indoor Air Conc.

(µg/m³)

2.5E-01

Cancer

Risk

NA

Noncancer

Hazard

8.1E-04

|       |                              |                                | Soil                 | Gas Concentration              | n Data                              |           |                                 |                | Result             |
|-------|------------------------------|--------------------------------|----------------------|--------------------------------|-------------------------------------|-----------|---------------------------------|----------------|--------------------|
| _     |                              | ENTER                          | ENTER                |                                | ENTER                               |           |                                 | Soil Gas Conc. | Attenuation Factor |
|       | eset to                      |                                | Soil                 |                                | Soil                                |           |                                 | (µg/m³)        | (unitless)         |
| D     | efaults                      | Chemical                       | gas                  | OR                             | gas                                 |           |                                 | 1.96E+02       | 1.3E-03            |
|       |                              | CAS No.                        | conc.,               |                                | conc.,                              |           | •                               |                |                    |
|       |                              | (numbers only,                 | $C_g$                |                                | $C_g$                               |           |                                 |                |                    |
|       |                              | no dashes)                     | (μ <b>g</b> /m³)     |                                | (ppmv)                              | Chemical  |                                 |                |                    |
|       |                              |                                |                      |                                |                                     |           |                                 |                |                    |
|       |                              | 108883                         | 1.96E+02             |                                |                                     | Toluene   |                                 |                |                    |
|       |                              |                                |                      |                                |                                     |           |                                 |                |                    |
|       |                              |                                |                      |                                |                                     |           |                                 | _              |                    |
|       |                              | ENTER                          | ENTER                | ENTER                          | ENTER                               |           | ENTER                           |                |                    |
| _     |                              | Depth                          |                      |                                |                                     |           |                                 |                |                    |
|       | MORE                         | below grade                    | Soil gas             |                                | Vadose zone                         |           | User-defined                    |                |                    |
|       | •                            | to bottom                      | sampling             | Average                        | SCS                                 |           | vadose zone                     |                |                    |
|       |                              | of enclosed                    | depth                | soil                           | soil type                           | OR        | soil vapor                      |                |                    |
|       |                              | space floor,<br>L <sub>F</sub> | below grade,         | temperature,<br>T <sub>S</sub> | (used to estimate                   | UR        | permeability,<br>k <sub>v</sub> |                |                    |
|       |                              | ·                              | L <sub>s</sub>       | -                              | soil vapor                          |           | -                               |                |                    |
|       |                              | (15 or 200 cm)                 | (cm)                 | (°C)                           | permeability)                       |           | (cm <sup>2</sup> )              |                |                    |
|       |                              |                                | 450                  |                                |                                     |           |                                 |                |                    |
|       |                              | 15                             | 152                  | 24                             | S                                   |           |                                 |                |                    |
|       |                              | ENTER                          | ENTER                | ENTER                          | ENTER                               |           | ENTER                           |                |                    |
|       | MORE                         | Vandose zone                   | Vadose zone          | Vadose zone                    | Vadose zone                         |           | Average vapor                   |                |                    |
|       | <b>1</b>                     | SCS                            | soil dry             | soil total                     | soil water-filled                   |           | flow rate into bldg.            |                |                    |
|       | <u> </u>                     | soil type                      | bulk density,        | porosity,                      | porosity,                           |           | (Leave blank to calcula         | ate)           |                    |
|       |                              | Lookup Soil                    | $\rho_b^A$           | n <sup>V</sup>                 | $\theta_{w}^{V}$                    |           | Q <sub>soil</sub>               | ,              |                    |
|       |                              | Parameters                     | (g/cm <sup>3</sup> ) | (unitless)                     | (cm <sup>3</sup> /cm <sup>3</sup> ) |           | (L/m)                           |                |                    |
|       |                              |                                | (g/ciii )            | (unitiess)                     | (CIII /CIII )                       |           | (L/III)                         | :              |                    |
|       |                              | S                              | 1.66                 | 0.375                          | 0.054                               |           | 5                               | ]              |                    |
|       |                              |                                |                      |                                |                                     |           |                                 | _              |                    |
| Г     | MORE                         |                                |                      |                                |                                     |           |                                 |                |                    |
|       | Ψ                            | ENTER                          | ENTER                | ENTER                          | ENTER                               | ENTER     | ENTER                           |                |                    |
|       |                              | Averaging                      | Averaging            |                                |                                     |           |                                 |                |                    |
|       |                              | time for                       | time for             | Exposure                       | Exposure                            | Exposure  | Air Exchange                    |                |                    |
| ſ.    |                              | carcinogens,                   | noncarcinogens,      | duration,                      | frequency,                          | Time      | Rate                            |                |                    |
| L     | ookup Receptor<br>Parameters | AT <sub>C</sub>                | AT <sub>NC</sub>     | ED                             | EF                                  | ET        | ACH                             |                |                    |
|       | . Gramotoro                  | (yrs)                          | (yrs)                | (yrs)                          | (days/yr)                           | (hrs/day) | (hour) <sup>-1</sup>            |                |                    |
|       |                              |                                |                      |                                |                                     |           |                                 | 1              |                    |
| NEW=> | Residential                  | 70                             | 26                   | 26                             | 350                                 | 24        | 0.5                             |                |                    |

END