Appendix E3
Draft Remedial Action Plan

Remedial Action Plan

1515 West 178th Street
Gardena, California 90248
Stantec Project No: 185804064/185804163
SMU # 18-1126/RO0001744

June 27, 2019

Prepared for:

Opfiniti, LLC
1515 West 178th Street,
Gardena, California 90248

Prepared by:

Stantec Consulting Services Inc.
735 E. Carnegie Drive, Suite 280
San Bernardino, California

Prepared for:

Los Angeles County Fire Department
Site Mitigation Unit
Health Hazardous Materials Division
5825 Rickenbacker Road
Commerce, California

This document entitled Remedial Action Plan was prepared by Stantec Consulting Services Inc. (“Stantec”) for the account of Opfiniti, LLC (the “Client”). Any reliance on this document by any third party is strictly prohibited. The material in it reflects Stantec’s professional judgment in light of the scope, schedule and other limitations stated in the document and in the contract between Stantec and the Client. The opinions in the document are based on conditions and information existing at the time the document was published and do not take into account any subsequent changes. In preparing the document, Stantec did not verify information supplied to it by others. Any use which a third party makes of this document is the responsibility of such third party. Such third party agrees that Stantec shall not be responsible for costs or damages of any kind, if any, suffered by it or any other third party as a result of decisions made or actions taken based on this document.

Prepared by _____
(signature)

Joshua Sargent, MS, PG

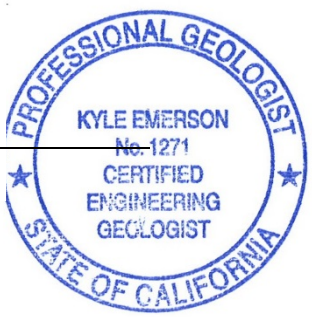
Geologist

Reviewed by _____
(signature)

Dion Monge

Senior Scientist

Approved by _____
(signature)



Kyle Emerson, PG, CEG

Managing Principal Geologist

Table of Contents

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

Abbreviations

AP	Alquist-Priolo
BGS	Below Ground Surface
CCR	California Code of Regulations
CGS	California Geological Survey
CLAFD	County of Los Angeles Fire Department
COPC	Chemicals of Potential Concern
CR	Cancer Risk
CSM	Conceptual Site Model
CVOCs	Chlorinated Volatile Organic Compounds
DCE	Dichlorethene
DRO	Diesel Range Organics
DTSC	Department of Toxic Substances Control
DTSC-SL	DTSC-modified screening level
DWR	Department of Water Resources
ESA	Environmental Site Assessment
GRO	Gasoline Range Organics
HAZWOPER	Hazardous Waste Operations and Emergency Response
HERO	Human and Ecological Risk Office
HHRA	Human Health Risk Assessment
LARWQCB	Los Angeles Regional Water Quality Control Board
MCL	Maximum Contaminant Level
Mg/Kg	Milligrams per Kilograms
ORO	Oil Range Organics
OSHA	Occupational Safety and Health Administration
PAH	Polycyclic Aromatic Hydrocarbons
PCB	Polychlorinated Biphenyl
PCE	Tetrachloroethylene
PRGs	Preliminary Remediation Goals
PVE	Pomona Valley Environmental
RSL	Regional Screening Level
RWQCBSFBR	California Regional Water Quality Control Board, San Francisco Bay Region
SMU	Site Mitigation Unit
TCE	Trichloroethylene
TPH	Total Petroleum Hydrocarbons
TPHd	TPH as diesel
TPHg	TPH as gasoline
TPHo	TPH as oil
US EPA	United States Environmental Protection Agency
USA	Underground Service Alert
USGS	United Stated Geologic Survey
VOC	Volatile Organic Compound
µg/L	Micrograms per Liter
$\mu g/m^3$	Micrograms per Cubic Meter

1.0 INTRODUCTION

On behalf of Opfiniti, LLC, Stantec Consulting Services, Inc. (Stantec) is pleased to submit this Remedial Action Plan (RAP) report. This RAP is designed to address identified soil, soil vapor, and groundwater impacts at the property addresses at 1515 West 178th Street, City of Gardena, County of Los Angeles, California (the "Property, Figure1). This report also includes a Soil Management Plan (Section 5.0) that discusses the procedures that should be taken if soil contamination or underground structures of environmental significance are encountered during the proposed redevelopment. The Property is proposed for redevelopment as a residential tract.

This document has been requested by the County of Los Angeles Fire Department (CLAFD), Site Mitigation Unit (SMU) based on assessment data provided to the agency for review. The following sections discuss a proposed plan of excavation and off-site disposal of petroleum-impacts soils above residential screening levels and presents a plan for confirmation soil sampling to verify the removal of the impacted soil to levels below the approved site cleanup goals. Additionally, the RAP presents a plan for the implementation of soil vapor barriers beneath all future residential buildings at the Property to mitigate against soil vapor intrusion into these residential buildings.

1.1 PROPERTY DESCRIPTION AND OPERATIONS

The Site consists of two contiguous parcels of land totaling approximately 5.63 acres of land developed with a 108,000-square foot warehouse building with associated parking and freight loading areas. The Property is currently occupied by RoadEx, a freight transportation business. The warehouse is used for the storage of various goods awaiting distribution to large and small retailers and manufacturing businesses. Pallets of shredded paper are stored in the western portion of the warehouse with overflow storage in the adjoining west parking lot area. The paper is reportedly shipped out of the country for recycling. The loading docks are located along the west wall of the warehouse.

A covered truck maintenance/service area is located along the exterior north wall of the building. Various petroleum products (new and used oil) and other automotive products such as coolant and degreasing detergents are used and stored in this area. Two trenches were observed in the shop area that were noted to have slight gradient to the north toward an unpaved strip of land that borders a portion of the northern Site boundary.

The surrounding area is a mixture of residential properties to the west and southwest, and commercial/light industrial businesses to the south and east. A chemical manufacturer, Bee Chemical, was historically located to the southeast of the Site (across West 178th Street), as discussed further in the paragraphs below. The general Site layout is depicted on Figure 2.

1.2 PROPERTY GEOLOGY AND HYDROGEOLOGY

The Property is located in an area of recent alluvial fan deposits from the Quaternary age. These deposits typically consist of tideland and flood-plain deposits. Regionally, the Property is located within

the southwestern block of the Los Angeles Basin, within the Peninsular Ranges Geomorphic Province of California. Shallow sediments in this area of the Los Angeles Basin consist of recent-age gravel, sand, silt, and clay deposits by the Los Angeles River and Dominguez Channel. In some areas, these sediments are expected to be approximately 50 to 90 feet thick. The near-surface sediments are underlain by sedimentary rocks of primarily recent to Miocene age. According to past assessments of the Site, shallow soils consist of silty sand and clay (Stantec, 2019).

The Site is at an average elevation of approximately 35 feet above mean sea levels (msl). The regional topographic is relatedly flat with a local gradient slightly to the northeast towards the Dominguez Channel (United States Geological Survey [USGS], 1964).

The closest mapped active fault is the Newport-Inglewood-Rose Canyon Fault Zone located approximately 2.8 miles northeast of the Site. According to official maps of California, the Site is not located within an Alquist-Priolo (AP) Earthquake Fault Zone boundary (California Geological Survey [CGS], 2010).

The Site lies within the Coastal Plain of Los Angeles groundwater basin, West Coast sub basin (4-11.03). The basin is bounded on the north by the Ballona Escarpment, an abandoned erosional channel from the Los Angeles River; on the east by the Newport-Inglewood fault zone; and on the south and west of the Pacific Ocean and consolidated rocks of the Palos Verdes Hills (Department of Water Resources [DWR], 1999). Water-bearing units include the unconsolidated and semi-consolidated marine and alluvial sediments of Holocene, Pleistocene, and Pliocene ages. Groundwater has been documented to be present at approximately 25 to 30 feet below ground surface (bgs) at the Property, and flowing to the east-southeast (Stantec, 2019).

2.0 PROPERTY BACKGROUND AND PREVIOUS SUBSURFACE INVESTIGATIONS

According to historical records, the Property was used for agricultural purposes from at least 1928 through that late-1950s/early-1960s. Globe Illuminations Company (Globe), a manufacturer of light fixtures, reportedly developed and occupied the Site from 1961 until the business ceased operations and filed for bankruptcy in 1987. Specific commercial/industrial activities associated with Globe are unknown except that, according to environmental database records, they allegedly operated an oil/water separator and generated petroleum waste and cooling system wastewater. From 1987 through 2007, the Property was occupied by multiple commercial/light industrial businesses including: Malco Company (1990), Ortho Mattress (1995), Cintek System, Inc (2001), and 99-Cent store merchandise warehouse (2006). RoadEx has occupied the Property since 2011.

2.1 PAST REMEDIATION AND ASSESSMENTS

Several rounds of investigation and remedial efforts have been performed at the Property from 1990 through 2019. These remedial and assessment activities are discussed in the sections below and separated by media.

2.1.1 Past Soil Assessments

Past Phase I and II environmental site assessment (ESA) reports prepared by SECOR International, Inc. (SECOR) in 2004 reported that impacts to soil from various chlorinated solvents, including tetrachloroethylene (PCE), were detected in 1990 in an unpaved strip of land between the northern Property boundary and the existing building awning/canopy. As a result, a remedial excavation was performed in this area by Pomona Valley Environmental (PVE) in 1991. The excavation was reportedly performed and subsequently summarized in a closure report prepared by PVE. The report indicated that 397.4 tons of soil was hauled off-site and reused in paving materials at a Kmart parking lot. Six confirmation samples collected from within the resulting excavation reported mostly non-detect levels of total petroleum hydrocarbons (TPH) and volatile organic compounds (VOCs), except for the sample collected from the south wall below a trench that led into the unpaved area (near recent boring location HA-2). That south wall sample below the trench reported PCE and trichloroethylene (TCE) in soil at 0.130 and 0.065 milligrams per kilograms (mg/kg), respectively. The results suggested that the soil impacts may have extended below the concrete slab of the rear truck maintenance area that remains at the Property today. The closure report prepared by PVE recommended no further assessment or remedial action in this area.

As part of a Phase II ESA performed by SECOR in 2004, additional assessment was performed in and around the excavation area due to the limited detection capabilities of laboratories in 1991 and because it was SECOR's position that the cleanup levels used by PVE were too high given a proposed use of the Property as residential. SECOR's Phase II ESA included soil borings in the excavation area, south of the excavation area (in the covered truck maintenance area), former clarifier and solvent wash area,

flammables storage closet, pallet storage area, and an evaluation of pesticides in soil related to former agricultural uses that occurred at the Property prior to the existing development. The results of SECOR's Phase II ESA reported PCE, TCE, and xylenes in soil at the backfilled excavation area and near the flammables storage closet, but at concentrations well below United States Environmental Protection Agency (US EPA) Preliminary Remediation Goals (PRGs) – the agency thresholds at the time of the assessment. Pesticides were detected in only one sample in the northern portion of the Property but at concentrations well below both past and present-day screening levels.

Based on an online review of the Property on the ENVIROSTOR website, the Department Toxic Substances Control (DTSC) opened a case file for the Property in 2005 and subsequently referred it to the County of Los Angeles Fire Department, Site Mitigation Unit (CLAFD SMU). In 2007, an additional Phase II ESA was performed by Terracon with oversight from the CLAFD. The assessment included Site-wide sampling on a 100-foot grid for VOCs in soil vapor and shallow soil sampling for California Code of Regulations (CCR), Title 22 metals and organochlorine pesticides. The soil vapor results from this assessment are discussed in Section 2.1.2. Organochlorine pesticide and metals concentrations from this assessment were reported below residential use criteria.

As part of a separate property assessment for potential Property acquisition and redevelopment as residential use, Stantec performed additional assessments in April and May of 2016 for a prospective purchaser. These assessments included a total of seventeen (17) soil vapor probes – some at 5 feet only, and some at 5 feet and 15 feet bgs. Soil samples were collected at boring locations SV-11 through SV-17. No VOCs were detected in any soil samples collected during this investigation (*i.e.* results were "non-detect").

In October 2018, Stantec advanced four direct-push soil borings (SV-18 through SV-21/HP-4) and two shallow hand auger locations (HA-1 and HA-2) within the property, and three off-site soil borings HP-5, SV-22/HP-6, and SV-23/HP-7 at the easterly-adjacent property addressed as 1487 West 178th Street. Soil borings HA-1 and HA-2 were advanced in the northern portion of the Property near the outfall of the of the two trenches observed by Stantec during the assessment. Soil borings SV-18 through SV-20 were located within the Site building, and soil boring SV-21/HP-4 was located in the northern portion of the Site near the paper storage area. Select soil samples collected from on-site borings were analyzed for TPH, VOCs, and metals. Various VOCs were detected at locations from HA-2 at five feet, while TPHd and TPHo were detected at 18,000 and 23,000 mg/kg, respectively. The one-foot soil sample collected from HA-1 reported no VOCs, and TPHd and TPHo at 420 and 1,200 mg/kg, respectively. All metals concentrations reported from these locations were within typical background levels, and not above typical residential screening levels.

A Vapor Intrusion Human Health Risk Assessment (VIHHRA) report was prepared for the Property in November 2018. That report analyzed soil vapor data collected at the Property from April 2016 through October 2018. That soil vapor data was used to evaluate a reasonable maximum exposure (RME) scenario on a point-by-point bases under the proposed future Property use as residential. The soil vapor dataset is provided in Table 3. Six VOCs were detected at least once above the residential screening levels derived by dividing DTSC and California Regional Water Quality Control Board, San Francisco Bay

Region (RWQCBSFBR) residential air screening levels by the currently proposed default soil vapor to indoor air attenuation factor of 0.03.

Assuming slab-on-grade construction and using model central tendency values for Q_{soil} and $Q_{building}$, the cumulative cancer risk (CR) estimates for samples collected at five-feet bgs ranged from 2.3E-07 at SV-4 to 6.5E-05 at SV-13. Additionally, the cumulative CR estimates for samples collected at fifteen-feet bgs ranged from 1.3E-07 at SV-19 to 1.1E-05 at SV-12. No five- or fifteen-foot samples were estimated to be at or above the upper bound of the risk range (1E-04). Note that PCE was the primary contributor to the CR estimates. Although concentrations of COPCs are generally much higher at the fifteen-foot depth interval, the differences result from model predicted (and confirmed through empirical measurement) attenuation of COPCs from a greater depth. The highest estimated potential cancer risks are associated with soil vapor samples collected at and near the northeast corner of the existing warehouse building, extending to the eastern property line.

In March 2019, Stantec advanced nine soil borings (SB-1 through SB-9) in the northern portion of the Property. Shallow soil samples from SB-1 through SB-9 were analyzed for TPH and VOCs to characterize the lateral and vertical extent of possible petroleum impacts in the northern portion of the Site. Low concentrations of TPHg were detected in the one-foot and three-foot soil samples collected from boring SB-2, located at the outfall of a concrete-lined drain. The peak concentration of TPHg was reported at 8.4 mg/kg in the one-foot sample. No other detections of TPHg were reported from any other soil samples collected during this investigation. Elevated levels of TPHd and TPHo were reported in shallow soils collected from SB-1, SB-2, and SB-3. Peak concentrations of TPHd and TPHo were reported at 2,800 mg/kg from the five-foot soil sample collected from boring SB-2, with cumulative vales of TPHd and TPHo in this sample reported at 5,600 mg/kg. All soil samples collected during this investigation with detections of TPHd and TPHo have cumulative reported values exceeding the CLAFD cleanup goal of 1,000 mg/kg.

Trace concentrations of certain fuel related VOCs were detected in the 1-foot and 5-foot bgs samples collected from SB-2. However, all of the detected VOC compounds were well below the US EPA RSLs for residential use (note: a groundwater grab sample was collected at SB-2 – see Section 2.1.3). No PCE or breakdown products were detected above laboratory reporting limits in any of the samples. PCBs were not detected in the shallow soil sample collected at SB-2 which was selected for analysis since any PCB impacts would be expected from a surficial release where the highest TPH was historically detected. However, no PCBs were detected above laboratory reporting limits. Shallow soil samples collected from 1-foot bgs from SB-1 and SB-3, in the unpaved strip of land north of the automotive repair area, reported metals concentration to be within typical naturally occurring background levels for California.

2.1.2 Past Soil Vapor Assessments

Based on an online review of the Property on the ENVIROSTOR website, the Department Toxic Substances Control (DTSC) opened a case file for the Property in 2005 and subsequently referred it to the CLAFD SMU. In 2007, an additional Phase II ESA was performed by Terracon with oversight from the CLAFD. The assessment included Site-wide sampling on a 100-foot grid for VOCs in soil vapor and shallow soil sampling for California Code of Regulations (CCR), Title 22 metals and organochlorine

pesticides. Terracon's assessment identified limited chlorinated volatile organic compounds (CVOCs) impacts to soil vapor on the Property and no organochlorine pesticide or metals impacts to soil above typical agency thresholds or screening levels. The detected CVOCs, namely PCE and TCE, were reported at concentrations below commercial soil screening levels and human health risk screening criteria with regard to potential vapor intrusion from the subsurface to indoor air. The detected concentrations, however, were slightly above residential use human health risk screening criteria at several locations. As a result, the CLAFD issued a closure letter for the Site on May 17, 2007 under the condition that the Property remained as commercial use.

As part of a separate Property assessment for potential acquisition and redevelopment as residential use, Stantec performed additional assessments in April and May of 2016 for a prospective purchaser. These assessments included a total of seventeen (17) soil vapor probes – some at 5 feet only, and some at 5 feet and 15 feet bgs. With the exception of two sample locations, all of the 5-foot bgs soil vapor samples reported PCE above the DTSC Human and Ecological Risk Office (HERO), Note 3 residential soil screening levels and reached a maximum concentration of 68,000 micrograms per cubic meter (µg/m^3) in sample SV-13. This data suggests that there is a Property source in the vicinity of SV-13, however the actual source was not identified by that assessment.

In October 2018, Stantec advanced four direct-push soil borings (SV-18 through SV-21/HP-4) and two shallow hand auger locations (HA-1 and HA-2) within the property, and three off-site soil borings HP-5, SV-22/HP-6, and SV-23/HP-7 at the easterly-adjacent property addressed as 1487 West 178th Street. Soil vapor samples were collected from all locations advanced during this assessment with the exception of HA-1, HA-2, and HP-5. Various VOCs were detected in soil vapor samples collected on- and off-site. Namely, PCE, benzene, bromodichloromethane, and chloroform was reported in off-site soil vapor samples above commercial screening levels. These compounds, and additionally TCE, were also detected in select on-site soil vapor samples at concentrations exceeding commercial screening levels. It is understood that chloroform is a known lab contaminant, and also present in tap water as a disinfectant, and has been identified as likely source for the chloroform detections in soil vapor during this assessment.

2.1.3 Past Groundwater Assessments

As part of ongoing due diligence investigations, Stantec collected three grab groundwater samples from beneath the Property in June of 2016. Impacts of PCE in groundwater were detected at peak concentrations of 70 micrograms per liter (µg/L) in boring HP-1, in the area of the peak soil vapor concentrations in the northeast corner of the Property. At the south end of the Property directly across the street and down gradient from Bee Chemical, PCE was detected at 6.8 µg/L and 1,1-dichloroethene (1,1-DCE) was detected at 100 µg/L.

In December of 2017, the owner of the Property engaged Stantec to install and sample three groundwater monitoring wells to further evaluate groundwater quality beneath the Property, and to investigate whether the VOC concentrations detected in the groundwater grab sample from the southeast corner of the Property was a result of migration from the Bee Chemical groundwater plume known to be off-site to the south of 178th Street. The groundwater sampling results indicated PCE concentrations in groundwater

from well W-1, located in the northeast corner of the Property near former grab groundwater sample location HP-1. Similar to the 2016 groundwater sampling, the data collected from W-3, located in the southeast corner of the Property, hydraulically down/cross-gradient from the former Bee Chemical plant, reported additional chemicals TCE and DCE, indicating a distinctly different chemical make up between wells W-1 and W-3. Groundwater samples collected from well W-2, installed in the eastern portion of the Property between these two wells, was non-detect for all VOCs. Therefore, the data collected from this event indicated two separate and distinct groundwater plumes – one coming from the off-site property (former Bee Chemical) to the south of 178th Street and one sourced from a release in the northeast corner of the Property.

Based on this interpretation, Stantec recommended to the CLAFD that these two plumes be addressed separately. It was requested that the CLAFD request further definition of the plume migrating from the offsite Bee Chemical property to be completed by that company and not by Opfiniti, LLC.

To further assess the Property, Stantec advanced four direct-push soil borings (SV-18 through SV-21/HP-4) and two shallow hand auger locations (HA-1 and HA-2) within the property, and three off-site soil borings HP-5, SV-22/HP-6, and SV-23/HP-7 at the easterly-adjacent property addressed as 1487 West 178th Street in October of 2018. The soil and soil vapor results of this investigation are discussed in Sections 2.1.1 and 2.1.2, respectively. Grab groundwater samples were collected from borings SV-21/HP-4 on-site, and borings SV-22/HP-6, SV-23/HP-7, and HP-5 located off-site. Groundwater samples collected from on- and off-site reported TPHg, TPHd, and TPHo at concentrations below California maximum contaminant levels (MCLs). The VOCs PCE, TCE, and c-1,2-DCE were detected in off-site groundwater samples at concentrations exceeding MCLs. The VOCs PCE, TCE, and other degradation products were detected in on-site groundwater samples at concentrations exceeding MCLs.

It was determined in correspondence with CLAFD that an additional well needed to be installed onsite to evaluate Site-specific groundwater flow direction. Therefore, a fourth well, W-4, was installed on the Property in March, 2019. Additionally, three off-site grab groundwater samples (HP-8 through HP-10) were collected on the easterly-adjacent property, and a single grab groundwater sample (SB-5-GW) was collected at the Property during this investigation Onsite and offsite sampling events conducted to-date indicate that groundwater flow direction beneath the Site is to the east. Analytical results of offsite groundwater sampling show that the plume, with VOC concentrations above MCLs for drinking water, extends less than 300 feet east of the Property boundary.

Based on a meeting between Stantec, the CLAFD, and Opfiniti, LLC on May 8, 2019 it was concluded that the extent of the groundwater impacts have been reasonably defined onsite and offsite down-gradient of the source in the northeast corner. It was also concluded that additional steps could now be taken toward the proposed redevelopment of the Property through the submittal of this Remedial Action Plan (RAP) to address TPH soil impacts onsite and mitigation of the soil vapor concentrations using vapor barriers with passive venting systems. Additionally, prior to the submittal of this RAP, CLAFD requested that a final groundwater monitoring event be performed.

Second quarter 2019 groundwater monitoring was performed at the Property on May 14, 2019. Groundwater flow direction during this sampling event was calculated to be east-southeast at a gradient

of 0.0025 feet per foot (ft/ft). PCE and TCE were reported at 8.7 and 1.9 µg/L, respectively, in well W-1, located in the northeast portion of the Property. The PCE concentration exceeds the California Maximum Contaminant Level (MCL) for this compound of 5.0 µg/L. Well W-2 reported levels of PCE and TCE at 4.7 and 1.7 µg/L, respectively. Well W-3 reported PCE at 9.4 ug/L and detected of various other compounds at trace concentrations. PCE was reported in well W-4 at 0.89 µg/L. No other VOCS were reported above laboratory reporting limits in well W-4 (Table 4).

3.0 REMEDIAL ACTION PLAN

The following sections present the proposed remedial strategies for petroleum-impacted soil via excavation and off-site disposal prior to the implementation of grading activities at the Property, and the use of vapor barriers beneath all future residential buildings at the Property to mitigate against the intrusion of VOC-impacted soil vapor at the Property.

3.1 PROPOSED EXCAVATION AND CLEANUP GOALS

The proposed petroleum and VOC cleanup objectives are based on future use of the Property for residential purposes and for groundwater protection. The analytical results will be compared to the cleanup thresholds of the LACFD used for comparison purposes during the assessment work performed at the Property. These thresholds include the following:

- Cumulative TPH (gas, diesel, oil ranges): less than 1,000 mg/kg for protection of human health, and less than the Soil Screening Levels for groundwater protection specified in the Los Angeles Regional Water Quality Control Board Interim Site Assessment and Cleanup Guidebook (May 1996) for sites where groundwater is anticipated to be between 20 and 150 feet bgs.

- VOCs: The more conservative residential threshold between the Department of Toxic Substances Control Note 3 (DTSC, 2019) and US EPA Regional Screening Levels (USEPA, 2019) documents. For example, in the case of PCE and TCE, the proposed cleanup goals are 0.59 mg/kg (DTSC, 2019) and 0.94 mg/kg (USEPA, 2019).

- Other potential contaminants of concern: Any other contaminants of concern that may arise would be analyzed based on the more conservative residential threshold between DTSC Note 3 and US EPA RSLs, or as in the case of arsenic, below naturally occurring background levels for California (generally accepted to be 12 mg/kg or below).

Soil site cleanup goals for other chemicals not listed above can be found on attached Tables 1 and 2.

3.1.1 Preliminary Activities

3.1.1.1 Health and Safety Plan

The existing Site-specific health and safety plan (HASP) will be updated for the proposed remedial activities at the Property. That HASP will describe the controls and procedures that will be implemented to minimize incidents, injury, and health risks associated with the excavation and exposure to chemicals of potential concern (COPCs). The completed HASP will be prepared in accordance with Occupational Safety and Health Administration (OSHA) Hazardous Waste Operations Standards (29 CFR 1910.120 and CCR Title 8). A copy of the referenced HASP will be on-Site with the Stantec representative for reference and will be followed by all Stantec employees and subcontractors.

All field personnel will review the HASP prior to commencement of field work. Prior to the initialization of daily field activities, a safety meeting will be conducted at the Property. All on-Site workers will be required to sign the daily safety meeting attendance log.

3.1.1.2 Utility Clearance

Stantec will update the existing Underground Service Alert (USA) ticket prior to the start of the planned excavation activities. The perimeter of the Property will be clearly delineated with white paint or above ground markers as required by USA prior to obtaining a USA ticket number for the Property. A USA ticket number for the project will be kept current through the duration of the project.

3.1.2 Remedial Excavation

3.1.2.1 AQMD Rile 1166 Monitoring

PCE, TCE, and fuel-related VOCs will register on a handheld PID in real time. During the proposed remedial excavation, Stantec will perform air monitoring in accordance with an approved 1166 various locations permit to evaluate whether any detected levels of VOCs show a significant increase over background levels. Based on concentrations of VOCs reported in previous investigations, VOC emissions are not expected to be elevated above 50 parts per million per volume (ppmV) hexane. However, should VOC emissions consistently and continuously exceed 50 ppmV, actions will be taken to reduce VOC emissions in accordance with the various locations Rule 1166 Permit for Contaminated Soil Mitigation Plan along with required notification to the South Coast Air Quality Management District.

3.1.2.2 Excavation Activities

Petroleum-impacted soil will be removed from the Property via excavation where TPH has been documented to exceed the proposed site cleanup goals. The preliminary area proposed for excavation is depicted on Figure 6 and will be adjusted in the field based on field screening (*i.e.* staining and olfactory response).

The proposed excavation area measures approximately 20 feet north-south by approximately 200 feet east-west. This proposed excavation footprint will be multi-level and will extend to the depths listed below, as directed by documented soil analytical data:

- Three feet bgs in the area of historical soil borings SB-1;
- Eight feet bgs in the area of the historical soil borings SB-2/HA-2, located at the outfall of the drain extending from the mechanics area;
- Five feet bgs in the area of historical soil boring SB-3; and,
- Three feet bgs in the area of historical soil borings SB-4 and HA-1.

Currently the northern Property boundary in this area is lined with a concrete to prevent soil erosion. Stantec is proposing to leave the concrete cap in-place during the remedial activities. If impact is

documented to exist beneath this concrete capped area through confirmation soil sampling, impacted soils will be excavated to the extent feasible without compromising soil stability, or up to, but not exceeding, the northern Property boundary.

Excavation will be initiated in the area surrounding SB-2/HA-2 where impacts are estimated to extend to approximately eight-feet bgs. Following removal of the deeper soils, the excavation will extend out laterally to the estimated excavation boundary at the depths stated above. Excavation activities will be supervised by Stantec, and all contractors will have current 40-hour Hazardous Waste Operations and Emergency Response (HAZWOPER) certificates.

Impacted soil will be excavated using a hydraulic excavator and/ or rubber tire loader. The excavated soils will be temporarily stockpiled on 6-mill thick plastic sheeting and covered daily, pending waste profiling to an approved disposal facility. Once the stockpiled soils have been appropriately profiled for disposal, the soils will be loaded into California Department of Transportation-approved trucks and transported to an off-site licensed disposal facility, in accordance will all applicable regulations.

3.1.3 Confirmation Soil Sampling

After removal of petroleum-impacted soils to the proposed excavation depths and lateral limits, confirmation soil sampling will occur. All remedial excavations will be subject to confirmation soil sampling and analysis to confirm removal of impacted exceed the proposed site cleanup goals outlined above.

Confirmation soil sampling will be performed on a 25-foot grid within the base of the excavation and every 25 linear feet along each sidewall. A minimum of one sample from each wide wall and bottom will be collected. Prior to collecting the verification soil samples, a 25-foot by 25-foot sampling grid will be laid out across the excavation areas to establish the sampling spacing.

Soil samples will be collected directly from excavation sidewalls and bottoms and discharged directly into sampling containers. Where confirmation soil sampling is performed in excess of four feet, soil sampling will be performed using the assistance of an excavator, and soils will be sampled directly from the excavator bucket. Soil samples will be carefully packaged for chemical analyses using USEPA method 5035 (Terracore®). The sample containers will be labeled with the appropriate identification information (excavation number, sidewall direction, sampling depth, sample collection date, and sample collection time), logged on a chain-of-custody form, and placed into an ice-chilled cooler pending transport and delivery to a California state certified laboratory for chemical analyses.

All confirmation soil samples will be analyzed for the chemicals of concern (COC) that will include; TPH as gasoline, diesel, and oil by USEPA method 8015B and VOCs by USEPA 8260B (preserved by USEPA method 5035).

The excavation will be deemed complete when all confirmation sampling results are reported below the proposed site cleanup goals, or where excavation activities can no longer be performed (*i.e.* at the Property boundary).

3.1.4 Dust Control

Prior to starting the excavation, the proposed excavation areas will be irrigated to infiltrate water into the soil planned for removal. Care will be taken as to not produce conditions where runoff from the Property will enter the public right-of-way, enter the municipal storm water collection system, or enter adjacent properties. This will allow for movement of the soil with minimal dust generation during excavation. Additional water will be applied to the soil during the excavation activities to minimize dust generation and allow the proper moisture content for compaction of any fill material. Water will be utilized and applied as needed on all haul roads, within the working excavation and stockpile areas as a dust suppressant. If wind speed exceeds 13 miles per hour (sustained), the excavation activities will be placed on hold until the wind speed is reduced to below that threshold.

All generated stockpiles containing chemicals above the site cleanup goals which are to remain on-site overnight will be covered with plastic sheeting. During working hours, the stockpiles will be continually wetted to reduce the potential for dust generation.

3.1.5 Waste Disposal

Stockpiled soil will be underlain with 6-millinch thick plastic sheeting such (e.g., Visqueen®) and covered as necessary until soil disposal is arranged. Sampling of the stockpiled soils will include a four-point composite sample to be analyzed in accordance with the receiving waste facilities requirements, which will likely include analysis of TPH, VOCs, and Title 22 metals and sampled at a frequency required by the receiving facility.

Based on the data collected to-date, it is estimated that approximately 570 yards (approximately 855 tons) of petroleum-impacted soil will be generated during excavation. Waste disposal manifests documenting the transport and final disposal of the materials will be included in the final report.

3.1.6 Site Restoration and Backfill

The excavation area will remain open until the laboratory results of the confirmation sampling indicate that remedial objectives have been accomplished prior to approval to backfill. Backfilling of the excavations with clean soil derived from on-site or off-site sources will occur when the laboratory results confirm that all contaminates of concern are below the proposed Site cleanup levels, and with approval by the CLAFD.

If necessary, soil will be imported to the Property to complete backfill operations. Prior to importing any soil to the Property, the import location will be examined by Stantec. A site history will be developed to evaluate if potential COCPs may exist in the import-site soils. Stantec will follow the DTSC Information Advisory Clean Imported Fill Material, dated October 2001, for direction on the sampling and analysis testing guidance.

Soil samples will be collected from the proposed import site for applicable COPCs by appropriate sampling methods and laboratory test methods such as polycyclic aromatic hydrocarbons (PAHs) (EPA Method 8310), full-range TPH (EPA Method 8015), VOCs (EPA Method 8260), pesticides (EPA Method 8081), semi-VOCs (EPA Method 8270), and CAM-17 metals (EPA Method 6010/7471). The results of

any testing will be used to confirm that the import site is a suitable source of import materials proposed for residential use prior to its delivery to the Property. The supporting laboratory analytical report from the import sampling will be provided to the CLAFD for inclusion in the case file.

3.2 SOIL VAPOR

A Vapor Intrusion Human Health Risk Assessment (VIHHRA) report was prepared for the Property in 2018. That report analyzed soil vapor data collected at the Property from April 2016 through October 2018. That soil vapor data was used to evaluate a reasonable maximum exposure (RME) scenario on a point-by-point bases under the proposed future Property use as residential. The soil vapor dataset is provided in Table 3. Six VOCs were detected at least once above the residential screening levels derived by dividing DTSC and United States Environmental Protection Agency Regional Screening Levels (USEPA RSLs) for residential use by a conservative soil vapor to indoor air attenuation factor of 0.03. This conservative value was used in order to assist in making a risk management decision with regard to mitigation of soil vapor at the Site.

Assuming slab-on-grade construction and using model central tendency values for Q_{soil} and $Q_{building}$, the cumulative cancer risk (CR) estimates for samples collected at five-feet bgs ranged from 2.3E-07 at SV-4 to 6.5E-05 at SV-13. Additionally, the cumulative CR estimates for samples collected at fifteen-feet bgs ranged from 1.3E-07 at SV-19 to 1.1E-05 at SV-12. No five- or fifteen-foot samples were estimated to be at or above the upper bound of the risk range (1E-04). Note that PCE was the primary contributor to the CR estimates. Although concentrations of COPCs are generally much higher at a depth of fifteen-foot depth interval, the differences result from model predicted (and confirmed through empirical measurement) attenuation of COPCs from a greater depth. The highest estimated potential cancer risks are associated with soil vapor samples collected at and near the northeast corner of the existing warehouse building, extending to the eastern property line.

The estimates of potential vapor intrusion risk resulting from exposure to chemicals at 5- and 15-feet in depth fall within a risk management range where further site characterization, mitigation and/or remediation are typically recommended. Following discussions with the prospective purchaser/developer of the Site, the risk management decision selected will include mitigation of soil vapor concentrations at the Site through engineering controls. Vapor intrusion mitigation measures will consist of a gas membrane barrier and passive sub-slab soil vapor collection piping (i.e. sub-slab vapor barrier system) being installed below all proposed inhabitable structures proposed for Site redevelopment. Such a system would effectively mitigate transport of subsurface contaminants in the vapor phase to indoor air. Additionally, this system should be constructed in such a way that the passive system can be changed to an active system (i.e. an exhaust fan system connected to the sub-slab piping).

Based on the assessments completed to-date, and the results of the VIHHRA, Stantec concludes that this proposed remedy will address the vapor intrusion concerns at the Property. It is Stantec's understanding that CLAFD will require that a deed restriction/notification be recorded on title to the Property to properly notify the city and homeowners of the presence of the vapor barriers and to prohibit any disturbance to them. The vapor intrusion control system design will be submitted to the CLAFD under separate cover once complete.

3.3 GROUNDWATER

The second quarter 2019 groundwater monitoring results, which are anticipated to be the final round of monitoring at the Property prior to development, are consistent with the results of prior groundwater monitoring events, characterizing that VOC concentrations are only slightly above MCLs, and groundwater flow direction is generally to the east. Based on the reported concentrations of VOCs in on-site monitoring wells, groundwater flow direction to the east, and down-gradient definition confirmed through off-site grab groundwater sampling, no further assessment of groundwater is recommended.

Prior to redevelopment activities at the Property, all groundwater monitoring wells at the Property will be properly abandoned in accordance with Los Angeles County and California State regulations. All groundwater monitoring well abandonment activities will be submitted to the CLAFD under separate cover for approval.

4.0 FINAL REMEDIATION SUMMARY REPORT

Upon completion of the remedial excavation, a Soil Excavation Report will be prepared to document all activities completed on-site. This report will provide a description of how the excavation was completed to remove the petroleum-impacted soil. A map showing the locations of removal verification samples and any re-testing required will be attached to this report. Tables and copies of all laboratory analytical reports will be included to verify removal to the approved Property cleanup levels. A separate table will be provided for import confirmation sampling, if the import sampling has been completed by the time the report is prepared.

Following submittal of the Soil Excavation Report and filing the deed notification/restriction for the proposed vapor barrier mitigation systems with the Los Angeles County Recorder, Stantec will request closure/no further action from the CLAFD.

5.0 GENERAL SOIL MANAGEMENT APPROACH

5.1 ON-SITE SOIL MANAGEMENT AND EXCAVATION PROCEDURES

While handling TPH-impacted soils during excavation, stockpiling, and loading operations, a monitoring program will be in place to control impacted soil migration off-site via aerial suspension, stormwater run-off, or attachment to equipment leaving the property. The nearest properties to the excavation include an equestrian center to the north (leased from Southern California Edison) and a commercial office complex to the east. Stantec proposes to utilize the following controls to minimize the spread of impacted soil off-site:

- During excavation and loading activities, copious amounts of water will be applied to the soil prior to and during excavation in order to suppress dust particles from becoming air-borne. Additionally, impacted soil must not be disturbed if winds exceed 13 miles per hour (mph). All stockpiled TPH-impacted soils must be covered with heavy grade plastic sheets while water suppression is not employed, particularly during non-working hours.

- To aid in maintaining a clean work environment, all vehicles and equipment should be inspected prior to exiting the Property. Rumble plates will be installed at the entrance and exits points to the Property. If significant amounts of soil are trapped within the tires or under-carriages of vehicles after movement over the rumble plates, the soil should be removed prior to the vehicle exiting the Property. During and at the end of each day or as necessary during the day, any soil deposited on off-site roadways outside the exit of the Property must be swept up by hand or with a street sweeper and returned to the Property for on-site management.

- If Property development is required during rainy periods, care should be taken to minimize negative impacts of rain. Educated judgment should be used to determine the significance of the potential rainfall event and how it might affect the remedial grading activities. If a significant rainfall event is anticipated or occurs during construction operations, necessary measures must be taken to minimize erosion of stockpiles and limit soil erosion that might result in off-site migration. A Storm Water Pollution Prevention Plan (SWPPP) should be prepared and maintained onsite if construction activities extend into winter months.

In addition to actions taken to mitigate the potential dust migration to the surrounding neighborhood, the following controls should be in place to ensure community safety and compliance with City ordinances:

- The Property will be fenced and gated, limiting access to only those authorized.
- Equipment operation times will be dictated by the City of Gardena Zoning Ordinances.
- Given the time duration required to obtain analytical results, the excavation will need to remain open overnight or over a series of nights. Proper safety measures will need to be in place, such as safe side slope and at least one end open to provide easy access into and out of the excavation. Measures should be in place to backfill excavations as soon as possible after completion. Excavations or areas of the Property that are not backfilled at

extend deeper than 4 feet bgs will be fenced off to provide a visual marker onsite workers and persons visiting the Property.

5.1.1 Contingency Procedures for Unknown Contamination or Subsurface Structures

The following contingency procedures will be followed upon discovery of features that are potentially a source of contamination (such as unknown USTs, sumps, drums, clarifiers, etc.) or contaminated soil. Below are the procedures that will be followed for suspending excavation/grading work, transferring any materials, and notifying applicable local, State and/or Federal agencies. The contingency procedures include the following:

1) If an underground tank, previously unidentified structure (*e.g.*, clarifier, sump, drum, below ground lift, etc.), or potentially-contaminated soil is found during construction, grading, or excavation, activities will be suspended until an evaluation, appropriate permitting, and/or sampling can be performed. **Any subsurface structure or potentially contaminated soil encountered should not be removed or graded through.**

2) Sampling will be performed on the material, soil, and surrounding soils, etc., as necessary to evaluate the nature of the material and proper disposal method. The appropriate chemical analysis will be performed by the environmental professional consistent with the concern identified.

3) Identification of unknown or unexpected conditions will be promptly communicated by telephone or email to the Client and to LACFD. Reportable quantities of petroleum product or hazardous substances may require notification to the applicable regulatory agencies. Similarly, underground storage tanks (registered or unregistered) require notification and permitting with the Los Angeles County Department of Public Works (LACDPW) and should not be move frfom the location where they are encountered.

4) Once any required permitting is secured and the area of concern is characterized, the structures and/or impacted soil will be excavated and stored/stockpiled onsite on plastic.

5) Any impacted soil requiring excavation will be separately stockpiled and profiled for waste characterization purposes. All excavation confirmation sampling will be performed according to the sampling protocols outlined in Section 3.1.3. The confirmation samples will be analyzed for chemicals of concern based on the results of sampling performed during Step 2 above, or as requested by LACFD.

6.0 REFERENCES

California Geological Survey (CGS), 2002, California Geomorphic Provinces, Note 36.

_____, 2010a, Fault Activity Map of California, adjustable scale, http://www.quake.ca.gov/gmaps/FAM/faultactivitymap.html.

_____, 2010b, Alquist-Priolo Earthquake Fault Zones of California, http://www.quake.ca.gov/gmaps/ap/ap_maps.htm.

California Regional Water Quality Control Board, Los Angeles and Ventura Counties, Region 4, 1996, Interim Site Assessment & Cleanup Handbook, dated May.

Department of Toxic Substances Control (DTSC), 2001, Information Advisory Clean Imported Fill Material, dated October.

_____, Human and Ecological Risk Office, 2018, Human Health Risk Assessment Note 3, dated June.

SECOR, 2004a, Phase I Environmental Site Assessment – Power Trans Freight Systems, May 12.

_____, 2004b, Phase II Environmental Site Assessment – Power Trans Freight Systems, December 2.

Stantec Consulting Services, Inc. (Stantec), 2016a, Phase I Environmental Site Assessment, 1515 W. 178th Street, Gardena, California, dated April 27.

_____, 2016b, Phase II Environmental Site Assessment, 1515 W. 178th Street, Gardena, California, dated July 18.

_____, 2018a, Well Installation and Sampling Report, 1515 W. 178th Street, Gardena, dated January 25.

_____, 2018b, Work Plan for Site Assessment with LACFD Oversight, 1515 W. 178th Street, Gardena, California, dated March 6.

_____, 2018c, Continued Site Assessment With LACFD Oversight, 1515 W. 178th Street, Gardena, California, dated November 15.

_____, 2018d, Work Plan For Additional Site Assessment With LACFD Oversight, 1515 W. 178th Street, Gardena, California, dated December 7.

_____, 2019a, Further Site Assessment With LACFD Oversight, 1515 W. 178th Street, Gardena, California, dated April 16.

_____, 2019b, Quarterly Groundwater Monitoring Event – Second Quarter 2019, 1515 W. 178 Street, Gardena, California, dated June 14, 2019.

United States Environmental Protection Agency (USEPA), Regional Screening Level (RLS) Summary Table (TR=1E-06, HQ=1), dated April.

United States Geological Survey (USGS), 1981, Torrance, 7.5 Minute, Topographic Map, Scale 1 inch = 2,400 feet.

TABLES

Table 1
Summary of Soil Analytical Results - TPH & VOCs
1515 West 178th Street, Gardena, CA

Stantec Project No.: 185804136

Sample ID [1]	Sampling Date	Sampling Depth [2]	TPH (mg/kg)			VOCs (mg/kg)									PCBs
			EPA Test Method 8015			EPA Test Method 8260B									8082
			GRO	DRO	ORO	Benzene	Toluene	Ethyl benzene	Total Xylenes	PCE	TCE	1,1-DCE	Methylene Choride	All Other VOCs	varies
Residential Screening Levels (mg/kg) [3]			--	--	--	*0.3*	*1,100*	*5.8*	*550*	*0.59*	*0.94*	*230*	*1.8*	*varies*	*varies*
LARWQCB Screening Levels (groundwater 20 to 150 feet bgs) [4]			500	1,000	10,000	*0.011*	*0.30*	*0.70*	*1.75*	*NE*	*NE*	*NE*	*NE*	*NE*	*varies*
LACFD Cleanup Goal (mg/kg)			1,000			*see clean up goals above*									--
SV-11-5	5/19/2016	5	NA	NA	NA	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.051	<varies	NA
SV-11-15	5/19/2016	15	NA	NA	NA	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.051	<varies	NA
SV-12-5	5/19/2016	5	NA	NA	NA	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.051	<varies	NA
SV-12-15	5/19/2016	5	NA	NA	NA	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.051	<varies	NA
SV-12-15 REP	5/19/2016	15	NA	NA	NA	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.051	<varies	NA
SV-13-5	5/19/2016	5	NA	<4.9	<25	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.051	<varies	NA
SV-13-15	5/19/2016	15	NA	<4.9	<25	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.051	<varies	NA
SV-14-5	5/19/2016	5	NA	NA	NA	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.051	<varies	NA
SV-14-15	5/19/2016	15	NA	NA	NA	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.051	<varies	NA
SV-15-5	5/19/2016	5	NA	NA	NA	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.051	<varies	NA
SV-15-15	5/19/2016	15	NA	NA	NA	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.051	<varies	NA
SV-16-5	5/19/2016	5	NA	NA	NA	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.051	<varies	NA
SV-16-15	5/19/2016	15	NA	NA	NA	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.051	<varies	NA
SV-17-5	5/19/2016	5	NA	NA	NA	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.051	<varies	NA
SV-17-15	5/19/2016	15	NA	NA	NA	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.051	<varies	NA
SV-18-15	10/19/2018	15	NA	NA	NA	<0.0037	<0.0051	<0.0051	<0.0051	<0.0037	<0.0037	<0.0037	<0.0037	<varies	NA
SV-19-5	10/19/2018	5	NA	NA	NA	<0.0040	<0.0051	<0.0051	<0.0051	<0.0040	<0.0040	<0.0040	<0.0040	<varies	NA
SV-20-5	10/19/2018	5	NA	NA	NA	<0.0037	<0.0051	<0.0051	<0.0051	<0.0037	<0.0037	<0.0037	<0.0037	<varies	NA
HA-1-1	10/25/2018	1	<1.0	**420**	**1,200**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<varies	NA
HA-1-3	5/23/2019	3	<1.0	**84**	**59**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
HA-2-5	10/25/2018	5	**31**	**18,000**	**23,000**	<0.0050	<0.0050	**0.19**	**6.01**	<0.0050	<0.0050	<0.0050	**0.024**	**1,2,4-TMB - 0.240** **1,3,5-TMB - 0.021** **4-Isopropyltoluene - 0.018** **Chlorobenzene - 0.075** **Isopropylbenzene - 27** **n-Butylbenzene - 0.170** **n-Propylbenzene - 0.063** **Naphthalene - 0.210** **sec-Butylbenzene - 0.019**	NA

Table 1
Summary of Soil Analytical Results - TPH & VOCs
1515 West 178th Street, Gardena, CA

Stantec Project No.: 185804136

Sample ID [1]	Sampling Date	Sampling Depth [2]	TPH (mg/kg) EPA Test Method 8015			VOCs (mg/kg) EPA Test Method 8260B									PCBs 8082
			GRO	DRO	ORO	Benzene	Toluene	Ethyl benzene	Total Xylenes	PCE	TCE	1,1-DCE	Methylene Choride	All Other VOCs	varies
Residential Screening Levels (mg/kg) [3]			--	--	--	*0.3*	*1,100*	*5.8*	*550*	*0.59*	*0.94*	*230*	*1.8*	*varies*	*varies*
LARWQCB Screening Levels (groundwater 20 to 150 feet bgs) [4]			500	1,000	10,000	*0.011*	*0.30*	*0.70*	*1.75*	*NE*	*NE*	*NE*	*NE*	*NE*	*varies*
LACFD Cleanup Goal (mg/kg)			1,000			*see clean up goals above*									--
SB-1-1	3/12/2019	1	NA	**270**	**820**	NA	NA	NA	NA	NA	NA	NA	NA	NA	<varies
SB-1-3	3/13/2019	3	NA	<10	<10	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
SB-1-5	3/12/2019	5	<1.0	<10	<10	<0.0039	<0.0039	<0.0039	<0.0039	<0.0039	<0.0039	<0.0039	<0.0039	<varies	NA
SB-2-1	3/12/2019	1	**8.4**	**2,200**	**1,600**	<0.0044	<0.0044	<0.0044	<0.0044	<0.0044	<0.0044	<0.0044	<0.0044	**1,2,4-TMB - 0.220** **1,3,5-TMB - 0.075** **4-Isopropyltoluene - 0.028** **n-Propylbenzene - 0.016** **Naphthalene - 0.023** **sec-Butylbenzene - 0.015**	<0.0016
SB-2-5	3/12/2019	5	**5.9**	**2,800**	**2,800**	<0.0041	<0.0041	**0.120**	**0.287**	<0.0041	<0.0041	<0.0041	<0.0041	**1,2,4-TMB - 2.0** **4-Isopropyltoluene - 0.026** **Chlorobenzene - 0.018** **Isopropylbenzene - 0.035** **n-Butylbenzene - 0.190** **n-Propylbenzene - 0.078** **Napthalene - 0.130** **sec-Butylbenzene - 0.023**	NA
SB-2-10	3/12/2019	10	<1.0	<10	<10	<0.0042	<0.0042	<0.0042	<0.0042	<0.0042	<0.0042	<0.0042	<0.0042	<varies	NA
SB-2-15	3/12/2019	15	<1.0	<10	<10	<0.0038	<0.0038	<0.0038	<0.0038	<0.0038	<0.0038	<0.0038	<0.0038	<varies	NA
SB-3-3	3/12/2019	3	<1.0	**440**	**1,300**	<0.0050	<0.0051	<0.0052	<0.0053	<0.0054	<0.0055	<0.0056	<0.0057	<varies	NA
SB-3-5	3/12/2019	5	NA	<10	<10	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
SB-3-10	3/12/2019	10	<1.0	<10	<10	<0.0038	<0.0038	<0.0038	<0.0038	<0.0038	<0.0038	<0.0038	<0.0038	<varies	NA
SB-4-5	3/12/2019	5	<1.0	<10	<10	<0.0036	<0.0036	<0.0036	<0.0036	<0.0036	<0.0036	<0.0036	<0.0036	<varies	NA
SB-4-10	3/12/2019	10	<1.0	<10	<10	<0.0037	<0.0037	<0.0037	<0.0037	<0.0037	<0.0037	<0.0037	<0.0037	<varies	NA
SB-5-1	5/23/2019	1	<1.0	<10	<10	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
SB-5-5	3/12/2019	5	<1.0	<10	<10	<0.0039	<0.0039	<0.0039	<0.0039	<0.0039	<0.0039	<0.0039	<0.0039	<varies	NA
SB-5-10	3/12/2019	10	<1.0	<10	<10	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<varies	NA
SB-6-5	3/12/2019	5	<1.0	<10	<10	<0.0036	<0.0036	<0.0036	<0.0036	<0.0036	<0.0036	<0.0036	<0.0036	<varies	NA
SB-7-5	3/12/2019	5	<1.0	<10	<10	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<varies	NA
SB-8-5	3/12/2019	5	<1.0	<10	<10	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<varies	NA
SB-9-5	3/12/2019	5	<1.0	<10	<10	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<varies	NA
SB-10-1	5/23/2019	1	<1.0	**24**	**70**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
HP-8-25	3/7/2019	25	<1.0	<10	<10	<0.0037	<0.0037	<0.0037	<0.0037	<0.0037	<0.0037	<0.0037	<0.0037	<varies	NA
HP-8-30	3/7/2019	30	<1.0	<10	<10	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<varies	NA

NOTES:
Concentrations reported in milligrams per kilogram (mg/kg)
(1) Refer to Figure 2 for sampling locations
(2) Sampling depth is reported as feet below ground surface
(3) Most conservative value between DTSC Note 3 (June 2018) and US EPA RSLs (May 2018)
(4) CRWQCB Interim Site Assessment and Cleanup Guidebook, May, 1996
< - Indicates the concentration was not detected above the laboratory reporting limit.

ABBREVIATIONS:
bgs - below ground surface
NA - Not Analyzed
ND - Non Detect
NE - Not Established
PCE - Tetrachloroethene
TCE - Trichloroethene
USEPA RSLs - United States Environmental Protection Agency Regional Screening Levels for Residential Soils - November 2015
TMB - Trimethylbenzene
1,1-DCE - 1,1-Dichloroethene
GRO - gasoline range organics
DRO - diesel range organics
ORO - oil range organics
VOCs - Volatile Organic Compounds

Table 2
Summary of Soil Analytical Results - Title 22 Metals
1515 West 178th Street, Gardena, CA

Location	Sample ID [1]	Sampling Date	Sampling Depth [2]	Metals [3]													
				EPA 6010B													EPA 7471A
				Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Molybdenum	Nickel	Vanadium	Zinc	Mercury
Residential Screening Levels (mg/kg) [4]				*31*	*0.68*	*15,000*	*160.0*	*70*	*120,000*	*23*	*3,100*	*80*	*390*	*1,500*	*390*	*23,000*	*1.0*
California Background Levels Range				*0.15-1.95*	*0.6-11.0*	*133-1400*	*0.25-2.7*	*0.05-1.70*	*23-1,579*	*2.7-46.9*	*9.1-96.4*	*12.4-97.1*	*5,580-73,400*	*9-509*	*75-288*	*133-236*	*0.1-0.9*
East Trench Outfall / Former Rail Spur	HA-1-1	10/25/2018	1	<2.0	**1.5**	**84**	<1.0	<1.0	**32**	**6.5**	**26**	**11**	<1.0	**12**	**24**	**140**	ND<0.10
West Trench Outfall / Former Rail Spur	HA-2-1	10/25/2018	1	<2.0	**2.5**	**69**	<1.0	<1.0	**11**	**5.0**	**26**	**15**	<1.0	**12**	**18**	**320**	<0.10
	SB-1-1	3/12/2019	1	<2.0	**1.7**	**70**	<1.0	<1.0	**13**	**4.9**	**18**	**11**	<1.0	**9.1**	**19**	**200**	<0.10
Former Rail Spur	SB-3-1	3/12/2019	1	<2.0	**2.0**	**52**	<1.0	<1.0	**7.1**	**3.2**	**13**	**10**	<1.0	**7.6**	**12**	**110**	<0.10

(1) Refer to Figure 2 for sampling locations

(2) Sampling depth is reported as feet below ground surface

(3) Concentrations reported in milligrams per kilogram (mg/kg)

(4) Most conservative value between DTSC Note 3 (June 2018) and US EPA RSLs (May 2018)

< - Indicates the concentration was not detected above the laboratory method report limit.

ABBREVIATIONS:

USEPA RSLs - United States Environmental Protection Agency Regional Screening Levels for Residential Soils- June 2015

NA - Not Analyzed

Table 3
Summary of Soil Vapor Analytical Results
1515 West 178th Street, Gardena, CA
Stantec Project No.: 185804136

Sample ID	Purge Volume	Sampling Date	Sampling Depth [1]	VOCs (µg/m^3) [2]													
				PCE	TCE	Benzene	Toluene	Ethylbenzene	Total Xylenes	Bromodichloro methane	Dibromochloro methane	1,1-DCE	1,2,4-TMB	1,3,5-TMB	Chloroform	Methylene Chloride	Other VOCs
Residential Soil Vapor Screening Levels [3]				15.3	16	3.2	10,333	36.7	3,333	2.53	NE	2,433	2,100	2,100	4.0	33.3	varies
Commercial Soil Vapor Screening Levels [3]				66.7	100	14	43,333	163.3	14,667	11	NE	10,033	8,667	8,667	17.7	400.0	varies
SV-1	3	4/8/2016	5	**410**	<80	<80	<800	<400	<400	<400	<400	<400	<400	<400	<400	<400	<varies
SV-2	3	4/8/2016	5	**510**	<80	<80	<800	<400	<400	<400	<400	**620**	<400	<400	<400	**450**	<varies
SV-3	3	4/8/2016	5	**310**	<80	<80	<800	<400	<400	<400	<400	<400	<400	<400	<400	<400	<varies
SV-3 REP	3	4/8/2016	5	**260**	<80	<80	<800	<400	<400	<400	<400	<400	<400	<400	<400	<400	<varies
SV-4	3	4/8/2016	5	**240**	<80	<80	<800	<400	<400	<400	<400	<400	<400	<400	<400	**1,000**	<varies
SV-5	3	4/8/2016	5	**1,000**	<80	**90**	<800	<400	<400	<400	<400	<400	<400	<400	<400	<400	<varies
SV-6	3	4/8/2016	5	**990**	**110**	**100**	<800	<400	<400	<400	<400	<400	<400	<400	<400	<400	<varies
SV-7	3	4/8/2016	5	**46,000**	**100**	**100**	<800	<400	<400	<400	<400	<400	<400	<400	<400	<400	<varies
SV-8	3	4/8/2016	5	<80	<80	**90**	<800	<400	<400	<400	<400	<400	<400	<400	<400	<400	<varies
SV-9	3	4/8/2016	5	<80	<80	**100**	<800	<400	<400	<400	<400	<400	<400	<400	<400	<400	<varies
SV-10	3	4/8/2016	5	**110**	<80	**90**	<800	<400	<400	<400	<400	<400	<400	<400	<400	<400	<varies
SV-11-5	3	5/19/2016	5	**6,100**	**2,100**	**170**	<800	<400	**510**	<400	<400	<400	<400	<400	<400	<400	<varies
SV-11-15	3	5/19/2016	15	**7,400**	**2,800**	<80	<800	<400	<400	<400	<400	<400	<400	<400	<400	<400	<varies
SV-12-5	3	5/19/2016	5	**15,000**	**1,300**	<80	<800	<400	<400	<400	<400	<400	<400	<400	<400	<400	<varies
SV-12-15	3	5/19/2016	5	**31,000**	**2,400**	<80	<800	<400	<400	<400	<400	<400	<400	<400	<400	<400	<varies
SV-12-15 REP	3	5/19/2016	15	**23,000**	**2,000**	<80	<800	<400	<400	<400	<400	<400	<400	<400	<400	<400	<varies
SV-13-5	3	5/19/2016	5	**68,000**	**130**	**100**	<800	<400	<400	<400	<400	<400	<400	<400	<400	<400	<varies
SV-13-15	3	5/19/2016	15	**NS - > 100" H2O**													
SV-14-5	3	5/19/2016	5	**21,000**	**280**	**140**	<800	<400	<400	<400	<400	<400	<400	<400	<400	<400	<varies
SV-14-15	3	5/19/2016	15	**NS - > 100" H2O**													
SV-15-5	3	5/19/2016	5	**4,600**	**1,700**	<80	<800	<400	<400	<400	<400	<400	<400	<400	<400	<400	<varies
SV-15-15	3	5/19/2016	15	**7,100**	**3,100**	**90**	<800	<400	<400	<400	<400	<400	<400	<400	<400	<400	<varies
SV-16-5	3	5/19/2016	5	**14,000**	**640**	<80	<800	<400	<400	<400	<400	<400	<400	<400	<400	<400	<varies
SV-16-15	3	5/19/2016	15	**3,500**	**300**	**90**	<800	<400	<400	<400	<400	<400	<400	<400	<400	<400	<varies
SV-17-5	3	5/19/2016	5	**27,000**	**420**	**150**	<800	<400	<400	<400	<400	<400	<400	<400	<400	<400	<varies
SV-17-15	3	5/19/2016	15	**24,000**	**400**	<80	<800	<400	<400	<400	<400	<400	<400	<400	<400	<400	<varies

Table 3
Summary of Soil Vapor Analytical Results
1515 West 178th Street, Gardena, CA
Stantec Project No.: 185804136

Sample ID	Purge Volume	Sampling Date	Sampling Depth [1]	VOCs (µg/m^3) [2]													
				PCE	TCE	Benzene	Toluene	Ethylbenzene	Total Xylenes	Bromodichloro methane	Dibromochloro methane	1,1-DCE	1,2,4-TMB	1,3,5-TMB	Chloroform	Methylene Chloride	Other VOCs
Residential Soil Vapor Screening Levels [3]				15.3	16	3.2	10,333	36.7	3,333	2.53	NE	2,433	2,100	2,100	4.0	33.3	varies
Commercial Soil Vapor Screening Levels [3]				66.7	100	14	43,333	163.3	14,667	11	NE	10,033	8,667	8,667	17.7	400.0	varies
SV-18-5	3	10/22/2018	5	**1,040**	**253**	**134**	**190**	**50**	**171**	**13**	<8.0	**19**	**36**	**12**	**410**	<8.0	**Isopropylbenzene - 9.0 4-Isopropyltoluene - 9.0 n-Propylbenzene - 12 Styrene - 28**
SV-18-15	3	10/22/2018	15	**8,580**	**110**	**170**	**363**	**43**	**139**	**27**	**18**	**43**	**31**	**9.0**	**38**	<8.0	**Isopropylbenzene - 10 n-Propylbenzne- 10 Styrene - 22**
SV-19-5	3	10/22/2018	5	**147**	<8.0	**26**	**87**	**25**	**98**	<8.0	<8.0	<8.0	**33**	**11**	**25**	<8.0	**Styrene - 24**
SV-19-15	3	10/22/2018	15	**105**	<8.0	<8.0	**277**	**84**	**426**	**17**	**15**	<8.0	**185**	**100**	**25**	<8.0	**n-Butylbenzene - 15 Isopropylbenzene - 30 n-Propylbenzene - 27 Styrene - 19**
SV-19-15 REP	3	10/22/2018	15	**106**	<8.0	<8.0	**298**	**89**	**437**	**18**	**13**	<8.0	**185**	**103**	**22**	<8.0	**n-Propylbenzene - 14 Isopropylbenzene - 30 n-Propylbenzene - 28 Styrene - 20**
SV-20-5	3	10/22/2018	5	**722**	**9.0**	<8.0	**102**	**40**	**234**	<8.0	<8.0	<8.0	**102**	**45**	**38**	<8.0	**Isopropylbenzene - 8.0 4-Isopropyltoluene - 17 n-Propylbenzene - 15 Styrene - 15**
SV-20-15	3	10/22/2018	15	**562**	**18**	<8.0	**161**	**45**	**232**	<8.0	<8.0	<8.0	**96**	**44**	<8.0	<8.0	**Isopropylbenzene - 9.0 n-Propylbenzene - 15 Styrene - 15**
SV-21-5	3	10/22/2018	5	**57**	<8.0	**48**	**157**	**47**	**202**	**9.0**	<8.0	<8.0	**57**	**26**	**267**	<8.0	**Isopropylbenzene - 16 4-Isopropyltoluene - 33 n-Propylbenzene - 19 Styrene - 34**
SV-21-15	3	10/22/2018	15	**30**	<8.0	**104**	**680**	**208**	**1,120**	<8.0	<8.0	**61**	**434**	**227**	**171**	<8.0	**n-Butylbenzene - 44 sec-Butylbenzene - 15 Isopropylbenzene - 54 4-Isopropyltoluene - 129 n-Propylbenzene - 76 Styrene -28**

Table 3
Summary of Soil Vapor Analytical Results
1515 West 178th Street, Gardena, CA
Stantec Project No.: 185804136

Sample ID	Purge Volume	Sampling Date	Sampling Depth [1]	VOCs (µg/m^3) [2]													
				PCE	TCE	Benzene	Toluene	Ethylbenzene	Total Xylenes	Bromodichloro methane	Dibromochloro methane	1,1-DCE	1,2,4-TMB	1,3,5-TMB	Chloroform	Methylene Chloride	Other VOCs
Residential Soil Vapor Screening Levels [3]				15.3	16	3.2	10,333	36.7	3,333	2.53	NE	2,433	2,100	2,100	4.0	33.3	varies
Commercial Soil Vapor Screening Levels [3]				66.7	100	14	43,333	163.3	14,667	11	NE	10,033	8,667	8,667	17.7	400.0	varies
SV-22-5[5]	3	10/22/2018	5	**1,610**	<8.0	**115**	**455**	**102**	**492**	**17**	<8.0	<8.0	**121**	**55**	**380**	<8.0	**tert-Butylbenzene - 14 Isopropylbenzene -27 4-Isopropyltoluene - 101 n-Propylbenzene - 30 Styrene -29**
SV-22-5 REP [5]	3	10/22/2018	5	**1,610**	<8.0	**118**	**497**	**112**	**530**	**18**	<8.0	<8.0	**138**	**61**	**423**	<8.0	**Isopropylbenzene - 25 4-Isopropyltoluene - 125 n-Propylbenzene - 21 Styrene - 30**
SV-22-15[5]	3	10/22/2018	15	**13,300**	**36**	**185**	**581**	**149**	**733**	<8.0	<8.0	<8.0	**133**	**66**	**30**	<8.0	**c-1,2-DCE - 18 Isopropylbenzene - 44 4-Isopropyltoluene - 100 n-Propylbenzene -40 Styrene - 31**
SV-23-5[5]	3	10/22/2018	5	**316**	<8.0	**162**	**567**	**145**	**706**	**29**	<8.0	<8.0	**201**	**83**	**547**	<8.0	**Isopropylbenzene - 27 4-Isopropyltoluene - 9.0 n-Propylbenzene - 44 Styrene - 38**
SV-23-15[5]	3	10/22/2018	15	**769**	<8.0	**185**	**562**	**145**	**519**	**20**	<8.0	<8.0	**104**	**46**	**526**	<8.0	**n-Butylbenzene - 14 Isopropylbenzene - 47 4-Isopropyltoluene - 78 n-Propylbenzene - 42 Styrene - 68**

NOTES:
(1) Sample depth is reported as feet below ground surface
(2) Concentrations reported in µg/m^3 and analyzed by GC/MS, EPA Method 8260B
(3) DTSC HERO NOTE 3 (June 2018) or US Environmental Protection Agency Regional Screeening Levels for Residential indoor air updated May 2018 with an attenuation factor of 0.03.
(4) DTSC HERO NOTE 3 (June 2018) or US Environmental Protection Agency Regional Screeening Levels for Commercial indoor air updated May 2018 with an attenuation factor of 0.03.
(5) Offsite boring on adjacent property (commercial use)
< - Indicates the concentration was not detected above the listed laboratory method reporting limit.
The analyte was reported above the applicable residential screening threshold
The analyte was reported above the applicable commercial screening threshold
ABBREVIATIONS:
NE - Not Established
VOCs - Volatile Organic Compounds

TABLE 4
Summary of Groundwater Grab Sample Results
1515 West 178th Street, Gardena, CA
Stantec Project No.: 185804136

Well ID	Date	GRO	DRO	ORO	Ethyl benzene	PCE	TCE	1,1-DCA	1,1-DCE	1,2-DCA	c-1,2-DCE	1,1,2-TCA	Chloro methane	Chloroform	All Other VOCs
		EPA 8015 (mg/L)			EPA 8260B (µg/L)										
CALIFORNIA MCL		--	--	--	<1.0	**5.0**	**5.0**	**5.0**	**6.0**	**0.5**	**6.0**	**5.0**	**NE**	**1.0**	various
HP-1	06/27/16	<0.100	**0.053**	<0.25	<1.0	**70**	**16**	<1.0	<1.0	<0.50	<1.0	<1.0	<10	<1.0	<varies
HP-2	06/27/16	<0.100	**0.065**	<0.25	<1.0	**3.7**	**1.5**	<1.0	<1.0	<0.50	<1.0	<1.0	<10	<1.0	<varies
HP-3	06/27/16	<0.100	**0.310**	**1.10**	<1.0	**5.8**	**12**	**16**	**100**	**1.7**	<1.0	**1.7**	**<10**	**1.8**	<varies
HP-4	10/19/18	<0.050	**0.400**	**0.32**	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<varies
HP-5	10/18/18	**0.100**	**0.320**	**0.29**	<5.0	**18**	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<varies
HP-6	10/18/18	**0.230**	**0.320**	**0.30**	<5.0	**160**	**7.8**	<5.0	<5.0	<5.0	**15**	<5.0	**70**	<5.0	<varies
HP-7	10/18/18	**0.130**	**0.330**	**0.27**	<5.0	**40**	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<varies
HP-8	03/07/19	*No Recovery* [1]													
HP-9	03/07/19	<0.20	**0.290**	**0.30**	<0.50	**0.71**	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<varies
HP-10	03/07/19	<0.20	**0.250**	<0.20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	**0.75**	<varies
SB-2-GW	03/12/19	**0.36**	**1.8**	**2.1**	**1.5**	**1.7**	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	**1,2,4-TMB - 8.5** **1,3,5-TMB - 1.3** **4-Isopropyltoluene - 0.84** **Chlorobenzene - 0.55** **n-Propylbenzene - 0.78** **Naphthalene - 4.0** **Xylenes - 4.4**
SB-5-GW	03/12/19	<0.200	<0.220	<0.220	<0.50	**11**	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<varies

Notes:
USEPA = United States Environmental Protection Agency
MCL = Maximum Contaminant Levels updated January 2015.
< = Concentration less than the indicated laboratory reporting limit.
The analyte was reported above its MCL
TPHg = Total Petroleum Hydrocarbons as gasoline
TPHd = Total Petroleum Hydrocarbons as diesel
TPHo =Total Petroleum Hydrocarbons as oil

PCE = Tetrachloroethene
TCE = Trichloroethene
1,1-DCA = 1,1-Dichloroethane
1,1-DCE = 1,1-Dichloroethene
1,2-DCE = 1,1-Dichloroethane
1,1,2-TCA = 1,1,-Trichloroethane
TPH = Total petroleum hydrocarbons
VOCs = Volatile organic compounds

(1) Groundwater could not be recovered at this location. Soil samples were collected from 25 and 30 feet bgs - the general depth of groundwater in the Property vicinity

TABLE 5

SUMMARY OF GROUNDWATER ELEVATION DATA, 2017 TO PRESENT

Opfiniti, LLC (Roadex)
1515 West 178th Street
Gardena, California 90248

Well	Surveyed Wellhead Elevation[1]	Sampling Date	Depth to Static Water (ft bgs)	Free Product Thickness (ft)	Groundwater Elevation[2] (ft amsl)
W-1	35.99	03/19/19	26.43	0.00	9.56
		05/14/19	25.98	0.00	10.01
W-2	37.24	03/19/19	27.86	0.00	9.38
		05/14/19	27.79	0.00	9.45
W-3	40.18	03/19/19	30.79	0.00	9.39
		05/14/19	30.60	0.00	9.58
W-4	34.81	03/19/19	24.20	0.00	10.61
		05/14/19	24.25	0.00	10.56

Notes:

[1] = Elevations are measured in feet above mean sea level (amsl).

[2] = Groundwater Elevation in feet amsl = Surveyed Well Elevation-Depth to Static Water

bgs= Below Ground Surface

ft = Feet

TABLE 6

SUMMARY OF GROUNDWATER ANALYTICAL DATA - TPH & VOCs (2017 - 2019)

Opfiniti, LLC (RoadEx)
1515 West 178th Street
Gardena, California 80248

Well ID	Date	EPA Method 8015 (mg/L)			EPA Method 8260B (ug/L)									
		TPHg	TPHd	TPHo	Benzene	Toluene	Ethylbenzene	Xylenes	PCE	TCE	1,1-DCA	1,1-DCE	cis-1,2-DCE	All Other VOCs
CALIFORNIA MCL		--	--	--	*1.0*	*150*	*300*	*1,750*	*5.0*	*5.0*	*5.0*	*6.0*	*6.0*	varies
W-1	12/12/17	<0.200	<0.200	<0.200	<5.0	<5.0	<5.0	<5.0	**15**	<5.0	<5.0	<5.0	<5.0	<varies
	10/25/18	<0.050[1]	<0.200	<0.200	<5.0	<5.0	<5.0	<5.0	**7.4**	<5.0	<5.0	<5.0	<5.0	<varies
	03/19/19	<0.200	<0.200	<0.200	<0.50	<0.50	<0.50	<0.50	**11**	**1.5**	<0.50	<0.50	<0.50	<varies
	05/14/19	<0.200	<0.200	**0.22**	<0.50	<0.50	<0.50	<0.50	**8.7**	**1.9**	<0.50	<0.50	<0.50	<varies
W-2	12/12/17	<0.200	<0.200	<0.200	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<varies
	10/25/18	<0.050[1]	<0.200	<0.200	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<varies
	03/19/19	<0.200	<0.200	<0.200	<0.50	<0.50	<0.50	<0.50	**4.3**	**1.8**	<0.50	**1.4**	<0.50	<varies
	05/14/19	<0.200	<0.200	<0.200	<0.50	<0.50	<0.50	<0.50	**4.7**	**1.7**	<0.50	<0.50	<0.50	<varies
W-3	12/122/17	<0.200	<0.200	<0.200	<5.0	<5.0	<5.0	<5.0	**13**	**7.8**	**8.2**	**79**	<5.0	<varies
	10/25/18	**0.120[1]**	<0.200	<0.200	<5.0	<5.0	<5.0	<5.0	**9.9**	**5.1**	**5.4**	**48**	<5.0	<varies
	03/19/19	<0.200	<0.200	<0.200	<0.50	<0.50	<0.50	<0.50	**10**	**5.9**	**5.1**	**48**	<0.50	**1,1,2-TCA - 1.4** **Chloroform - 1.3**
	05/14/19	<0.200	<0.200	<0.200	<0.50	<0.50	<0.50	<0.50	**9.4**	**4.6**	**4.5**	**47**	<0.50	**1,1,2-TCA - 2.2** **Chloroform - 0.61**
W-4	03/19/19	<0.200	**0.32**	**0.36**	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<varies
	05/14/19	<0.200	**0.32**	**0.42**	<0.50	<0.50	<0.50	<0.50	**0.89**	<0.50	<0.50	<0.50	<0.50	<varies

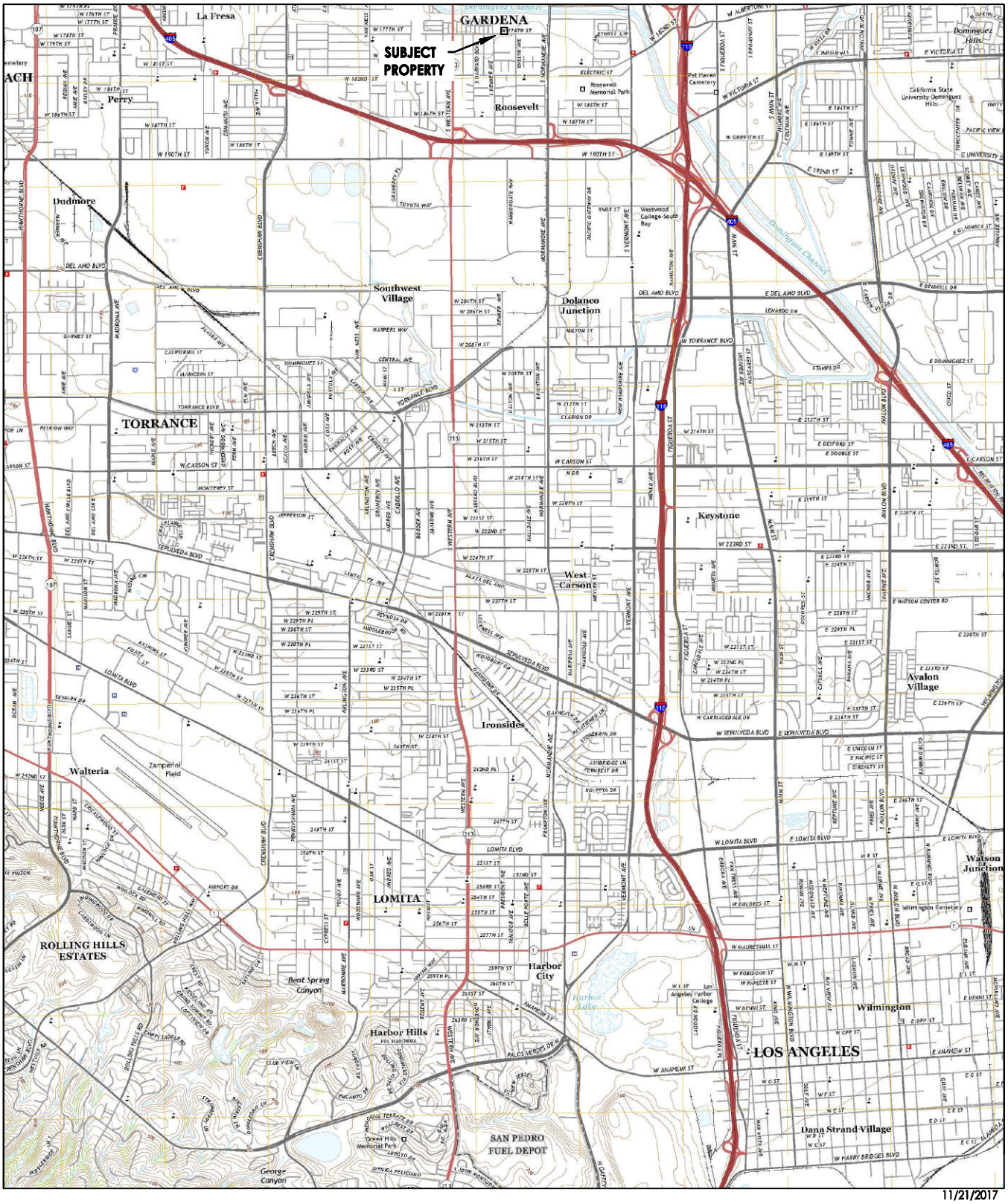
Notes:

Numbers in **BOLD FONT** exceed laboratory reporting limit
USEPA - United States Environmental Protection Agency
MCL - Maximum Contaminant Levels updated January 2015.
< - Concentration less than the indicated Laboratory Reporting l
(1) EPA Method 8260B

PCE - Tetrachloroethene
TCE - Trichloroethene
TPHg - Total Petroleum Hydrocarbons as Gasoline
TPHd - Total Petroleum Hydrocarbons as Diesel
TPHo - Total Petroleum Hydrocarbons as Oil

1,1-DCA - 1,1-Dichloroethane
1,2-DCA - 1,2-Dichloroethane
1,1-DCE - 1,1-Dichloroethene
cis-1,2-DCE - cis-1,2-Dichloroethene
trans-1,2-DCE - trans-1,2-Dichloroethene
1,1,2-TCA - 1,1,2 -trichloroethane

FIGURES



TORRANCE QUADRANGLE, USGS, 2015

11/21/2017
185804045

V:\1858\active\185804064\05_report_deliv\dwgs_design\cad_figures\roadex_gardena_figures.dwg
2017/12/21 3:04 PM By: Sargent, Josh

Stantec

735 E. CARNEGIE DR, SUITE 280
SAN BERNARDINO, CALIFORNIA 92408
www.stantec.com

N

0 1/2 MILE 1 MILE

APPROXIMATE SCALE (MILES)

Client/Project
OPFINITI, LLC
1515 WEST 178TH STREET
GARDENA, CALIFORNIA

Figure No.
1

Title
PROPERTY LOCATION MAP

LEGEND:

- APPROXIMATE PROPERTY BOUNDARY
- W-1 MONITORING WELL LOCATION
- HP1 GROUNDWATER BORING LOCATION
- SV1 SOIL/SOIL VAPOR BORING LOCATION
- HA-1 HAND AUGER BORING LOCATION
- SB-1 SOIL BORING 15 FEET bgs
- HP-8 HYDROPUNCH BORING

N

0 80 160

APPROXIMATE SCALE IN FEET

No warranty is made by Stantec Consulting Services Inc. as to the accuracy, reliability, or completeness of these data. Original data were compiled from various sources. This information may not meet National Map Accuracy Standards. This product was developed electronically, and may be updated without notification. Any reproduction may result in a loss of scale and or information.

Stantec

FOR:
OPFINITI, LLC
1515 W. 178th STREET
GARDENA, CALIFORNIA

SITE MAP

FIGURE: **2**

JOB NUMBER:	DRAWN BY:	CHECKED BY:	APPROVED BY:	DATE:
185804064/4136	STA	DM	DM	04/11/19

LEGEND:

	APPROXIMATE PROPERTY BOUNDARY
W-1	MONITORING WELL LOCATION
HP1	GROUNDWATER BORING LOCATION
SV1	SOIL/SOIL VAPOR BORING LOCATION
HA-1	HAND AUGER BORING LOCATION
SB-1	SOIL BORING 15 FEET bgs
HP-8	HYDROPUNCH BORING
GRO	GASOLINE RANGE ORGANICS
DRO	DIESEL RANGE ORGANICS
ORO	OIL RANGE ORGANICS
NA	NOT ANALYZED
BOLD	CONCENTRATION EXCEEDS LACFD CLEANUP GOAL OF (1,000 mg/kg)
*	COMBINED TPH CONCENTRATION EXCEEDS LACFD CLEANUP GOAL OF (1,000 mg/kg)

NOTE:
ALL RESULTS REPORTED IN MILLIGRAM PER KILOGRAM (mg/kg)

N

0 80 160

APPROXIMATE SCALE IN FEET

No warranty is made by Stantec Consulting Services Inc. as to the accuracy, reliability, or completeness of these data. Original data were compiled from various sources. This information may not meet National Map Accuracy Standards. This product was developed electronically, and may be updated without notification. Any reproduction may result in a loss of scale and or information.

Stantec

FOR:
OPFINITI, LLC
1515 W. 178th STREET
GARDENA, CALIFORNIA

SITE MAP
WITH SOIL ANALYTICAL RESULTS

FIGURE: **3**

JOB NUMBER:	DRAWN BY:	CHECKED BY:	APPROVED BY:	DATE:
185804064/4136	STA	DM	DM	04/11/19

LEGEND:

	APPROXIMATE PROPERTY BOUNDARY
W-1	MONITORING WELL LOCATION
HP1	GROUNDWATER BORING LOCATION
SV1	SOIL/SOIL VAPOR BORING LOCATION
HA-1	HAND AUGER BORING LOCATION
SB-1	SOIL BORING 15 FEET bgs
HP-8	HYDROPUNCH BORING
9.39	GROUNDWATER ELEVATION (feet amsl)
9.50	GROUNDWATER ELEVATION CONTOUR (MAY 14, 2019)
GRADIENT 0.003	GROUNDWATER HYDRAULIC GRADIENT (ft/ft)

PCE	TETRACHLOROETHENE
TCE	TRICHLOROETHENE
Ben	BENZENE
1,1-DCA	1,1-DICHLOROETHANE
1,1-DCE	1,1-DICHLOROETHENE
1,2-DCA	1,2-DICHLOROETHANE
NA	NOT ANALYZED
NR	NO RECOVERY

NOTE:
ALL RESULTS REPORTED IN MICROGRAMS PER LITER (µg/L)

N

0 80 160

APPROXIMATE SCALE IN FEET

No warranty is made by Stantec Consulting Services Inc. as to the accuracy, reliability, or completeness of these data. Original data were compiled from various sources. This information may not meet National Map Accuracy Standards. This product was developed electronically, and may be updated without notification. Any reproduction may result in a loss of scale and or information.

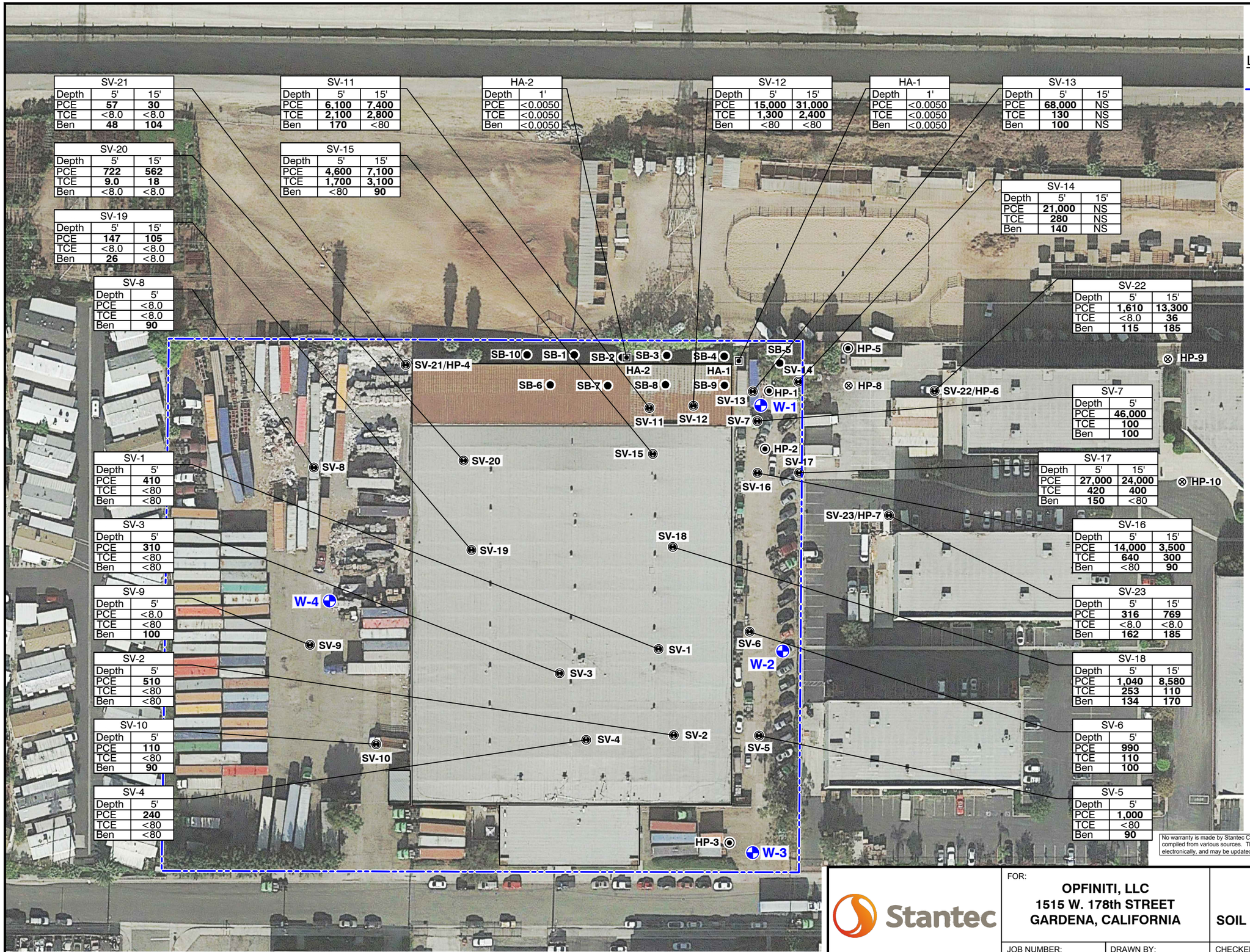
Stantec

FOR:
OPFINITI, LLC
1515 W. 178th STREET
GARDENA, CALIFORNIA

SITE MAP WITH GROUNDWATER ANALYTICAL RESULTS AND GROUNDWATER ELEVATION CONTOURS

FIGURE: **4**

JOB NUMBER:	DRAWN BY:	CHECKED BY:	APPROVED BY:	DATE:
185804064/4136	STA	DM	DM	04/11/19



LEGEND:

- APPROXIMATE PROPERTY BOUNDARY
- **W-1** MONITORING WELL LOCATION
- **HP1** GROUNDWATER BORING LOCATION
- **SV1** SOIL/SOIL VAPOR BORING LOCATION
- **HA-1** HAND AUGER BORING LOCATION
- **SB-1** SOIL BORING 15 FEET bgs
- **HP-8** HYDROPUNCH BORING

PCE	TETRACHLOROETHENE
TCE	TRICHLOROETHENE
Ben	BENZENE
1,1-DCA	1,1-DICHLOROETHANE
1,1-DCE	1,1-DICHLOROETHENE
1,2-DCA	1,2-DICHLOROETHANE

NOTE:
ALL RESULTS REPORTED IN MILLIGRAM PER KILOGRAM (mg/kg)

N

0 80 160

APPROXIMATE SCALE IN FEET

No warranty is made by Stantec Consulting Services Inc. as to the accuracy, reliability, or completeness of these data. Original data were compiled from various sources. This information may not meet National Map Accuracy Standards. This product was developed electronically, and may be updated without notification. Any reproduction may result in a loss of scale and or information.

Stantec

FOR:
OPFINITI, LLC
1515 W. 178th STREET
GARDENA, CALIFORNIA

SITE MAP
WITH HISTORICAL
SOIL VAPOR ANALYTICAL RESULTS

FIGURE: **5**

JOB NUMBER:	DRAWN BY:	CHECKED BY:	APPROVED BY:	DATE:
185804064/4136	STA	DM	DM	04/11/19

FILEPATH:M:\00_OTHER OFFICES\Former-Redlands_San Bernadino\185804064\FIG 2_OPFINITI GARDENA_PROPERTY MAP_6-14-2019.dwg | Layout Tab: 5a | Drafter: jlieberman | Jun 14, 2019 at 11:41

LEGEND:

- APPROXIMATE PROPERTY BOUNDARY
- W-1 MONITORING WELL LOCATION
- HP1 GROUNDWATER BORING LOCATION
- SV1 SOIL/SOIL VAPOR BORING LOCATION
- HA-1 HAND AUGER BORING LOCATION
- SB-1 SOIL BORING 15 FEET bgs
- HP-8 HYDROPUNCH BORING
- EXCAVATION EXTENT

N

0 80 160

APPROXIMATE SCALE IN FEET

No warranty is made by Stantec Consulting Services Inc. as to the accuracy, reliability, or completeness of these data. Original data were compiled from various sources. This information may not meet National Map Accuracy Standards. This product was developed electronically, and may be updated without notification. Any reproduction may result in a loss of scale and or information.

Stantec

FOR:
OPFINITI, LLC
1515 W. 178th STREET
GARDENA, CALIFORNIA

SITE MAP WITH PROPOSED EXCAVATION AREA

FIGURE: **6**

JOB NUMBER:	DRAWN BY:	CHECKED BY:	APPROVED BY:	DATE:
185804064/4136	STA	DM	DM	04/11/19

FILEPATH:M:\00_OTHER OFFICES\Former-Redlands_San Bernadino\185804064\FIG 2_OPFINITI GARDENA_PROPERTY MAP_6-14-2019.dwg | Layout Tab: 6 | Drafter: jlieberman | Jun 14, 2019 at 11:42

APPENDIX A

Health and Safety Plan

SITE-SPECIFIC HEALTH AND SAFETY PLAN (HASP)

1515 W. 178th St
Gardena, California 90247

Prepared for:

Opfiniti, LLC
1515 West 178th Street
Gardena, California 90248

Submitted by:
Stantec Consulting Services Inc.
735 E. Carnegie Drive, Suite 280
San Bernardino, CA 92408

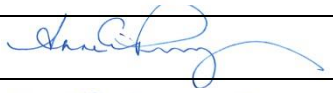
June 21, 2019

Purpose and Approval

Our work can be hazardous, and it is imperative that we never forget that! It is the purpose of this Health and Safety Plan (HASP) to proactively aid Stantec employees in:

- Identifying and understanding the potential risks/hazards they may encounter at the site.
- Mitigating those potential risks/hazards.

Stantec's policy is to complete our work on this site without any type of incident (injury, illness, impact to the environment, impact to property and equipment). In order to achieve this goal, the project team will work together to perform an effective hazard assessment. The team will then establish appropriate precautions and communicate these daily among project staff. Staff will be responsible for communicating changing field conditions to the project management so these conditions and appropriate precautions may be re-evaluated as needed. Staff will implement **STOP WORK AUTHORITY** at any time they believe that conditions may be inherently unsafe or might cause damage to property or harm to the environment. Staff may refuse to participate in work they believe will be unsafe. If it is believed that such conditions exist, staff will communicate immediately with the Project Manager to resolve the situation. We expect all subcontractors and project personnel to share this goal.

Client: Opfiniti, LLC **Project Name:** Remedial Action Plan and Soil Management **Start Date:** 3Q2019 **Plan Review Date:** 1Q2020 (Last day of expected fieldwork or no longer than 6 months).		**Site Name:** Opfiniti, LLC **Project Number:** 185804064/4136 **End Date:** 2Q2020
Dion Monge Project Manager	Signature: 	Date: 6/21/2019
Anne Perez Office Safety Environmental Coordinator (OSEC)	Signature: 	Date: 6/21/2019
Josh Sargent Site Health and Safety Officer (SHSO)	Signature: 	Date: 6/21/2019
Alicia Jansen Peer Reviewer	Signature: 	Date: 6/21/2019
Dion Monge HASP Originator	Signature: 	Date: 6/21/2019

The health and safety guidelines in this HASP were prepared exclusively for this site. This HASP will be amended (with changes recorded on the Health and Safety Plan Modification Log that follows) if site conditions, scope of work, training dates, personnel, or other critical items change before the scheduled HASP review date above. This HASP is intended to be available on site. Contents of this binder are listed in Attachment 1. Elements of the HASP shall be reviewed during daily tailgate meetings conducted by the Site Health & Safety Officer.

Stantec

Health and Safety Plan Modification Log

HASP Section	Description of Revision	Revision Date	Approved By

Acknowledgement and Agreement Form

"Zero Tolerance for Incidents of ANY Kind.
Work Together to Ensure a SAFE and High Quality Project"

All parties conducting site activities are required to coordinate their activities and practices with the Stantec Site Health and Safety Officer (SHSO). Stantec has provided a copy of this HASP to site contractors in the interest of disclosure of potential risks/hazards of which Stantec may be aware. Similarly, contractors shall inform Stantec of any potential site risks/hazards of which they are aware including the contractor's work, equipment, procedures and chemicals.

This HASP has been developed for the purpose of proactively aiding Stantec employees in identifying, understanding, and mitigating the potential risks/hazards they are may encounter at the site. This HASP may also be used as a reference document by properly trained and experienced Stantec subcontractors and clients. However, sub-contractors and other contractors at the site must develop their own HASP to address the potential risks/hazards faced by their own employees.

This HASP should NOT be understood by contractors or anyone other than Stantec employees to provide information on all of the potential risks/hazards to which they may be exposed as a result of their work. Stantec claims no responsibility for use of this HASP by others.

Your signature below confirms the following: that you have read and understand the potential risks/hazards identified by Stantec and the associated mitigation measures discussed in this HASP; that there may be additional risks or hazards that are not identified in this HASP; that you have received training and medical surveillance according to this HASP and the OSHA Standard on Hazardous Waste Operations and Emergency Response (29 CFR 1910.120); and that you understand that you could be prohibited by the Stantec Site Health and Safety Officer or other authorized Stantec personnel from working on this project for not complying with any aspect of this or any other applicable HASP.

**NOTE: OSHA (federal) is used interchangeably and equally with California OSHA (CalOSHA) in this document.

(All Stantec and subcontractor personnel must sign.)

Name	Signature	Company	Date

Acknowledgement and Agreement Form, cont.

Name	Signature	Company	Date

TABLE OF CONTENTS

ATTACHMENTS

1.0 Emergency Response

The nearest telephone is: a personal cell phone carried by the Stantec SHSO – Nick Drachenberg Bohn at 909-289-5312 or Josh Sargent at 909-289-7111. The number for the nearest landline is: N/A.

Additional personnel who may be on-site or the SHSO: N/A

Emergency Response			
Name		**Telephone**	**Verification**
Hospital	Memorial Hospital of Gardena 1145 West Redondo Beach Blvd Gardena CA 90247-3528	**911** or (310) 532-4200	DM 6/21/2019
Ambulance	Ambulance	**911**	
Police	Gardena Police Dept, 1718 W 162nd St, Gardena, CA 90247	**911** or (310) 217-9600	DM 6/21/2019
Fire Department	Los Angeles Fire Department - Station 79 18030 South Vermont Avenue Gardena, CA 90247	**911** or (310) 548-7579	DM 6/21/2019
Environmental Response	National Response Center (24-hour hotline)	(800) 424-8802	DM 6/21/2019
Environmental Protection	US Environmental Protection Agency (24-hour hotline)	(800) 424-9346	DM 6/21/2019
Emergency Services	Office of Emergency Services (24-hour hotline)	(800) 852-7550	DM 6/21/2019
Poison Control	U.S. National Poison Control Center (24-hour hotline)	(800) 222-1222	DM 6/21/2019
Agency / Line Locator			
National Line Locator	National 811 Call-Before-You-Dig Hotline (24-hour hotline)	811	DM 6/21/2019
Public Utility Locator			
Private Line Locator			

Project Team Phone Numbers			
Name		**Telephone**	**Verification**
Stantec Project Manager	Kyle Emerson Dion Monge	909-255-8220 909-556-6516	DM 6/21/2019
Stantec Site Health and Safety Officer	Nick Drachenberg Joshua Sargent	909-289-5312 909-289-7111	DM 6/21/2019

Stantec West Region HSE Coordinator	Daniel Spencer	(972) 345-3739 Cell (817) 640-9621 Office	DM 6/21/2019

Local office and additional contacts in case of an emergency or field questions regarding the Site:

1. **Dion Monge (Project Manager) at 909-556-6516**
2. **Anne Perez (OSEC) at 909-335-6116**

Flow charts for contacting additional departments in Stantec and official reporting protocol can be found in Section 1.4 of Attachment C.

2.0 Project Team Information

Project Team Phone Numbers			
Project Role/Name		**Telephone**	**Verification**
Stantec Project Manager	Dion Monge	909-556-6516	6/21/2019
Field Staff: Site Health and Safety Officer (SHSO)	Nick Drachenberg	909-289-5312	6/21/2019
Stantec Business Unit Leader	Kyle Emerson	951-315-0534 (cell) 909-335-6116 (office)	6/21/2019
Senior Certified Industrial Hygienist (CIH)	Dan Feldt	414-305-1984	6/21/2019
Stantec West Region Health, Safety, Environment (HSE) Coordinator	Clint Reuter	818.395.8556 Cell 949.923.6258 Office	6/21/2019
Stantec Human Resources Representative	Eunice Hernandez	661-885-3106	6/21/2019
OSEC (Stantec Office Safety & Environmental Coordinator)	Anne Perez	909-255-8202	6/21/2019

(Note: The Field Staff will be on-Site. All others are Stantec employees supporting all Stantec staff and not necessarily charging time to the Task Order.)

TRAINING

Site personnel will be trained and certified in hazardous waste operations and emergency response as follows:

- 40-Hour HAZWOPER Training;
- OSHA Respiratory Protection (29 CFR 1910.134)
- Annual 8-Hour Refresher [29 CFR 1910.120€(8)];
- First Aid/CPR Training;
- Physical examination consistent with 29 Code of Federal Regulations (CFR) 1910.120 (and 8 California Code of Regulations (CCR) 5192, if applicable);
- Supervisory 8-hour Training [29 CFR 1910.120€(4)] for the Site Manager/SHSO; and
- Additional training specific to the job being performed (e.g., Fall Protection, Lock Out/Tag Out, Hot Work, Confined Space, etc.).

In addition to the above-mentioned trainings, Stantec personnel are required to have training in a behavior-based safety program and defensive driving. Fit tests are also required for respirator use.

Client-Specific Safety Procedures:
Opfiniti, LLC does not have any additional required safety programming or expectations, thus Stantec staff will comply with state, federal and local regulations, and Stantec policies, procedures and expectations.

Site specific staff safety training certification information is listed on the following page.

SITE SPECIFIC STAFF TRAINING
(Includes personnel that could potentially visit the Site)

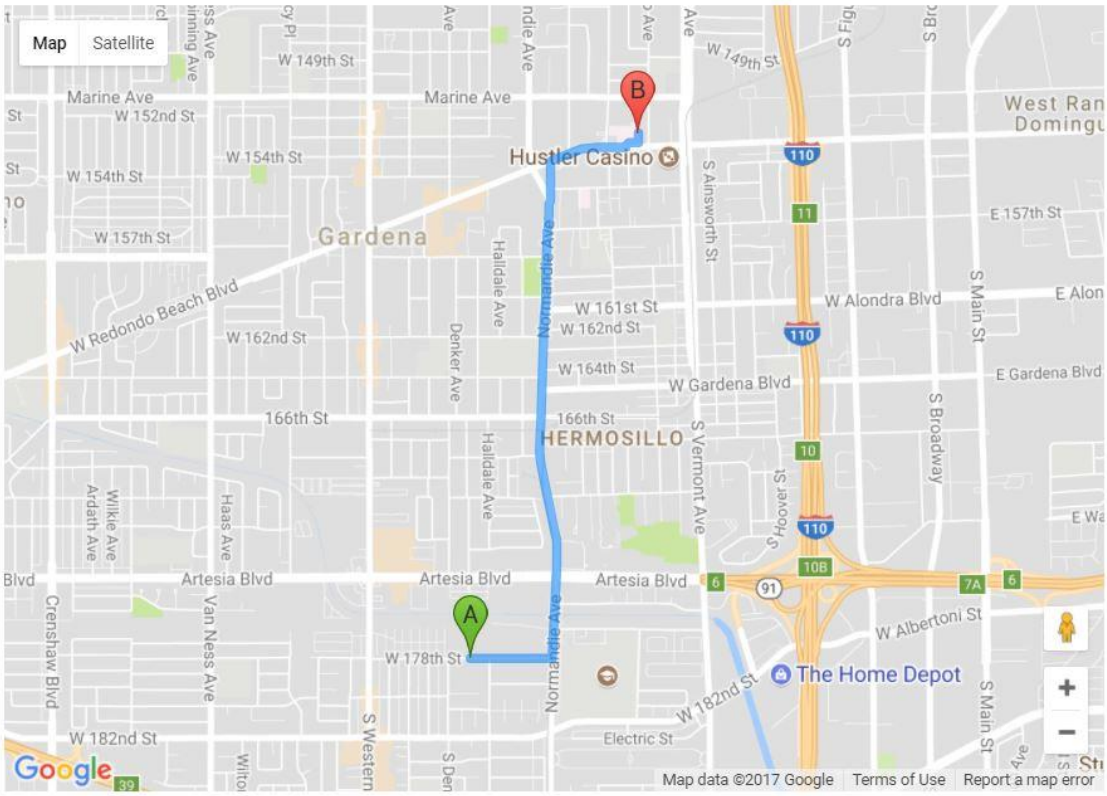
Name	40Hr HAZWOPER	8Hr HAZWOPER Refresher	CPR / First Aid	Defensive Driver Training	Respirator Fit Test
Nick Drachenberg	04/04/2015	09/27/2018	09/27/2018	09/19/2018	6/18/2019
Joshua Sargent	6/12/2012	10/13/2018	11/3/2017	07/21/2017	10/26/2018
Dion Monge	02/11/2005	07/18/2018	11/3/2017	08/08/2016	6/18/2019

Copies of the OSHA 8-Hour Refresher Certificates are included in Attachment A.

Stantec

DIRECTIONS AND MAP TO THE HOSPITAL

The SHSO will verify and validate the route to the hospital by driving it before work begins.



A 1515 W 178th St, Gardena, CA 90248, USA

2.1 mi. About 8 mins

	1.	Head east on W 178th St toward Evelyn Ave	0.3 mi
↰	2.	Turn left onto Normandie Ave	1.4 mi
↱	3.	Slight right to stay on Normandie Ave	0.1 mi
↱	4.	Turn right onto W Redondo Beach Blvd	0.2 mi
↰	5.	Turn left Destination will be on the left	404 ft

B 1145 W Redondo Beach Blvd, Gardena, CA 90247, USA

Map data ©2017 Google

Name: Memorial Hospital of Gardena

Address: 1145 West Redondo Beach Blvd Gardena, CA 90247-3528

Phone: 310-532-4200

3.0 Scope of Work

Past environmental investigations performed by Stantec have identified an area of petroleum hydrocarbon impacted soil in an unpaved area along the northern Property boundary and impacts to soil vapor from the volatile organic compound (VOC), tetrachloroethylene (PCE), in the northeast, east, and southeast portions of the Property. Calculated risk modeled during a human health risk assessment performed by Stantec in 2018 concluded that the concentrations of PCE in these areas fall within the ranges where a risk management decision should be made in order to mitigate the potential for vapor migration into proposed residential structures. In an abundance of caution, the prospective purchaser/ developer of the Property has elected to install vapor barriers with subslab passive venting below all of the planned residential buildings.

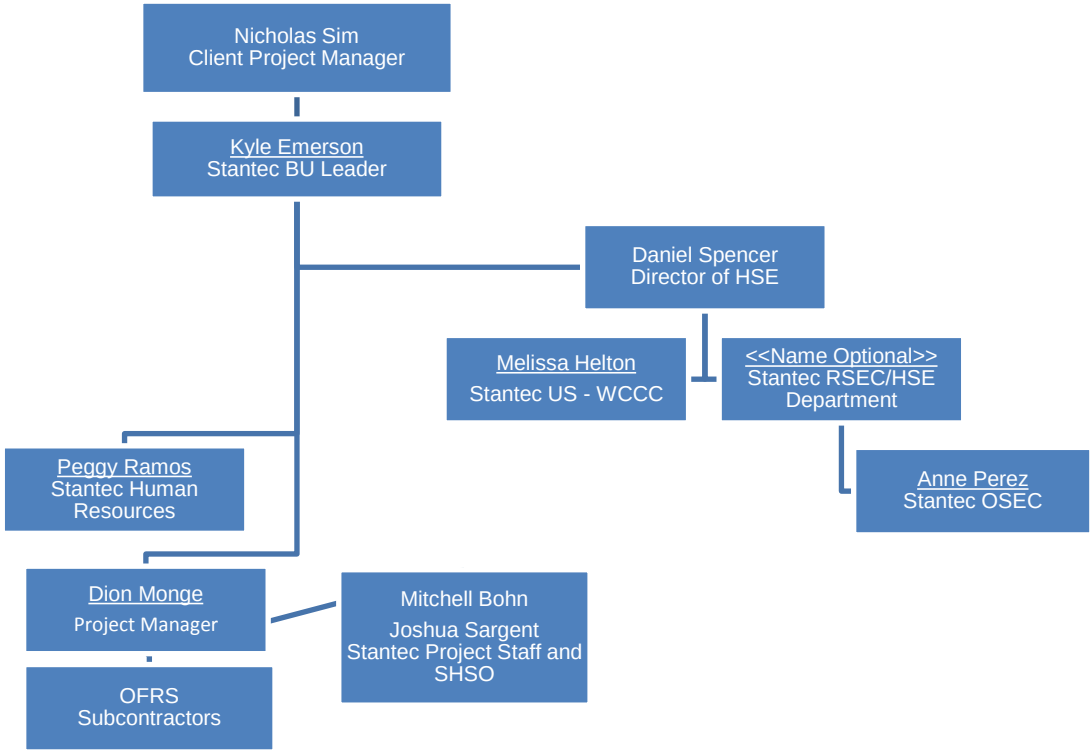
With regard to the TPH-impacted soil, the proposed remedial action includes excavation, off-site disposal, and confirmation sampling in the resulting excavation prior to the implementation of grading activities at the Property.

Therefore, this HASP was prepared for the use of Stantec personnel while performing the following tasks:

1. Driving To/From the Job Site (w/o trailer)
2. Excavation and loading of TPH-impacted soil
3. Confirmation sampling within the excavation
4. Onsite visits and any potential sampling that may occur during grading, as discussed in the Soil Management Plan sections of the RAP

4.0 Organization and Responsibilities

An organization chart for project personnel is provided below.



A table summarizing responsibilities for project personnel is provided below.

Project Job Title	General Project Responsibilities
Client Project Manager	Provide all known analytical data gathered by others and notice of hazards. Provide access to site and available emergency response capabilities.
Stantec Business Unit Leader	Provide immediate support at notice of all incidents
Stantec Project Manager	Overall financial and logistics. Contact client and subcontractors to understand all hazards. Discuss with SHSO. Follow-up all incidents upon notice.
Stantec Site Health and Safety Officer	Conduct work in accordance with JSA and this HASP. Report all incidents and near misses immediately to Project Manager.
Stantec Human Resources	Assist with incident review, recordkeeping.
Stantec Director of Health, Safety and Environment	Respond with corporate resources to all incidents as appropriate. Assist in incident investigation.
Stantec Regional Safety and Environment Coordinator (RSEC) /HSE	Respond with corporate resources to all incidents as appropriate. Assist in incident investigation.

Project Job Title	General Project Responsibilities
Department	
Site Health and Safety Officer (SHSO)	Responsible for assuring compliance with this HASP, Stantec and client health and safety requirements on the project site.
Stantec US - Workers Compensation Claims Coordinator (WCCC)	Assist with incident review, medical case management, and recordkeeping.
Stantec Office Safety and Environment Coordinator	Manage Health and Safety responsibilities for personnel in Office. Assist in HASP review. Assist employees with setting up training and attending/completing necessary courses.
Stantec Project Staff	Oversee / perform work
OFRS	Perform work

5.0 Site Background, Potential Hazards and Mitigation Measures

PROJECT BACKGROUND INFORMATION

Past Phase I and II environmental site assessment (ESA) reports prepared by SECOR International, Inc. (SECOR) in 2004 reported that impacts to soil from various chlorinated solvents, including tetrachloroethylene (PCE), were detected in 1990 in an unpaved strip of land between the northern Property boundary and the existing building awning/canopy. As a result, a remedial excavation was performed in this area by Pomona Valley Environmental (PVE) in 1991. The excavation was reportedly performed and subsequently summarized in a closure report prepared by PVE. The report indicated that 397.4 tons of soil was hauled off-site and reused in paving materials at a Kmart parking lot. Six confirmation samples collected from within the resulting excavation reported mostly non-detect levels of total petroleum hydrocarbons (TPH) and volatile organic compounds (VOCs), except for the sample collected from the south wall below a trench that led into the unpaved area (near recent boring location HA-2). That south wall sample below the trench reported PCE and trichloroethylene (TCE) in soil at 0.130 and 0.065 milligrams per kilograms (mg/kg), respectively. The results suggested that the soil impacts may have extended below the concrete slab of the rear truck maintenance area that remains at the Property today. The closure report prepared by PVE recommended no further assessment or remedial action in this area.

As part of a Phase II ESA performed by SECOR in 2004, additional assessment was performed in and around the excavation area due to the limited detection capabilities of laboratories in 1991 and because it was SECOR's position that the cleanup levels used by PVE were too high given a proposed use of the Property as residential. SECOR's Phase II ESA included soil borings in the excavation area, south of the excavation area (in the covered truck maintenance area), former clarifier and solvent wash area, flammables storage closet, pallet storage area, and an evaluation of pesticides in soil related to former agricultural uses that occurred at the Property prior to the existing development. The results of SECOR's Phase II ESA reported PCE, TCE, and xylenes in soil at the backfilled excavation area and near the flammables storage closet, but at concentrations well below United States Environmental Protection Agency (US EPA) Preliminary Remediation Goals (PRGs) – the agency thresholds at the time of the assessment. Pesticides were detected in only one sample in the northern portion of the Property but at concentrations well below both past and present-day screening levels.

Based on an online review of the Property on the ENVIROSTOR website, the Department Toxic Substances Control (DTSC) opened a case file for the Property in 2005 and subsequently referred it to the County of Los Angeles Fire Department, Site Mitigation Unit (CLAFD SMU). In 2007, an additional Phase II ESA was performed by Terracon with oversight from the CLAFD. The assessment included Site-wide sampling on a 100-foot grid for VOCs in soil vapor and shallow soil sampling for California Code of Regulations (CCR), Title 22 metals and organochlorine pesticides. The soil vapor results from this assessment are discussed in Section 2.1.2. Organochlorine pesticide and metals concentrations from this assessment were reported below residential use criteria.

As part of a separate property assessment for potential Property acquisition and redevelopment as residential use, Stantec performed additional assessments in April and May of 2016 for a prospective purchaser. These assessments included a total of seventeen (17) soil vapor probes – some at 5 feet only, and some at 5 feet and 15 feet bgs. Soil samples were collected at boring locations SV-11 through SV-17. No VOCs were detected in any soil samples collected during this investigation (*i.e.* results were "non-detect").

In October 2018, Stantec advanced four direct-push soil borings (SV-18 through SV-21/HP-4) and two shallow hand auger locations (HA-1 and HA-2) within the property, and three off-site soil borings HP-5, SV-22/HP-6, and SV-23/HP-7 at the easterly-adjacent property addressed as 1487 West 178th Street. Soil borings HA-1 and HA-2 were advanced in the northern portion of the Property near the outfall of the of the two trenches observed by Stantec during the assessment. Soil borings SV-18 through SV-20 were located within the Site building, and soil boring SV-21/HP-4 was located in the northern portion of the Site near the paper storage area. Select soil samples collected from on-site borings were analyzed for TPH, VOCs, and metals. Various VOCs were detected at locations from HA-2 at five feet, while TPHd and TPHo were detected at 18,000 and 23,000 mg/kg, respectively. The one-foot soil sample collected from HA-1 reported no VOCs, and TPHd and TPHo at 420 and 1,200 mg/kg, respectively. All metals concentrations reported from these locations were within typical background levels, and not above typical residential screening levels.

A Vapor Intrusion Human Health Risk Assessment (VIHHRA) report was prepared for the Property in November 2018. That report analyzed soil vapor data collected at the Property from April 2016 through October 2018. That soil vapor data was used to evaluate a reasonable maximum exposure (RME) scenario on a point-by-point bases under the proposed future Property use as residential. The soil vapor dataset is provided in Table 3. Six VOCs were detected at least once above the residential screening levels derived by dividing DTSC and California Regional Water Quality Control Board, San Francisco Bay Region (RWQCBSFBR) residential air screening levels by the currently proposed default soil vapor to indoor air attenuation factor of 0.03.

Assuming slab-on-grade construction and using model central tendency values for Q_{soil} and $Q_{building}$, the cumulative cancer risk (CR) estimates for samples collected at five-feet bgs ranged from 2.3E-07 at SV-4 to 6.5E-05 at SV-13. Additionally, the cumulative CR estimates for samples collected at fifteen-feet bgs ranged from 1.3E-07 at SV-19 to 1.1E-05 at SV-12. No five- or fifteen-foot samples were estimated to be at or above the upper bound of the risk range (1E-04). Note that PCE was the primary contributor to the CR estimates. Although concentrations of COPCs are generally much higher at the fifteen-foot depth interval, the differences result from model predicted (and confirmed through empirical measurement) attenuation of COPCs from a greater depth. The highest estimated potential cancer risks are associated with soil vapor samples collected at and near the northeast corner of the existing warehouse building, extending to the eastern property line.

In March 2019, Stantec advanced nine soil borings (SB-1 through SB-9) in the northern portion of the Property. Shallow soil samples from SB-1 through SB-9 were analyzed for TPH and VOCs to characterize the lateral and vertical extent of possible petroleum impacts in the northern portion of the Site. Low concentrations of TPHg were detected in the one-foot and three-foot soil samples collected from boring SB-2, located at the outfall of a concrete-lined drain. The peak concentration of TPHg was reported at 8.4 mg/kg in the one-foot sample. No other detections of TPHg were reported from any other soil samples collected during this investigation. Elevated levels of TPHd and TPHo were reported in shallow soils collected from SB-1, SB-2, and SB-3. Peak concentrations of TPHd and TPHo were reported at 2,800 mg/kg from the five-foot soil sample collected from boring SB-2, with cumulative vales of TPHd and TPHo in this sample reported at 5,600 mg/kg. All soil samples collected during this investigation with detections of TPHd and TPHo have cumulative reported values exceeding the CLAFD cleanup goal of 1,000 mg/kg.

Trace concentrations of certain fuel related VOCs were detected in the 1-foot and 5-foot bgs samples collected from SB-2. However, all of the detected VOC compounds were well below the US EPA RSLs for residential use (note: a groundwater grab sample was collected at SB-2 – see Section 2.1.3). No PCE or breakdown products were detected above laboratory reporting limits in any of the samples. PCBs were not detected in the shallow soil sample collected at SB-2 which was selected for analysis since any PCB impacts would be expected from a surficial release where the highest TPH was historically detected. However, no PCBs

were detected above laboratory reporting limits. Shallow soil samples collected from 1-foot bgs from SB-1 and SB-3, in the unpaved strip of land north of the automotive repair area, reported metals concentration to be within typical naturally occurring background levels for California.

Past Soil Vapor Assessments

Based on an online review of the Property on the ENVIROSTOR website, the Department Toxic Substances Control (DTSC) opened a case file for the Property in 2005 and subsequently referred it to the CLAFD SMU. In 2007, an additional Phase II ESA was performed by Terracon with oversight from the CLAFD. The assessment included Site-wide sampling on a 100-foot grid for VOCs in soil vapor and shallow soil sampling for California Code of Regulations (CCR), Title 22 metals and organochlorine pesticides. Terracon's assessment identified limited chlorinated volatile organic compounds (CVOCs) impacts to soil vapor on the Property and no organochlorine pesticide or metals impacts to soil above typical agency thresholds or screening levels. The detected CVOCs, namely PCE and TCE, were reported at concentrations below commercial soil screening levels and human health risk screening criteria with regard to potential vapor intrusion from the subsurface to indoor air. The detected concentrations, however, were slightly above residential use human health risk screening criteria at several locations. As a result, the CLAFD issued a closure letter for the Site on May 17, 2007 under the condition that the Property remained as commercial use.

As part of a separate Property assessment for potential acquisition and redevelopment as residential use, Stantec performed additional assessments in April and May of 2016 for a prospective purchaser. These assessments included a total of seventeen (17) soil vapor probes – some at 5 feet only, and some at 5 feet and 15 feet bgs. With the exception of two sample locations, all of the 5-foot bgs soil vapor samples reported PCE above the DTSC Human and Ecological Risk Office (HERO), Note 3 residential soil screening levels and reached a maximum concentration of 68,000 micrograms per cubic meter (µg/m^3) in sample SV-13. This data suggests that there is a Property source in the vicinity of SV-13, however the actual source was not identified by that assessment.

In October 2018, Stantec advanced four direct-push soil borings (SV-18 through SV-21/HP-4) and two shallow hand auger locations (HA-1 and HA-2) within the property, and three off-site soil borings HP-5, SV-22/HP-6, and SV-23/HP-7 at the easterly-adjacent property addressed as 1487 West 178th Street. Soil vapor samples were collected from all locations advanced during this assessment with the exception of HA-1, HA-2, and HP-5. Various VOCs were detected in soil vapor samples collected on- and off-site. Namely, PCE, benzene, bromodichloromethane, and chloroform was reported in off-site soil vapor samples above commercial screening levels. These compounds, and additionally TCE, were also detected in select on-site soil vapor samples at concentrations exceeding commercial screening levels. It is understood that chloroform is a known lab contaminant, and also present in tap water as a disinfectant, and has been identified as likely source for the chloroform detections in soil vapor during this assessment.

Past Groundwater Assessments

As part of ongoing due diligence investigations, Stantec collected three grab groundwater samples from beneath the Property in June of 2016. Impacts of PCE in groundwater were detected at peak concentrations of 70 micrograms per liter (µg/L) in boring HP-1, in the area of the peak soil vapor concentrations in the northeast corner of the Property. At the south end of the Property directly across the street and down gradient from Bee Chemical, PCE was detected at 6.8 µg/L and 1,1-dichloroethene (1,1-DCE) was detected at 100 µg/L.

In December of 2017, the owner of the Property engaged Stantec to install and sample three groundwater monitoring wells to further evaluate groundwater quality beneath the Property, and to investigate whether the

VOC concentrations detected in the groundwater grab sample from the southeast corner of the Property was a result of migration from the Bee Chemical groundwater plume known to be off-site to the south of 178th Street. The groundwater sampling results indicated PCE concentrations in groundwater from well W-1, located in the northeast corner of the Property near former grab groundwater sample location HP-1. Similar to the 2016 groundwater sampling, the data collected from W-3, located in the southeast corner of the Property, hydraulically down/cross-gradient from the former Bee Chemical plant, reported additional chemicals TCE and DCE, indicating a distinctly different chemical make up between wells W-1 and W-3. Groundwater samples collected from well W-2, installed in the eastern portion of the Property between these two wells, was non-detect for all VOCs. Therefore, the data collected from this event indicated two separate and distinct groundwater plumes – one coming from the off-site property (former Bee Chemical) to the south of 178th Street and one sourced from a release in the northeast corner of the Property.

Based on this interpretation, Stantec recommended to the CLAFD that these two plumes be addressed separately. It was requested that the CLAFD request further definition of the plume migrating from the offsite Bee Chemical property to be completed by that company and not by Opfiniti, LLC.

To further assess the Property, Stantec advanced four direct-push soil borings (SV-18 through SV-21/HP-4) and two shallow hand auger locations (HA-1 and HA-2) within the property, and three off-site soil borings HP-5, SV-22/HP-6, and SV-23/HP-7 at the easterly-adjacent property addressed as 1487 West 178th Street in October of 2018. The soil and soil vapor results of this investigation are discussed in Sections 2.1.1 and 2.1.2, respectively. Grab groundwater samples were collected from borings SV-21/HP-4 on-site, and borings SV-22/HP-6, SV-23/HP-7, and HP-5 located off-site. Groundwater samples collected from on- and off-site reported TPHg, TPHd, and TPHo at concentrations below California maximum contaminant levels (MCLs). The VOCs PCE, TCE, and c-1,2-DCE were detected in off-site groundwater samples at concentrations exceeding MCLs. The VOCs PCE, TCE, and other degradation products were detected in on-site groundwater samples at concentrations exceeding MCLs.

It was determined in correspondence with CLAFD that an additional well needed to be installed onsite to evaluate Site-specific groundwater flow direction. Therefore, a fourth well, W-4, was installed on the Property in March, 2019. Additionally, three off-site grab groundwater samples (HP-8 through HP-10) were collected on the easterly-adjacent property, and a single grab groundwater sample (SB-5-GW) was collected at the Property during this investigation Onsite and offsite sampling events conducted to-date indicate that groundwater flow direction beneath the Site is to the east. Analytical results of offsite groundwater sampling show that the plume, with VOC concentrations above MCLs for drinking water, extends less than 300 feet east of the Property boundary.

Based on a meeting between Stantec, the CLAFD, and Opfiniti, LLC on May 8, 2019 it was concluded that the extent of the groundwater impacts have been reasonably defined onsite and offsite down-gradient of the source in the northeast corner. It was also concluded that additional steps could now be taken toward the proposed redevelopment of the Property through the submittal of this Remedial Action Plan (RAP) to address TPH soil impacts onsite and mitigation of the soil vapor concentrations using vapor barriers with passive venting systems. Additionally, prior to the submittal of this RAP, CLAFD requested that a final groundwater monitoring event be performed.

Second quarter 2019 groundwater monitoring was performed at the Property on May 14, 2019. Groundwater flow direction during this sampling event was calculated to be east-southeast at a gradient of 0.0025 feet per foot (ft/ft). PCE and TCE were reported at 8.7 and 1.9 µg/L, respectively, in well W-1, located in the northeast portion of the Property. The PCE concentration exceeds the California Maximum Contaminant Level (MCL) for

this compound of 5.0 µg/L. Well W-2 reported levels of PCE and TCE at 4.7 and 1.7 µg/L, respectively. Well W-3 reported PCE at 9.4 ug/L and detected of various other compounds at trace concentrations. PCE was reported in well W-4 at 0.89 µg/L. No other VOCS were reported above laboratory reporting limits in well W-4.

POTENTIAL HAZARDS

Chemical:

Based on prior assessments, the potential chemical hazards at this site include:

- Petroleum hydrocarbons
- Volatile Organic Compounds

Physical:

Other potential site specific hazards may include:

- Wind/debris
  - Should weather conditions change and become a hindrance to performing the task safely, stop work and contact the project manager.
- Heat
  - Be sure to drink plenty of liquids, be sure your co-worker is drinking enough liquids. Be sure to take breaks to cool down.
- Trips/falls
  - To protect yourself, always look before you step. Take care walking and standing working in all areas of the site.
- Noise
  - The Site is over Highway lanes – wear the proper hearing protection if found to be necessary.
- PPE
  - Wear the proper PPE for the tasks involved – minimum: gloves, hard hat, safety glasses, steel toed boots, high-viz safety vest, and when appropriate, a dust mask (see below). Additional safety wear may need to be used if site conditions change.

HAZARD MITIGATION

Attachment A provides information for on avoiding, monitoring and mitigating chemical and physical hazards, including general hazards that can potentially be encountered on any project site (earthquakes, bees, etc). As described, proper hygiene and personal protective equipment (PPE) shall be required including,

- Washing hands before eating, smoking and always after sample collection is completed, and
- Donning hard hats, reflective high visibility vests, safety toed shoes, and disposable sampling gloves.

Protect yourself, always look before you step and wear proper PPE for the task being performed.

6.0 Potential Airborne Concerns and Air Monitoring Action Levels

An air purifying respirator or masking with high-efficiency particulate air (HEPA) filtering capability shall be used while sampling suspect ACM materials. The following is a list of chemicals that may be present in the work area but are not planned to be monitored on a continual basis given that no soil disturbance is planned.

Potential Airborne Concerns						
Chemical (Or Class)	**OSHA PEL ACGIH TLV**	**Other Pertinent Limits**	**Warning Properties**	**Routes of Exposure or Irritation**	**Acute Health Effects**	**Chronic Health Effects/Target Organs**
TPH_d	• FedOSHA PEL 15 mg/m³ (total elemental carbón) • FedOSHA PEL 0.2 mg/m³ (total coal tar volatiles)		Yellowish to light brown liquid	Inhalation, skin absorption, ingestion, skin and/or eye contact.	Nausea, eye irritation, increased blood pressure, headache, light-headedness, loss of appetite, poor coordination, and difficulty concentrating. [Potential occupational carcinogen	Kidneys, circulatory system
TPHg	• CalOSHA PEL 300 ppm • FedOSHA PEL None Established • No REL Established • TLV 300 ppm	• CalOSHA STEL 500 ppm ACGIH STEL 500 ppm	Clear liquid with a characteristic odor	Inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, skin, mucous membrane; dermatitis; headache, fatigue, blurred vision, dizziness, slurred speech, confusion, convulsions; chemical pneumonia (aspiration liquid); possible liver, kidney damage; [Potential occupational carcinogen]	Eyes, skin, respiratory system, central nervous system, liver, kidneys
TPH_o	• FedOSHA PEL 5mg/m³ • TLV 5mg/m³	• None	Brown-to-black, oily liquid (used) Amber colored liquid with petroleum odor (new)	Inhalation, skin absorption, ingestion, skin and/or eye contact	Slightly irritated noses, throats, and eyes, diarrhea, anemia and tremors, nausea. Irritated skin.	Respiratory system, skin (epidermis).

Potential Airborne Concerns						
Chemical (Or Class)	**OSHA PEL ACGIH TLV**	**Other Pertinent Limits**	**Warning Properties**	**Routes of Exposure or Irritation**	**Acute Health Effects**	**Chronic Health Effects/Target Organs**
Benzene (1910.1028)	• Cal/FedOSHA PEL 1.0 ppm • TLV 0.5 ppm (skin)	• Cal/FedOSHA STEL 5.0 ppm • NIOSH REL 0.1 ppm • IDLH 500 ppm	Characteristic benzene odor	Inhalation, dermal, ingestion, eyes	Skin (dermatitis), eye, respiratory tract irritant, headache, dizziness, nausea.	Carcinogen, CNS, eye damage, bone marrow, blood, skin.
Toluene	• CalOSHA PEL 50 ppm • FedOSHA PEL 200 ppm • TLV 50 ppm	• NIOSH REL 100 ppm NIOSH STEL 150 ppm • IDLH 500 ppm FedOSHA C 300 ppm • CalOSHA C 500 ppm • CalOSHA STEL 150 ppm	Sweet, pungent, aromatic odor	Inhalation, dermal, ingestion, eyes	Skin (dermatitis) eye, respiratory tract irritant, headache, dizziness, weakness, and fatigue.	CNS, liver, kidneys, skin.
Ethylbenzene	• Cal/FedOSHA PEL 100 ppm • TLV 100 ppm	• FedOSHA STEL 125 ppm • TLV STEL 125 ppm • NIOSH REL 100 ppm; • NIOSH STEL 125 ppm • IDLH 800 ppm • CalOSHA STEL 125 ppm	Sweet, pungent aromatic odor	Inhalation, dermal, ingestion, eyes	Skin/eye/mucous membrane irritant, headache, dizziness, drowsiness	Eyes, respiratory tract, skin, CNS, blood, kidneys, liver.
Total Xylenes	• Cal/FedOSHA PEL 100 ppm • TLV 100 ppm	• TLV STEL 150 ppm • NIOSH REL 100 ppm • NIOSH STEL 100 ppm • IDLH 900 ppm • CalOSHA C 300 ppm • CalOSHA STEL 150 ppm	Pungent, aromatic odor	Inhalation, dermal, ingestion, eyes	Throat and skin irritant (dermatitis), headache, nausea, drowsiness, fatigue	CNS, liver, kidneys, skin, gastrointestinal damage, eye damage
Tetrachloroethylene (PCE)	• Cal/FedOSHA PEL 1.0 ppm • TLV 0.5 ppm (skin)	• Cal/FedOSHA STEL 5.0 ppm • NIOSH REL 0.1 ppm • IDLH 500 ppm	Characteristic CVOC odor	Inhalation, dermal, ingestion, eyes	Skin (dermatitis), eye, respiratory tract irritant, headache, dizziness, nausea.	Carcinogen, CNS, eye damage, bone marrow, blood, skin.

Potential Airborne Concerns						
Chemical (Or Class)	**OSHA PEL ACGIH TLV**	**Other Pertinent Limits**	**Warning Properties**	**Routes of Exposure or Irritation**	**Acute Health Effects**	**Chronic Health Effects/Target Organs**
Methyl Tertiary Butyl Ether (MTBE)	• CalOSHA PEL 40 ppm • FedOSHA PEL None Established • TLV 540 ppm	• AIHA WEEL 100 ppm.	Extremely flammable liquid with offensive odor	Inhalation, dermal, ingestion	Irritated nose, throat, headache, dizziness, nausea, sleepiness	CNS, liver, kidney, gastrointestinal damage, potential carcinogen
Tert Butyl Alcohol TBA	• Cal/FedOSHA PEL 100 ppm • TLV 100 ppm •	• Cal/FedOSHA STEL 150 ppm • • TLV STEL 150 ppm	Colorless solid or liquid with a camphor like odor	Inhalation, ingestion, absorption through the skin or eye	Irritation to eyes, skin, respiratory tract, mucous membranes.	Eyes, skin, respiratory tract and mucous membranes
Diisopropyl Ether (DIPE) (Isopropyl Ether)	• CalOSHA PEL 250 ppm • FedOSHA PEL 500 ppm • TLV 250 ppm	• NIOSH REL 500 ppm • TLV STEL 310 ppm • IDLH 1400 ppm	Colorless liquid with a sharp, sweet, ether-like odor.	Inhalation, ingestion, skin and/or eye contact	Irritation eyes, skin, nose; respiratory discomfort; dermatitis; in animals: drowsiness, dizziness, unconsciousness, narcosis	Eyes, skin, respiratory system, central nervous system
Ethyl Tertiary Butyl Ether ETBE	• Cal/FedOSHA PEL None established • TLV 25 ppm	• NIOSH REL None established	Extremely flammable, clear, colorless liquid, week ether-like odor (13 ppm odor threshold)	Inhalation, ingestion, skin absorption (slight) eyes	Irritation to the skin or eyes, respiratory tract, coughing, shortness of breath, headaches, dizziness, drowsiness, narcosis, physical and mental impairment, unconsciousness, central nervous system effects vomiting, mild to severe pulmonary injury.	Skin, eyes, respiratory tract, central nervous system, potential carcinogen, potential mutagen.
Tertiary Amyl Methyl Ether TAME	• Cal/FedOSHA PEL None established • TLV 20 ppm	• NIOSH REL None established	Extremely flammable, clear, colorless liquid with a weak ether like odor	Inhalation, ingestion, skin absorption, eyes	Irritation to the eyes, skin, respiratory tract, gastro intestinal tract, nausea, vomiting and diarrhea.	Nervous system reproduction system, potential carcinogen, potential mutigen.

Abbreviation	Explanation
PEL	Permissible Exposure Limit set by OSHA (8 hour time-weighted average/TWA)
REL	Recommended Exposure Limit (set by National Institute of Occupational Safety & Health-NIOSH)
C	Ceiling Limit (airborne concentration not to be exceeded for any period of time)
STEL	15-minute Short Term Exposure Limit (unless other time period specifically identified)
IDLH	Immediately Dangerous to Life or Health
TWA	8 hour time-weighted average (PEL, TLV, REL)

TLV	Threshold Limit Value set by the American Conference of Governmental Industrial Hygienists (ACGIH) 8 hr. TWA
AIHA WEEL	Workplace Environmental Exposure Level (set by the AIHA-American Industrial Hygiene Association)
SKIN	Skin Absorption is significant contributor to total exposure
NIOSH	National Institute of Occupation Safety and Health
CNS	Central Nervous System
CVS	Cardiovascular System

7.0 Site-Specific Control and Safety Procedures

Procedures described in this section are site specific procedures intended to aid Stantec personnel in mitigating site risks/hazards.

HASP Inspections
The site-specific HASP should be inspected in the field by the SHSO or other Stantec personnel to determine the effectiveness of the plan. Any deficiencies should be corrected and changes will be recorded on the HASP Modification Log.

Job Safety Analysis
Job Safety Analyses (JSAs) will be prepared or revised prior to mobilizing to the field. Applicable JSAs will be reviewed in detail on a daily basis by all affected on-site workers and/or visitors. Any revisions to the JSAs will be hand written into the JSAs, forwarded to the project manager, and communicated to during Daily Production Health and Safety Briefings. JSAs are located in Attachment B.

Permits
None required

Public Questions and Press
Questions about the site posed by neighbors, the press, or other interested parties will be directed to the **Opfiniti, LLC Project Manager Nick Sim at 310-878-9800.**

Work Hours
Work on this project will be conducted between the hours of 0700 to 1800.

Waste Management

A. Waste Generation (Type(s)/Quantities Expected): Unknown

Anticipated (YES/NO): ***NO***

Types: __ Liquid _Solid __ Sludge ____ Other (describe) _____

Quantity (Expected Volume): NA

B. Characteristics (Expected): ***NA***

Corrosive _____ Flammable/Combustible ____ Radioactive _____ Toxic ___

Reactive _____

Other (specify) _____

C. Packaging Requirements for Waste Material (Expected):

- DOT-approved Drums X
- Baker Tanks (possibly tankers if trucked off-site) _____
- Lined Waste Bins ____
- Temporary Stockpile _____

D. Disposal and/or Treatment Methods Proposed (Expected): ***NA***

All drum waste will be labeled, sampled, and analyzed for all applicable chemicals of potential concern and physical properties (e.g., pH, vapor pressure, etc.) to ensure proper waste characterization. Results of analysis will determine how and where impacted materials may be disposed. A licensed hazardous waste disposal company will be responsible for the categorization and transportation of all solid waste generated on this Site, if any. All materials will be disposed of or treated in accordance with federal, state and local regulations as selected and arranged by Stantec.

8.0 Journey Management Plan

PURPOSE

The purpose of this Journey Management Procedure (JMP) is to prevent losses associated with motor vehicle related incidents including: injuries to drivers, passengers and pedestrians, damage to motor vehicles and damage to third party property. By communicating potential safety risks before mobilizing to a site, a motor vehicle operator will be able to prepare for and avoid potential hazards.

These JMPs apply to all vehicles assigned for the support of site operations, including company owned and personal use vehicles. This JMP does not apply to vendors (such as UPS, FedEx. etc.) not under contract with Stantec or their supplier. This JMP does not address hazards that are external to the site access/egress and on the onsite project operations.

Site Specific JMP

General Vehicle Hazards

Highways approaching/near the project site are typically congested – allow extra time and space, slow down, and watch for vehicles.

Site Specific Potential Vehicle Hazards

Heat, traffic, winds. Watch for debris along the roadway. Highway adjacent – watch for traffic. If parking along the shoulder, watch for traffic before exiting vehicle.

Directions: Access to the Site

Access to the site will be provided by the client's representative on the morning of the scheduled field work.

Directions: Leaving the Site

Site Specific Restrictions and Controls

None noted

This Journey Management Plan is approved for use:

From: 6/21/2019	Time: 0500	To: TBD (completion of scope of work)	Time: 1900

Journey Management Plan Maintained by

Field Manager : Mitchell Bohn	Cell: 909-362-1346
Josh Sargent	909-289-7111

Contract Project Manager: Kyle Emerson	Cell: 909-255-8220

Should an incident occur, refer to Attachment C, Section 1.4 and Attachment 4 for Stantec's procedures of notifications and reporting.

Stantec

1. Start out going **west** on Business Center Dr toward Corporate Dr.

Then 0.21 miles — 0.21 total miles

2. Turn **right** onto Mountain View Ave.

Then 0.15 miles — 0.36 total miles

3. Merge onto I-10 W via the ramp on the **left** toward **Los Angeles**.

If you reach Coulston St you've gone a little too far.

Then 2.42 miles — 2.78 total miles

4. Merge onto I-215 S/Riverside Fwy S via EXIT 72 toward **Riverside**.

Then 6.22 miles — 9.00 total miles

5. Stay **straight** to go onto CA-91 W/Riverside Fwy S. Continue to follow CA-91 W.

Then 60.02 miles — 69.02 total miles

6. Turn **left** onto Normandie Ave.

Normandie Ave is 0.4 miles past S Vermont Ave.

If you are on CA-91 and reach W Artesia Blvd you've gone about 0.1 miles too far.

Then 0.26 miles — 69.28 total miles

7. Turn **right** onto W 178th St.

W 178th St is just past W 177th St.

If you reach W 179th St you've gone a little too far.

Then 0.26 miles — 69.54 total miles

8. 1515 W 178th St, Gardena, CA 90248-3203, 1515 W 178TH ST is on the **left**.

Your destination is just past Evelyn Ave.

Stantec

CHANGES TO THE JOURNEY MANAGEMENT PLAN

Date	Name	Change/Comment (be specific)

Attachment A

Training Certificates

Stantec

Certificate of Completion

This certifies that

Joshua Sargent

has successfully completed

8 Hour HAZWOPER Refresher Training

Refresher certification does NOT necessarily indicate initial 24 or 40 Hour HAZWOPER certification

In Accordance w/Federal OSHA Regulation 29 CFR 1910.120(e) & (p)

And all State OSHA/EPA Regulations as well including 29 CFR 1926.65 for Construction.

This course (Version 1) is approved for 8 Contact Hours (0.8 CEUs) of continuing education per the California Department of Public Health for Registered Environmental Health Specialist (REHS) (Accreditation # 044).

Julius P. Griggs
Julius P. Griggs
Instructor #892

1810135148077
Certificate Number

10/13/2018
Issue Date

SAFETY UNLIMITED, Inc.
OSHA Compliant Safety Training Since 1993

2139 Tapo St., Suite 228 Simi Valley,CA 93063
(888) 309-SAFE (7233) or 805 306-8027
https://www.safetyunlimited.com

Scan this code or visit www.safetyunlimited.com/v to verify certificate.
Proof of initial certification and subsequent refresher training is NOT required to take refresher training

Stantec

Certificate of Completion

This certifies that

Nicholas Drachenberg

has successfully completed

8 Hour HAZWOPER Refresher Training

Refresher certification does NOT necessarily indicate initial 24 or 40 Hour HAZWOPER certification

In Accordance w/Federal OSHA Regulation 29 CFR 1910.120(e) & (p)

And all State OSHA/EPA Regulations as well including 29 CFR 1926.65 for Construction.

This course (Version 1) is approved for 8 Contact Hours (0.8 CEUs) of continuing education per the California Department of Public Health for Registered Environmental Health Specialist (REHS) (Accreditation # 044).

Julius P. Griggs	1809275254236	9/27/2018
Julius P. Griggs Instructor #892	Certificate Number	Issue Date

SAFETY UNLIMITED, Inc.
OSHA Compliant Safety Training Since 1993

2139 Tapo St., Suite 228 Simi Valley,CA 93063
(888) 309-SAFE (7233) or 805 306-8027
https://www.safetyunlimited.com

Scan this code or visit www.safetyunlimited.com/v to verify certificate.

Proof of initial certification and subsequent refresher training is NOT required to take refresher training

Stantec

Certificate of Completion

This certifies that

Dion Monge

has successfully completed

8 Hour HAZWOPER Refresher Training

Refresher certification does NOT necessarily indicate initial 24 or 40 Hour HAZWOPER certification

In Accordance w/Federal OSHA Regulation 29 CFR 1910.120(e) & (p)

And all State OSHA/EPA Regulations as well including 29 CFR 1926.65 for Construction.

This course (Version 1) is approved for 8 Contact Hours (0.8 CEUs) of continuing education per the California Department of Public Health for Registered Environmental Health Specialist (REHS) (Accreditation # 044).

Julius P. Griggs	180718530001	7/18/2018
Julius P. Griggs Instructor #892	Certificate Number	Issue Date

SAFETY UNLIMITED, Inc.
OSHA Compliant Safety Training Since 1993

2139 Tapo St., Suite 228 Simi Valley,CA 93063
(888) 309-SAFE (7233) or 805 306-8027
https://www.safetyunlimited.com

Scan this code or visit www.safetyunlimited.com/v to verify certificate.

Proof of initial certification and subsequent refresher training is NOT required to take refresher training

Attachment B

Job Safety Analyses

1. Driving to/from the job Site (with no trailer) Job Safety Analysis (JSA)

POC	Development Team	Position/Title	Date	Reviewed By	Position/Title
X	Michael Philipp	West Region Health and Safety Manager	10/04/2006		
			05/27/2008	Michael Philipp	West Region Health and Safety Manager
		Site specific edits to this JSA were made by	03/5/2018	Dion Monge	HASP Originator
POC is the JSA development 'Point Of Contact'					

Field staff must review job-specific work plan and coordinate with project manager to verify that all up-front logistics are completed prior to starting work including, but not limited to, permitting, access agreements, and notification to required contacts (e.g. site managers, inspectors, clients, subcontractors, etc.). A tailgate safety meeting must be performed and documented at the beginning of each workday. Last-Minute Risk Assessment (LMRA) procedures must be used throughout the project. Weather conditions (heat, cold, rain, and lightening) must also be considered. Each employee is empowered, expected, and has the responsibility to stop the work performed by him/herself or another co-worker if the working conditions or behaviors are considered unsafe. All employees should act proactively to identify and mitigate hazards to the safest extent of their ability. Use Stop Work Authority as needed.

Job Steps	Personal Protective Equipment	Potential Hazard	Critical Actions
Perform LMRA procedures.	Wear reflective vest for traffic, steel toed shoes, long sleeve shirt, hardhat, safety glasses with side shields, and high visibility work gloves.	Slip/trip/falls, struck by traffic	● Assess the potential hazards. Analyze how to reduce the risk. – STANTEC_____. ● Review JSA – STANTEC_____.
Verify Journey Management Plan is complete and current		Unexpected traffic detours	● Assure directions are available and understood prior to commencing travel – STANTEC_____. ● Pull the vehicle into a safe location if additional directions must be confirmed – STANTEC_____. ● Increase following distance to allow extra time to stop if you are in

Field staff must review job-specific work plan and coordinate with project manager to verify that all up-front logistics are completed prior to starting work including, but not limited to, permitting, access agreements, and notification to required contacts (e.g. site managers, inspectors, clients, subcontractors, etc.). A tailgate safety meeting must be performed and documented at the beginning of each workday. Last-Minute Risk Assessment (LMRA) procedures must be used throughout the project. Weather conditions (heat, cold, rain, and lightening) must also be considered. Each employee is empowered, expected, and has the responsibility to stop the work performed by him/herself or another co-worker if the working conditions or behaviors are considered unsafe. All employees should act proactively to identify and mitigate hazards to the safest extent of their ability. Use Stop Work Authority as needed.

Job Steps	Personal Protective Equipment	Potential Hazard	Critical Actions
			unfamiliar territory - STANTEC_____.
Verify a Vehicle Collision Kit, a 3-lb type ABC fire extinguisher, and other as needed emergency equipment is in the vehicle.	Safety vest, high visibility work gloves, steel-toe/shank boots, safety glasses, long-sleeved shirt	Struck by another vehicle, pinch points, falling equipment	• Verify prepared field kit is in the vehicle. Inventory of the kit should include first aid kit, blood borne pathogen kit, fire extinguisher, collision kit, flashlight, etc. – STANTEC_____. • For cold weather areas the inventory should also include a bag of sand, a bag of salt, gloves, wool socks, wool caps, wool blankets, tire chains, small shovel and matches – STANTEC_____.
Perform perimeter walk around of vehicle for damage or unusual conditions, and complete the SWP-124a - Vehicle Pre-Use Checklist.	Safety vest, high visibility work gloves, steel-toe/shank boots, safety glasses, long-sleeved shirt	Getting hit by a car, pinch points, slip/trip/fall, chemical contacts (grease or oil from car), overheated engine or break-down due to lack of critical fluids.	• Complete the SWP-124a - Vehicle Pre-Use Checklist prior to travel – STANTEC_____ • Wear safety vest and watch for cars during walk around– STANTEC_____. • Address all questionable items prior to departure – STANTEC_____. • Assure tires are properly inflated – STANTEC_____. • Assure there are no cuts or bulges in the sidewalls – STANTEC_____. • Assure windshield and window glass is clean and not cracked or crazed – STANTEC_____. • Lift wiper arms and check wiper blades for damage or deterioration – STANTEC_____. • Check behind vehicle for obstructions – STANTEC_____. • Check under vehicle engine for evidence of fluid leaks – STANTEC_____. • Check fluid levels– STANTEC_____. • Wear Nitrile gloves when checking under hood – STANTEC_____. • Verify all traffic control equipment is removed/safely stowed away – STANTEC_____. • Look for and identify possible slip, trip, fall, and pinch point hazards –

Field staff must review job-specific work plan and coordinate with project manager to verify that all up-front logistics are completed prior to starting work including, but not limited to, permitting, access agreements, and notification to required contacts (e.g. site managers, inspectors, clients, subcontractors, etc.). A tailgate safety meeting must be performed and documented at the beginning of each workday. Last-Minute Risk Assessment (LMRA) procedures must be used throughout the project. Weather conditions (heat, cold, rain, and lightening) must also be considered. Each employee is empowered, expected, and has the responsibility to stop the work performed by him/herself or another co-worker if the working conditions or behaviors are considered unsafe. All employees should act proactively to identify and mitigate hazards to the safest extent of their ability. Use Stop Work Authority as needed.

Job Steps	Personal Protective Equipment	Potential Hazard	Critical Actions
			STANTEC_____. ● Do not touch metal with moist or wet skin – STANTEC_____. ● Scrape windows, front and rear windshields – STANTEC_____.
Enter and prepare to start vehicle	**SEAT BELT**, sunglasses if needed	Back or body strain, slip/trip/fall, blind spots, inability to signal intentions, streaking windshield, impaired vision.	● Be aware of footing, handholds, and head room when entering vehicle – STANTEC_____. ● Adjust seat so back is fully supported, upper arms close to body, and pedals within easy reach – STANTEC_____. ● Lower steering wheel so hands are below shoulders and shoulders are relaxed – STANTEC_____. ● Check mirror adjustments each time vehicle is re-started – STANTEC_____. ● Locate and test operations of front and rear turn signals, headlamps, wipers, and washer fluid – STANTEC_____. ● Verify proper operation of climate controls – STANTEC_____. ● Fasten seat belt – STANTEC_____. ● Lock doors – STANTEC_____. ● Driver's cell phone shall be turned off – STANTEC_____. ● Turn on headlights if vehicle is not equipped with day-time running lights – STANTEC_____.

Field staff must review job-specific work plan and coordinate with project manager to verify that all up-front logistics are completed prior to starting work including, but not limited to, permitting, access agreements, and notification to required contacts (e.g. site managers, inspectors, clients, subcontractors, etc.). A tailgate safety meeting must be performed and documented at the beginning of each workday. Last-Minute Risk Assessment (LMRA) procedures must be used throughout the project. Weather conditions (heat, cold, rain, and lightening) must also be considered. Each employee is empowered, expected, and has the responsibility to stop the work performed by him/herself or another co-worker if the working conditions or behaviors are considered unsafe. All employees should act proactively to identify and mitigate hazards to the safest extent of their ability. Use Stop Work Authority as needed.

Job Steps	Personal Protective Equipment	Potential Hazard	Critical Actions
Start engine and let vehicle warm up.	**SEAT BELT**, sunglasses if needed	Unexpected movement.	• Assure that transmission is in Park, or in neutral if a manual transmission, and that parking brake is set – STANTEC_____. • Refer to Manufacturers vehicle manual for warm up times – STANTEC_____. • Assure there is sufficient gas, oil and other critical fluids – STANTEC_____. • Check for proper function of warning lights – STANTEC_____. • Make any other necessary adjustments prior to driving – STANTEC_____.
Pull out of parking space.	**SEAT BELT**, sunglasses if needed	Collision with other vehicles, pedestrians, or stationary objects.	• Check mirrors and over shoulder in all directions prior to pulling out of parking space – STANTEC_____. • Give two short blasts on the horn and while looking over your shoulder – STANTEC_____. • Slowly pull out of the parking space being prepared to apply the brakes if needed – STANTEC_____. • Signal if parallel parked along a street – STANTEC_____. • Avoid reversing when possible – STANTEC_____. • If reversing with 2 or more personnel in the vehicle, then at least 1 person must exit the vehicle and act as a spotter. If alone, before getting in the car, assess the area for approaching pedestrians and vehicles – STANTEC_____.
Drive a motor vehicle	**SEAT BELT**, sunglasses if needed	Collision, injury or death to occupants or other parties.	• Use the Stantec safe driving techniques – STANTEC_____. • **Scan** – Scan your horizon – STANTEC_____. • **Timing** – Do you have enough time to stop – STANTEC_____. • **Alert** – Don't drive when you are tired – STANTEC_____. • **Next** – Anticipate what could happen next – STANTEC_____. • **Team** – Passengers need to assist – STANTEC_____. • **Elevate** – Elevate your line of site – STANTEC_____.

Field staff must review job-specific work plan and coordinate with project manager to verify that all up-front logistics are completed prior to starting work including, but not limited to, permitting, access agreements, and notification to required contacts (e.g. site managers, inspectors, clients, subcontractors, etc.). A tailgate safety meeting must be performed and documented at the beginning of each workday. Last-Minute Risk Assessment (LMRA) procedures must be used throughout the project. Weather conditions (heat, cold, rain, and lightening) must also be considered. Each employee is empowered, expected, and has the responsibility to stop the work performed by him/herself or another co-worker if the working conditions or behaviors are considered unsafe. All employees should act proactively to identify and mitigate hazards to the safest extent of their ability. Use Stop Work Authority as needed.

Job Steps	Personal Protective Equipment	Potential Hazard	Critical Actions
			• **Courteous** – Don't be the driver others dislike – STANTEC_____. • Driver's cell phone shall be turned off – STANTEC_____. • Scan major and minor intersections before entry (left-right-left) – STANTEC_____. • Scan mirrors frequently, at least one mirror every 5-8 seconds – STANTEC_____. • Avoid staring while evaluating road conditions – STANTEC_____. • Maintain adequate spacing between your vehicle and the vehicle in front of you (Rule of thumb is 1 second for every 10 miles per hour – STANTEC_____. • After stopping, allow vehicle in front to move for 3 seconds before accelerating – STANTEC_____. • Evaluate approaching merge before you reach them – STANTEC_____. • Avoid being boxed in by other vehicles – STANTEC_____. • Seek eye contact with other drivers – STANTEC_____. • Before changing lanes, signal well in advance, check mirrors and over shoulder, and allow adequate space before changing lanes – STANTEC_____. • Avoid blind spots – STANTEC_____. • Increase the distance between your vehicle and the vehicle in front of you at night and in inclement weather. – STANTEC_____
Pauses in travel	Safety vest, high visibility work gloves, steel-toe/shank boots, safety glasses, long-sleeved shirt, cell phone.	Struck by another vehicle, insecure connections	• If there is a pause in travel (i.e. rest stop, gas station) do another walk around the vehicle prior to resuming travel – STANTEC_____. • Be aware of nefarious characters – STANTEC_____.

Field staff must review job-specific work plan and coordinate with project manager to verify that all up-front logistics are completed prior to starting work including, but not limited to, permitting, access agreements, and notification to required contacts (e.g. site managers, inspectors, clients, subcontractors, etc.). A tailgate safety meeting must be performed and documented at the beginning of each workday. Last-Minute Risk Assessment (LMRA) procedures must be used throughout the project. Weather conditions (heat, cold, rain, and lightening) must also be considered. Each employee is empowered, expected, and has the responsibility to stop the work performed by him/herself or another co-worker if the working conditions or behaviors are considered unsafe. All employees should act proactively to identify and mitigate hazards to the safest extent of their ability. Use Stop Work Authority as needed.

Job Steps	Personal Protective Equipment	Potential Hazard	Critical Actions
Reversing the vehicle	**SEAT BELT**, sunglasses if needed	Collision, injury or death to occupants or other parties.	• Make all backing maneuvers slowly and cautiously – STANTEC_____. • Check mirrors and over shoulders – STANTEC_____. • If reversing with 2 or more personnel in the vehicle, then at least 1 person must exit the vehicle and act as a spotter. If alone, before getting in the car, assess the area for approaching pedestrians and vehicles – STANTEC_____.
Parking	**SEAT BELT**, sunglasses if needed	Collision, injury or death to occupants or other parties.	• Park away from other cars when possible and when safe. – STANTEC_____ • Look for pull-through parking to avoid reversing – STANTEC_____. • Back into parking spot when possible and safe and legal – STANTEC_____. • If reversing with 2 or more personnel in the vehicle, then at least 1 person must exit the vehicle and act as a spotter. If alone, before getting in the car, assess the area for approaching pedestrians and vehicles – STANTEC_____. • Maintain cushion of safety from fixed objects – STANTEC_____. • Set parking brake – STANTEC_____.
POST-TRIP		Conditions worsen leading to mechanical failure possibly resulting in accident, injury, or death.	• Report vehicle problems immediately to company representative or rental car agency – STANTEC_____. • Schedule a tune-up or repair if necessary – STANTEC_____ .

Excavation Operations

POC	Development Team	Position/Title	Date	Reviewed By	Position/Title
			12/3/2003	Michael Philipp	West Region Health and Safety Manager
X	Michael Philipp	West Region Health and Safety Manager	12/3/2003		
			12/3/2003	David Stolcenberg	Asst. Engineer/Intern
If most recent review date is more than six months old, then this JSA must be updated and reviewed again to remain current					
POC is the JSA development 'Point Of Contact'					

Field staff must review job-specific work plan and coordinate with project manager to verify that all up-front logistics are completed prior to starting work including, but not limited to, permitting, access agreements, and notification to required contacts (e.g. site managers, inspectors, clients, subcontractors, etc.). A tailgate safety meeting must be performed and documented at the beginning of each workday. Plan, Prevent, Execute (PPE)/Safe Performance Self Assessment (SPSA) procedures must be used throughout the project. Weather conditions (heat, cold, rain, lightning) must also be considered. Each employee is empowered, expected, and has the responsibility to stop the work performed by him/herself or another co-worker if the working conditions or behaviors are considered unsafe. All employees should act proactively to identify and mitigate hazards to the safest extent of their ability.

Job Steps	Personal Protective Equipment	Potential Hazard	Critical Actions
Clear excavation locations.	Gather necessary PPE. Reflective vest for traffic, steel toed and shank shoes, hard hat, safety glasses with side shields, ear plugs/muffs, and leather gloves for the non-chemical aspects of work; Wear an air purifying respirator with combination organic vapor/P-100 cartridges, and other PPE as needed. (Use a North 7600 series full face respirator or its equivalent. Best brand nitrile gloves or their equivalent. Howard Leight Max foam earplugs with an NRR of 33 or their equivalent. Tyvek, poly coated chemical resistant suit or its equivalent).	Traffic hazards, overhead and underground installations, product releases, property damage, dealer inconvenience.	● Reference Utility Clearance Review form (Attachment 4) - STANTEC ● Coordinate with Site Manger (or designee) to minimize potential conflicts. - STANTEC ● Review proposed locations against available construction drawings and known utilities, tanks, product lines, etc. - STANTEC ● Mark out the proposed excavation locations. - STANTEC ● Call underground utility locating service for public line location clearance and get list of utilities being contacted. If necessary, coordinate private line locator for private property. - STANTEC ● Develop a traffic guidance and control plan with the client and local agencies as applicable. Plan may include use of delineators, barrier tape, jersey barriers, snow fence, etc. (Refer to Attachment 2). - STANTEC ● It is the responsibility of the SHSO to annotate the Site Plan with the Traffic Guidance and Control configuration if a formally developed Traffic Guidance and Control Plan is not available. - STANTEC
Obtain sub-contractor equipment maintenance records prior to commencing work.		Improper equipment maintenance, which can cause equipment failure and possible personal injury.	● Verify records in possession are for equipment on site. - STANTEC ● Verify maintenance is current. - STANTEC

Field staff must review job-specific work plan and coordinate with project manager to verify that all up-front logistics are completed prior to starting work including, but not limited to, permitting, access agreements, and notification to required contacts (e.g. site managers, inspectors, clients, subcontractors, etc.). A tailgate safety meeting must be performed and documented at the beginning of each workday. Plan, Prevent, Execute (PPE)/Safe Performance Self Assessment (SPSA) procedures must be used throughout the project. Weather conditions (heat, cold, rain, lightning) must also be considered. Each employee is empowered, expected, and has the responsibility to stop the work performed by him/herself or another co-worker if the working conditions or behaviors are considered unsafe. All employees should act proactively to identify and mitigate hazards to the safest extent of their ability.

Job Steps	Personal Protective Equipment	Potential Hazard	Critical Actions
Set up necessary traffic guidance and control equipment. See Attachment 2 for detailed plan.	Wear reflective vest for traffic, steel toed and shank shoes, hardhat, safety glasses with side shields, and leather gloves as necessary.	Potentially can be struck by vehicle during placement. Vehicle accident as a result of improper traffic control equipment placement.	● Use buddy system for placing traffic guidance and control equipment. - STANTEC ● Create a traffic guidance and control plan to address traffic issues. Refer to section above and Traffic Guidance and Control Plan drawing in Attachment 2. - STANTEC ● Adhere to approved Traffic Guidance and Control Plans when working in roadways. - STANTEC ● It is the responsibility of the SHSO to annotate the Site Plan with the Traffic Guidance and Control configuration if a formally developed Traffic Guidance and control Plan is not available. - STANTEC
Set up exclusion zone(s), stockpile area and establish work areas/heavy equipment pathways.	Wear reflective vest for traffic, steel toed and shank shoes, hardhat, safety glasses with side shields, and leather gloves as necessary.	Injury or exposure to public or other onsite personnel. Slip/fall hazards. Onsite vehicular accident with heavy equipment.	● Set up exclusion zones. - STANTEC ● It is the responsibility of the SHSO to annotate the site plan with the location of the exclusion zone(s). - STANTEC ● Set up clear walking paths between workstations. - STANTEC ● Use safety tape, snow fence and delineators. - STANTEC
Hand digging/post-holing where necessary to expose and protect underground installations as needed.	Steel toed and shank shoes, hardhat, safety glasses with side shields, hearing protection, reflective safety vest, and leather gloves for the non-chemical aspects of work as necessary.	Damage to lines (and associated physical hazards or property damage). Back strain. Injury or vehicle damage from falling into holes.	● Use hand tools whenever possible. - STANTEC ● Use proper lifting techniques. - STANTEC ● Barricade/cover trenches until job is complete. - STANTEC ● Conduct air monitoring as outlined in Section 12. Include Lower Explosive Limit (LEL) and oxygen monitoring. If >10% LEL or O2 < 19.5%, discontinue work or ventilate area with explosion-proof equipment. - STANTEC ● Have appropriate respirator with combination organic vapor/P-100 cartridges within 3-5 feet of working location, readily available. - STANTEC ● Avoid twisting back during post holing. - STANTEC ● If necessary, decontaminate equipment after use. Decontamination will be accomplished by an Alconox wash with tap water rinse followed by a de-ionized or distilled water rinse. Collect rinse water in 5 gallon buckets and transfer to 55-gallon drums and stage drums in a position agreed upon by the STANTEC SHSO and the Property Manager. - STANTEC
Assist with set up of heavy equipment.	Wear reflective vest for traffic, steel toed and shank shoes, hardhat, safety glasses with side shields, hearing protection devices, and leather gloves as necessary.	Damage caused by heavy equipment while accessing set-up location. Struck by equipment.	● Verify clear pathway to excavation and stockpiling locations. - STANTEC ● Provide as-needed hand signals and guidance to driver to place rig. - STANTEC ● Visually inspect equipment (fire extinguisher on board, no oil or other fluid leaks, cabling and associated equipment in good condition, pressurized hoses secured with whip-checks or adequate substitute, jacks in good condition). - STANTEC ● Maintain eye contact with operator; check all blind spots and use agreed upon hand signals. - STANTEC

Field staff must review job-specific work plan and coordinate with project manager to verify that all up-front logistics are completed prior to starting work including, but not limited to, permitting, access agreements, and notification to required contacts (e.g. site managers, inspectors, clients, subcontractors, etc.). A tailgate safety meeting must be performed and documented at the beginning of each workday. Plan, Prevent, Execute (PPE)/Safe Performance Self Assessment (SPSA) procedures must be used throughout the project. Weather conditions (heat, cold, rain, lightning) must also be considered. Each employee is empowered, expected, and has the responsibility to stop the work performed by him/herself or another co-worker if the working conditions or behaviors are considered unsafe. All employees should act proactively to identify and mitigate hazards to the safest extent of their ability.

Job Steps	Personal Protective Equipment	Potential Hazard	Critical Actions
Commence excavation	Use PPE as follows: Level D (all the time): Safety glasses, hardhat, disposable earplugs, long-sleeved shirts and pants, steel-toed boots. For contact with moist soil or liquid: Gloves: 0.008-inch gauge Best brand nitrile gloves or their equivalent, and leather work gloves Boot Covers: PVC, Neoprene or equivalent Chemical resistant Suit: Tyvek, Poly coated, chemical resistant or its equivalent. Upgrade to Level C (if necessary): Level D plus full face respirator Cartridges: Organic Vapor/P-100 Gloves: 0.008-inch gauge inner Best brand nitrile gloves or their equivalent, with 0.11-inch gauge outer Best brand nitrile gloves or their equivalent and leather work gloves Boot Covers: Neoprene Chemical Resistant Suit: Wear Tyvek, poly coated chemical resistant suit or its equivalent	Heat or cold exposure, exposure to chemical hazards, hitting an underground or overhead utility, flammable or oxygen-deficient atmosphere from accumulated vapors, trip and fall, side wall cave-in, equipment failure, noise.	● Monitor weather conditions and take breaks as needed for cold or hot weather. - STANTEC ● Conduct air monitoring as outlined in Section 12. Include Lower Explosive Limit (LEL) and oxygen monitoring. If >10% LEL or O2 < 19.5%, discontinue work or ventilate area with explosion-proof equipment. - STANTEC ● Have appropriate respirator with combination organic vapor/P-100 cartridges within 3-5 feet of working location, readily available. - STANTEC ● Maintain required trench/excavation setbacks for workers and equipment and monitor stability of sidewalls and surrounding ground conditions. - STANTEC ● Keep work area clear of tripping or slipping hazards. - STANTEC ● Perform periodic visual inspections of heavy equipment and keep it at least 5' from trench/excavation edge, or one foot away from the edge for every foot of depth if greater than 5' deep. - STANTEC ● Perform necessary soil classification. - STANTEC ● Slope/bench walls or shore excavation to prevent cave-in. - STANTEC ● Keep all spoils > 2 ft from excavation edge. - STANTEC ● Keep excavation entry controlled and equipped with required ladders and crosswalks. - STANTEC ● Suppress odors and vapors by spraying with Simple Green solution or other approved vapor suppressant. - STANTEC ● NOTE: STANTEC staff are not to enter an excavation without first contacting Philip Platcow, Director of Industrial Hygiene and Health & Safety (617) 232-7355. - STANTEC
Collect samples in accordance with sampling plan, as required.	Steel toed and shank shoes, hardhat, safety glasses with side shields, hearing protection, reflective safety vest, and chemical resistant gloves as necessary. Wear appropriate respirator with combination organic vapor/P-100 cartridges as needed.	Cave-in of sidewalls if entering excavation. Injury from heavy equipment. Exposure to site contaminants.	● Stay out of excavation if it cannot be safely sloped, (collect samples from backhoe bucket). - STANTEC ● Use agreed-upon hand signals with heavy equipment operators. - STANTEC ● Monitor air around excavation in accordance with Section 12. - STANTEC ● Have appropriate respirator with combination organic vapor/P-100 cartridges within 3-5 feet of working location, readily available. - STANTEC

Field staff must review job-specific work plan and coordinate with project manager to verify that all up-front logistics are completed prior to starting work including, but not limited to, permitting, access agreements, and notification to required contacts (e.g. site managers, inspectors, clients, subcontractors, etc.). A tailgate safety meeting must be performed and documented at the beginning of each workday. Plan, Prevent, Execute (PPE)/Safe Performance Self Assessment (SPSA) procedures must be used throughout the project. Weather conditions (heat, cold, rain, lightning) must also be considered. Each employee is empowered, expected, and has the responsibility to stop the work performed by him/herself or another co-worker if the working conditions or behaviors are considered unsafe. All employees should act proactively to identify and mitigate hazards to the safest extent of their ability.

Job Steps	Personal Protective Equipment	Potential Hazard	Critical Actions
Store excavated materials properly in accordance with site-specific requirements	Steel toed and shank shoes, hardhat, safety glasses with side shields, hearing protection, reflective safety vest, and chemical resistant gloves and suit.	Exposure to public. Traffic hazard or obstruction/inconvenience to station operation. Improper storage or disposal.	● Monitor air around excavation in accordance with Section 12. - STANTEC ● Have appropriate respirator with combination organic vapor/P-100 cartridges within 3-5 feet of working location, readily available. - STANTEC ● Have proper storage containment and labeling available onsite. - STANTEC ● Place materials in isolated location away from traffic and other site functions. - STANTEC ● Stockpile excavated materials on suitable plastic or in appropriately designed container. Cover with plastic and barricade access to waste in accordance with local regulations. - STANTEC ● Suppress odors and vapors by spraying with simple Green solution or other approved vapor suppressant. - STANTEC ● Coordinate proper disposal offsite (where applicable). - STANTEC
Backfill trench/excavation	Steel toed and shank shoes, hardhat, safety glasses with side shields, hearing protection, reflective safety vest, and leather gloves for the non-chemical aspects of work and chemical resistant inner gloves as necessary. Wear appropriate air purifying respirator with combination organic vapor/P-100 cartridges as needed.	Struck by heavy equipment. Sidewall collapse. Future damage or accidents resulting from subsidence.	● Use agreed-upon hand signals with heavy equipment operators. - STANTEC ● Compact soils to meet specifications. - STANTEC ● Maintain eye contact with equipment operators, check blind spots. - STANTEC ● Monitor air around trench/excavation in accordance with Section 12. - STANTEC ● Have appropriate respirator with combination organic vapor/P-100 cartridges within 3-5 feet of working location, readily available. - STANTEC
Supervisor/HSC must confirm all trenches/excavations are closed, filled in and/or capped.		Possible injuries and damage to property due to slope/sidewall failure and/or falling into excavation.	● Visually inspect each and every trench/excavation. - STANTEC ● If trench/excavation is left open overnight, cover completely with trench-plate or completely surround the trench/excavation with delineators and snow fence. - STANTEC
Clean site/demobilize	Steel toed and shank shoes, hardhat, safety glasses with side shields, hearing protection, reflective safety vest, and leather gloves for the non-chemical aspects of work as needed.	Traffic. Safety hazard left on site. Lifting hazards.	● Use buddy system as necessary to remove traffic guidance and control equipment. - STANTEC ● Leave site clean of refuse and debris. - STANTEC ● Notify station personnel of departure. - STANTEC ● Use proper lifting techniques or use mechanical assistance. - STANTEC
Package and deliver samples to lab		Bottle breakage (if any), back strain.	● Handle and pack bottles carefully (bubble wrap bags are helpful). - STANTEC ● Use proper lifting techniques. - STANTEC

Attachment C

General Safety Information for ALL SITES

1.0 General Safety Information

1.1 Emergency Response Procedures: Evacuation

In the event of an on-site or off-site emergency requiring site evacuation (e.g., fire, release, explosion, etc), the following procedures will be followed:

- Stop Work and notify the SHSO.
- Evacuate the site and go to the emergency meeting location if safe conditions exist. The evacuation point is shown in the sketch below or following this page. If safe conditions prevent evacuation to this location, move upwind, away from the source of the emergency. Maintain a safe distance from the source.
- Check in with the SHSO at the emergency meeting location. The SHSO will take attendance once all personnel have gathered.
- Dial the appropriate emergency response number(s). State the problem clearly and completely and remain on the line until dismissed by the operator.
- Only attempt extinguishing small fires with portable dry chemical (A-B-C) extinguishers on-hand. When in doubt, emergency response personnel shall be notified.
- Do not reenter the emergency site without specific approval from emergency response personnel.

Randomly scheduled evacuation drills may be conducted at any time during field activities.

1.2 Emergency Response Procedures: Injury or Illness

If an injury or illness occurs, take the following action:

- Stop Work, stabilize the situation, and secure the site.
- Administer First Aid for the person immediately using a first aid and blood-borne pathogens kit.
- Determine if emergency response (fire/ambulance) is necessary. If so, call appropriate emergency response numbers on closest available phone. Provide the location of the injured person and other details as requested. Drive the individual to the hospital only if it makes sense.
- If emergency decontamination is required:
    - Immediately remove any contaminated personal protective equipment (PPE) or clothing. (EXCEPTION: if the person has been burned, only emergency medical services (EMS) personnel should remove any clothing)
    - If possible, wash contaminated area with mild soap and water.
    - Use eyewash station if necessary.
    - Personnel assisting the contaminated individual will don the proper PPE to avoid exposure.
- For all injuries or illness, even minor cuts, scratches, and bruises, notify the SHSO immediately. The SHSO is responsible for initiating incident reporting procedures immediately after the victim(s)/site have been stabilized. The SHSO will assume responsibility during a medical emergency until more qualified EMS personnel arrive at the site as needed.
- As promptly as possible following an injury or illness, the Project Manager or designee shall ensure appropriate notification has been made to the family of the individual involved.
- Please see Section 1.6 for incident reporting procedures.

1.2.1 Injuries or Illnesses Requiring Hospital Service WITHOUT Ambulance Service

Injuries or illnesses requiring hospital service without ambulance services include minor lacerations, minor sprains, etc. The following procedures will be taken immediately:

- The SHSO will ensure prompt transportation of the injured person to a physician or hospital.
- A representative of Stantec will always drive the injured employee to the medical facility and remain at the facility until the employee is ready to be discharged.
- If the driver of the vehicle is not familiar with directions to the hospital, a second person shall accompany the driver and the injured employee and navigate the route to the hospital.
- If it is necessary for the SHSO to accompany the injured employee, provisions will be made to have another employee, properly trained and certified in First Aid, to act as the temporary SHSO.
- If the injured employee is able to return to the job site the same day, he/she will bring a statement from the doctor containing such information as:
  - Date
  - Employee's name
  - Diagnosis
  - Date he/she is able to return to work, regular or light duty
  - Date he/she is to return to doctor for follow-up appointment, if necessary
  - Signature and address of doctor
- As promptly as possible following an injury or illness, ensure appropriate notification has been made to the family of the individual involved.
- Please see Section 1.6 for incident reporting procedures.

If the injured employee is unable to return to the job site the same day, the employee who transported him will bring this information back to the job site and report it to the Project Manager, office OSEC, Clint Reuter, Stantec's Practice and Risk Management (PRM), and their regional Human Resources Specialist.

1.2.2 Injuries or Illnesses Requiring Hospital Service WITH Ambulance Service

Injuries or illnesses requiring transport by ambulance include life-threatening conditions such as severe head injuries, amputations, heart attacks, heat stroke, etc. The following procedures will be taken immediately:

- Call for ambulance service and notify the SHSO.
- Administer First Aid until ambulance service arrives or until relieved by EMS personnel.
- While the injured employee is being transported, the SHSO will contact the medical facility to be utilized.
- One designated representative will accompany the injured employee to the medical facility and remain at the facility until final diagnosis and other relevant information is obtained.
- As promptly as possible following an injury or illness, ensure appropriate notification has been made to the family of the individual involved.
- Please see Section 1.6 for incident reporting procedures.

1.2.3 Death of an Individual or Hospitalization of Three or More Employees

The emergency response procedures above will be followed. If the injured person dies, follow the incident reporting procedures. PRM will notify the Human Resources Department, local law enforcement officials immediately. Human Resources will notify the local OSHA office within 8 hours of a fatality or the hospitalization of three or more employees.

1.3 Emergency Response Procedures: Spills or Cut Lines

Prevent problems by documenting the location of underground lines (e.g., product, sewer, electrical, gas, telephone, fiber optic) before starting site work. If a line or tank is drilled through, or a leak occurs, document the event as soon as possible using the Incident Investigation Report.

In the event of a spill/release, follow this plan:

- Stop Work, stabilize the situation, and secure the site.
- Stay upwind of the spill/release.
- Wear appropriate PPE.
- Turn off equipment and other sources of ignition, but only from a safe distance.
- Turn off pumps and shut valves to stop the flow/leak, but only from a safe distance.
- Plug the leak or collect drippings, when possible, if you can do this safely and within your level of training.
- Use sorbent pads to collect product and impede its flow, if possible and only if you can do it safety and within your level of training.
- Call Fire Department immediately if fire or explosion risk is involved (i.e. natural gas involved).
- Notify the SHSO to begin the incident reporting procedures. All spills/releases will be reported to the Client Project Manager within 24 hours.
- Determine if the client wants Stantec to repair the damage or if the client will use an emergency repair contractor of their choice.
- Based on agreements, contact emergency spill contractor for containment of free product. The contacts for this project will be the local fire department.
- Advise the client of spill discharge notification requirements and determine who will complete and submit forms. *(Do not submit or report to agencies without the client's consent.)* Document each interaction with the client and regulators and note, in writing; name, title, authorizations, refusals, decisions, and commitments to any action.
- Do not transport or approve transportation of contaminated soils or product until proper manifests have been completed and approved. Be aware that soils/product may meet criteria for hazardous waste.
- Do not sign manifests as generator of wastes unless you have been given appropriate training and approval for signing on behalf of the generator; contact Project Manager or Waste Compliance Manager to discuss waste transportation.
- If the spill extends into waterways, the Coast Guard and the National Response Center shall be notified immediately by the client (or by the Stantec Project Manager with the client's permission).

The Project Manager will involve the client/generator in any Incident Investigation process. The client/generator is under obligation to report to the proper government agencies.

1.4 Incident Reporting Procedures

This section outlines the procedures that will be followed in the event of an incident. A flowchart and a table with necessary contact information (phone numbers, fax numbers, and email addresses) for incident reporting are also provided.

In the event of an incident:

1. Stop Work, stabilize the situation, and secure the site.

2. Report all incidents, injuries, spills, non-conformance events, permit exceedances, and potential incidents (near losses) immediately to the SHSO, who will then notify the Stantec Project Manager. **If you are unsure whether or not something should be reported, Stop Work and proceed with notification anyway.**

3. The Stantec Project Manager will make internal notifications* to the following:
   - The office OSEC (Anne Perez)
   - At least one Stantec Senior HSE Team Member (Daniel Spencer, Keith Robinson);
   - **If a team member does not answer, leave a detailed message with a number at which you can be reached, and follow-up with another call later.**

- *Internal notification is a Stantec requirement. Internal reporting requirements were established primarily to provide a pathway for employees to obtain the assistance of company health and safety experts during an incident or significant near loss. Secondary to obtaining expert assistance, internal notification is required to help Stantec track injuries and near losses that occur to our employees. The data captured during the reporting process is then used to identify trends that can be pro-actively addressed to improve overall health and safety within our company. This helps everyone go home safely.

Stantec Energy & Resources Incident Reporting

Incident occurs:
Stop work, stabilize the situation, secure the site & provide immediate care. Stantec employee or contractor must immediately report the incident the Stantec Project Lead. Injured personnel requiring medical attention will transport the injured person to medical care and remain until released.

Site Lead or Contractor Supervisor notifies Project Manager & Stantec Area HS Lead Verbal notification and email an **INCIDENT QUICK REPORT** notification within **1 hour**. **Client Reporting Schedule Starts (next Page**

HSE TEAM:
Clint Reuter (1-805-308-9930)
Clint.reuter@stantec.com
Tony Wong (805-234-6227)
tony.wong@stantec.com)
Terry Arseneau (1-403-702-6686)
terry.arseneau@stantec.com
Scott Purves (1-403-542-9751)
scott.purves@stantec.com
Adam Taylor (1-403-585-3238)
adam.taylor@stantec.com
Marty Ringen (1-780-862-3470)
marty.ringen@stantec.com
Don Johnson (1-778-385-5846)
don.johnson@stantec.com

HIGH POTENTIAL INCIDENT

Conference Call Review YES or NO

YES

Senior Management Team
4-Hour HPI Flash Alert Notice Team
(Email-description, classification & path forward)
Jon Lessard (1-281-513-5538)
Jon.lessard@stantec.com
Bob Seager (1-403-540-0259)
bob.seager@stantec.com
Don Belliveau (1-506-471-3238)
don.belliveau@stantec.com
Kirk Morrison (1-403-650-3402
kirk.morrison@stantec.com
Nick Poushinsky (1-250-413-7404)
nick.poushinsky@stantec.com
Tino Di Manno (403-716-8202)
tino.dimanno@stantec.com
Peter Salusbury (1-778-837-0096)
peter.salusbury@stantec.com

NO

Stantec Site Lead, Project Manager or Contractor Supervisor issues RMS 3 Incident Report within 24- hours.

Finalized RMS 3 forwarded to Corporate HSE

Stantec Site Lead, Project Manager or Contractor Supervisor issues RMS 3 Incident Report within 24-hours.

Stantec Site Lead & Area HSE Lead conducts investigation following the corporate investigation process. A report is issued within 5 days to the Stantec Energy & Resources Sr. Mgt. Team identifying root causes and implementing barriers to prevent re-occurrence. Senior Management Team signs off on the Incident report.

Based on clients expectations a more formal Incident Cause and Analysis Method may <u>also</u> be used to support for the investigation.

HSE develops Lessons Learned Report for corporate-wide / client distribution

Stantec

Client Reporting Schedule
"No client requirements"

Notifications

Stantec Account and HSE Support Contacts - notify within 1 hour
See Project Team Phone Numbers for
National Account Manager (NAM)
Alternate NAM
Health and Safety Coordinator

Client - notify within 24 hours unless high potential (notify within 1 hour) :
See Project Team Phone Numbers for
Client

Incident Investigation Report within 5 days
See Project Team Phone Numbers for
Client

Incident Type	Definition (Current Stantec Corporate Definitions)
Report Only	An employee needs to document a happening which may be relevant in the future. Examples include: witnessing an accident or a non-work-related injury, an incident on a worksite not involving Stantec personnel, physical signs and symptoms related to workstation ergonomics and/or materials handling
Incident	Any unplanned event that adversely affects our employees, our business, its physical assets, the clients we serve, or the environment.
Serious Incident	Any work-related incident where there is property damage greater than $5000, employee hospitalization, fatality, facility/site shutdown, or involves a third party (public). A near miss with the potential for any of the above consequences would also be considered a serious incident.
Near-Miss	Any event that could adversely affect our employees, our business, its physical assets, the customers we serve, or the environment, given any change in circumstances.
Hazard Identification	The identification of a condition or practice that has the potential for an incident or loss.
Property Damage (Vehicle)	Damage to any vehicle used for Stantec business, includes normal wear and tear (e.g. tire damage, minor scratches, stone chips to paint or windshield, mechanical wear), whether the vehicle is attended or not.
Property Damage (Other)	Damage to equipment, materials, etc., excluding vehicle damage.
Theft	Theft of any property under the care and control of Stantec.
Non-compliance	Where an employee or project is identified as operating outside the parameters of Stantec policy and/or legislative requirements.

Incident Type	Definition (Current Stantec Corporate Definitions)
***Near Miss - Injury**	An employee reports physical symptoms related to work activities which have not yet resulted in treatment of any type, nor have they impacted the employee's working ability.
First Aid	An injury or illness requires first aid treatment only
Medical Treatment	Medical treatment above and beyond first aid, without loss of work time beyond the day of injury or illness.
Restricted Work	Change in job duties and/or shortened work day resulting from a work-related injury or illness, affecting the employee's ability to engage in one or more routine work activities (i.e. an activity carried out at least once per week).
Lost Time	Health care professional recommends one or more days away from work due to a work-related injury or illness.
Fatality	Work related fatality.
Motor Vehicle Incident	An incident involving a vehicle driven by an employee, whether on or off the road, that has resulted in damage to assets, the environment or Stantec's reputation, irrespective of cost or responsibility for cause. This does not include damage as a result of normal wear and tear (see Property Damage – Vehicle).
Spill or Release	Discharge of material or substance which is reportable to a third party such as a regulatory agency or a client, or which may expose an employee to a health risk.
Contractor Recordable Injury	Definitions as above, including Medical Aid – No Lost Time, Restricted Work, Lost Time or Fatality) but applied to a Stantec subcontractor.
Fire / Explosion / Flood	A natural or man-made hazard including fire, explosion or flood that causes damage or injury.
Violence or Harassment	Any act in which a person is abused, threatened, intimidated or assaulted in the course of their employment.
3rd Party Incident	Incident involves someone who is not party to the work being completed, but may be impacted. Example: Member of the public.
Utility Strike	Compromising or disrupting of service to buried and/or overhead utility service lines, municipal or third party owned utility services, UST system components and other subsurface property service lines or systems
Work Refusal	An employee has enacted their legislated Right to Refuse dangerous work.
Stop Work Authority	An employee has enacted Stantec's Stop Work Authority provisions upon observing the presence of unsafe conditions associated with Stantec work activities. All employees have the right to stop or refuse work when they perceive an immediate danger to their health and safety or that of their colleagues.
	For Consideration
High Potential Incident	A Near Miss, First Aid injury, Medical Aid injury, Modified Work injury or Lost Time injury can often have the potential to be a fatality or a Significant Injury with disability if the circumstances would have been slightly different. For example, a Lost Time incident due to a back soft tissue injury would only be counted as a Lost Time with low potential for a serious injury, whereas a First Aid incident involving a remotely operated machine striking a worker and imparting a small cut would be counted as a First Aid incident with high potential for a Fatality or a Significant Injury. Any incident with energy exchange that had the potential to be a Fatality or a Significant Injury if the circumstances would have been slightly different should be counted as High Potential; all others should be counted as low potential and reported as normal incidents (see above). In terms of Risk Assessment language when the exposure, probability and consequence of the hazard(s) that created the injury calculate to a High or Extreme Risk Level, the incident should be counted as a High Potential; all others should be counted as low potential.

Incident Type	Definition (Current Stantec Corporate Definitions)
Critical Risk Control	**TBA** 1. Vehicles and Mobile Equipment 2. Hazardous Materials Management 3. Equipment Safeguarding 4. De-Energization, Isolation, Lock-Out, and Tagging 5. Working at Heights 6. Lifting Operations 7. Confined Space 8. Excavations and Trenching 9. Ergonomic & Manual Handling 10. Working on Ice or water 11. Wildlife Interactions

3.0 Other Potential Site Hazards

3.1 Physical Hazards

Physical hazards may include traffic, uneven terrain, sharp debris, fencing, holes, noise, etc. Thusly, a constant awareness of one's location is paramount to your personal safety. However, knowing where you are, the level of noise produced by associated machinery and hearing protection may hinder your ability to hear vocal warnings. "Keep your head on a swivel" as the order of the day.

Be aware of the location of all of the equipment activities in your work area.

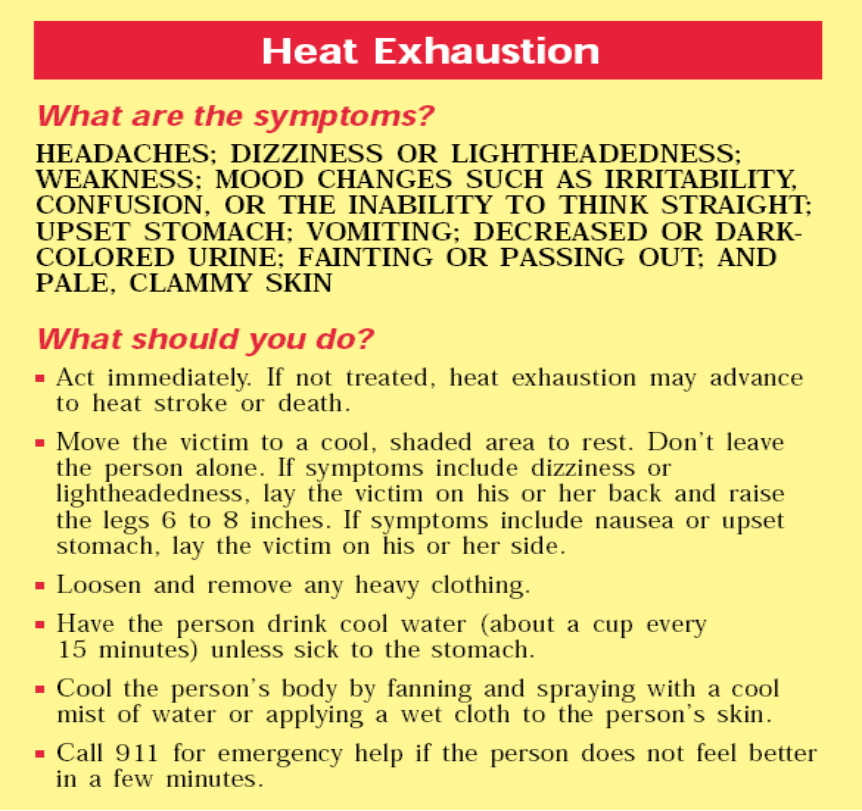
To protect yourself, always look before you step and wear proper PPE for the task being performed.

3.2 Weather and Natural Disasters

Hazards associated with weather and natural disasters may include, but are not limited to, effects of extreme heat (heat exhaustion, heat stroke), effects of extreme cold (hypothermia, frostbite), high winds, heavy rain, lightning, heavy snow, ice, earthquakes, landslides, flooding, etc.

The most likely hazards at the site are effects of extreme heat (heat exhaustion, heat stroke) and earthquakes.

To protect yourself from heat, perform the heaviest work during the coolest part of the day; drink plenty of cool water; wear light, loose-fitting, breathable clothing; and take frequent, short breaks in the shade. Certain medications, having a previous heat-related illness, and wearing PPE such as a respirator or protective suit can increase risk.



Stantec

Heat Stroke–A Medical Emergency

What are the symptoms?

DRY, PALE SKIN WITH NO SWEATING; HOT, RED SKIN THAT LOOKS SUNBURNED; MOOD CHANGES SUCH AS IRRITABILITY, CONFUSION, OR THE INABILITY TO THINK STRAIGHT; SEIZURES OR FITS; AND UNCONCIOUSNESS WITH NO RESPONSE

What should you do?

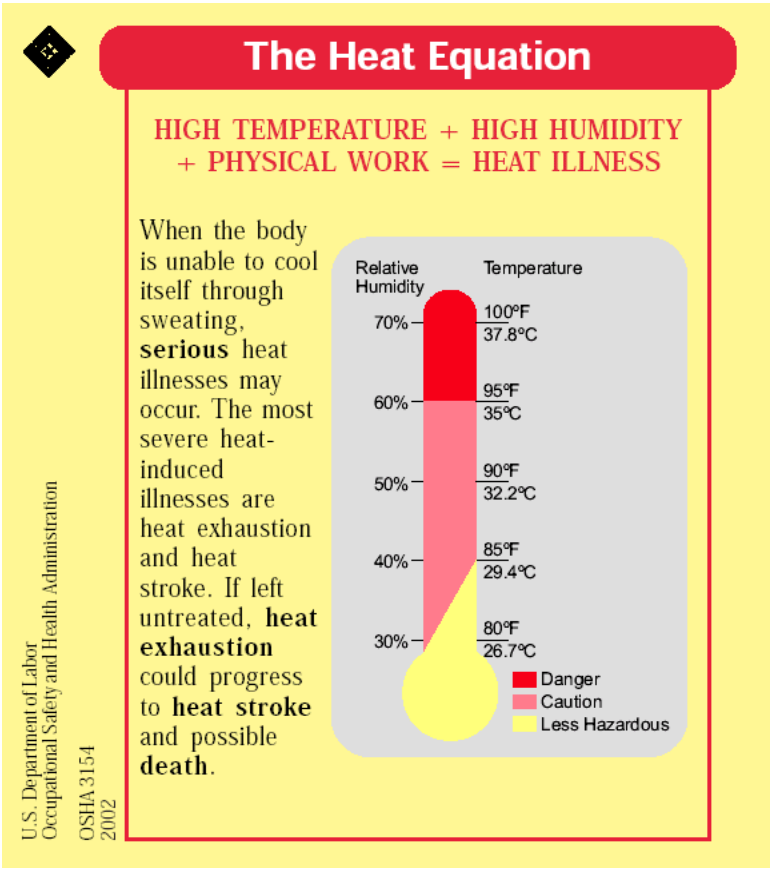
- Call 911 for emergency help immediately.
- Move the victim to a cool, shaded area. Don't leave the person alone. Lay the victim on his or her back. Move any nearby objects away from the person if symptoms include seizures or fits. If symptoms include nausea or upset stomach, lay the victim on his or her side.
- Loosen and remove any heavy clothing.
- Have the person drink cool water (about a cup every 15 minutes) if alert enough to drink something, unless sick to the stomach.
- Cool the person's body by fanning and spraying with a cool mist of water or wiping the victim with a wet cloth or covering him or her with a wet sheet.
- Place ice packs under the armpits and groin area.

How can you protect yourself and your coworkers?

- Learn the signs and symptoms of heat-induced illnesses and how to respond.
- Train your workforce about heat-induced illnesses.
- Perform the heaviest work during the coolest part of the day.
- Build up tolerance to the heat and the work activity slowly. This usually takes about 2 weeks.
- Use the buddy system, with people working in pairs.
- Drink plenty of cool water, about a cup every 15 to 20 minutes.
- Wear light, loose-fitting, breathable clothing, such as cotton.
- Take frequent, short breaks in cool, shaded areas to allow the body to cool down.
- Avoid eating large meals before working in hot environments.
- Avoid alcohol or beverages with caffeine. These make the body lose water and increase the risk for heat illnesses.

What factors put you at increased risk?

- Taking certain medications. Check with your health-care provider or pharmacist to see if any medicines you are taking affect you when working in hot environments.
- Having a previous heat-induced illness.
- Wearing personal protective equipment such as a respirator or protective suit.



HEAT STRESS

INTRODUCTION

Operations involving high air temperatures, radiant heat sources, high humidity, direct physical contact with hot objects, or strenuous physical activities have a high potential for inducing heat stress in employees engaged in such operations. Outdoor operations conducted in hot weather, such as construction, refining, asbestos removal, and hazardous waste site activities, especially those that require workers to wear semi-permeable or impermeable protective clothing, are also likely to cause heat stress among exposed workers.

CAUSAL FACTORS

Age, weight, degree of physical fitness, degree of acclimatization, metabolism, use of alcohol or drugs, and a variety of medical conditions such as hypertension all affect a person's sensitivity to heat. However, even the type of clothing worn must be considered. Prior heat injury predisposes an individual to additional injury. It is difficult to predict just who will be affected and when, because individual susceptibility varies. In addition, environmental factors include more than the ambient air temperature. Radiant heat, air movement, conduction, and relative humidity all affect an individual's response to heat.

DEFINITIONS

The American Conference of Governmental Industrial Hygienists (2002) states that workers should not be permitted to work when their deep body temperature exceeds 100.4°F (38 °C).

Heat is a measure of energy in terms of quantity.

A **calorie** is the amount of heat required to raise 1 gram of water 1°C (based on a standard temperature of 16.5 to 17.5°).

Conduction is the transfer of heat between materials that contact each other. Heat passes from the warmer material to the cooler material. For example, a worker's skin can transfer heat to a contacting surface if that surface is cooler, and vice versa.

Convection is the transfer of heat in a moving fluid. Air can be described as a fluid. Air flowing past the body can cool the body if the air temperature is cool. On the other hand, air that exceeds 35°C (95°F) can increase the heat load on the body.

Evaporative cooling takes place when sweat evaporates from the skin. High humidity reduces the rate of evaporation and thus reduces the effectiveness of the body's primary cooling mechanism.

Radiation is the transfer of heat energy through space. A worker whose body temperature is greater than the temperature of the surrounding surfaces radiates heat to these surfaces. Hot surfaces and infrared light sources radiate heat that can increase the body's heat load.

Globe temperature is the temperature inside a blackened, hollow, thin copper globe.

Metabolic heat is a by-product of the body's activity.

Natural wet bulb (NWB) temperature is measured by exposing a wet sensor, such as a wet cotton wick fitted over the bulb of a thermometer, to the effects of evaporation and convection. The term natural refers to the movement of air around the sensor.

Dry bulb (DB) temperature is measured by a thermal sensor, such as an ordinary mercury-in-glass thermometer, that is shielded from direct radiant energy sources.

HEAT DISORDERS AND HEALTH EFFECTS

HEAT STROKE

Heat Stroke occurs when the body's system of temperature regulation fails and body temperature rises to critical levels. This condition is caused by a combination of highly variable factors, and its occurrence is difficult to predict. **Heat stroke is a medical emergency.** The primary signs and symptoms of heat stroke are confusion; irrational behavior; loss of consciousness; convulsions; a lack of sweating (usually); hot, dry skin; and an abnormally high body temperature, e.g., a rectal temperature of 41°C (105.8°F). If body temperature is too high, it causes death. The elevated metabolic temperatures caused by a combination of workload and environmental heat load, both of which contribute to heat stroke, are also highly variable and difficult to predict. If a worker shows signs of possible heat stroke, professional medical treatment should be obtained immediately. The worker should be placed in a shady area and the outer clothing should be removed. The worker's skin should be wetted and air movement around the worker should be increased (as long as the temperature of the air is less than 95° F) to improve evaporative cooling until professional methods of cooling are initiated and the seriousness of the condition can be assessed. Fluids should be replaced as soon as possible.

The medical outcome of an episode of heat stroke depends on the victim's physical fitness and the timing and effectiveness of first aid treatment. Regardless of the worker's protests, no employee

suspected of being ill from heat stroke should be sent home or left unattended unless a physician has specifically approved such an order.

HEAT EXHAUSTION
The signs and symptoms of heat exhaustion are headache, nausea, vertigo, weakness, thirst, and giddiness. Fortunately, this condition responds readily to prompt treatment. Heat exhaustion should not be dismissed lightly, however, for several reasons. One is that the fainting associated with heat exhaustion can be dangerous because the victim may be operating machinery or controlling an operation that should not be left unattended; moreover, the victim may be injured when he or she faints. Also, the signs and symptoms seen in heat exhaustion are similar to those of heat stroke, a real potential medical emergency.

Workers suffering from heat exhaustion should be removed from the hot environment and given fluid replacement. They should also be encouraged to get adequate rest.

HEAT CRAMPS
Heat Cramps are usually caused by performing hard physical labor in a hot environment. These cramps have been attributed to an electrolyte imbalance caused by sweating. It is important to understand that cramps can be caused by both too much and too little salt. Cramps appear to be caused by the lack of water replenishment. Because sweat is a hypotonic solution (±0.3% sodium chloride), excess salt can build up in the body if the water lost through sweating is not replaced.

Thirst cannot be relied on as a guide to the need for water; instead, water must be taken every 15 to 20 minutes in hot environments. Under extreme conditions, such as working for 6 to 8 hours in heavy protective gear, a loss of sodium may occur. Studies have shown that drinking commercially available carbohydrate-electrolyte replacement liquids is effective in minimizing physiological disturbances during recovery.

HEAT COLLAPSE
Heat Collapse ("Fainting"). In heat collapse, the brain does not receive enough oxygen because blood pools in the extremities. As a result, the exposed individual may lose consciousness. This reaction is similar to that of heat exhaustion and does not affect the body's heat balance. However, the onset of heat collapse is rapid and unpredictable. To prevent heat collapse, the worker should gradually become acclimatized to the hot environment.

HEAT RASHES
Heat Rashes are the most common problem in hot work environments. "Prickly heat", as heat rashes are sometimes called, is manifested as red papules on the skin and usually appears in areas where the clothing is restrictive. As sweating increases, these papules give rise to a prickling sensation. Prickly heat occurs in skin that is persistently wetted by unevaporated sweat, and heat rash papules may become infected if they are not treated. In most cases, heat rashes will disappear when the affected individual returns to a cool environment.

HEAT FATIGUE
A factor that predisposes an individual to heat fatigue is lack of acclimatization. The use of a program of acclimatization and training for work in hot environments is advisable. Acclimatization can take several weeks depending on the individual involved and the difference in temperature between the location from which the person is coming and the temperature to which he/she is going. The signs and symptoms of heat fatigue include impaired performance of skilled sensorimotor, mental, or vigilance

jobs. There is no treatment for heat fatigue except to remove the heat stress before a more serious heat-related condition develops.

CONTROL MEASURES FOR HEAT STRESS

Ventilation, air-cooling, fans, shielding, and insulation are the five major types of engineering controls used to reduce heat stress in hot work environments. Heat reduction can also be achieved by using power assists and tools that reduce the physical demands placed on a worker.

However, for this approach to be successful, the metabolic effort required for the worker to use or operate these devices must be less than the effort required without them. Another method is to reduce the effort necessary to operate power assists. Workers should be allowed to take frequent rest breaks in a cooler environment.

ACCLIMATIZATION

The human body can adapt to heat exposure to some extent. This physiological adaptation is called acclimatization. After a period of acclimatization, the same activity will produce fewer cardiovascular demands. The worker will sweat more efficiently (causing better evaporative cooling), and thus will more easily be able to maintain normal body temperatures.

FLUID REPLACEMENT

Cool (50°-60°F) water or any cool liquid (except alcoholic beverages, tea and coffee) should be made available to workers to encourage them to drink small amounts frequently, e.g., one cup every 20 minutes. Ample supplies of liquids should be placed close to the work area. Although some commercial replacement drinks contain salt, this is not necessary for acclimatized individuals because most people add enough salt to their summer diets.

GENERAL VENTILATION

General ventilation is used to dilute hot air with cooler air (generally cooler air that is brought in from the outside). This technique clearly works better in cooler climates than in hot ones. A permanently installed ventilation system usually handles large areas or entire buildings. Portable or local exhaust systems may be more effective or practical in smaller areas.

AIR TREATMENT/AIR COOLING

Air treatment/air cooling differs from ventilation because it reduces the temperature of the air by removing heat (and sometimes humidity) from the air.

Air conditioning is a method of air-cooling, but it is expensive to install and operate. An alternative to air conditioning is the use of chillers to circulate cool water through heat exchangers over which air from the ventilation system is then passed; chillers are more efficient in cooler climates or in dry climates where evaporative cooling can be used.

Local air cooling can be effective in reducing air temperature in specific areas. Two methods have been used successfully in industrial settings. One type, cool rooms, can be used to enclose a specific workplace or to offer a recovery area near hot jobs. The second type is a portable blower with built-in air chiller. The main advantage of a blower, aside from portability, is minimal set-up time.

Another way to reduce heat stress is to increase the airflow or convection using fans, etc. in the work area (as long as the air temperature is less than the worker's skin temperature). Changes in air speed can help workers stay cooler by increasing both the convective heat exchange (the exchange between the skin surface and the surrounding air) and the rate of evaporation. Because this method does not actually cool the air, any increases in air speed must impact the worker directly to be effective.

If the outdoor air temperature (i.e. the dry bulb temperature) is higher than 95°F (35 °C) the hot air passing over the skin can actually make the worker hotter (i.e. add to the overall body heat load). When the temperature is >95°F and the air is dry, evaporative cooling may be improved by air movement, although this improvement will be offset by the convective heat. When the temperature exceeds 95°F and the relative humidity is 100%, air movement will make the worker hotter. Increases in air speed have no effect on the body temperature of workers wearing vapor-barrier clothing.

HEAT CONDUCTION

Heat conduction methods include insulating the hot surface that generates the heat and changing the surface itself.

Simple engineering controls, such as shields, can be used to reduce radiant heat i.e. heat coming from hot surfaces within the worker's line of sight. Surfaces that exceed 95°F, and this is very common on hot summer days, are sources of infrared radiation that can add to the worker's heat load. Flat black surfaces absorb heat more than smooth, polished ones. Having cooler surfaces surrounding the worker, assists in cooling because the worker's body radiates heat toward them.

With some sources of radiation, such as heating pipes, it is possible to use both insulation and surface modifications to achieve a substantial reduction in radiant heat. Instead of reducing radiation from the source, shielding can be used to interrupt the path between the source and the worker. Polished surfaces make the best barriers, although special glass or metal mesh surfaces can be used if visibility is a problem.

Shields should be located so that they do not interfere with airflow, unless they are also being used to reduce convective heating. The reflective surface of the shield should be kept clean to maintain its effectiveness.

ADMINISTRATIVE CONTROLS/SAFE WORK PRACTICES

Training is the key to good work practices. Unless all employees understand the reasons for using new, or changing old, work practices, the chances of such a program succeeding are greatly reduced. NIOSH (1986) states that a good heat stress training program should include least the following components:

- Knowledge of the hazards of heat stress;
- Recognition of predisposing factors, danger signs, and symptoms;
- Awareness of first-aid procedures for, and the potential health effects of, heat stroke and heat exhaustion;

- Employee responsibilities in avoiding heat stress;
- Dangers of using drugs, including therapeutic ones, and alcohol in hot work environments;
- Use of protective clothing and equipment; and
- Purpose and coverage of environmental and medical surveillance programs and the advantages of worker participation programs.

Hot jobs should be scheduled for the cooler part of the day when possible, and routine maintenance and repair work in hot areas should be scheduled for the cooler seasons of the year.

Measurement is often required of those environmental factors that most nearly correlate with deep body temperature and other physiological responses to heat. At the present time, the Wet Bulb Globe Temperature Index (WBGT) is the most used technique to measure these environmental factors. WBGT values are calculated by the following equations:

WET BULB GLOBE TEMPERATURE INDEXES (WBGI)

Indoor or outdoors with no solar load

$$WBGT = 0.7NWB + 0.3GT$$

Outdoors with solar load

$$WBGT = 0.7NWB + 0.2GT + 0.1DB$$

Where: WBGT = Wet Bulb Globe Temperature Index
NWB = Natural Wet Bulb Temperature
DB = Dry Bulb (air) Temperature
GT = Globe Thermometer Temperature

The determination of WBGT requires the use of a black globe thermometer, a natural (static) wet-bulb thermometer, and a dry-bulb thermometer. The measurement of environmental factors shall be performed as follows:

1. The range of the dry and the natural wet-bulb thermometers should be -5°C to +50°C, with an accuracy of ±0.5°C. The dry bulb thermometer must be shielded from the sun and the other radiant surfaces of the environment without restricting the airflow around the bulb. The wick of the natural wet bulb thermometer should be kept wet with distilled water for at least one-half hour before the temperature reading is made. It is not enough to immerse the other end of the wick into a reservoir of distilled water and wait until the whole wick becomes wet by capillarity. The wick must be wetted by direct application of water from a syringe one-half hour before each reading. The wick must cover the bulb of the thermometer and an equal length of additional wick must cover the stem above the bulb. The wick should always be clean, and new wicks should be washed before using.

2. A globe thermometer, consisting of a 15 cm (6-inch) in diameter hollow copper sphere painted on the outside with a matte black finish, or equivalent, must be used. The bulb or sensor of a thermometer (range -5°C to +100°C with an accuracy of ±0.5°C) must be fixed in the center of the sphere. The globe thermometer should be exposed at least 25 minutes before it is read.

3. A stand should be used to suspend the three thermometers so that they do not restrict free airflow around the bulbs and the wet-bulb and globe thermometer are not shaded.

4. It is permissible to use any other type of temperature sensor that gives a reading similar to that of a mercury thermometer under the same conditions.

5. The thermometers must be placed so that the readings are representative of the employee's work or rest areas, as appropriate.

Once the WBGT has been estimated, employers can estimate workers' metabolic heat load and use the ACGIH method to determine the appropriate work/rest regimen, clothing, and equipment to use to control the heat exposures of workers in their facilities.

The California Occupational Safety and Health Standards Board confirmed that new major changes to the state's heat illness prevention regulations will take effect on **May 1, 2015**. In response to the new regulations, we must review and update our heat illness prevention program to comply with the new rule changes. Cal/OSHA has provided a summary chart entitled which can be found at the following link (Guidance Chart). In addition, Cal/OSHA has updated their Q&A webpage on Heat Illness Prevention Enforcement.

Outlined below are the current California requirements for outdoor projects (as of May 1, 2015):

REQUIREMENTS FOR OUTDOOR PLACES OF EMPLOYMENT

- **Water** – Must Be Fresh, Pure, Suitably Cool, Free And As Close As Practicable To Work Areas
    - PM's must ensure that employees have access to potable drinking water that is fresh, pure, suitably cool, and provided to employees free of charge.
    - A new requirement is that the water must be "located as close as practicable to the areas where the employees are working."
- **Shade** – Required If Above 80 Degrees; Still Required If 80 Degrees Or Below Upon Employee Request
    - Access to shade is required when the temperature exceeds 80 degrees Fahrenheit (previously, the standard was 85 degrees).
    - The area of shade now must be large enough to accommodate the number of employees on cool-down periods, rest breaks, and must accommodate the number of employees who remain onsite during meal periods.
    - **Please note** – Employers must provide shade upon an employee's request, regardless of the temperature.
- **Cool-Down Periods** – Employees Must Be Monitored, Asked About Heat Illness Symptoms, And Provided A Minimum Of Five Minutes Of Net Resting Time
    - Employees must be allowed and encouraged to take a cool-down period when they feel the need to do so to protect themselves from overheating.
    - However, an employee who takes a cool-down period:
        1. Must be monitored and asked if he or she is experiencing symptoms of heat illness;
        2. Must be encouraged to stay in the shade;
        3. Must not be ordered back to work before he/she has had at least five minutes of net resting time
        4. Must not be ordered back to work "until any signs or symptoms of heat illness have abated," even if this abatement period takes longer than five minutes.
    - When an employee, on cool-down period exhibits or reports symptoms of heat illness, the employer must provide appropriate first aid or implement emergency response procedures.

- **High-Heat Procedures** – Pre-Shift Meetings, Day-Long Monitoring, and Emergency Preparedness
    - Employers must have high-heat procedures, triggered at 95 degrees. There are several new additions to the high-heat requirements.
        1. When the temperature reaches or exceeds 95 degrees, the PM's must now conduct meetings with employees before commencing work.
            - During these "pre-shift" meetings, which are on paid time, the PM must review the high-heat procedures, encourage employees to drink plenty of water, and remind employees of their right to take cool-down periods when necessary.

2. During the workday, the PM must ensure effective monitoring/observation for signs of heat illness, such as through adopting a buddy system, tasking a supervisor with monitoring crews of 20 or fewer employees, or any other "effective means of observation."
3. The PM must now designate at least one employee at each worksite as being a person who is authorized to call for emergency medical services if the need arises.

   For projects in agriculture, when the temperature reaches or exceeds 95 degrees, the PM must do more than make cool-down periods available. Instead, the PM must "ensure" that the employees take a 10-minute cool-down period every two hours.
   - These 10-minute cool-down periods for agricultural employees may be taken concurrently with any other meal period or rest breaks required by law so long as their timing coincides with the timing of meal period and/or rest breaks.

- **Emergency Response Procedures** – Ensuring That Employees Can Call For Help, Receive Immediate Onsite Attention From Supervisors, And Attention From Emergency Medical Responders:
  - The revised regulations now specifically require "effective" emergency response procedures in heat illness prevention programs. Such requirements include:
    1. All employees at the worksite must be able to contact (through "effective communication") a supervisor or summon emergency medical services.
    2. When an onsite supervisor observes or receives a report of heat illness symptoms, he or she must take immediate action, including offering the affected employee first aid or emergency medical services if the symptoms are severe.
    3. A PM must transport, if necessary, an affected employee to a location where he/she can be reached by an emergency medical provider.
    4. A PM must be able to provide emergency medical providers with clear and precise directions to the worksite.
       - Please note that using a cellular phone for calling or texting is considered "effective communication" only if reception in the work area is reliable.
- **Acclimatization Procedures** – Monitoring Employees Who Work During Heat Waves and in High-Heat Areas
  - During a "heat wave" a supervisor or designee is required to closely observe all employees at the worksite. A "heat wave" is any day in which the predicted high temperature for the day is at least 80 degrees and at least ten degrees higher than the "average high daily temperature in the preceding five days."
  - In addition, an employee who has been "newly assigned" to a high heat area must be closely observed by a supervisor or designee for the first 14 days of the employee's work.

REQUIREMENTS FOR WRITTEN HEAT ILLNESS PREVENTION PLANS

- **Heat Illness Prevention Plan** – Employers Must Revise, Translate, And Make Available
  - The new Cal/OSHA regulations require the establishment and maintenance of a heat illness prevention plan that includes the new procedures discussed above.
  - The plan must be written "in both English and the language understood by the majority of employees."
  - Finally, this written plan must be made available at the worksite for employees and Cal/OSHA representatives to inspect upon request.
    - Please reference SWP 113 for additional information.

TRAINING REQUIREMENTS

- **Heat Illness Training** – Employers Must Cover The New Regulations
    - All California employers must update their training protocol to cover the substance of the new regulations. The new and/or revised training topics for employees and supervisors include:
        1. The employer's responsibility to provide water, shade, cool-down breaks, and access to first aid
        2. The employee's right to be free from retaliation for exercising his/her rights under the regulations
        3. The concept of acclimatization, the importance of acclimatization, and the acclimatization procedures in the employer's heat illness prevention plan
        4. The appropriate first aid and/or emergency responses to the different types of heat illness
        5. The fact that heat illness may progress quickly from mild symptoms and signs to a serious and life threatening illness.

Revision History

Date	Change	Acknowledgement
April 24, 2015	Document Created	Brandon Barnes
April 28, 2015	Document Review	Brandon Barnes Clint Reuter

CALIFORNIA OUTDOOR PROJECT HEAT ILLNESS PREVENTION PLAN

Scope

This plan is to ensure all employees working outdoors are properly protected from heat related illness risks and that projects are compliant with Cal/OSHA Heat Illness Prevention standards. This applies to all employees regardless of their duration at the project sites in California when temperatures are expected to be above 80 ºF.

This plan is to be reviewed and agreed upon with all onsite staff prior to the start of work, including any subcontractors not operating under their own plan.

Complete this 6 Step plan for all outdoor projects within California.

Project Info:

Jobsite Address:_____

Today's Task(s):_____ Expected Job Duration:_____

1. **PROJECT MANAGEMENT RESPONSIBILITIES & STAFF MEMBERS**
   The following supervisors have authority and responsibility for implementing the provisions of this plan at this worksite.(List all staff and responsible supervisors).

Project Manager:_____ Phone:_____

Site Supervisor:_____ Phone:_____

Site Health & Safety Officer:_____Phone:_____

All crew members and subcontractors operating off of this plan (print and sign)	
Name (Print):	Signature:

Use more sheets if necessary.

Review Staff Expectations:

- All Onsite employees to be aware of this plan and its provisions.
- Any employees not in agreement with or not following this plan shall not be allowed to work at this jobsite.
- Discuss “Fit for Duty” aspects; are employees well-rested, hydrated, and acclimatized?

2. WATER PROVISION PLAN

Each employee must have available at least 1 quart of clean, cool water per hour before the start of each shift, maintained throughout the day.

Describe how adequate water supplies will be maintained throughout the day for all employees:

_____

Person(s) responsible for water:_____ How often checked?_____

Review Water Provisions Expectations:

- Reusable containers/bottles are to be uniquely marked or identified to avoid potential health exposure between coworkers.
    - Non-water (chemical/industrial) containers are to be clearly labeled to prevent inadvertent consumption.
- Water to be replenished before supplies drop below 1 quart/employee/hour.
- Water to be readily accessible (as close as practical) with multiple stations, if necessary.
- Electrolyte replacement fluids are also suitable. Water must also be maintained.
- Caffeinated/sugary drinks are discouraged. Water consumption is expected regardless.

3. ACCESS TO SHADE

Describe how shade will be provided and maintained throughout the day for all employees:

_____

Person(s) responsible for shade:_____

Review Shade Access Expectations:

- Shade is required at 80 ºF.
- Shade is to be available at any time (or temperature) if requested by any employee or subcontractor.
- For crews of 4 or more, shade should be provided by pop up canopy, tent, or other appropriate shade structure.
    - Crews of 4 or fewer can utilize vehicle cabs with working A/C as effective means of shade and rest.
    - Multiple vehicles can accommodate up to 4 employees each, rotating if necessary).
- Work must be stopped and rescheduled if access to water or shade is insufficient.
- Employees who are not from the local area and acclimatized are to be closely monitored and given additional breaks. Every employee can take breaks as needed.

Stantec

4. WEATHER MONITORING

Start of project temperature:_____Today's Forecasted High Temperate:_____

Describe how temperatures will be monitored throughout the day:

_____

Person(s) responsible for weather monitoring:_____

Review Weather Monitoring Expectations:

- **Check forecasts prior to the start of work.**
  - On or Offsite PM/Supervisor Monitoring and Communication expected.
- Shade is required at 80 ºF.
- High Heat Procedures go into effect at 95 ºF or during a Heat Wave (defined below).

5. HIGH HEAT AND HEAT WAVE PROCEDURES

These High Heat Procedures go into effect at 95 ºF and above, or during a "Heat Wave".

- Heat Waves are defined as: Temperatures above 80 ºF, and when temperatures are at least 10ºF higher than average high daily temperature of the preceding 5 days.

Record time of High Heat or Heat Wave Plan Implementation.

_____: Stopped Work once temperatures reach 95 ºF for a mandatory 10 minute cool-down, rest period and High Heat/Heat Wave procedure discussion.

1. Breaks to be:
   - At least 10 minutes, repeated at least every 2 hours,
   - encouraged to be taken individually by request,
   - Taken as often as employees need based on signs and symptoms.
2. Establish employee buddy system or monitoring plan with frequent communication to be on the lookout for signs and symptoms of heat illness.
   - Direct or electric means of communication will be maintained, so that employees can contact a supervisor when needed.
   - If the supervisor is unable to be near all workers to effectively communicate in person, electronic devices such as cell phone, text messaging, or satellite phone may be used if reception in the area is reliable.
3. Record Break times:_____/_____/_____/_____/_____
/_____/_____/_____/_____/_____/_____

Note - Any employees who are not acclimatized to the local environment must be closely monitored and directed to take additional rest breaks.

6. EMERGENCY RESPONSE PLANNING

For any heat related illness, dial 911 immediately.

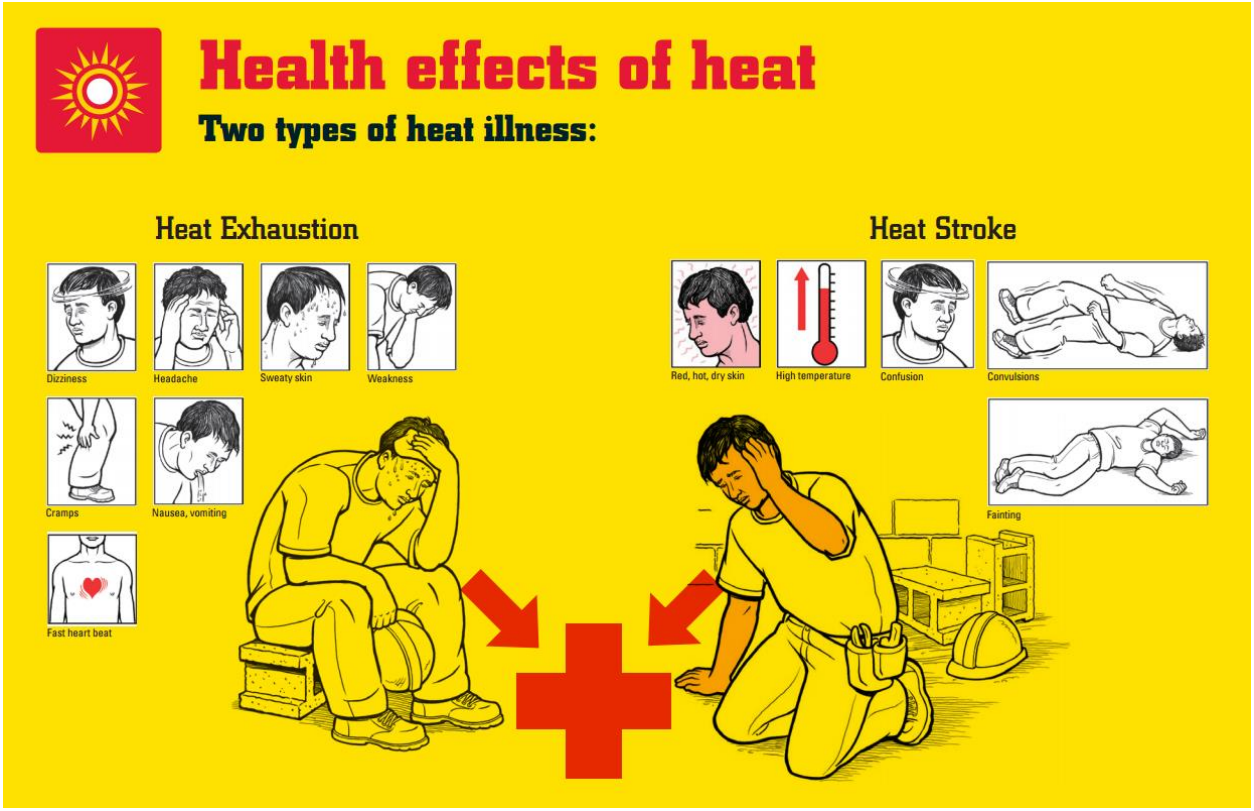
1. Call AllOne Health (800) 350-4511 for any work related injuries/questions/concerns.
2. Notify the project Supervisor/PM once the situation is stabilized and care has begun.
3. Follow Stantec's Injury Reporting protocol, report the incident to the RSEC within 1 hour, with a RMS3 (Incident Report) to be submitted to HSE@stantec.com within 24 hours.

Record time of Emergency Planning step.

_____Daily Tailgate/RMS2 Emergency planning discussion held.

Review Heat Illness Signs and Symptoms, and Emergency Response Plan expectations:

- Review site layout and emergency protocols as described in the HASP, or RMS1.
- Review each step of this plan with all site workers regardless of arrival time or duration onsite when temperatures are expected to be above 80 ºF.
- **Review Heat Illnesses Signs and Symptoms.**



1 REVISION HISTORY

Date	Change	Acknowledgments
20150617	Created	Clint Reuter/Brandon Barnes
	Reviewed	Pending
	Posted to StanNet	Pending

PERSONAL PROTECTIVE EQUIPMENT

REFLECTIVE CLOTHING

Reflective clothing, which can vary from aprons and jackets to suits that completely enclose the worker from neck to feet, can stop the skin from absorbing radiant heat. However, since most reflective clothing does not allow air exchange through the garment, the reduction of radiant heat must more than offset the corresponding loss in evaporative cooling. For this reason, reflective clothing should be worn as loosely as possible. In situations where radiant heat is high, auxiliary-cooling systems can be used under the reflective clothing.

AUXILIARY BODY COOLING

1. Commercially available **ice vests**, though heavy, may accommodate as many as 72 ice packets, which are usually filled with water. Carbon dioxide (dry ice) can also be used as a coolant. The cooling offered by ice packets lasts only 2 to 4 hours at moderate to heavy heat loads, and frequent replacement is necessary. However, ice vests do not encumber the worker and thus permit maximum mobility. Cooling with ice is also relatively inexpensive.

2. **Wetted clothing** is another simple and inexpensive personal cooling technique. It is effective when reflective or other impermeable protective clothing is worn. The clothing may be wetted terry cloth coveralls or wetted two-piece, whole-body cotton suits. This approach to auxiliary cooling can be quite effective under conditions of high temperature and low humidity, where evaporation from the wetted garment is not restricted.

3. **Water-cooled garments** range from a hood, which cools only the head, to vests and "long johns," which offer partial or complete body cooling. Use of this equipment requires a battery-driven circulating pump, liquid-ice coolant, and a container.

   Although this system has the advantage of allowing wearer mobility, the weight of the components limits the amount of ice that can be carried and thus reduces the effective use time. The heat transfer rate in liquid cooling systems may limit their use to low-activity jobs; even in such jobs, their service time is only about 20 minutes per pound of cooling ice. To keep outside heat from melting the ice, an outer insulating jacket should be an integral part of these systems.

4. **Circulating air** is the most highly effective, as well as the most complicated, personal cooling system. By directing compressed air around the body from a supplied air system, both evaporative and convective cooling is improved. The greatest advantage occurs when circulating air is used with impermeable garments or double cotton overalls.

   One type, used when respiratory protection is also necessary, forces exhaust air from a supplied-air hood ("bubble hood") around the neck and down inside an impermeable suit. The air then escapes through openings in the suit. Air can also be supplied directly to the suit without using a hood in three ways:

   - by a single inlet;
   - by a distribution tree; or
   - by a perforated vest.

   In addition, a vortex tube can be used to reduce the temperature of circulating air. The cooled air from this tube can be introduced either under the clothing or into a bubble hood. The use of a vortex tube separates the air stream into a hot and cold stream; these tubes also can be used to supply heat in cold climates. Circulating air, however, is noisy and requires a constant source of compressed air supplied through an attached air hose.

One problem with this system is the limited mobility of workers whose suits are attached to an air hose. Another is that of getting air to the work area itself. These systems should therefore be used in work areas where workers are not required to move around much or to climb. Another concern with these systems is that they can lead to dehydration. The cool, dry air feels comfortable and the worker may not realize that it is important to drink liquids frequently.

RESPIRATOR USAGE

The use of any kind of respiratory protection device increases stress on a worker, and this stress contributes to overall heat stress. Chemical protective clothing such as totally encapsulating chemical protection suits will also add to the heat stress problem.

SUMMARY

Heat stress offers significant challenges when work needs to be performed under hot ambient conditions. However, a well thought-out program can substantially reduce the chances of heat stress. A combination of engineering and administrative controls along with effective use of personal protective equipment can protect employees from suffering the effects of heat stress

EARTHQUAKES

Earthquakes can last just a few seconds or as long as several minutes. Safety precautions include (as amended from http://safety.lovetoknow.com/Earthquake_Safety_Precautions):

- Before an earthquake:
  - Store heavy items or glassware on low shelves so they do not become dangerous projectiles. Secure large equipment with straps, bolts, or other stabilizing methods.
  - Know the emergency meeting location at the site.

- During an earthquake:
  - Immediately seek a safe location such as in a doorway, beneath a table or desk, or along an interior wall away from windows or hazardous objects.
  - Cover the back of your head and your eyes to minimize injury from flying debris
  - Do not take elevators during an earthquake.
  - If outdoors, stay in open areas away from buildings, power lines, trees, and other potential hazards.
  - If driving, stop quickly but safely and stay in the vehicle. Do not stop near power lines, bridges, overpasses, or other potentially dangerous locations.
  - Stay calm and brace yourself to keep your balance. Sit if possible.

- After an earthquake:
  - Be prepared for aftershocks, which may be stronger than the initial jolt.
  - Administer First Aid and summon emergency assistance if necessary.
  - Wear PPE (boots, gloves) to avoid getting cut by broken glass.
  - Turn off gas, electricity, and water if damage is suspected or if advised to do so by authorities.
  - Be cautious opening cabinets, cupboards, and closets in case items are poised to fall.
  - Keep phone lines clear for emergency use.
  - Be patient: it may take hours or days to restore all services depending on the severity of the quake.

4.3 Biological Hazards

Biological hazards may include, but are not limited to, bees/wasps, spiders, snakes, stray dogs, rats and poisonous/allergenic plants.

Bee/Wasp Precautions

Purpose

Bees and similar organisms such as wasps, hornets and yellow jackets can cause significant injury, pain and/or discomfort during our work. This precaution has been developed to help avoid injury.

We can encounter these organisms during a number of our tasks such as:

- Opening well vault covers
- Opening core or sample boxes
- Performing O & M in system compounds
- Working in tall grass, weeds and brush
- Performing site assessments (indoors and outdoors)

Yellow Jackets

Yellow Jackets are found throughout the United States. Yellow Jackets feed on insects, spiders and a wide variety of other food items. They are medium-sized, stout-bodied, and black with bright yellow bands. Yellow-jackets construct globular paper nests, usually in underground cavities. Favorite nesting places include rodent burrows, compost piles and wall voids.

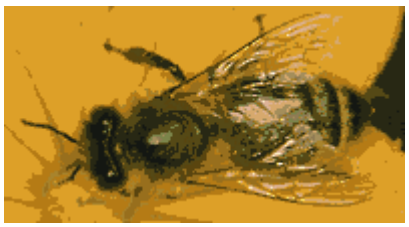
Yellow Jackets are scavengers and frequently are found foraging around compost piles and garbage receptacles. Their activity can be discouraged in the vicinity of patios, parks, picnic and other recreational areas by covering all food and disposing of waste in covered containers.

Paper Wasps

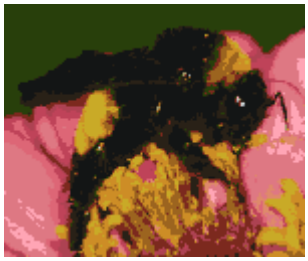
Paper wasps are about 1" in length, have a spindle-shaped body and are marked with a brown and yellow pattern. Paper wasps construct umbrella-shaped, single-layered nests with exposed cells. Nests may be built in trees and shrubs but frequently are found under building overhangs, in attics, barns, garages and sheds. These wasps are not considered overly aggressive and usually pose a threat only when their nests are disturbed. However, foraging wasps can cause considerable annoyance as they fly in and about entrances of buildings.

Honey Bees

Honey bees may become troublesome when they swarm or build colonies in or near residential areas. Honeybees occasionally invade homes and establish a colony, building combs of wax containing honey, pollen and brood in wall spaces. Once established, a colony is difficult to remove because it usually involves structural modification of the building. To be effective, the honey and wax should be removed along with the bees or the site will remain attractive to other swarms.



Bumble Bees



These bees most commonly become a problem when they establish nests close to a sidewalk or near building foundations. Bumble bees are large, robust bees covered with dense black and yellow hairs. They commonly reach one inch in length. Bumble bees usually are not overly aggressive, but will sting if molested. To avoid confrontations with bumble bees, stay clear of patches of flowers visited by adults. These bees can be controlled by spraying or dusting insecticides into their nests. Retreatment may be necessary.

What to do?

Naturally, there are many kinds of bees, and other insects for that matter, about which we should be concerned. The following are some good rules of thumb to keep in mind.

To mitigate hazards associated with bees/wasps:

- Avoid known locations of bees/wasps.
- Keep your eyes and ears open for swarms.
- Look for insects flying in and out of openings such as a crack in the wall, an open pipe end, or a well vault lid.
- Be cautious of tall grass as some bees build their hives at ground level.
- Be cautious of pointed structures, especially in barns, storage sheds, and outbuildings as bees often build hives in those structures.
- Avoid wearing citrus or floral aftershaves or perfumes as bees/wasps may be attracted to these odors.
- Wear light colored clothing as insects are generally attracted to dark colors.
- Fill in cracks or crevices and close open ends of pipes when bees/wasps are not around.
- Leave the area as quickly as possibly if a nest has been disturbed. Do not retrieve nearby belongings. Do not stand still. Do not try to fight them.

If stung by a bee or wasp, wash the area with soap and water. If you have been stung over 15 times or are having symptoms other than pain and swelling, seek emergency medical assistance immediately. Staff that are allergic will carry an EpiPen® as prescribed by a doctor. The SHSO, OSEC and Project Manager should be made aware of this prior to the start of the project.

Insect Sting Reactions

Insect sting reactions can be classified into three types - a normal reaction, a toxic reaction, and an allergic reaction. A normal reaction, lasts only a few hours, involves pain, redness, swelling, itching, and warmth at the site of the sting. A toxic reaction lasts for several days, results from multiple stings and causes muscle cramps, headache, fever, and drowsiness. An allergic reaction is similar to a toxic reaction but is triggered with only one sting.

An allergic reaction can involve one or more of the following: hives, itching, and swelling in areas other than the sting site; tightness in the chest and difficulty in breathing; a hoarse voice or swelling of the tongue; dizziness or a sharp drop in blood pressure; and unconsciousness or cardiac arrest.

4.0 Site Control and Safety Procedures

Procedures described in this section are intended to aid Stantec personnel in mitigating site risks/hazards.

Video Cameras

Prior to using a camera or other electronic recording devices on this site, all on-site personnel and/or visitors will obtain approval from the Project Manager.

Daily Production Health and Safety Briefings

A safety meeting will be conducted twice daily and as needed at the site to discuss the health and safety issues for the activities to be conducted that day. The topics of the meeting will include, at a minimum, general health and safety procedures, reviewing health and safety policies and reviewing the job hazard analyses for the tasks to be conducted. Additional safety meetings may be conducted if the scope of work changes during the day, or if other health and safety issues are identified. The meetings can be documented in using the RMS-2 Fit for Duty Forms included in Attachment 2.

Driving

- Review the Stantec Safe Driving Procedures provided on-site.
- Utilize the Journey Hazard Assessment Card to identify potential driving/journey/traffic hazards before each trip.
- The Daily Vehicle Checklists should be used at least once a day for each vehicle driven for Stantec business to identify potential vehicle issues/hazards. Copies of the Daily Vehicle Inspection Checklist are included in this HASP as Attachment 3.
- Have each team member who will travel to/from the site review the site-specific Journey Management Plan (JMP) before traveling to identify routes of travel and potential driving/journey/traffic hazards. JMP(s) will be kept with each traveling employee throughout the entire course of travel.
- A Stantec Vehicle Collision Kit will be kept in every vehicle used for Stantec project work. A Stantec Vehicle Collision Kit is included in this HASP as Attachment 4.

Drug and Alcohol Testing

Following an incident, Stantec will follow the incident reporting procedures. If appropriate, Stantec will include drug and alcohol testing, consistent with Stantec's Policies and Procedures, as well as the client's contractual requirements for testing.

Exclusion Zone and Decontamination (as applicable)

No eating, drinking, smoking or raw tobacco use is permitted in the exclusion zone. These activities will be conducted only in designated areas of the site. Use of PDAs, cell phones, pagers, or other electrical devices (with the exception of intrinsically safe devices) are prohibited in the exclusion zone. Personnel will properly decontaminate after leaving an exclusion zone. Decontamination procedures may involve disposing of Tyveks, latex gloves, etc. in a decontamination zone located immediately outside of the exclusion zone. At a minimum, personnel will wash any exposed skin before leaving a site using soap and water or pre-moistened cleansing towels. Stantec will evaluate the hazards and develop site-specific decontamination procedures to address the chemical hazards at each site. These procedures can be found in the job safety analyses.

Jewelry

Jewelry can be dangerous and shall not be worn during field activities. Large earrings, long necklaces, loose-fitting bracelets, rings, watches, etc. can become entangled in machinery and cause traumatic amputation of limbs, as well as be conductive of electricity.

Material Safety Data Sheets (a.k.a. Safety Data Sheets/GHS)

Material Safety Data Sheets (MSDSs) will be available in the Stantec HASP &/or in the sub-contractor's HASP for chemicals on site (including chemicals brought on site by on-site personnel and/or visitors).

Personal Protective Equipment

PPE is identified in JSAs. PPE listed in each JSA is specific to the task outlined in the JSA and is consistent with either OSHA 1910.132 or Appendix B of 29 CFR 1910.120. PPE is to be used in accordance with manufacturers' recommendations and employee training. Minimum PPE at the site includes steel toe/steel shank boots, high visibility work gloves, hi-viz safety vest, long sleeve shirt, pants, safety glasses with side shields, and a hard hat.

Pre-entry Briefing

All on-site workers and visitors will receive a pre-entry briefing prior to accessing work areas of the site. The briefing will include reviewing contents of the HASP, signing the Acknowledgement and Agreement Form. The briefing for visitors may be abbreviated to be fit-for-purpose based on the intent of the visit.

Shutoff Valves/Switches

(IF NEEDED) The SHSO will identify the location of shutoff valves and switches for utilities and products on the Site Plan and disseminate this information to all site personnel and visitors as appropriate.

Site Access and Layout

Before mobilizing to the site for an event, the property owner(s) will be notified.

Site Security

Security of our staff, subcontractors, equipment, and the public is of paramount importance to Stantec. Employees are trained in hazard recognition and will follow standard policies and procedures to report and mitigate site security issues/hazards if identified. Note that security consideration is different than traffic guidance and control, which also impacts security to some extent. Security refers to personal safety and freedom from theft or violence. The following items will be evaluated when considering security measures at the site:

- Recent criminal activity at the site and nearby areas (ask site owner/operator and the police);
- Work hours (security concerns may be different depending on the time of day); and
- Lighting at the site (thieves are generally dissuaded from stealing on well lighted sites).

Standard security measures will be implemented on site to minimize the potential for loss at the site. Standard security measures include properly maintained lighting, functioning locks for windows/doors/equipment storage areas, and maintaining control of tools and equipment when not in use. Security may be implemented in a variety of ways:

- Orange construction fence (minimal security);
- Chain link fencing;
- Extra lighting;

- Specialized locks; and/or
- Contract security.

Traffic Guidance and Control

Incidents on sites have shown the need for a site-specific Traffic Guidance and Control Plan. The SHSO and project staff will develop a Traffic Guidance and Control Plan and disseminate this information to all site personnel. This plan will consider the amount of traffic at a site and provide for the safety of all workers. Equipment and resources to be considered as part of traffic guidance and control include:

- Vehicle hazard lights (tail and headlights)
- Cones/Delineators
- Placement of vehicles as barriers between workers and traffic
- Rotating amber hazard lights that can be placed on top of vehicles
- Signage advising drivers of shoulder work.

Other considerations for the Traffic Guidance and Control Plan include:

- Lane closures with proper signing
- Requiring personal vehicles (that aren't being used as barriers) to park as far away from potential traffic as possible.
- Cordoning off as much space as is necessary to ensure our safety.
- Identifying traffic flow routes and parking areas for heavy equipment (e.g., vacuum trucks, drill rigs, etc.) and establishing site speed limits.
- Reviewing local regulations for: formally developed traffic guidance and control plans signed by licensed individuals, police details, flagmen, hours of activity, closure of streets, etc.

Attachment 1

Stantec Field Binder Checklist and Project Applicable Forms

Stantec Field Binder Checklist

INCLUDED			FORMS	Qty.	COMMENTS
YES	NO	N/A			
PROJECT DOCUMENTS					
			Kick-off Meeting Materials	1	
X			Site-Specific Workplan / Written Scope	1	
			Project Management Checklist	1	
			Field and Safety Supplies Checklist	5	
X			Sampling Procedures	1	
			Permits	1	
			Traffic Control Plans	1	
STANTEC ENVIRONMENTAL SERVICES SECTOR					
Field Notes and Logs					
			Site Observation Report	20	
			Borehole/Well Construction Logs	10	
			Gauging Logs	5	
			Purge Groundwater Sampling Logs	10	
			Grab Groundwater Sample Log	10	
			Non-Aqueous Phase Liquid Bailing Sheets	5	
			O&M Field Data Log	20	
			Waste Management Form	10	
Oil & Gas Subsector					
HSE Monitoring					
			Equipment Calibration Sheet	5	
			Air Monitoring Logs	10	
			HSE Opportunity Card	5	
			SAFE Observation Remedial System	1	
			SAFE Observation Emergency Drill	1	
			SAFE Observation Groundwater	1	
			SAFE Observation Drilling	1	
			SAFE Observation Excavation	1	
			SAFE Observation Heavy Equipment	1	
STANTEC CORPORATE HEALTH SAFETY AND ENVIRONMENT					
Hazard Assessment					
			RMS2– FIELD LEVEL Risk ASSESSMENT (FIT FOR DUTY), 1 day	1	
X			RMS2– FIELD LEVEL Risk ASSESSMENT (FIT FOR DUTY), 5 days	10	
			RMS 7 - Quantified Hazard Assessment		
			SWP 102a - Workplace Violence	1	

Stantec Field Binder Checklist

INCLUDED			FORMS	Qty.	COMMENTS
YES	NO	N/A			
			Inspection Form		
			SWP 105a - Hazard Assessment for PPE Assessment Form	1	
HSE Monitoring and Incident Report					
X			RMS 5 - Worksite Inspection - Field	1	Required by HSE 103b mitigations
X			RMS 10 – Planned Job Observation	1	Required by HSE 103b mitigations
X			RMS 3 - Incident Report	1	To be used as needed
Driving Safety and JMP					
X			SWP 124a - Vehicle Pre-Use Checklist	1	
X			SWP 124b - Journey Management Plan	1	
Ground Disturbance					
			SWP 213a - Pre-Ground Disturbance Worksheet Approval	1	
			SWP 213b – Ground Disturbance Form	1	
			SWP 213d - Backfill Inspection Form	1	
Electrical Work					
			SWP 406a - Electrical Job Brief Hazard Assessment	1	
			SWP 406b - Energized Work Permit	1	
			SWP 408a - LTT Permit	1	
			SWP 408b - Emergency LTT Removal	1	
			SWP 408c - LTT Periodic Audit	1	
Confined Space					
			SWP 411a - Confined Space Entry Permit	1	
			SWP 411b - Alternate Entry Permit	1	
Lifting Operations					
			SWP 217a - Forklift Pre-Operational Checklist	1	
CLIENT-SPECIFIC DOCUMENTS					

Instructions: Review your Stantec Field Binder prior to starting work and ensure applicable contents are included. Sign and date the checklist. Your signature indicates your acknowledgement that you will maintain the field binder with forms required for your work.

Signature	Date:

HEALTH, SAFETY AND ENVIRONMENT

SAFE WORK PRACTICE
PRE-GROUND DISTURBANCE WORKSHEET & APPROVAL FORM
SWP-213a

** Form to be completed by Project Manager or Designate*

Section One: Project Information

Project Number:	Project Name:
Project Manager:	
Client:	
Location:	
Planned Excavation Method: ☐ Mechanical ☐ Hand	Planned Excavation Depth: ☐ <30 cm / 1 ft and/or ☐ >30cm /1 ft
Work Description: (provide detail information as to what work is planned and how it will be executed):	
Information provided/completed by: ☐ Client ☐ Stantec	

Section Two: Utilities Location and Verification

1. Review location description provided by client.	Yes ☐ *(circle all that apply)* Green Field / Brown Field / White Zone / Other No ☐ N/A ☐ Justification:	
2. Identify and confirm land use.	Yes ☐ *(circle all that apply)* Ag Land / Urban / Municipal Urban / Native Forest / Industrial No ☐ N/A ☐ Justification:	
3a. Full-sweep line locate required	Yes ☐ No ☐ N/A ☐ Justification:	
3b. Point-specific line locates	Yes ☐ No ☐ N/A ☐ Justification:	
3c. Quote required and authorized (prior to location activities started)	Yes ☐ Provided by: Client Name: Date: No ☐ N/A ☐ Justification:	
4. Utility locates have been performed by public utility company(s) within required timeframe. Locates are clear/visible. *for multiple utility companies, please note dates and contact information using questions 5-15	Yes ☐ Contact Date: Ticket Number: Contact Person: Alternate Contact: Proposed Meet Date: Meet Time: No ☐ N/A ☐ Justification: Ticket Expiration Date:	
5. Private locate company has been contacted and is an approved utility locating contractor. *Markings are clear and visible.*	Yes ☐ Contact Name: Contact Number: Meet Date: Meet Time: No ☐ N/A ☐ Justification:	

HEALTH, SAFETY AND ENVIRONMENT

SAFE WORK PRACTICE
PRE-GROUND DISTURBANCE WORKSHEET & APPROVAL FORM
SWP-213a

6. Site access/permission has been secured. *Land owner/tenant has been contacted.*	Yes ☐ No ☐	Land Owner Name: Contact Number: Permit/Authorization Number: Land Agent Name: Contact Number: ** Attach Access Agreement and Permit Authorization* N/A ☐ Justification:
7. Work discussed with owner/tenant.	Yes ☐ No ☐	Owner Name: Tenant Name: N/A ☐ Justification:
8a. All crossing agreements for third party and owner facilities are in place and conditions have been met.	Yes ☐ No ☐	Crossing or proximity agreements: 1. 2. 3. ** Attach crossing agreements with conditions* N/A ☐ Justification:
8b. Have third party line owners been given 48 hours' notice to crossing or encroachment?	Yes ☐ No ☐	N/A ☐ Justification:
9. Is owner's representative required to be present when exposing or excavating near/across lines?	Yes ☐ No ☐	N/A ☐ Justification:
10a. Reviewed site information to identify subsurface structures relevant to planned site activities. *Review easements, right of ways, historical plot plans, previous site investigation, soil surveys, boring logs, etc.*	*Check all that apply:* ☐ 3rd party identified ☐ Recent low pressure plots reviewed? ☐ Land Standing Report reviewed? No ☐	☐ Recent high pressure plots reviewed? ☐ Land title search reviewed? ☐ Previous Site Investigations? N/A ☐ Justification: ☐ Other
10b. Most recent as-built drawings and/or site plans surveys obtained. *Including UST, product and vent lines, building layout.*	Yes ☐ No ☐	N/A ☐ Justification:
10c. Municipal utilities drawings.	Yes ☐ No ☐	N/A ☐ Justification:
11. All applicable local, provincial and federal permits have been obtained.	Yes ☐ No ☐	Local/City Permit Number: Provincial/State Permit Number: Other: Other: ** Copy attached and on site* N/A ☐ Justification:

Approval to Proceed with Field Activities

Client Approval:

Print Name: Signature: Date:

Project Manager/Designate Approval:

Print Name: Signature: Date:

HEALTH, SAFETY AND ENVIRONMENT

SAFE WORK PRACTICE
GROUND DISTURBANCE FORM
SWP-213b

Stantec

Ground Disturbance Form

Field Activity				
1. Copy of current locates and drawings on site.	Yes ☐ No ☐ N/A ☐ Justification:			
2. All site personnel involved in ground disturbance activities have been briefed on clearance protocols, line locations and signed off on work plan	Yes ☐ No ☐ N/A ☐ Justification:			
3a. Work area is secured.	Yes ☐ No ☐ N/A ☐ Justification:			
3b. Site work permits have been obtained.	Yes ☐ No ☐ N/A ☐ Justification:			
3c. Emergency shut-off switch is located for all impacted equipment.	Yes ☐ No ☐ N/A ☐ Justification:			
3d. Fire extinguishers/warning sign/ barriers are present.	Yes ☐ No ☐ N/A ☐ Justification:			
3e. Signage in place for overhead power lines.	Yes ☐ No ☐ N/A ☐ Justification:			
3f. Specify other safety equipment as needed.	☐ ☐		☐ ☐	
4. Location of area lights/signs and associated subsurface lines identified. Ticket/Confirmation No:	Yes ☐ No ☐	Located by: Company/Utility: N/A ☐ Justification:	Phone:	Date:
5a. Location of all telecommunication and associated subsurface lines identified. Ticket/Confirmation No:	Yes ☐ No ☐	Located by: Company/Utility: N/A ☐ Justification:	Phone:	Date:
5b. Fiber optic lines identified. Ticket/Confirmation No:	Yes ☐ No ☐	Located by: Company/Utility: N/A ☐ Justification:	Phone:	Date:
6. Location of drains and associated Inter-connecting lines identified.	Yes ☐ No ☐	Located by: Company/Utility: N/A ☐ Justification:	Phone:	Date:
7. Location of all electrical junction boxes and associated interconnecting lines identified.	Yes ☐ No ☐ N/A ☐ Justification: Status: Live ☐ Shut-off and locked out ☐ Removed from service ☐ Confirmation of status: Name: * Maintain minimum safe distance of > 7 m/23 ft.	Located by:	Phone:	Date: Date:

SAFE WORK PRACTICE
GROUND DISTURBANCE FORM
SWP-213b

Stantec

8. Location of natural gas meters or connections and all interconnecting lines identified.	Yes ☐ Located by: Company/Utility: No ☐ N/A ☐ Justification: Status: Live ☐ Shut-off and locked out ☐ Removed from service ☐ Confirmation of status: Name:	Phone:	Date: Date:
9. Location of Cable lines.	Yes ☐ Located by: Company/Utility: No ☐ N/A ☐ Justification:	Phone:	Date:
10. Location of Water lines.	Yes ☐ Located by: Company/Utility: No ☐ N/A ☐ Justification:	Phone:	Date:
11. Presence and tracing of process/storm sewers identified /understood. *If other concrete, fiberglass, untraced PVC lines are potentially in the ground disturbance area, identify means of identification in comments section.*	Yes ☐ Located by: Company/Utility: No ☐ N/A ☐ Justification: Comments (need to comment on water sewer line):	Phone:	Date:
12. Presence of underground pipelines associated with pumps and pump galleries, manifolds, tank fields, compressors, production wells, loading racks and equipment identified.	Yes ☐ Located by: Company/Utility: No ☐ N/A ☐ Justification:	Phone:	Date:
13. Location of all aboveground indicators of subsurface utilities/services that may be leading to or from buildings within planned work area are Identified.	Yes ☐ No ☐ N/A ☐ Justification:		
14a. Orientation, arrangement, location, sizes of tanks, STP and extractor covers identified. .	Yes ☐ No ☐ N/A ☐ Justification:		
14b. Burial depth of tank determined if relevant	Yes ☐ Depth: No ☐ N/A ☐ Justification:		
14c. Presence of underground lines for instrumentation, process analyzer, and motor-operated valves are inspected/identified.	Yes ☐ No ☐ N/A ☐ Justification:		
15. Location of other pertinent features surface or sub-surface that may be of relevance to work scope has been identified.	Yes ☐ No ☐ N/A ☐ Justification:		
16. Are all buried lines and utilities that are identified on all drawing sources staked or marked in the ground disturbance zone plus a 30 m /100 ft. buffer?	Yes ☐ No ☐ N/A ☐ Justification:		

17. Critical zones have been identified. *5 m / 16.5 ft. of pipeline crossing area, or the distance defined in the pipeline crossing agreement. 3 m / 10 ft. distance from edge of tank, pumps and pump galleries, manifolds, on/below grade transformers, compressors, production wells, flow lines, loading racks, other process equipment, operating dispenser islands and suspected hazardous/critical utilities, product lines, other subsurface structures, and entire area between tank field and dispensers at retail sites*	Yes ☐ Identify critical zones: No ☐ N/A ☐ Justification:
18. Has the owner/representative inspected the crossings or encroachment areas prior to beginning work?	Yes ☐ No ☐ N/A ☐ Justification:
19. Are all conditions of the Crossing Agreements being met?	Yes ☐ No ☐ N/A ☐ Justification:
20. Are all operators aware of the mechanical excavation zone as discussed in the tailgate meeting?	Yes ☐ No ☐ N/A ☐ Justification:
21. Location of surface features indicative of product lines or other subsurface structures identified.	*Check all that apply:* ☐ Pipe marker signs present ☐ Surface scaring present ☐ Ground depressions present ☐ Water cc's identified ☐ Cut lines observed ☐ Vegetation distressed Other: No ☐ N/A ☐ Justification:
22. Road and pipeline crossing zones identified.	Yes ☐ No ☐ N/A ☐ Justification:
23. If subsurface structures exposed, extra precautions have been taken to ensure structural integrity.	Yes ☐ Describe: No ☐ N/A ☐ Justification:

Comments / Findings	Actions to Close Out Items	Person Completing	Date Completed

HEALTH, SAFETY AND ENVIRONMENT

SAFE WORK PRACTICE
GROUND DISTURBANCE FORM
SWP-213b

Completed by: (print name)	Company:
Signature	Date:

Attachment 2

RMS-2 Fit for Duty

HEALTH, SAFETY, AND ENVIRONMENT

RMS2 – FIELD LEVEL Risk ASSESSMENT (FIT FOR DUTY), 5 day

Project: _____ Project No: _____

Client: _____

Location: _____

Start Date: _____

Documentation and Procedure Review

1.	Risk Management Strategy (RMS1) form and/or Site Specific Health and Safety Plan signed and reviewed?	☐ Yes ☐ **No***
2.	Emergency Response Plan reviewed?	☐ Yes ☐ **No*** ☐ N/A
3.	Tested two-way communications (cell phone, satellite phone) and security measures?	☐ Yes ☐ **No***
4.	Attended Client Site Health and Safety meeting?	☐ Yes ☐ **No*** ☐ N/A
5.	Conducted Stantec site safety meeting with all workforces?	☐ Yes ☐ **No*** ☐ N/A
6.	Are there any new or unexpected hazards not identified in the RMS1/HASP? *If yes, include in the Job Safety Analysis (JSA).*	☐ Yes ☐ No
7.	Working alone or remote work? *If yes, complete call in/out process – Safe Work form must be completed.*	☐ Yes ☐ No

Notifications and Permits

8.	Are work permits required for this site? *If yes, have they been completed and submitted as required?*	☐ Yes ☐ No ☐ Yes ☐ **No***
9.	Are utility locates required for this site? *If yes, have they been completed and reviewed?*	☐ Yes ☐ No ☐ Yes ☐ **No***
10.	Does the Client require any notification prior to starting the work? *If yes, has the notification been provided?*	☐ Yes ☐ No ☐ Yes ☐ **No***

***Contact your Project Manager immediately.**

Work Description **Provide a general description of the work to be conducted.**

Personal Protective Equipment — List specific PPE as needed. Verify type and inspect condition.

☐ Head Protection Type: _____	☐ Hearing Protection: _____	☐ Gloves Type: _____
☐ Foot Protection Type: _____	☐ Respiratory Protection: _____	☐ Water Safety Gear: _____
☐ Eye Protection Type: _____	☐ Fire Retardant Coveralls: _____	☐ _____
☐ High Visibility Vest: _____	☐ Fall Protection: _____	☐ _____

Tools and Equipment — List specific equipment to be used. Verify type and inspect condition.

☐	☐	☐
☒	☐	☐

RMS2 – FIELD LEVEL Risk ASSESSMENT (FIT FOR DUTY), 5 day

DAILY TAILGATE DISCUSSIONS/SUBCONTRACTOR INPUT

Date:	**Time:**	**Weather:**
Start		
Mid-Day		
Post-Day		
Date:	**Time:**	**Weather:**
Start		
Mid-Day		
Post-Day		
Date:	**Time:**	**Weather:**
Start		
Mid-Day		
Post-Day		
Date:	**Time:**	**Weather:**
Start		
Mid-Day		
Post-Day		
Date:	**Time:**	**Weather:**
Start		
Mid-Day		
Post-Day		

RMS2 – FIELD LEVEL Risk ASSESSMENT (FIT FOR DUTY), 5 day

I know the hazards:

By signing here, you are stating the following:

1. I have been involved in the Job Safety Analysis (JSA) and understand the hazards and risk control actions associated with each task I am about to perform.
2. I understand the permit to work requirements applicable to the work I am about to perform (if it includes permitted activities).
3. I am aware that work that has not been risk–assessed must not be performed.
4. I am aware of my ability and obligation to **Stop Work** (*See below).*

I arrived and departed fit for duty (see Fit for Duty card for further information):

5. I am physically and mentally fit for duty.
6. I am not under the influence of any type of medication, drugs or alcohol that could affect my ability to work safely.
7. I am aware of my responsibility to bring any illness, injury (regardless of where or when it occurred), symptoms of soreness or discomfort, or fatigue issue I may have to the attention of the Crew Lead or Supervisor.
8. I sign out uninjured unless I have otherwise informed the Crew Lead or Supervisor.

Insert fitness level under corresponding time column: Fit for Duty = F Alternate Plan = AP
Team Lead to contact Project Manager for any personnel identified as AP

Individual Name/Company Name/Signature	Date:			Date:			Date:			Date:			Date:		
	Time:	Time:	Time:	Time:	Time:	Time:	Time:	Time:	Time:	Time:	Time:	Time:	Time:	Time:	Time:

I will STOP WORK any time anyone is concerned or uncertain about safety. **I will STOP WORK** if anyone identifies a hazard or additional mitigation not recorded. **I will** be alert to any changes in personnel or their fitness level (AP), conditions at the work site or hazards. If it is necessary to **STOP WORK**, I will reassess the task, hazards and mitigations; and then proceed only when safe to do so.

Conclusion of day: I certify that the planned work activities are completed for the day and all injuries and first aids have been reported via RMS3.

Signature of Crew Lead: _____ **Date:** _____

Signature of Crew Lead: _____ **Date:** _____

Signature of Crew Lead: _____ **Date:** _____

Signature of Crew Lead: _____ **Date:** _____

Signature of Crew Lead: _____ **Date:** _____

Are you ready to work safely?

Remember to
1. Stop and think
2. Look around
3. Assess risk
4. Control risks
5. Begin/resume work

RMS2 – FIELD LEVEL Risk ASSESSMENT (FIT FOR DUTY), 5 day

Job Safety Analysis (JSA) Must be completed for all field activities.

Basic Job Steps	Potential Hazards	Controls to Reduce or Eliminate Hazard	Person Responsible

Review the hazard categories below and check the mitigation measures applicable to the identified scope of work.

Environmental Hazards

1. Work area clean
2. Material storage identified
3. Dust/Mist/Fume
4. Noise in area
5. Extreme temperatures
6. Spill potential
7. Waste containers needed
8. Waste properly disposed
9. Waste plan identified
10. Excavation permit required
11. Other workers in area
12. Weather conditions
13. MSDS reviewed

Ergonomic Hazards

14. Awkward body position
15. Over extension
16. Prolonged twisting/bending motion
17. Working in a tight area
18. Lift too heavy/awkward to lift
19. Parts of body in line of fire
20. Repetitive motion
21. Hands not in line of sight
22. Working above your head

Access/Egress Hazards

23. Aerial life/Man basket (inspected & tagged)
24. Scaffold (inspected & tagged)
25. Ladders (tied off)
26. Slips & trips
27. Hoisting (tools, equipment)
28. Evacuation (alarms, routes, ph. #)
29. Confined space entry permit required

Remember to

1. Stop and think
2. Look around
3. Assess risk
4. Control risks
5. Begin/resume work

Overhead Hazards

30. Barricades & signs in place
31. Hole coverings identified
32. Harness/lanyard inspected
33. 100% Tie-off with harness
34. Tie off points identified
35. Falling items
36. Foreign bodies in eyes
37. Hoisting or moving loads overhead

Rigging & Hoisting Hazards

38. Lift study required
39. Proper tools used
40. Tools inspected
41. Equipment inspected
42. Slings inspected
43. Others working overhead/below
44. Critical lift permit

Electrical Hazards

45. GFI test
46. Lighting levels too low
47. Working on/near energized equipment
48. Electrical cords condition
49. Electrical tools condition
50. Fire extinguisher
51. Hot work or electrical permit required

Personal Limitations/Hazards

52. Procedure not available for task
53. Confusing instructions
54. No training for task or tools to be used
55. First time performing the task
56. Micro break (stretching/flexing)
57. Report **all injuries** to your supervisor

It is important that all relevant hazards have plans in place to reduce risk.
Be sure that all associated permits are closed off at the end of the job.

Remember: Stop and Think

Reviewed by Name and Signature: _____

Required Pre-Entry Discussion Topics / Requirements for All Workers and Visitors

Safety rules apply to anyone entering a Stantec workplace or worksite, including employees, supervisors, management and visitors.

COMPANY SAFETY RULES (REFERENCE: STANTEC'S *HSE MANUAL* SECTION 1.3)

- Take reasonable care to protect the health and safety of yourself and others, and the environments in which we all work.
- Consumption of alcohol is only approved during company-sponsored events. Consumption or possession of illegal drugs on company premises, or on any company jobsite, is prohibited.
- Horseplay, fighting or otherwise interfering with other employees is prohibited.
- Theft, vandalism or any other abuses or misuse of company property is prohibited.
- All unsafe acts and conditions, including "near miss" incidents, spills or releases of hazardous materials, property damage, and injuries are to be promptly reported to your supervisor in accordance with Section 12 of the HSE manual, and Section 1.8 of this health and safety plan (HASP).
- Clothing and personal protective equipment (PPE) shall be appropriate to tasks being performed, as determined by hazard assessment (refer to job safety analyses and/or standard operating procedures in Attachment B of this HASP).
- All work shall be conducted in accordance with applicable regulatory safety requirements, client safety requirements, and in accordance with Stantec's HSE manual.
- Only use tools, vehicles and equipment that are in good repair, with all guards and safety devices in place, and for which you have sufficient training and experience. Select tools, vehicles and equipment appropriate for the task intended, and use them in compliance with the manufacturer's written instructions.
- Every employee will keep the work area neat, clean and orderly. A floor or other surface used by any employee will be kept free of obstructions, hazards, and accumulations of refuse, snow or ice.
- As a Stantec employee, you are responsible and authorized to STOP work immediately if you become aware of an unsafe act or condition that could place anyone in danger, or if you are not confident in the work plan. Refer to the Stop Work Authority for guidance.

DISCUSSION IDEAS FOR THE DAILY PRODUCTION H&S MEETING

- Emergency response plan, emergency vehicle (full of fuel) and muster point
- Route to medical aid (hospital or other facility)
- Work hours, is night work planned?
- Hand signals around heavy equipment
- Traffic control
- Pertinent Legislation and Regulations
- Above and below ground utilities (energized or de-energized)
- Material Safety Data Sheets (MSDS)
- To who, what, why, and when to report an incident
- Fire extinguisher and First Aid kit locations
- Excavations, trenching sloping and shoring
- Personal protective equipment (PPE) and training
- Safety equipment and training

Required Pre-Entry Discussion Topics / Requirements for All Workers and Visitors

- Emergency telephone and telephone numbers (may not be 911)
- Eye wash stations and washroom locations
- Energy lock-out/tag-out procedures. Location of “kill Switches” etc.
- Weather restrictions
- Site security. Site hazards. Is special waste present?
- Traffic and people movements
- Working around machinery (both static and mobile)
- Sources of ignition, static electricity etc.
- Stings, bites, large animals and other naturally related injuries
- Working above grade
- Working at isolated sites
- Decontamination procedures (both personnel and equipment)
- Falls, trips, sprains and lifting injuries (how to prevent)
- Right to refuse unsafe work
- Adjacent property issues (residence, business, school, day care center)
- Hand & glove safety, pinch points, hand positioning

Attachment 3

Driver's Fatigue Checklist /Safe Driving Vehicle Pre-Use Checklist

Too tired to drive?

A road safety initiative of RACV, Rural Ambulance Victoria and Metropolitan Ambulance Service

Driver Fatigue Checklist

Before you drive, answer these questions to make sure you are not too tired to drive.

	Yes	No
Have you been getting full nights of restful sleep over the past week? *When you don't get enough sleep you acquire sleep debt. The only way to repay the debt is by sleeping.*	❑	❑
Are you setting off on a trip after a good night's sleep, rather than after a full day at work? *Being awake for 17 hours has the same effect on driving as having a BAC (Blood Alcohol Concentration) of .05, doubling your risk of crashing. After 24 hours the BAC equivalent is 0.1, equating to a 7 times greater risk of crashing than someone who is well rested.*	❑	❑
Are you planning to start your trip after 6am, rather than starting out earlier when you would normally be asleep? *Your body naturally wants to sleep between about 1am and 6am greatly increasing your risk of crashing, at those times.*	❑	❑
Have you allowed time in your trip to stop and rest if you feel tired? *Regular breaks every 2 hours will help maintain vigilance, however, the only way to combat fatigue is to sleep.*	❑	❑
Do you stop and have a Powernap if you feel tired while driving? *Stopping for a 15 to 30 minute sleep or Powernap when you are tired is effective in alleviating the short-term effects of fatigue, but ensure you allow time to recover from your sleep before commencing to drive.*	❑	❑
Are you sure that you do not suffer from a sleeping disorder, such as sleep apnoea? *2% of people suffer from the most common sleep disorder, sleep apnoea. Men over 50, particularly those overweight, are most at risk.*	❑	❑

If you have answered "no" to any of these questions you may be at risk of fatigue.

RACV

Too tired to drive?

What is fatigue?

Driver fatigue contributes to more than 25 per cent of all road crashes in Victoria.

Two main causes:

- lack of quality sleep
- driving at times when you would normally be asleep.

Protect yourself from having a fatigue-related crash by:

- making sure you regularly get enough sleep
- being aware of the fatigue high crash risk times when driving between 1am-6am
- not starting a long trip after a long day's work
- planning your trip so you can take regular breaks
- seeking medical advice if you often feel sleepy
- being aware of the effects of any medication taken.

Once you're on the road:

- regular rest breaks to help keep you alert, but if you feel tired, the only way to keep safe is to stop and sleep
- eat proper and well-balanced meals, preferably at your normal meal times.

If you feel tired when driving, take a Powernap (sleep for 15 to 30 minutes), but allow time to recover from your sleep before commencing to drive.

Don't be fooled by myths about fatigue! The following common beliefs about fatigue are untrue:

myth – Coffee is the best way to combat fatigue.
Coffee only provides short-term benefits; once its effects wear off, you suffer from sleep rebound, which is a major cause of crashes.

myth – Playing music will help keep me alert.
This is only a short-term benefit.

myth – Plenty of fresh air through the window will help keep me alert.
This is only a short-term benefit.

myth – Young people need less sleep.
In fact, drivers under 25 years of age are over-represented in fatigue crashes.

myth – I know when I am tired, or when I am having ``sleep attacks".
The danger is that you only find out how tired you are when it's too late.

The only cure for fatigue is sleep

HEALTH, SAFETY AND ENVIRONMENT

SAFE DRIVING – VEHICLE PRE-USE CHECKLIST

SWP 124A

Employee Name: Region/Business Unit:

Date: Time: Vehicle Color:

Vehicle Make/Model: Vehicle License Plate Number:

Job: Job #: # of Km or Mi Driven

Job: Job #: # of Km or Mi Driven

Odometer Start: Odometer Stop: Total Km or Mi Driven:

Stantec Vehicle ☐ Rental ☐ Personal Vehicle ☐

Perimeter Walk Around:	**Item is OK**	**Item is NOT OK**
Check for signs of vandalism, negligence, damage or unusual conditions		
Check all tires for excessive and unusual wear and proper inflation – include the spare tire if accessible		
Check under vehicle for signs of leaking fluids		
Check wiper blades (Do they work? Do they need replacement?)		
Check all light systems – brake, head, back-up, running, turn signals, emergency flashers		
Check to make sure doors, truck/toolbox lids, tailgates all open and close properly		
(Make sure you have keys to any toolboxes that you may need to access)		

Check Gauges on Dashboard:

Fuel Level		
Oil light		
Engine Coolant Temperature Gauge		
Service Indicator Lights		
Battery Charge Indicator		

HEALTH, SAFETY AND ENVIRONMENT

SAFE DRIVING – VEHICLE PRE-USE CHECKLIST

SWP 124A

Inside Vehicle:

Make sure seatbelts are present for all who will be riding in the vehicle		
Secure all cargo in the vehicle so that items will not become projectiles in the event of sudden stops or collisions		
Adjust the seat position, rearview and side mirrors		
Adjust temperature controls, vents, radio, etc.		

If Pulling a Trailer:

Is trailer properly hitched to the vehicle (including safety chains)		
All lights are working properly		
Proper trailer for the load (check weight specifications) and load is balanced. If you anticipate the load is near the trailer weight limit, weigh the trailer at a weigh station		
Are tires in good condition and properly inflated?		

Notify the vehicle manager or rental company if you feel that any deficiencies are unsafe and DO NOT drive the vehicle

Signature: _____

SAFE DRIVING – VEHICLE PRE-USE CHECKLIST

SWP 124A

1 REVISION HISTORY

Date	Change	Acknowledgments
2010/02/23	Changed HSE to SWP; reformatted header and footer; added revision history	GD
20121015	Updated and reviewed by PS	KDR

Attachment 4
RMS-3 incident/Near Miss Investigation and Collision Kit

INCIDENT REPORT – RMS 3

Incidents involving injury, potential injury, or report of pain, soreness, or discomfort must be reported immediately (within one hour) to a supervisor. Supervisors will then immediately contact ***their HSE representative to develop a plan for assessment and care***. This form must be completed and **submitted within 24 hours** of any incident. Do not delay submission waiting for signatures. **Email to hse@stantec.com or fax unsigned report to (780) 969-2030** and file locally in compliance with the corporate records retention policy and practices once all signatures have been obtained.

This document contains privileged and confidential information prepared at the request of Stantec's Legal Counsel. The contents of this report are restricted to HR personnel, Risk Management Representatives, Project Manager and PC Leader, and Stantec's Insurer, Adjuster and Legal Counsel. Information collected will be used solely for the purpose of meeting the requirements of Stantec's HSE and insurance programs, complying with applicable legislation, and will be used in accordance with any governing privacy legislation. The information collected will be maintained electronically and may be included in required reports.

SECTION 1: GENERAL INFORMATION			
Office location:		BC number:	
Location of incident:			
Incident date and time:		Date and time reported:	
Project name:		Project number:	
Client Name:			
Person in charge:		Person in Charge Phone:	

SECTION 2: STANTEC EMPLOYEE INFORMATION (if more than one identify extras in incident details below)			
Name:		Phone:	
Job position:		Group name:	
Time employee began work:		Job Experience (in years)	
Type of employment:	Full Time ☐ ; Visitor ☐ ; Contract ☐ ; Volunteer ☐ ; Seasonal ☐		
Supervisor:		Supervisor Phone:	

SECTION 3: INCIDENT DETAILS

Type of Incident: *incident types marked with an asterisk, please complete pages 1 and 4 only

See StanNet for a list of Incident Type Definitions

☐ **Report Only*	☐ **Hazard Identification*	☐ **Near Miss*
☐ First Aid	☐ Motor Vehicle Incident	☐ 3rd Party Incident (i.e., Public)
☐ Medical Aid – No Lost Time	☐ Property Damage - Vehicle	☐ Spill or Release
☐ Restricted Work	☐ Property Damage - Other	☐ Utility Strike
☐ Lost Time	☐ Theft	☐ Fire/Explosion/Flood
☐ Fatality	☐ Contractor Recordable Incident	☐ Stop Work Authority
☐ Violence or Harassment	☐ Non-compliance	☐ Other (specify details below)

Describe incident in detail: (include any issues related to people, equipment, materials, environment, and processes)

Immediate corrective actions taken:

Canada East (Atlantic) – Neil Clements (506-639-2961); Canada East (ON/QC) – Jim Elkins (613-404-8508); Canada Prairie & Mountain – Yvonne Beattie (780-616-8909); International – Kev Metcalfe (780-231-2185); US Northeast & South) – Fred Miller (610-235-7315); US Midwest & Mid-Atlantic - Keith Kuhlmann (740-816-6170); US West – Clint Reuter (818-395-8556)

Stantec

INCIDENT REPORT – RMS 3

SECTION 4: MEDICAL INFORMATION

Name of first aid attendant:	Injury recorded in first aid log? Yes ☐ No ☐ N/A ☐
Description of first aid or medical treatment administered:	
Clinic/hospital sent to:	
Attending physician/paramedic (if known):	

Area of Injury – Please check all that apply:

☐	Head	☐	Teeth	☐	Upper back		Left		Right		Left		Right		Left		Right		Left		Right
☐	Face	☐	Neck	☐	Lower back	☐	Shoulder	☐		☐	Wrist	☐		☐	Hip	☐		☐	Ankle	☐	
☐	Eye(s)	☐	Chest	☐	Abdomen	☐	Arm	☐		☐	Hand	☐		☐	Thigh	☐		☐	Foot	☐	
☐	Ear(s)			☐	Pelvis	☐	Elbow	☐		☐	Finger(s)	☐		☐	Knee	☐		☐	Toe(s)	☐	
☐	Other	Specify				☐	Forearm	☐						☐	Lower Leg	☐					

Has the injured employee had a previous similar injury or disability?	Yes ☐	No ☐

SECTION 5: PROPERTY OR VEHICLE DAMAGE: STANTEC

Ownership Details (choose one):	☐ Rented (attach rental agreement)	☐ Stantec Owned	☐ Personal (employee vehicle)
Year, Make, and Model of Vehicle:		Vehicle ID # (VIN)	
Nature of damage:		Estimated cost of damage:	$
Description of damaged property:			
Attending police officer (if known):		Badge #:	
Copy of police report received	Yes ☐ No ☐ If yes, file number:	(attach copy of police report)	

PROPERTY OR VEHICLE DAMAGE: 3RD PARTY

Name of owner and contact number:			
Year, Make, and Model of Vehicle:		License Plate Number:	
Insurer and Policy Number:			
Injured parties? Yes ☐ No ☐	If yes, describe Injuries:		
Diagram or photographs attached?	Yes ☐ No ☐		

WITNESS INFORMATION - #1

Name:		Phone Number:	
Witness statement provided?	Yes (attached) ☐	No ☐	

WITNESS INFORMATION - #2

Name:		Phone Number:	
Witness statement provided?	Yes (attached) ☐	No ☐	

SECTION 6: SPILL OR RELEASE

Stantec

INCIDENT REPORT – RMS 3

SECTION 7: ANALYSIS

IMMEDIATE/DIRECT CAUSES

A. **UNSAFE ACTIONS** (check off as many as necessary)

- ☐ Operating equipment without authority
- ☐ Failure to warn
- ☐ Failure to secure
- ☐ Operating at improper speed
- ☐ Making safety devices inoperative
- ☐ Removing safety devices
- ☐ Using defective/improper equipment
- ☐ Using equipment improperly
- ☐ Failing to use personal protective equipment properly
- ☐ Improper loading
- ☐ Improper placement
- ☐ Improper lifting or handling
- ☐ Improper position for a task
- ☐ Servicing equipment in operation
- ☐ Horseplay
- ☐ Failure to follow procedure, policy or practice
- ☐ Failure to identify hazard or risk
- ☐ Inattention
- ☐ Failure to communicate
- ☐ Other: Specify

B. **UNSAFE CONDITIONS** (check off as many as necessary)

- ☐ Inadequate guards/barriers
- ☐ Improper/inadequate PPE
- ☐ Defective tools or equipment
- ☐ Congested work area
- ☐ Inadequate warning system
- ☐ Fire and explosion hazards
- ☐ Poor housekeeping; disorder
- ☐ Noise exposure
- ☐ Radiation exposure
- ☐ High or low temperature exposures
- ☐ Inadequate or excess illumination
- ☐ Inadequate ventilation
- ☐ Presence of harmful materials
- ☐ Inadequate instructions/procedures
- ☐ Hazardous environmental conditions; gases, dusts, smokes, fumes, vapours
- ☐ Inadequate information/data
- ☐ Inadequate preparation/planning
- ☐ Inadequate support/assistance
- ☐ Road conditions
- ☐ Weather conditions
- ☐ Other: Specify

BASIC/ROOT CAUSES

C. **PERSONAL FACTORS (check off as many as necessary)**

- ☐ Inadequate physical capability
- ☐ Physical stress
- ☐ Mental stress
- ☐ Lack of skill
- ☐ Lack of knowledge
- ☐ Other: Specify

D. **JOB FACTORS (check off as many as necessary)**

- ☐ Inadequate leadership or supervision
- ☐ Inadequate engineering
- ☐ Inadequate purchasing
- ☐ Abuse or misuse
- ☐ Inadequate maintenance (scheduled or preventative)
- ☐ Inadequate tools or equipment
- ☐ Inadequate work standards
- ☐ Other: Specify
- ☐ Excessive wear and tear
- ☐ Inadequate communications
- ☐ Improper motivation

SECTION 8: FOLLOW-UP

Short-term:	Corrective Action	Assigned To	Target Date	Completion Date

Long-term:	Corrective Action	Assigned To	Target Date	Completion Date

Stantec

INCIDENT REPORT – RMS 3

REVIEW COMMENTS		
Involved Employee Comments:		
Signature: Job Title:	Print Name:	Date:
Lead Investigator Comments:		
Signature: Job Title:	Print Name:	Date:
Supervisor/Project Manager:		
Signature: Job Title:	Print Name:	Date:
HSE Representative (OSEC/JH&S Committee/RSEC/HSE Manager):		
Signature: Job Title:	Print Name:	Date:
Management Review:		
Signature: Job Title:	Print Name:	Date:
Client Review (if required):		
Signature: Job Title:	Print Name:	Date:
Additional Comments:		

Contact information.
Immediately Call Corporate HSE, and Practice & Risk Management, and (if injuries) Human Resources.

Health, Safety & Environment: Call:
Clint Reuter Office (949) 923-6258 Cell (818) 395-8556

Practice & Risk Management: Fax unsigned report to (780) 969-2030

Human Resources: **For Injuries Only** contact the Human Resources Rep. for your region:

US East: Jennie Moore
Jennie Moore: Phone: (585) 413-5241, Cell: (585) 613-8022, Fax: (585) 272-7442,
E-Mail: jennie.moore@stantec.com.

US West: Eunice Hernandez
Eunice Hernandez: Phone: (661) 885-3106, Fax:,
E-Mail: eunice.hernandez@stantec.com

US Mtn Desert: (Arlington, Houston, Midland, Phoenix, Scottsdale, Ponca City SLC): Shannon Drake
Shannon Drake: Phone: (602) 707-4627, Fax (602) 532-7784,
E-Mail: Shannon.Drake@stantec.com

US Mtn Desert: (Dallas, Fort Worth, Denver, Fort Collins, Golden, Las Vegas, Reno, Oklahoma City, Tucson) Sheryl Appelt
Sheryl Appelt: Phone: (602) 707-9495, Fax (602) 926-2217,
E-Mail: Sheryl.Appelt@stantec.com

Fax and/or scan-email report to all three.

VEHICLE COLLISION KIT

Stantec Vehicle Collision Kit

The following items should be enclosed in an envelope in the glove box of all Stantec vehicles:

- Vehicle Registration Card
- Vehicle Insurance Card with name and phone number of agent
- Name of Preferred Body Shop or Maintenance Facility to take damaged vehicle (usually nearest Dealership)
- Owner's Manual
- Disposable Camera
- Note Pad and Pen

WHAT TO DO AFTER A COLLISION:
Auto collisions: Even the most careful drivers may be involved. Knowledge of what to do **after** the collision can make the experience a little less frightening and decrease the chance of unnecessary complications.

After a Collision

- Check for injuries. Life and health are more important than damage to vehicles.
- Make note of specific damages to all vehicles involved.
- Write down the names, addresses and license numbers of persons involved in the collision. Also, write a description of the other vehicles.
- Call the police, even if the collision is minor.
- Jot down names and addresses of anyone who may have witnessed the collision. This can prevent disagreement concerning how the collision actually happened.

Other Do's and Don'ts

- DO jot down details about the collision, the location, and circumstances such as weather conditions and visibility.
- DO notify your insurance agent about the collision immediately.
- DON'T sign any document unless it is for the police or your insurance agent.

Remember that a <u>Stantec incident investigation form must also be completed</u> following any collision. The collision must be reported to the Stantec Project Manager in addition to the following people:

Practice and Risk Management :
Fax: 780-969-2030

Clint Reuter Office (949) 923-6258 Cell (818) 395-8556

CERTIFICATE OF LIABILITY INSURANCE

5/1/2020

DATE (MM/DD/YYYY): 4/26/2019

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must have ADDITIONAL INSURED provisions or be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER Lockton Companies 444 W. 47th Street, Suite 900 Kansas City MO 64112-1906 (816) 960-9000	**CONTACT NAME:** **PHONE (A/C, No, Ext):** **FAX (A/C, No):** **E-MAIL ADDRESS:**
	INSURER(S) AFFORDING COVERAGE — **NAIC #** **INSURER A :** Berkshire Hathaway Specialty Insurance Company — 22276 **INSURER B :** Travelers Property Casualty Co of America — 25674 **INSURER C :** **INSURER D :** **INSURER E :** **INSURER F :**
INSURED 1415077 STANTEC CONSULTING SERVICES INC. 370 INTERLOCKEN BOULEVARD, SUITE 300 BROOMFIELD CO 80021-8012	

COVERAGES **CERTIFICATE NUMBER:** 16046527 **REVISION NUMBER:** XXXXXXX

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
A	X **COMMERCIAL GENERAL LIABILITY** CLAIMS-MADE [X] OCCUR X CONTRACTUAL/CROSS X XCU COVERED GEN'L AGGREGATE LIMIT APPLIES PER: POLICY [X] PRO-JECT [X] LOC OTHER:	N	N	47-GLO-307584	5/1/2019	5/1/2020	EACH OCCURRENCE DAMAGE TO RENTED PREMISES (Ea occurrence) MED EXP (Any one person) PERSONAL & ADV INJURY GENERAL AGGREGATE PRODUCTS - COMP/OP AGG $	$ 2,000,000 $ 1,000,000 $ 25,000 $ 2,000,000 $ 4,000,000 $ 2,000,000 $
B B B	**AUTOMOBILE LIABILITY** X ANY AUTO OWNED AUTOS ONLY HIRED AUTOS ONLY SCHEDULED AUTOS NON-OWNED AUTOS ONLY	N	N	TC2J-CAP-8E086819 TJ-BAP-8E086820 TC2J-CAP-8E087017	5/1/2019 5/1/2019 5/1/2019	5/1/2020 5/1/2020 5/1/2020	COMBINED SINGLE LIMIT (Ea accident) BODILY INJURY (Per person) BODILY INJURY (Per accident) PROPERTY DAMAGE (Per accident) $	$ 1,000,000 $ XXXXXXX $ XXXXXXX $ XXXXXXX $ XXXXXXX
A	X **UMBRELLA LIAB** [X] OCCUR X **EXCESS LIAB** [ ] CLAIMS-MADE DED RETENTION $	N	N	47-UMO-307585	5/1/2019	5/1/2020	EACH OCCURRENCE AGGREGATE $	$ 5,000,000 $ 5,000,000 $ XXXXXXX
B B B	**WORKERS COMPENSATION AND EMPLOYERS' LIABILITY** Y/N ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? [N] N/A (Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below		N	TC2J-UB-8E08592 (AOS) TRJ-UB-8E08593 (MA, WI) EXCEPT FOR OH ND WA WY	5/1/2019 5/1/2019	5/1/2020 5/1/2020	X PER STATUTE [ ] OTH-ER E.L. EACH ACCIDENT E.L. DISEASE - EA EMPLOYEE E.L. DISEASE - POLICY LIMIT	$ 1,000,000 $ 1,000,000 $ 1,000,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

TO WHOM IT MAY CONCERN

CERTIFICATE HOLDER	**CANCELLATION**
16046527 TO WHOM IT MAY CONCERN 370 INTERLOCKEN BOULVEARD SUITE 300 BROOMFIELD CO 80021	**SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.** **AUTHORIZED REPRESENTATIVE** Joseph M Arnold

© 1988-2015 ACORD CORPORATION. All rights reserved.

Attachment 5
RMS-5 Site Inspection Form

RMS5 - WORKSITE INSPECTION – FIELD

Department: _____ Business Centre: _____

Location: _____ Date: _____

Purpose: To identify hazards in the field where Stantec personnel are working.

Responsibility: The Project Manager will determine how often work site inspections are required. OSEC will assist.

NOTE: for pre-use vehicle inspection, record inspection on SWP 124a – Vehicle Pre-Use Checklist.

	Status			Severity Ranking			Repeat Item (Y or blank)	Action Required (incl. champion's name)	Date Done
	Okay	Needs Work	N/A	A	B	C			
HSE Documentation									
Rms1 – hazard assessment	☑	☐	☐						
Health and Safety Plan (HASP)	☑	☐	☐						
Toolbox meeting	☑	☐	☐						
Permits (e.g. work, confined space, hot work, etc.)	☐	☐	☑						
Clearances	☐	☐	☑						
Training requirements met	☑	☐	☐						
Safe Work Practices	☑	☐	☐						
Inspection forms (e.g. ladder, chainsaw, client-specific excavation, etc.)	☑	☐	☐						
Other: Specify: _____	☐	☐	☐						
Emergency Preparedness									
Emergency Response Plan current & available	☑	☐	☐						
Muster point	☑	☐	☐						

A – Major – Includes potential for serious incident or illness, hospitalization, permanent disability, fatality or extensive property damage
B – Moderate – Includes potential for lost-time injury or illness, temporary disability or considerable property damage
C – Minor – Includes potential for first aid injury, minor illness, no lost time or limited property damage

	Status			Severity Ranking			Repeat Item (Y or blank)	Action Required (incl. champion's name)	Date Done
	Okay	Needs Work	N/A	A	B	C			
First aid kit stocked/available	☑	☐	☐						
Emergency eyewash available	☑	☐	☐						
First aid providers on-site	☑	☐	☐						
Fire extinguisher	☑	☐	☐						
Communication available	☑	☐	☐						
Spill response kit	☑	☐	☐						
Other: Specify: _____	☐	☐	☐						
Protective Equipment									
Hard hats									
Safety glasses	☑	☐	☐						
Hearing protection	☐	☐	☑						
High visibility vests	☑	☐	☐						
Proper work gloves	☐	☐	☑						
Safety boots	☑	☐	☐						
18" PVC orange traffic cones	☐	☐	☑						
Road signs as required	☐	☐	☑						
Fall arrest/restraint	☐	☐	☑						
Personal floatation device	☐	☐	☑						
Other: Specify: _____	☐	☐	☐						

A – Major – Includes potential for serious incident or illness, hospitalization, permanent disability, fatality or extensive property damage
B – Moderate – Includes potential for lost-time injury or illness, temporary disability or considerable property damage
C – Minor – Includes potential for first aid injury, minor illness, no lost time or limited property damage

	Status			Severity Ranking			Repeat Item (Y or blank)	Action Required (incl. champion's name)	Date Done
	Okay	Needs Work	N/A	A	B	C			
Tools and Equipment									
Maintenance – tools in good condition	☑	☐	☐						
Used properly	☑	☐	☐						
Appropriate for job	☑	☐	☐						
Stored and/or secured safely	☑	☐	☐						
Lockout system established	☐	☐	☑						
Clearance from panels/overhead wires	☑	☐	☐						
Guards in place	☐	☐	☑						
Other: Specify: _____	☐	☐	☐						
Chemicals									
Controlled products labeled properly	☐	☐	☑						
Stored properly	☐	☐	☑						
MSDS available	☐	☐	☑						
TDG compliance	☐	☐	☑						
Other: Specify: _____	☐	☐	☐						
Site									
Parking	☑	☐	☐						
Accessibility	☑	☐	☐						
Work area demarcated	☐	☐	☑						

A – Major – Includes potential for serious incident or illness, hospitalization, permanent disability, fatality or extensive property damage
B – Moderate – Includes potential for lost-time injury or illness, temporary disability or considerable property damage
C – Minor – Includes potential for first aid injury, minor illness, no lost time or limited property damage

	Status			Severity Ranking			Repeat Item (Y or blank)	Action Required (incl. champion's name)	Date Done
	Okay	Needs Work	N/A	A	B	C			
Visibility	☑	☐	☐						
Slipping and tripping hazards	☑	☐	☐						
Drainage	☑	☐	☐						
Overhead hazards identified	☑	☐	☐						
Buried utilities located/marked and exposed by hand	☐	☐	☑						
Pits/excavations barricaded	☐	☐	☑						
Excavation/Trench supports/slope	☐	☐	☑						
Traffic hazards controlled (including pedestrian walkways)	☑	☐	☐						
Other: Specify: _____	☐	☐	☐						
Environment									
Sensitive areas identified	☑	☐	☐						
Noise levels (</= 84dBA – 8hr shift; 82dBA – 12hr shift)	☑	☐	☐						
Chemical hazards identified	☑	☐	☐						
Working near water	☐	☐	☑						
Heat/Cold	☑	☐	☐						
Gas, fumes, dusts, vapors, asbestos	☑	☐	☐						
Ventilation	☑	☐	☐						
Confined space (including monitor and attendant(s))	☐	☐	☑						

A – Major – Includes potential for serious incident or illness, hospitalization, permanent disability, fatality or extensive property damage
B – Moderate – Includes potential for lost-time injury or illness, temporary disability or considerable property damage
C – Minor – Includes potential for first aid injury, minor illness, no lost time or limited property damage

	Status			Severity Ranking			Repeat Item (Y or blank)	Action Required (incl. champion's name)	Date Done
	Okay	Needs Work	N/A	A	B	C			
Other: Specify: _____	☐	☐	☐						
General (including Buildings/Trailers)									
Exits marked and accessible	☑	☐	☐						
Stairs and walkways clean and dry	☐	☐	☑						
Handrails sturdy	☐	☐	☑						
Emergency lighting	☐	☐	☑						
General housekeeping	☐	☐	☑						
Body positioning, ergonomics (resources available on StanNet)	☐	☐	☑						
Other: Specify: _____	☐	☐	☐						

Prepared by: _____ _____
Signature Date

Approved by: _____ _____
Signature (Project Manager) Date

Original Copy: Project Files
Copies: OSEC & Field Files

A – Major – Includes potential for serious incident or illness, hospitalization, permanent disability, fatality or extensive property damage
B – Moderate – Includes potential for lost-time injury or illness, temporary disability or considerable property damage
C – Minor – Includes potential for first aid injury, minor illness, no lost time or limited property damage

Attachment 6
RMS-10 Planned Job Observation

PLANNED JOB OBSERVATION

(submit to hse@stantec.com)

BC:		**Project Number:**		**Date:**	
Practice/Sector:			**Type of Work:**		
Client:					
Location:					
Company Observed:					
RMS 1/HASP Reviewed:	☐ Yes ☐ No		**LMRA Tested:**	☐ Yes ☐ No	

OBSERVATION CHECKLIST (G = GOOD; NI = NEED IMPROVEMENT)

Safety Management Tools	**G**	**NI**
Site Orientation	☐	☐
FLRA (RMS 2)	☐	☐
Ongoing HRAC	☐	☐

Working Conditions	**G**	**NI**
Tools and equipment	☐	☐
Housekeeping	☐	☐
Environmental Conditions	☐	☐
Workplace Design	☐	☐
Site Barricading	☐	☐

Working Conditions	**G**	**NI**
Traffic Control	☐	☐

Human Behavior	**G**	**NI**
Attention to work	☐	☐
Body position	☐	☐
Repetitive motion	☐	☐
Team communication	☐	☐
Use of PPE	☐	☐
Recognizing changes	☐	☐

OBSERVATIONS

Describe task, process, or conditions observed:
What was said? (Reinforcement/Coaching):
What is to be done? Follow-up action(s):
Observer's Name (print):

Stantec