

Washington Issaquah | Bellingham | Seattle

Oregon Portland | Bend | Baker City

California Oakland | Sacramento | Irvine

VAPOR INTRUSION, INSPECTION, MONITORING, AND MAINTENANCE WORK PLAN

PACIFIC FOOD SYSTEMS, INC. 5815 FOURTH AVENUE SOUTH – NORTH BUILDING SEATTLE, WASHINGTON

AGREED ORDER NO. DE 10402

Submitted by: Farallon Consulting, L.L.C. 975 5th Avenue Northwest Issaquah, Washington 98027

Farallon PN: 457-007

For: Mr. Ron Taylor Capital Industries, Inc. 5801 Third Avenue South Seattle, Washington

November 2015

Prepared by:

Russell Luiten, E.I.T. Staff Engineer

Reviewed by:

Jeffrey Kaspar, L.G., L.H.G. Principal Geologist



TABLE OF CONTENTS

ACR	ONYM	IS AND ABBREVIATIONS	ii
1.0	INTI	RODUCTION	
	1.1	VIIMM WORK PLAN PURPOSE	1-1
	1.2	VAPOR INTRUSION INSPECTION, MONITORING, AND	
		MAINTENANCE WORK PLAN ORGANIZATION	1-1
2.0	SITE	E DESCRIPTION AND SYSTEM DESIGN	
	2.1	SITE DESCRIPTION	
	2.2	BACKGROUND	
	2.3	VAPOR INTRUSION MITIGATION DESIGN PLAN	
	2.4	VAPOR INTRUSION MITIGATION SYSTEM DIAGNOSTIC	
		TESTING	
	2.5	VAPOR INTRUSION MITIGATION SYSTEM	
3.0	INSI	PECTION, MONITORING, AND MAINTENANCE PROCEDUI	RES 3-1
	3.1	INSPECTION AND MONITORING	3-1
		3.1.1 Tenant Inspections	3-1
		3.1.2 Annual Inspections	3-2
		3.1.3 Pressure Field Extension Monitoring	3-2
		3.1.4 Air Quality Monitoring	3-3
	3.2	SYSTEM RE-EVALUATION AND ENHANCEMENT	3-4
	3.3	SYSTEM MAINTENANCE	3-4
	3.4	SYSTEM SHUT-DOWN	3-5
4.0	REP	ORTING	4-1
5.0	BIBI	LIOGRAPHY	5-1

FIGURES

Figure 1	Vicinity Map
Figure 2	Site Plan Showing Vapor Intrusion, Air Quality Sampling Buildings
Figure 3	Vapor Intrusion Assessment, Air Sampling Analytical Results

TABLE

Table 1Summary of Inspection and Monitoring Tasks



APPENDICES

- Appendix A Subslab Depressurization System Design
- Appendix B City of Seattle Electrical Permit
- Appendix C Reminder Notice to Tenants
- Appendix D Subslab Depressurization System Monitoring Log
- Appendix E June 2015 Air Quality Results
- Appendix F Inspection Form



ACRONYMS AND ABBREVIATIONS

Agreed Order	Agreed Order No. DE 5348 entered into by the Washington State Department of Ecology and Capital Industries, Inc. on January 24, 2008
Building	Pacific Food Systems – North Building at 5815 Fourth Avenue South in Seattle, Washington
Capital	Capital Industries, Inc.
COCs	constituents of concern
Ecology	Washington State Department of Ecology
Farallon	Farallon Consulting, L.L.C.
HVOC	halogenated volatile organic compound
IOW	inches of water
PFE	pressure field extension
PSC	Philip Services Corporation
SCFM	standard cubic feet per minute
SSDS	subslab depressurization system
VI	vapor intrusion
VIAMM	Revised Vapor Intrusion Assessment, Monitoring, and Mitigation Plan, W4 Joint Deliverable, Seattle, Washington dated February 2, 2015, prepared by Farallon Consulting, L.L.C.
VIIMM Work Plan	Vapor Intrusion, Inspection, Monitoring, and Maintenance Work Plan, Pacific Seafoods, 5815 Fourth Avenue South – North Building, Seattle, Washington dated September 2015, prepared by Farallon Consulting, L.L.C. (this document)
VIM Design Plan	<i>Vapor Intrusion Mitigation Design Plan, 5815</i> 4 th Avenue South – North Building, Seattle, Washington dated November 10, 2014, prepared by Farallon Consulting, L.L.C.



1.0 INTRODUCTION

Farallon Consulting, L.L.C. (Farallon) has prepared this Vapor Intrusion, Inspection, Monitoring, and Maintenance Work Plan (VIIMM Work Plan) on behalf of Capital Industries, Inc. (Capital) to describe the procedures for inspection, maintenance, and monitoring of the subslab depressurization system (SSDS) installed at the Pacific Food Systems, Inc. – North Building at 5815 Fourth Avenue South in Seattle, Washington (herein referred to as the Building). A site vicinity map is provided on Figure 1.

Mitigation of VI from volatile constituents of concern (COCs) has been determined by the Washington State Department of Ecology (Ecology) to be necessary at the Building in accordance with Exhibits B and D of Agreed Order No. DE 5348 entered into by Capital and Ecology on January 24, 2008 (Agreed Order) and with the *Revised Vapor Intrusion Assessment, Monitoring, and Mitigation Plan, W4 Joint Deliverable, Seattle, Washington* dated February 2, 2015, prepared by Farallon (2015) (VIAMM) under Agreed Order No. DE 10402 entered into by the West of 4th Group and Ecology. VI mitigation design specifications have been developed in accordance with the *Vapor Intrusion Mitigation Design Plan, 5815 4th Avenue South – North Building, Seattle, Washington* dated November 10, 2014, prepared by Farallon (2014d) (VIM Design Plan). The need for VI mitigation was based on the results from the Tier 3 Vapor Intrusion Assessment documented in the Farallon (2014b) *Tier 3 Vapor Intrusion Assessment Report, 5815 4th Avenue South – North Building, Seattle Washington* dated August 20, 2014.

1.1 VIIMM WORK PLAN PURPOSE

The purpose of the VIIMM Work Plan is to describe the procedures to be used to inspect, monitor, and maintain the SSDS installed in the Building to mitigate the intrusion of volatile COCs that have the potential to migrate from soil and/or Water Table Zone groundwater to indoor ambient air in the Building. The inspection, monitoring, and maintenance procedures are consistent with the VIAMM.

1.2 VAPOR INTRUSION INSPECTION, MONITORING, AND MAINTENANCE WORK PLAN ORGANIZATION

The VIIMM Work Plan is organized as follows:

- Section 1 presents the VIIMM Work Plan purpose;
- Section 2 provides a site description, a summary of the Building background, and a description of the VI mitigation design plan and SSDS;
- Section 3 discusses system inspection, monitoring, and maintenance procedures;
- Section 4 discusses the reports that will be prepared to describe the results from the inspection, monitoring, and maintenance activities; and

1-1

• Section 5 provides a list of documents used in preparation of the VIIMM Work Plan.



2.0 SITE DESCRIPTION AND SYSTEM DESIGN

The following sections provide a description of the Capital Area of Investigation, within which the Building is located, summarize the Building background, and describe the VI mitigation design plan and system.

2.1 SITE DESCRIPTION

The Capital property is at 5801 3rd Avenue South between South Mead Street on the north and South Fidalgo Street on the south, and between 4th Avenue South on the east and 1st Avenue South on the west in Section 39, Township 24 South, Range 4 East in Seattle, King County, Washington (Figure 2). Capital is a source of halogenated volatile organic compounds (HVOCs) in the subsurface with the potential to result in a VI condition at Capital and buildings within the Capital Area of Investigation. The Capital Area of Investigation was initially defined in the *Remedial Investigation Work Plan, Capital Industries, Inc., 5801 Third Avenue South, Seattle, Washington* dated September 16, 2008, prepared by Farallon (2008a) and revised in the *Revised Draft Remedial Investigation Report, 5901 4th Avenue South, Seattle, Washington* dated October 2012, prepared by Farallon (2012a) as the area where concentrations of HVOCs associated with confirmed or suspected source areas at Capital exceed screening levels (Figure 2). The Capital Area of Investigation is within the Seattle city limits in King County, Washington (2007) and is zoned for industrial light manufacturing. Properties within the Capital Area of Investigation include a mixture of light industrial, commercial, and residential properties.

The Building is located within the Capital Area of Investigation, east of Capital Plant 4 (Figure 2), and currently is used by Pacific Food Systems, Inc. for warehouse storage and equipment maintenance.

2.2 BACKGROUND

The volatile HVOCs tetrachloroethene, trichloroethene, and/or cis-1, 2-dichloroethene were detected at concentrations exceeding the preliminary cleanup standards used to evaluate VI risk in two subslab soil gas samples collected at the Building in April 2011 (Figure 3). The standards used to evaluate VI risk were set forth in the *Revised Inhalation Pathway Interim Measures Work Plan* prepared by Philip Services Corporation (PSC) (2002); the Draft *Interim Vapor Intrusion Plan* prepared by Arrow Environmental et al. (2007), which is Exhibit D of the Agreed Order; and the *Updated Air and Groundwater IPIMALs/VIRLs for Residential and Commercial Scenarios for the Georgetown Site* prepared by Pioneer Technologies Corporation (2012). The subslab sample results indicated the potential for VI into the Building, and warranted indoor air analysis to further evaluate whether a VI risk exists.

The results from the assessment of indoor and outdoor ambient air conducted between 2012 and 2014 indicated that a source of volatile COCs in the subsurface was resulting in a VI condition for the Building. Results from indoor air sampling events have remained relatively consistent



despite sealing the core holes in the floor slab and eliminating the contribution of COCs from potential sources in the Building.

Concentrations of trichloroethene detected in indoor air samples have consistently exceeded the preliminary cleanup level of 1.5 micrograms per cubic meter for a carcinogenic compound. Due to the association of the trichloroethene source with a release of HVOCs beneath or proximate to the Building with no apparent contributing operational source within the building, Tier 4 mitigation measures were implemented.

An SSDS was designed according to specifications defined in the VIM Design Plan; installation of the SSDS in the Building was completed in March 2015. The as-built schematic of the SSDS installed in the Building is provided in Appendix A.

2.3 VAPOR INTRUSION MITIGATION DESIGN PLAN

The purpose of the VIM Design Plan was to provide the specifications of the SSDS developed by Farallon to mitigate intrusion of volatile COCs that have the potential to migrate from soil and/or Water Table Zone groundwater to indoor ambient air in the Building. The mitigation measures developed are consistent with the Agreed Order. The VIM Design Plan included procedures for collecting SSDS design data; preparing the SSDS design; and installing, implementing, and performance-testing the SSDS.

2.4 VAPOR INTRUSION MITIGATION SYSTEM DIAGNOSTIC TESTING

Farallon preformed the diagnostic testing of the SSDS at the Building in accordance to the VIM Design Plan on February 10th 2015. Prior the VI mitigation system diagnostic test, the subslab monitoring ports, extraction sumps and piping network was installed by Saybr Contractors, Inc. (Saybr) on January 20th and 21st, 2015. Cracks greater than 1/8-inch in the Building's concrete slab were cleaned and filled with polyurethane sealant prior to diagnostic testing.

The VI mitigation diagnostic testing was preformed with a 6.0 hp wet/dry vacuum connected to the SSDS piping and sump network. Diagnostic testing flow and vacuum was controlled by a combination of a gate valve near the wet/dry vacuum connection point and the SSDS air inlet. A monitoring port was installed in the piping to monitor static flow and vacuum applied to the SSDS during diagnostic testing.

During the diagnostic testing, four different static vacuum and flow combinations were applied to the SSDS piping and sump network. Subslab differential pressures were monitored at the two subslab monitoring probes for each diagnostic testing static vacuum and flow. The static vacuum and flow was applied to the SSDS piping and sump network until the differential pressures at the subslab monitoring probes stabilized for a minimum of 15 minutes. Location of the subslab monitoring probes and schematics of the VI mitigation system is presented on Sheet No. 3 of Appendix A.



The VI mitigation system blower was selected on the VIM Design Plan's pass/fail criteria of a minimum measured negative 0.025 inches of water (IOW) differential pressures at both subslab monitoring probes. The lowest measured differential pressure during the diagnostic testing was 0.078 and 0.038 IOW at SSMP-1 and SSMP-2 respectively, with the SSDS vacuum of 3.8 IOW and a flow of 17 standard cubic feet per minute (SCFM). The lowest possible measurable flow during the diagnostic testing was 17 SCFM, which restricted the diagnostic test of lower vacuum and flows. Although the flow of 17 SCFM and vacuum of 3.8 IOW was used to select the SSDS blower, the flow and vacuum will not be the running criteria for the VI mitigation system.

2.5 VAPOR INTRUSION MITIGATION SYSTEM

The VI mitigation system addressed in this VIIMM Work Plan includes the SSDS installed at the Building. The SSDS is designed to maintain negative pressure directly beneath the Building, thereby acting as a "sink" for soil vapors in the vicinity of the Building. The SSDS installed at the Building was designed by Farallon, installed by Saybr, and began operation on April 1, 2015. A City of Seattle electrical permit was obtained on March 6, 2015 for the SSDS blower and electrical system installation. A copy of the closed permit with inspection record is provided in Appendix B. Two sump locations were installed for diagnostic testing at the Building. The locations of the two sumps were selected for incorporation in the final SSDS design and have minimal impact on the Building tenant's operations. Results from the diagnostic testing indicated that the two sump locations connected to one exhaust blower would be adequate for the mitigation system at the Building. Schematics of the SSDS design and layout are provided in Appendix A.

Two sumps, each consisting of a 6-inch-diameter boring directly above a 7- to 8-gallon subslab cavity, were installed during the diagnostic testing phase. A schematic of each sump location is presented on Sheet No. 4 of Appendix A. Piping and risers connect from each sump to the exhaust blower mounted to the south side of the Building. Risers are seated on a rubber seal within the sump, sealed with concrete, and piping and risers extend from the sump at and below ground level out the Building's southern exterior wall. The location where the pipe penetrates the Building's wall is sealed with waterproof sealant. Details for the sumps and risers are presented on Sheet No. 4 of Appendix A.

Piping connects the risers to the exhaust blower mounted on the Building's southern exterior wall. Piping, risers, and piping connections are constructed of polyvinyl chloride. The piping forms one network, with the connection to the exhaust blower at the highest point of the network; the connection to each sump is the lowest point of the network. Piping is angled to prevent water vapor from condensing into pools at low spots in the piping. The piping schematic and specifications are presented on Sheet No. 3 of Appendix A.

A Rotron DR101Y9M 0.33-horsepower regenerative exhaust blower manufactured by Ametek Technical and Industrial Products provides negative pressure to the sumps via the mitigation system risers and piping. The exhaust blower is mounted to the Building's southern exterior wall with a shelf. Vibration isolators are used between the exhaust blower and the shelf to prevent



vibration and excess noise. The blower is covered by an existing lean-to roof along the southern side of the Building. The location and specifications for the exhaust blower are presented on Sheet No. 3 of Appendix A.

The exhaust stack is constructed of polyvinyl chloride, mounted to the Building's southern exterior wall, and extends the point of emission to a height of approximately 4 feet above roof level. The exhaust stack's emission point is greater than 10 feet away from the adjacent buildings to the south and west. The exhaust stack outlet is angled and cut on the vertical to prevent precipitation from entering the exhaust stack while allowing the exhaust stack to exhaust emissions. A schematic showing specific details of the exhaust stack is presented on Sheet No. 4 of Appendix A.

A pressure gauge was installed in the piping network to measure and confirm that negative pressure is being applied throughout the mitigation system. Previously constructed systems in the area have included a manometer to monitor system performance. A Magnehelic pressure gauge rather than a manometer was installed to monitor SSDS pressure to reduce maintenance requirements for the Building's owner and tenants. A valve system was installed to enable disconnection of pressure gauges during non-monitoring events.

The pressure gauge and valve system were mounted to the piping network with flexible tubing. A main valve was installed between the riser and the pressure gauge to regulate the pressure applied to the gauge from the riser. A relief valve was installed to control the pressure between the first valve and the pressure gauge. The relief valve allows the pressure gauge to be opened to ambient air pressure during non-monitoring events, and relieves the pressure in the tubing after the main valve has been closed. The main valve will remain closed and the relief valve will remain open when the VI monitoring system is not operating. During VI system monitoring events, the main value will be opened and the relief valve will be closed to activate the pressure gauge. The pressure gauge will provide confirmation that negative pressure is being applied by the exhaust blower to the subsurface via each riser. The negative pressure applied by the exhaust blower will not allow soil gas removed from the subsurface to enter the Building and impact indoor air. Opening the relief valve will allow indoor air to enter the tubing, thereby relieving negative pressure remaining in the pressure gauge when it is not in use.

The SSDS start-up occurred on April 1, 2015. The SSDS was started with the air inlet fully closed, resulting in a system vacuum of 6.8 IOW and total flow of 19.7 SCFM. With the SSDS air inlet closed, differential pressures measured at the subslab monitoring probes were 0.117 IOW at SSMP-1 and 0.061 IOW at SSMP-2. The SSDS was initially optimized to prolong the operational life of the exhaust blower and minimize power consumption by the SSDS, while still depressurizing the area beneath the slab to mitigate volatile COCs from impacting air quality in the Building. The SSDS was optimized by adjusting vacuum to 1.9 IOW and flow to less than 12.9 SCFM. The resulting differential pressure was 0.025 IOW and 0.007 IOW at SSMP-1 and SSMP-2, respectively. Initial indoor air sampling results collected in June 2015 indicated that COCs persisted in indoor air at concentrations similar to pre-startup conditions of the SSDS (Appendix E).



On October 9, 2015, the SSDS was adjusted to have a minimum measured differential pressure of 0.025 IOW at both subslab monitoring ports. The SSDS flow and vacuum were adjusted to increase differential subslab pressure. The adjusted VI mitigation system vacuum was 3.6 IOW and 12.9 SCFM, resulting in a measured differential pressure of 0.050 IOW and 0.029 IOW at SSMP-1 and SSMP-2, respectively. Additional indoor air sampling will be conducted to assess SSDS performance and whether further adjustment to the SSDS is necessary.

2-5



3.0 INSPECTION, MONITORING, AND MAINTENANCE PROCEDURES

This section presents the inspection and monitoring procedures to be conducted by Capital at the Building, the protocols for evaluating and enhancing SSDS effectiveness, system maintenance, and guidelines to shut down the SSDS. The inspection and monitoring activities were developed based on and will be conducted in accordance with the *Verification of Depressurization System Effectiveness and Long-Term Operation and Maintenance Plan for Inhalation Pathway Interim Measures* developed for the PSC (2005) Georgetown Facility and the VIAMM. Monitoring procedures at the Building will be conducted parallel to the groundwater monitoring conducted at Capital as part of the Capital Remedial Investigation. Table 1 provides a summary of inspection and monitoring tasks to be conducted and the frequency at which they will occur.

3.1 INSPECTION AND MONITORING

Periodic inspection and monitoring will be conducted during operation of the VI mitigation system to confirm that the Building SSDS is operating effectively. The inspections and monitoring will be conducted by Capital. Inspection and monitoring of the SSDS will include the following:

- Annual system inspection;
- Annual negative pressure field extension (PFE) monitoring; and
- Biannual air quality monitoring.

3.1.1 Tenant Inspections

Inspections by Building tenants will be conducted on a monthly basis to ensure that the SSDS is operating properly. During inspections, the tenants will conduct a check of the SSDS pressure gauge. Capital will send a monthly reminder to the Building tenants to check the pressure gauge to confirm that the VI mitigation system is operating properly. The current Building tenants have agreed to perform the inspections, which will be documented in an inspection log book maintained at the Building. The Reminder Notice to Tenants is provided in Appendix C. An example of the Log Book maintained at the Building is provided in Appendix D.

If the SSDS system is not operating properly, the Building tenant will contact Capital and/or Farallon. Contact information for Pacific Food Systems, Inc., Capital, and Farallon is provided below:

3-1

JSI Pacific, Inc. dba Pacific Food Systems, Inc. Ms. Inna Guryevsky, Operations Manager 5815 Fourth Avenue South Seattle, Washington 98108 (206) 658-0382



Capital Industries, Inc. Mr. Ray Carr, Plant Manager 5801 Third Avenue South Seattle, Washington 98108 (206) 762-8585

Farallon Consulting, L.L.C. Mr. Jeffrey Kaspar, Project Principal/Manager 975 5th Avenue Northwest Issaquah, Washington 98027 (425) 295-0800

3.1.2 Annual Inspections

Annual inspections will be conducted to observe and document the condition of the SSDS and to record changes to the Building and surrounding area that could affect SSDS performance. To the extent feasible, annual inspections will be conducted at the same time of year to facilitate documenting inspection results in a single submittal. The Subslab Depressurization System Inspection Form provided in Appendix F will be used to document the annual inspections.

The annual inspection will consist of observing and documenting the condition of SSDS components and any structural changes or modifications to the Building or adjacent buildings or structures, and recording the SSDS pressure gauge measurement. The pressure gauge measurements previously documented on the Subslab Depressurization System Inspection Form will be used for comparison during the inspection. Photographs will be taken during the inspection to document any deterioration of materials (e.g., cracks in piping, mounting damage) or other pertinent changes in the condition of the SSDS, the Building structure, or other factors that could impact system operation or effectiveness.

3.1.3 Pressure Field Extension Monitoring

PFE monitoring will be conducted at the Building on an annual basis during the heating season to measure the pressure differential across the Building slab while the SSDS is operating. The results from the PFE monitoring will be used to confirm that the negative pressure field extends to points far removed from the sump locations. PFE monitoring will in conducted in conjunction with annual system inspections.

Two permanent subslab monitoring ports were installed in the Building slab during installation of the SSDS. The subslab monitoring ports are flush-mounted to the Building slab and have a tamper-resistant cap. The subslab monitoring ports will be used for PFE monitoring to determine whether a negative subslab pressure exits. A negative pressure of 0.025 inches of water column or more at each of the subslab monitoring ports is considered to be acceptable. The tamper-resistant cap secures the subslab monitoring port closed between PFE monitoring to maintain the integrity of the depressurization applied by the SSDS. The location and details of the subslab monitoring ports are shown on Sheet Nos. 3 and 4 in Appendix A.



3.1.4 Air Quality Monitoring

Air quality monitoring will be performed to provide:

- Air quality data that can be directly compared with the previous VI Assessment data to evaluate the reduction in volatile COCs due to operation of the SSDS;
- Air quality data that can be used to adjust the SSDS operation parameters and to reduce volatile COC concentrations below the VIAMM action levels, or appropriate future air action levels established during the future cleanup action; and
- Air quality data that can be used to evaluate whether further action is necessary to protect human health.

Air quality monitoring will be conducted on a semiannual basis following optimization of the SSDS and confirmation that volatile COCs remain at action levels less than those set forth in the VIAMM to determine if seasonal conditions require adjustments to the SSDS operations. As stated previously, initial indoor air sampling results for June 2015 indicated that volatile COCs remained at concentrations exceeding the VIAMM action levels (Appendix F). A second indoor air sampling event will be conducted in November and possibly again between December 2015 and March 2016 to assess whether operation of the SSDS at the current settings has reduced concentrations of volatile COCs to levels less than the VIAMM action levels or whether additional adjustments to the SSDS operations are required. The SSDS blower was selected based on performance capabilities that allow for increased flexibility in the applied vacuums beyond a typical radon-type blower. Following confirmation that the SSDS operational parameters have been adjusted so that volatile COC concentrations remain below the VIAMM action levels, the frequency of air quality monitoring will be reduced to an annual basis.

Air samples will be collected at the approximate sampling locations used during previous investigations using either Summa canisters or another appropriate sampling method. Samples will be analyzed for volatile COCs using U.S. Environmental Protection Agency Method TO-15 SIM. All sampling will be performed in general accordance with the standard operating procedures established during completion of the Tier 3 VI Assessments (Farallon 2013) and the current VIAMM, modified if necessary to accommodate relevant changes in regulatory or industry-standard sampling protocols. If sampling protocols change in response to updated regulatory or industry standards, the sampling protocols will be amended and submitted to Ecology for concurrence prior to performing sampling activities.



3.2 SYSTEM RE-EVALUATION AND ENHANCEMENT

The results from the air quality, PFE, groundwater monitoring, and/or annual inspections will be evaluated to determine whether modifications to the SSDS are necessary. The SSDS will be re-evaluated or modified to enhance effectiveness, if warranted, based on inspection and monitoring results. The following criteria will be used to determine whether re-evaluation of the SSDS is warranted:

- Inspection results indicate a significant structural change in the Building (e.g., remodeling that could introduce additional pathways for vapor intrusion);
- Air quality monitoring results indicate an indoor air Inhalation Pathway Interim Measures Action Level exceedance; and/or
- Groundwater sampling analytical results indicate a minimum tenfold increase in cumulative VI risk/hazard, as defined in the VIAMM, in the vicinity of the Building.

The scope of work to re-evaluate and, if necessary, enhance SSDS effectiveness will be provided on a case-by-case basis and discussed with Ecology. If a significant structural change is observed in the Building or if the analytical results for groundwater samples indicate a significant increase in HVOC concentrations, Capital will contact Ecology within 3 weeks of the building inspection date or receipt of analytical results.

3.3 SYSTEM MAINTENANCE

SSDS maintenance will be performed on an as-needed basis following the first year of operation, and will be based on conditions observed during the annual inspections or on reports from the Building tenants. Components that may require maintenance include the exhaust blower, pressure gauge, and piping. The exhaust blower is not amenable to periodic maintenance and is relatively easy to replace. Therefore, the blower will be operated until excessive noise, vibration, or significantly reduced pressure gauge readings are noted, at which point the blower will be repaired or replaced. An operational failure of the blower would be indicated by the pressure gauge, which will be checked during monthly tenant inspections and annual inspections.

Pressure gauges are less robust than manometers over continued use and may fail after prolonged use. An additional monitoring port was installed on the main riser to monitor VI mitigation system pressure and flow during annual inspections. VI mitigation system pressure measurements collected during annual inspections will be compared to the VI mitigation system pressure gauge. A failed pressure gauge will be identified when the pressure gauge is 75 percent of the annually monitored SSDS pressure. If pressure gauge failure is confirmed, a replacement pressure gauge will be installed and tested.

Replacement of cracked or otherwise damaged system piping observed during annual inspections or identified by the building tenant may be required. Proposed modifications to the SSDS will be presented to Ecology for approval before work will proceed.



3.4 SYSTEM SHUT-DOWN

System shut-down protocols are established under the VIAMM and will be followed if shutdown of the SSDS is found to be appropriate during the forthcoming cleanup action. Analytical results from ongoing groundwater monitoring and confirmation soil gas sampling data will be evaluated to determine whether continued operation of the SSDS at the Building is necessary to mitigate migration of volatile COCs from groundwater and/or soil to indoor air.

It is currently uncertain whether a source of HVOCs exists in soil or groundwater beneath the Building or to the east. Soil, groundwater, and soil gas data collected during the Feasibility Study and possible future work during the cleanup action will be used to evaluate whether a source of HVOCs exists and whether cleanup of a source is necessary to eliminate the continued need to operate the SSDS. At this time, groundwater samples collected from monitoring wells proximate to the Building will be periodically collected for analysis, and the results compared to groundwater Inhalation Pathway Interim Measures Action Levels presented in the VIAMM. If concentrations of HVOCs are less than the cleanup standard, soil gas sampling will be proposed to assess whether continued operation of the SSDS at the Building is necessary. Shut-down procedures may be implemented in accordance with the VIAMM or other applicable and relevant criteria at the time of the proposed shut-down, upon Ecology approval. When operation of the SSDS at the Building is deemed to be no longer necessary, Capital will discuss with Ecology the specific shut-down procedures, public communications, and post-shut-down monitoring requirements.



4.0 **REPORTING**

Results from the SSDS inspections and monitoring at the Building will be presented in an Annual Report. Each Annual Report will contain a brief narrative of the procedures followed for the inspection, monitoring, and maintenance activities; a copy of completed inspection forms; a summary of pressure gauge readings; the results from PFE monitoring; and the results from air quality monitoring events. Each Annual Report will document potentially significant changes in conditions or other issues observed during the inspections, present supporting photographs, and recommend follow-up investigations and/or corrective actions, if necessary. Each Annual Report will include an evaluation of the most-recent groundwater monitoring results to identify changes in HVOC concentrations that could trigger re-evaluation of SSDS effectiveness, and to determine when operation of the SSDS may no longer be necessary. Following review and approval by Capital, the Annual Report will be submitted to Ecology for review and comment within 60 days of the annual inspection.

Routine inspection and monitoring results and maintenance that occurred during the preceding quarter will be discussed in Quarterly Progress Reports. In the event that non-routine work is performed and warrants a dedicated reporting format, Ecology will be consulted and a separate report will be provided. For example, the SSDS startup and air quality monitoring work is outside the scope and intent of this document and warrants presentation as a dedicated report or investigation work to support shut-down of the SSDS.



5.0 **BIBLIOGRAPHY**

- Arrow Environmental; Aspect Consulting; Farallon Consulting, L.L.C.; and Pacific Groundwater Group. 2007. Draft *Interim Vapor Intrusion Plan*. Prepared for the Washington State Department of Ecology. May 1.
- Farallon Consulting, L.L.C. (Farallon). 2008a. Remedial Investigation Work Plan, Capital Industries, Inc. 5801 Third Avenue South, Seattle, Washington. Prepared for Ron Taylor, Capital Industries, Inc. September 16.
 - ———. 2008b. Vapor Intrusion Assessment Work Plan, Capital Industries, Inc., 5801 Third Avenue South, Seattle, Washington. Prepared for Ron Taylor, Capital Industries, Inc. September 16.
 - ———. 2009. Remedial Investigation Field Program First Phase Report, Capital Industries, Inc., 5801 3rd Avenue South, Seattle, Washington. Prepared for Ron Taylor, Capital Industries, Inc. September 18.
 - ——. 2011a. Addendum to the Vapor Intrusion Assessment Work Plan, Capital Industries, Inc., 5801 Third Avenue South, Seattle, Washington. Prepared for Ron Taylor, Capital Industries, Inc. January 18.
 - —. 2011b. Tier 3 Vapor Intrusion Assessment Sampling and Analysis Plan, 5814 4th Avenue South – North Building, Seattle, Washington. Prepared for Ron Taylor, Capital Industries, Inc. December 23.
 - ____. 2012a. *Revised Draft Remedial Investigation Report, 5901 4th Avenue South, Seattle, Washington*. Prepared for Ron Taylor, Capital Industries, Inc. October.
 - —. 2013. 2013 Tier 3 Vapor Intrusion Assessment Sampling and Analysis Plan Addendum, Capital Industries, Inc. 5801 Third Avenue South, Seattle, Washington. Prepared for Ed Jones, Washington State Department of Ecology. February 27.
 - 2014a. Letter Regarding Response to Ecology, Vapor Intrusion Action at 5815 4th Avenue South, Capital Industries, Inc. From Jeffrey Kaspar. To Ed Jones, Washington State Department of Ecology. January 24.
 - —. 2014b. 2014 Tier 3 Vapor Intrusion Assessment Report, 5814 4th Avenue South North Building, Seattle, Washington. Prepared for Ron Taylor, Capital Industries, Inc. August 20.
 - —. 2014c. *Revised Preliminary Cleanup Standards Memorandum, W4 Joint Deliverable, Seattle, Washington.* Prepared for Ed Jones, Washington State Department of Ecology. September 12.

5 - 1



 2014d. Vapor Intrusion Mitigation Design Plan, 5815 4th Avenue South– North Building, Seattle, Washington. Prepared for Ron Taylor, Capital Industries, Inc. November 10.

—. 2015. *Revised Vapor Intrusion Assessment, Monitoring, and Mitigation Plan, W4 Joint Deliverable, Seattle, Washington.* Prepared for Ed Jones, Washington State Department of Ecology. February 2.

- King County, Washington. 2007. *GIS Center, Parcel Viewer*. No date. <<u>http://www.metrokc.gov/gis/mapportal/PViewer_main.htm#newsHead</u>>. (December 31, 2007.)
- Philip Services Corporation (PSC). 2002. *Revised Inhalation Pathway Interim Measures Work Plan.* Prepared for the Washington State Department of Ecology. August.

———. 2005. Verification of Depressurization System Effectiveness and Long-Term Operation and Maintenance Plan for Inhalation Pathway Interim Measures. April 2005.

- Pioneer Technologies Corporation. 2012. Updated Air and Groundwater IPIMALs/VIRLs for Residential and Commercial Scenarios for the Georgetown Site. Prepared for the Washington State Department of Ecology. November 29.
- U.S. Environmental Protection Agency (EPA). 1993. Radon Reduction Techniques for Existing Detached Houses: Technical Guidance (Third Edition) for Active Soil Depressurization Systems. EPA/625/R-93/-011. October.
 - ——. 1994. *Radon Mitigation Standards*. EPA 402-R-93-078. Revised April.
- Washington State Department of Ecology (Ecology). 2010. Letter Regarding Capital Industries Site #11598755, Remedial Investigation Agreed Order (#DE 5348), Vapor Intrusion Assessment. From Ed Jones. To Ron Taylor, Capital Industries, Inc. November 3.
 - 2011. Letter Regarding Capital Industries Site #11598755, Remedial Investigation Agreed Order (#DE 5348), Tier 3 Vapor Intrusion Assessment at Three Buildings in South Seattle, WA. From Ed Jones. To Ron Taylor, Capital Industries, Inc. December 29.
- 2012. Letter Regarding Capital Industries Site #11598755, Remedial Investigation Agreed Order (#DE 5348), Tier 3 Report for 5815 4th Ave South, Seattle, WA. From Ed Jones. To Ron Taylor, Capital Industries, Inc. May 23.
 - —. 2013. Letter Regarding Capital Industries Site # 11598755, Remedial Investigation Agreed Order #DE 5348, Tier 3 Vapor Intrusion Report for 5815 4th Ave. South, Seattle, WA. From Ed Jones. To Ron Taylor, Capital Industries, Inc. July 5.

5-2



- -. 2014a. Letter Regarding Capital Industries Site # 11598755, Remedial Investigation Agreed Order #DE 5348, Vapor Intrusion Action at 5815 4th Ave. South, Seattle, WA. From Ed Jones. To Ron Taylor, Capital Industries, Inc. January 13.
- 2014b. Letter Regarding Capital Industries Site # 11598755, Remedial Investigation Agreed Order #DE 5348, Vapor Intrusion at 5815 4th Ave. South, Seattle, WA. From Ed Jones. To Ron Taylor, Capital Industries, Inc. January 30.

FIGURES

VAPOR INTRUSION, INSPECTION, MONITORING, AND MAINTENANCE WORK PLAN Pacific Food Systems, Inc. 5815 Fourth Avenue South – North Building Seattle, Washington

Farallon PN: 457-007







TABLE

VAPOR INTRUSION, INSPECTION, MONITORING, AND MAINTENANCE WORK PLAN Pacific Food Systems, Inc. 5815 Fourth Avenue South – North Building Seattle, Washington

Farallon PN: 457-007

Table 1Summary of Inspection and Monitoring TasksVapor Intrusion Inspection, Monitoring, and Maintenance Work PlanPacific Seafoods - North BuildingSeattle, WashingtonFarallon PN: 457-007

Inspection and Monitoring Task	Frequency/Month	Performed By	Documented In
System pressure check	Monthly	Pacific Food Systems	Pacific Food Systems VI Inspection Log Book
System inspections	Annually/January	Farallon Consulting, L.L.C.	SSDS Startup Report and VI Annual Report
Pressure field extension tests	Annually/January	Farallon Consulting, L.L.C.	SSDS Startup Report and VI Annual Report
Performance air sampling (Year 1)	Startup and at a frequency necessary to confirm SSDS is meeting mitigation objectives	Farallon Consulting, L.L.C.	SSDS Startup Report
Performance air sampling (Year 2 and beyond)	Annually/January	Farallon Consulting, L.L.C.	VI Annual Report (as applicable)

NOTE:

SSDS = subslab depressurization system

VI = vapor intrusion

APPENDIX A SUBSLAB DEPRESSURIZATION SYSTEM DESIGN

VAPOR INTRUSION, INSPECTION, MONITORING, AND MAINTENANCE WORK PLAN Pacific Food Systems, Inc. 5815 Fourth Avenue South – North Building Seattle, Washington

Farallon PN: 457-007

SUB-SLAB DEPRESSURIZATION SYSTEM

PACIFIC FOOD SYSTEMS - NORTH BUILDING 5815 4TH AVE SOUTH SEATTLE, WA 98108



DRAWING INDEX

SHEET NO.	DRAWING TITL
4	
1	TITLE SHEET, SITE LOCA
2	GENERAL NOTES, LEGE
3	SITE PLAN WITH SUB-SL
4	DETAILS

Washingtor ellingham | Seattle

FARALLON Oakland | Sacramento | Irvine

CONSULTING

Quality Service for Environmental Solutions | fara

Oregor tland | Benc California

LE

CATION MAP, AND DRAWING INDEX

END, SYMBOLS, AND ABBREVIATIONS

LAB DEPRESSURIZATION SYSTEM

PREPARED FOR

CAPITAL INDUSTRIES, INC. 5801 3RD AVE. SOUTH SEATTLE, WA 98108

SUB-SLAB DEPRESSURIZATION SYSTEM

TITLE SHEET, SITE LOCATION MAP, AND DRAWING INDEX

AS SHOWN	
PROJECT NO 457-007	0.
FILE NAME: SYSTEM.dwg	1
SHEET NO.	OF
1	4

ELECTRICAL ABBREVIATIONS				STA	NDARD ABBREVIATIONS				PIPING, EL
A/AMP	AMP	AF AIR FI AB AGGF AC ASPH	LTER EGATE BASE ALTIC CONCRETE	HDPE HORIZ	HIGH DENSITY POLYETHYLENE HORIZONTAL HORSEPOWEP/HIGH DESSURE	PRV PSI	PRESSURE RELEASE VALVE POUNDS PER SQUARE INCH	X	— GATE VALVE ——
AC	ALTERNATING CURRENT	APPROX APPR	OXIMATELY	HR	HOUR	PSIA PSIG	POUNDS PER SQUARE INCH, ABSOLUTE POUNDS PER SQUARE INCH, GAUGE		- GLOBE VALVE
BD	BUS DUCT	AS AIR S	PARGE	HS HYD	HOSE HYDRANT	PTW PVC	PRESSURE TREATMENT		— BALL VALVE
С		BF BLIND B.G.S. BELO) FLANGE W GROUND SURFACE	HOA	HAND OFF AUTOMATIC	PV	PADE SALES VARIABLE		BUTTERFLY VALVE
CLG	CEILING	BLDG BUILD BOP BOTT		ID IN	INSIDE DIAMETER	PUE	PAIR PUBLIC UTILITY EASEMENT	\	— CHECK VALVE
DC	DIRECT CURRENT	BV BALL		INV	INVERT	R	RADIUS/RISER		
DIS		CPLG CONC	ING	IPS	IRON PIPE SIZE	RC	REINFORCED CONCRETE	s	
DT	DOUBLE THROW	L CL CENT CV CONT	ERLINE ROL VALVE/CHECK VALVE	JB	JUNCTION BOX	REF	REFERENCE		- SOLENOID VALVE
EG	ENCLOSED AND GASKETED	DC DOUE		КО	KNOCK OUT	SCH	SCHEDULE		
E(OH) E(UG)	ELECTRICAL (OVERHEAD)	/DIA DIAMI DWG DRAV	ETER /ING	LSHH	LEVEL SWITCH	SDR SECT	STANDARD DIMENSION RATIO		
EMER	EMERGENCY	DP DUAL		MAX	MAXIMUM	SHT	SHEET	K	 PRESSURE REGULATING VALVE
EPO	ELECTRICAL METALLIC TUBING		EACE	MH MJ	MANHOLE MECHANICAL JOINT	SPEC	SPECIFICATION	*	
EXP	EXPOSED	EL/ELEV ELEV	ATION	MIN		STA STD	STATION STANDARD	D	DRAIN
FBO	FURNISHED BY OTHERS	ELEC ELEC ELB ELBO	TRICAL W	MNPT	MISCELLANEOUS MALE NATIONAL PIPE THREAD	STL	STEEL		WELD CAP
FLEX	DUAL ELEMENT FUSE	EPDM ETHY	LENE PROPYLENE RUBBER			SBO ST	SUPPLIED BY OWNER SAMPLE TAP		
GEN	GENERATOR	EXIST/(E) EXIST EXP EXPA	NSION	MW	MONITORING WELL	STR	STRAINER STAINI ESS STEEL		中 SCREWED PLUG
GFIC	GROUND FAULT INTERRUPTER	EW EACH FA FACH	WAY	NC	NORMALLY CLOSED	STL	STEEL	Ū	- FLANGE
GND GRC	GROUND GALVANIZED RIGID CONDUIT	EC FAIL (CLOSE	NIC		SVE SW	SOIL VAPOR EXTRACTION SWITCH		H BLIND FLANGE
		FO FAIL C	DPEN	NO.	NUMBER	7.0	7/0/04		- REDUCER/INCREASER
HUA	HAND-OFF-AUTO SWITCH	FLXC FLEXI FM FLOW	METER	N NTS	NEW NOT TO SCALE	TOC	TOP OF CASING/CURB		DIRECTION OF FLOW
IRD	INFRARED DETECTOR	FL FLOW	LINE	NPDES	NATIONAL POLLUTION DISCHARGE	TOS	TOP OF STEEL		— — UNION
HP	HORSE POWER	FUT FUTU	RE	oc	ON CENTER	1011			- FLEXIBLE PIPE COUPLING
HZ	CYCLES PER SECOND	FIN GR FINISI	HED GRADE GED END	OD OSHA	OUTSIDE DIAMETER	UBC UGPS	UNIFORM BUILDING CODE UNDERGROUND PULL SECTION		
JB	JUNCTION BOX	FNPT FEMA	LE NATIONAL PIPE THREAD	OUTIA	HEALTH ADMINISTRATION	UTIL	UTILITY		- BLOWER OR FAN
LFMC	LIQUID TIGHT FLEXIBLE	GAC GRAD	E	OVHD	OVERHEAD	V	VALVE/VENT/VOLTS	Č-	- CENTRIEUGAL PUMP
	METAL CONDUIT	GALV GALV	ANIZED	#/LB PB	POUND PULL BOX	VAC	VACION		
M	MOTOR/MOTOR STARTER COIL	GI GALV GPM GALL	ANIZED IRON ONS PER MINUTE	PBF	PROVIDED BY FARALLON	VERT	VAPOR	目	PITOT TUBE
MCP	MOTOR CIRCUIT PROTECTOR	GR GRAD		PCC	PORTLAND CEMENT PORTLAND CEMENT CONCRETE	VRV	VACUUM RELIEF VALVE		
NC	NORMALLY CLOSED	GSKT GASK	ET	PG PL	PRESSURE GAS PROPERTY LINE/PIPE LINE	W/ W/O	WITH WITHOUT		- STRAINER
NEC NEMA	NATIONAL ELECTRIC CODE	GW GROU GV GATE	VALVE	PO	PUMP OUT	WS	WATER SURFACE/WATER STOP	- I	TRAP
NE	MANUFACTURERS ASSOCIATION			P	PRESSURE			\bigcup	
NO	NON-FUSED NORMALLY OPEN	INST	RUMENTATION ABBR	EVIATION	IS AND SYMBOLS			AF	— FILTER
OL	OVERLOADS								DIAMETER
PBS	PUSHBUITTON	INSTRU			INSTRUMENT SYMBOLS		STANDARD SYMBOLS		
PF	POWER FACTOR					s			
PL PLC	PILOT LIGHT PROGRAMMABLE LOGIC CONTROLLER	FIRST LETTER	SUCCEEDING LETTERS	SYMPO	DESCRIPTION				
		INITIATING VARIABLE	OUTPUT FUNCTIONS	311000	E DESCRIPTION		REFERENCED		
RC	RIGID CONDUIT								
RCPT	RECEPTACLE			M	MOTOR				1. A COPT OF THE PROJECT E
SN SP	SOLID NEUTRAL SINGLE POLE								2. COPIES OF ALL PERMITS SH
ST	SINGLE THROW	A ANALYSIS B BURNER	ALARM	НОА	SELECTOR SWITCH				ALL PERMIT REQUIREMENT
SW	SWITCH	C CONDUCTIVITY	CONTROL	_					3. CONTRACTOR SHALL BE RE
TF/TRAN	TRANSFORMER	E POTENTIAL (VOLTS)	PRIMARY ELEMENT		LOCALLY MOUNTED				4. BURIED UTILITIES SHOWN (
UF	UNDERFLOOR	F FLOW RATE G FIRE ALARM	RATIO (FRACTION) GLASS (SIGHT GAUGE)		/ INSTROMENT				APPROXIMATE AND MAY NO
UG	UNDERGROUND	H HAND (MANUALLY)	HIGH						5 THE CONTRACTOR SHALL F
V VED	VOLTS VARIABLE EREQUENCY DRIVE	J POWER	b) INDICATE		CONTROL PANEL				THE GROUND PRIOR TO ST
VP	VAPOR PROOF	K TIME	LEAK, LOW		MOUNTED INSTRUMENT				FOUND BETWEEN EXISTING
WHT	WHITE	M MOISTURE/HUMIDIT	Y LIGHT (PILOT)				_		6.FARALLON SHALL BE NOTIF
WP	WEATHER PROOF	P PRESSURE/VACUUM	POINT (TEST CONNECTION						
XP	EXPLOSION PROOF	Q QUANTITY	INTEGRATE (TOTALIZE)		1		DE IN. MOO		PERSONS AND PROPERTY I
		S SPEED	SWITCH	-10	PLC SHUTDOWN ALARM		OF WASHING CONTRACTOR		STRUCTURES, UTILITIES, AI
		U MULTIVARIABLE	MULTIFUNCTION						KEQUIKEMENT SHALL APPL NORMAL WORKING HOURS.
		V VIBRATION/VOLUME W WEIGHT/FORCE/TOP	VALVE/DAMPER						
		X UNCLASSIFIED				— I			8. ALL EXCAVATIONS SHALL B OCCUPATIONAL SAFETY AN
		Z POSITION	DRIVE/ACTUATE			1			ACT (WISHA) REGULATIONS
		1							OPERATIONS.

9. NO TRENCHES SHALL BE LEFT OPEN WHEN WORK IS NOT IN PROGRESS. ALL OPEN EXCAVATIONS SHALL BE FENCED.

	Washington Issaquah Bellingham Seattle	
	Oregon Portland Bend	
FARALLON	California Oakland Sacramento Irvine	
Quality Service for Environment	al Solutions farallonconsulting.com	

	9/25/14	ISSUED FOR CLIENT REVIEW	CM/DEW	CM	
	DATE	DESCRIPTION	BY	CKD.	APF

LECTRICAL AND EQUIPMENT SYMBOLS



DESIGN DRAWINGS AND SPECIFICATIONS SHALL BE MAINTAINED ON THE JOB SITE AT ALL TIMES.

SHALL BE MAINTAINED ON THE JOB SITE AT ALL TIMES. THE CONTRACTOR SHALL COMPLY WITH

RESPONSIBLE FOR VERIFYING ALL DIMENSIONS.

ON THE DRAWINGS ARE FOR GENERAL INFORMATION ONLY. UTILITY LOCATIONS ARE IOT BE INCLUSIVE OF ALL UTILITIES THAT EXIST ON THE PROPERTY.

HAVE A PRIVATE UTILITY LOCATE SERVICE VERIFY ALL UTILITIES AND MARK THEIR LOCATIONS ON TARTING CONSTRUCTION. FARALLON SHALL BE CONTACTED IMMEDIATELY IF A CONFLICT IS G UTILITIES AND THE PROJECT DESIGN.

FIED OF DISCREPANCIES BETWEEN CONTRACT DRAWINGS AND ACTUAL SITE CONDITIONS.

ASSUME RESPONSIBILITY FOR THE JOB SITE CONDITIONS AND ENSURE THE SAFETY OF ALL FOR THE DURATION OF ON SITE PROJECT WORK. THE CONTRACTOR SHALL PROTECT AND PAVING FROM DAMAGE, DIRECT OR INDIRECT, RESULTING FROM THE WORK. THIS 'LY CONTINUOUSLY OVER THE DURATION OF ON SITE ACTIVITIES AND NOT BE LIMITED TO S.

BE PERFORMED IN STRICT ACCORDANCE WITH APPLICABLE U.S. DEPARTMENT OF LABOR ND HEALTH ADMINISTRATION (OSHA) AND THE WASHINGTON INDUSTRIAL SAFETY AND HEALTH IS. THE CONTRACTOR ASSUMES FULL RESPONSIBILITY FOR THE SAFETY OF ALL CONSTRUCTION

PREPARED FOR

CAPITAL INDUSTRIES,INC. 5801 3RD AVE. SOUTH SEATTLE, WA 98108 SUB-SLAB DEPRESSURIZATION SYSTEM AS SHOWN

GENERAL NOTES, LEGEND,SYMBOLS, AND ABBREVIATIONS SCALE AS SHOWN PROJECT NO. 457-007 FILE NAME: SYSTEM.dwg SHEET NO. OF 2

4





11/3/14	REISSUED FOR CLIENT REVIEW	ROL/DEW	СМ	
9/25/14	ISSUED FOR CLIENT REVIEW	CM/DEW	RM	
DATE	DESCRIPTION	BY	CKD.	APP.



CAPITAL INDUSTRIES, INC. 5801 3RD AVE, SOUTH SEATTLE, WA 98108

SUB-SLAB DEPRESSURIZATION SYSTEM AS SHOWN

PROJECT NO. 457-007 FILE NAME: SYSTEM.dwg SHEET NO. OF 4 4

SCALE

DETAILS

APPENDIX B CITY OF SEATTLE ELECTRICAL PERMIT

VAPOR INTRUSION, INSPECTION, MONITORING, AND MAINTENANCE WORK PLAN Pacific Food Systems, Inc. 5815 Fourth Avenue South – North Building Seattle, Washington

Farallon PN: 457-007

Project # 6462876

Address	5815 4th Ave S	Permit Number	6462876
Location	WAREHOUSE AREA	Permit Status	Permit Closed
Records Filed At		Application Date	Mar 06, 2015
Application Type	ELECTRICAL	Issue Date	Mar 06, 2015
Work Type	FIELD REVIEW	Expiration Date	Mar 05, 2016
Category	COMMERCIAL	Finaled Date	Apr 01, 2015
King Co. Assessor's #			
Zone/Overlays and ECA			
Legal Description		Contractor	ALLIED ELECTRIC SERVICE INC P O BOX 3855 LACEY, WA 98509 ELECTRICAL CONTRACTOR LICENSE: ALLIEES145BC
Description of Work	INSTALL CIRCUIT FOR SINGLE PHASE BLOWER. 3/27/15 JCB; ADDRESS CHANGED FROM 5801 3RD AVE S.	Permit Remarks	

Low V	oltage and Comm	unicat	tion Systems	Transformers						
Туре	# Control Units		# of Devices	Qty		Size				
-				-						
Servic	es			Electric	Heate	rs				
Qty		Size		Qty		Size				
-				-						
Feede	rs			Motors						
Qty		Size		Qty		Size				
-				-						
Conne	ections									
	Receptacles	0	Light Outlets 0			Switches 0	Fixtures	0		
	Residential Fans	0	Track Lighting 0	Mul	ti-Outle	t Assy (ft) 0	Smoke Detectors	0		
Device	es and Branch Circu	its								
	Floodlights	0	Dimmers (Comr	cl 2000W+)	0	Dedicated Ap	pliances 15-25 Amp	1		
	Furnaces (non-elec)	0	9	Sign Circuits	0	Dedicated Ap	opliances 30-50 Amp	0		
Fire Al	larm Info									
	Fire Alarm Devices	0				Fire	Alarm Control Units	0		
Renew	vable Energy									
	Range	Qty								

0-6 KW 0

7-26 KW 0

Project # 6462876

Inspections

Required Inspections - Not Yet Scheduled

Туре		Comments
None		

Required Inspections - Scheduled

Туре	Date	Inspector	Comments
None			

Completed Inspections

(Multiple same-type inspections may be required to complete a project)

Туре	Date	Result	Inspector	Comments
FINAL	Mar 10, 2015	Failed	ZOOKR	03/09/2015 WEBUSR Contact : Steve Koster - 360-789-1888 3-10-15 BZ Not at this address - called contact number left voice message to call me at 206-233-7864
FINAL	Mar 23, 2015	Partial Pass	ZOOKR	03/20/2015 WEBUSR Contact : Steve Koster - 360-789-1888 3-23-15 BZ (1) need address correction to 5815 4Th Ave. S (2) need phenolic lable on disconect
FINAL	Apr 01, 2015	Passed	ZOOKR	

Waived Inspections

Туре	Comments
COVER	3-23-15 BZ not required = surface

Definition of Terms

COVER	This inspection type is performed for all installations which require approval before closing walls, ceilings, floors or underground.
FINAL	All permits require a final inspection to certify that the work performed is in compliance with applicable codes.
PARTIAL PASS	Area of work inspected passed and additional inspections of this type are required - move ahead with corrections/conditions

APPENDIX C REMINDER NOTICE TO TENANTS

VAPOR INTRUSION, INSPECTION, MONITORING, AND MAINTENANCE WORK PLAN Pacific Food Systems, Inc. 5815 Fourth Avenue South – North Building Seattle, Washington

Farallon PN: 457-007

Reminder



Please check periodically to make sure your depressurization system is working by looking at the pressure gauge installed on the system. Close the Pressure Relief Valve (perpendicular to the hose) and open the Pressure Sample Valve (parallel to the hose) to engage the pressure gage. If the pressure indicator needle reads above zero then the system is working properly. However, if the pressure indicator needle reads **zero**, then please call me so that we can make arrangements to fix any problems.

Temporary problems with the system would not indicate any health risks – we just need to make sure the system is operating correctly. Please call me if you have any questions.

Thank you for your cooperation,

Russell Luiten (425) 295-0800



APPENDIX D SUBSLAB DEPRESSURIZATION SYSTEM MONITORING LOG

VAPOR INTRUSION, INSPECTION, MONITORING, AND MAINTENANCE WORK PLAN Pacific Food Systems, Inc. 5815 Fourth Avenue South – North Building Seattle, Washington

Farallon PN: 457-007



Washington Issaquah | Bellingham | Seattle

Oregon Portland | Bend | Baker City California Oakland | Sacramento | Irvine

SUBSLAB DEPRESSURIZATION SYSTEM MONITORING LOG BOOK

Appendix D of the Vapor Intrusion, Inspection, Monitoring, and Maintenance Work Plan

PACIFIC FOOD SYSTEMS, INC. – NORTH BUILDING 5900 1st AVENUE SOUTH SEATTLE, WASHINGTON

> In Accordance with AGREED ORDER NO. DE 5348

> Provided by: Farallon Consulting, L.L.C. 975 5th Avenue Northwest Issaquah, Washington 98027

> > Farallon PN: 457-004

For:

Mr. Ron Taylor Capital Industries, Inc. 5801 Third Avenue South Seattle, Washington

November 2015

Prepared by:

Russell Luiten, E.I.T. Staff Engineer

Reviewed by:

Jeffery Kaspar, L.G., L.H.G. Principal



MONITORING INSTRUCTIONS

This Subslab Depressurization System Monitoring Log Book was prepared for the use of Pacific Food Systems personnel while performing monthly monitoring of the subslab depressurization system in accordance with the *Vapor Intrusion, Inspection, Monitoring, and Maintenance Work Plan* for the Pacific Food Systems – North Building dated September 25, 2015.

Monthly monitoring of the pressure gauge is necessary to ensure that the subslab depressurization system (SSDS) is working properly. The SSDS consist of two collection sumps that are connected to one pressure gauge. Location of the pressure gauge is shown in Appendix A, Sheet No. 3.

The following steps should be taken at the pressure gauge (see attached Pressure Gauge Diagram):

- Close the Vacuum Relief Valve (perpendicular to the hose).
- Open the Pressure Sample Valve (parallel to the hose).
- Record the position of the Pressure Indicator Needle in the Pressure Reading column of the Depressurization System Monitoring Log. If the pressure gauge is inaccessible, write "NA."
- Close the Pressure Sample Valve (perpendicular to the hose).
- Open the Pressure Relief Valve (parallel to the hose).

If the pressure indicator needle is positioned between 1.5 and 9 inches of water column (IOW) at the pressure gauges, no further action is necessary.

If the pressure gauge reading is below 1.5 or above 9 IOW, please contact Russell Luiten at (425) 295-0800. The reading does not indicate any immediate health risks but arrangements will need to be made to ensure that the depressurization system is operating correctly.

If you have any questions or concerns, please contact Russell Luiten at (425) 295-0800.



Subslab Depressurization System Monitoring Log Vapor Intrusion Inspection, Monitoring, and Maintenance Work Plan Pacific Food Systems Seattle, Washington Farallon PN: 457-007

Date	Pressure Reading	Performed by	Comments		

APPENDIX E JUNE 2015 AIR QUALITY RESULTS

VAPOR INTRUSION, INSPECTION, MONITORING, AND MAINTENANCE WORK PLAN Pacific Food Systems, Inc. 5815 Fourth Avenue South – North Building Seattle, Washington

Farallon PN: 457-007

Table 1Summary of Vapor Intrusion Assessment Sampling Parameters5815 4th Avenue South - North BuildingCapital Industries, Inc.Seattle, WashingtonFarallon PN: 457-007

							Initial Pressure	Final Pressure	Sampling	Leak Test Helium
Sample Location	Sample Type	Sample Identification	Sample Date	Sample Start Time	Sample End Time	Sample Duration	(inches of mercury)	(inches of mercury)	Concentration (percent)	Concentration (percent)
SS-2	Subslab	5815N-Warehouse1-041311	4/13/2011	11:10	12:02	0:52	29.5	4.5	22.5	Not Applicable
SS-3	Subslab	5815N-Warehouse2-041311	4/13/2011	14:09	14:54	0:45	29.5	6.5	13.3	Not Applicable
14.2	T 1 A	FAR-36029-022112	2/21/2012	8:17	16:17	8:00	30	7.0	NT (A 1° 11	NT / A 1° 11
IA-3	Indoor Air	IA-3-1565-032013	3/20/2013	8:30	16:30	8:00	28.5	6.5	Not Applicable	Not Applicable
TA 4	To Jacob Alia	FAR-25243-022112	2/21/2012	8:10	16:10	8:00	30	7.5	NT-4 Amultashia	No.4 Augulio al la
1A-4	Indoor Air	IA-4-34193-032013	3/20/2013	8:35	16:35	8:00	29.5	7.5	Not Applicable	Not Applicable
IA-5	Indoor Air	IA-5-13844-042414	4/24/2014	8:26	16:06	7:40	30	6.0	Not Applicable	Not Applicable
IA-6	Indoor Air	IA-6-33970-050514	5/5/2014	9:15	17:10	7:55	30	6.0	Not Applicable	Not Applicable
0 4 1	Outdoor Air	FAR-5659-022112	2/21/2012	8:46	16:46	8:00	30	5.0	Not Applicable	Not Applicable
UA-1	Outdoor Air	IA-5-931-032013	3/20/2013	9:00	17:00	8:00	30	7.5	Not Applicable	Not Applicable
OA-2	Outdoor Air	OA-2-34748-042414	4/24/2014	8:41	16:46	8:05	30	6.0	Not Applicable	Not Applicable
IA-6	Indoor Air	IA6-22497-060115	6/1/2015	09:14	17:00	7:46	30.0	6.0	Not Applicable	Not Applicable
IA-7	Indoor Air	IA7-34758-060115	6/1/2015	09:16	16:12	6:56	26.0	5.0	Not Applicable	Not Applicable
AA-3	Outdoor Air	AA3-96113060115	6/1/2015	09:26	17:26	8:00	-26.0	-5.0	Not Applicable	Not Applicable

Table 2 Summary of Soil Gas and Air Sampling Analytical Results 5815 4th Ave South - North Building Capital Industries, Inc. Seattle, Washington Farallon PN: 457-007

						Analytical Results	(micrograms per	cubic meter)		
Sample Type	Location	Sample Identification	Sample Date	PCE ¹	TCE ¹	cis-1,2- Dichloroethene ¹	trans-1,2- Dichloroethene ¹	1,1- Dichloroethene ¹	Vinyl Chloride ¹	Helium (%)
Subalah	SS-2	5815N-Warehouse1-041311	4/13/2011	840	1,400	74	<1.4	<0.68	<0.44	0.44
Subsiab	SS-3	5815N-Warehouse2-041311	4/13/2011	4,200	28,000	<42	<42	<42	<27	< 0.11
	14.3	FAR-36029-022112	2/21/2012	1.5	4.4	0.98	< 0.67	< 0.067	< 0.043	NA
	IA-5	IA-3-1565-032013	3/20/2013	1.6	7.0	1.6	<0.68	< 0.068	<0.044	INA
	IA-4	FAR-25243-022112	2/21/2012	0.60	1.9	0.32	<0.68	< 0.068	< 0.044	NIA
Indoor Air		IA-4-34193-032013	3/20/2013	0.66	2.4	0.43	<0.67	< 0.067	< 0.043	NA
IIIdool All	IA-5	IA-5-13844-042414	4/24/2014	1.1	3.4	0.49	<0.65	< 0.065	< 0.042	NA
	IA-6	IA-6-33970-050514	5/5/2014	0.95	3.6	0.34	< 0.65	< 0.065	< 0.042	NA
	IA-6	IA6-22497-060115	6/1/2015	0.39	2.0	< 0.12	<0.63	< 0.063	< 0.040	NA
	IA-7	IA7-34758-060115	6/1/2015	1.1	1.9	< 0.12	<0.62	< 0.062	< 0.040	NA
	04.1	FAR-5659-022112	2/21/2012	<0.22	< 0.17	< 0.13	<0.64	< 0.064	< 0.041	
Outdoor Air	0A-1	OA-1-35995-032013	3/20/2013	<0.23	<0.18	<0.13	<0.66	< 0.066	< 0.043	NA
Outdool All	OA-2	OA-2-34748-040214	4/24/2014	<0.21	0.27	<0.12	<0.61	< 0.061	< 0.039	INA
	AA-3	AA3-96113-060115	6/1/2015	<0.21	2.9	<0.12	< 0.61	< 0.061	< 0.039	

NOTES:

Results in **bold** denote concentrations exceeding laboratory method reporting limits.

< denotes analyte not detected at or exceeding the reporting limit listed.

¹ Subslab samples analyzed by U.S. Environmental Protection Agency (EPA) Method Modified TO-15. Indoor and outdoor air samples analyzed by EPA Method Modified TO-15/SIM

²Helium analyzed by Modified ASTM Method D-1946 for Helium in air using GC/TCD

PCE = tetrachloroethene TCE = trichloroethene NA = not analyzed

Table 3 Summary of Indoor and Outdoor Air Sample Cumulative Exceedance Factors 5815 4th Avenue South - North Building **Capital Industries, Inc.** Seattle, Washington Farallon PN: 457-007

			Tetrachloroethene Trichloroethene								cis-1,2-dichloroethene					
Indoor Air Sampling Locations	Sample Date	Coutdoor ³	C _{indoor} ³	C _{indoor_corr} ³	EF _{Cancer}	EF _{Noncancer}	Coutdoor ³	C _{indoor} ³	C _{indoor_corr} ³	EF _{Cancer}	EF _{Noncancer}	C _{outdoor} ³	C _{indoor} ³	C _{indoor_corr} ³	EF _{Cancer}	EF _{Noncancer}
14.2	2/21/2012	0.110	1.50	1.39	0.06	0.185	0.085	4.4	4.32	2.88	11.06	0.065	0.98	0.92	-	-
IA-5	3/20/2013	0.115	1.60	1.49	0.07	0.198	0.090	7.0	6.91	4.61	17.72	0.065	1.60	1.54	-	-
	2/21/2012	0.110	0.60	0.49	0.02	0.065	0.085	1.9	1.82	1.21	4.65	0.065	0.32	0.26	-	-
1/4-4	3/20/2013	0.115	0.66	0.55	0.025	0.073	0.090	2.4	2.31	1.54	5.92	0.065	0.430	0.365	-	-
IA-5	4/24/2014	0.105	1.1	1.00	0.045	0.133	0.27	3.4	3.13	2.09	8.03	0.060	0.49	0.430	-	-
IA-6	5/5/2014	0.105	0.95	0.85	0.038	0.113	0.27	3.6	3.33	2.22	8.54	0.060	0.34	0.280	-	-
IA-6	6/1/2015	0.105	0.39	0.29	0.013	0.038	2.90	2.0	-0.90	0.00	0.00	0.060	0.06	0.000	-	-
IA-7	6/1/2015	0.105	1.10	1.00	0.045	0.133	2.90	1.9	-1.00	0.00	0.00	0.060	0.06	0.000	-	-
Commercial Indoor Air IPIMAL - Cancer ³ 22			-	1.5					-							
Commercial Indoor Air II	PIMAL - Non-cancer ³			7.5					0.39			-				

NOTES:

Where concentrations are below the method reporting limit, a value one-half of the method reporting limit is recorded for calculations herein.

Where outdoor air concentrations exceed indoor air concentrations, this results in negative corrected concentrations. These are included in the CCEF and NCCEF totals.

¹Samples with a CCEF exceeding 10 are presented in **bold** and indicate a potential cumulative inhalation cancer risk due to vapor intrusion greater than 1E-05.

²Samples with a NCCEF exceeding 10 are presented in *bold* and indicate a potential cumulative risk due to vapor intrusion with a hazard index greater than 1.

³Concentrations in micrograms/cubic meter (µg/m³)

CCEF = cancer cumulative exceedance factor EF _{Cancer} = Cancer exceedance factor EF _{Noncancer} = Noncancer exceedance factor $C_{outdoor} = Concentration of compound in outdoor air sample$ C_{indoor} = Concentration of compound in indoor air sample $C_{indoor_corr} = C_{indoor} - C_{outdoor}$ CCEF and NCEF values = cumulative total of individual EF values Exceedance Factors = Corrected indoor air concentration/IPIMAL IPIMAL = inhalation pathway interim measure action level

NCCEF = non-cancer cumulative exceedance factor

Table 3 Summary of Indoor and Outdoor Air Sample Cumulative Exceedance Factors 5815 4th Avenue South - North Building **Capital Industries, Inc.** Seattle, Washington Farallon PN: 457-007

			trans-1.2-dichloroethene				Vinvl Chloride				1.1-Dichloroethene							
Indoor Air Sampling Locations	Sample Date	C _{outdoor} ³	C _{indoor} ³	C _{indoor_corr} ³	EF _{Cancer}	EF _{Noncancer}	Coutdoor 3	C _{indoor} ³	C _{indoor_corr} ³	EF _{Cancer}	EF _{Noncancer}	Coutdoor 3	C _{indoor} ³	Cindoor_corr 3	EF _{Cancer}	EF _{Noncancer}	CCEF ¹	NCCEF ²
14.3	2/21/2012	0.32	0.34	0.02	-	0.001	0.020	0.022	0.002	0.002	0.0001	0.032	0.034	0.002	-	0.00004	2.9	11.3
1/4-3	3/20/2013	0.33	0.34	0.01	-	0.001	0.022	0.022	0.001	0.001	0.0000	0.033	0.034	0.001	-	0.00003	4.7	17.9
ΙΑ /	2/21/2012	0.32	0.34	0.02	-	0.002	0.020	0.022	0.002	0.003	0.0001	0.032	0.034	0.002	-	0.0001	1.2	4.7
174-4	3/20/2013	0.33	0.34	0.01	-	0.000	0.022	0.022	0.000	0.000	0.0000	0.033	0.034	0.001	-	0.00001	1.6	6.0
IA-5	4/24/2014	0.31	0.33	0.02	-	0.002	0.0195	0.021	0.002	0.002	0.0001	0.031	0.033	0.002	-	0.0001	2.1	8.2
IA-6	5/5/2014	0.31	0.33	0.02	-	0.002	0.0195	0.021	0.002	0.002	0.0001	0.031	0.033	0.002	-	0.0001	2.3	8.7
IA-6	6/1/2015	0.31	0.32	0.01	-	0.001	0.0195	0.020	0.001	0.001	0.0000	0.031	0.032	0.001	-	0.0000	2.1	8.2
IA-7	6/1/2015	0.31	0.31	0.01	-	0.000	0.0195	0.020	0.001	0.001	0.0000	0.031	0.031	0.001	-	0.0000	2.3	8.7
Commercial Indoor Air	IPIMAL - Cancer ³			-					0.66							-	10	10
Commercial Indoor Air II	PIMAL - Non-cancer ³			12					19					39			10	10

NOTES:

Where concentrations are below the method reporting limit, a value one-half of the method reporting limit is recorded for calculations herein.

Where outdoor air concentrations exceed indoor air concentrations, this results in negative corrected concentrations. These are included in EF Noncancer exceedance factor the CCEF and NCCEF totals.

¹Samples with a CCEF exceeding 10 are presented in *bold* and indicate a potential cumulative inhalation cancer risk due to vapor intrusion greater than 1E-05.

²Samples with a NCCEF exceeding 10 are presented in *bold* and indicate a potential cumulative risk due to vapor intrusion with a hazard index greater than 1.

³Concentrations in micrograms/cubic meter (µg/m³)

CCEF = cancer cumulative exceedance factor $EF_{Cancer} = Cancer exceedance factor$

C_{outdoor} = Concentration of compound in outdoor air sample C_{indoor} = Concentration of compound in indoor air sample

 $C_{indoor_corr} = C_{indoor} - C_{outdoor}$

CCEF and NCEF values = cumulative total of individual EF values Exceedance Factors = Corrected indoor air concentration/IPIMAL IPIMAL = inhalation pathway interim measure action level

NCCEF = non-cancer cumulative exceedance factor

APPENDIX F INSPECTION FORM

VAPOR INTRUSION, INSPECTION, MONITORING, AND MAINTENANCE WORK PLAN Pacific Food Systems, Inc. 5815 Fourth Avenue South – North Building Seattle, Washington

Farallon PN: 457-007

Subslab Depressurization System Inspection Form

Date and Time: _______Location: ______

PART 1 - DOCUMENTATION OF CONDITION OF SYSTEM COMPONENTS

Manometer/Pressure Gauge Readings											
Location System Manometer System Vacuum SSMP-1 SSMP-2											
Pressure (IOW)											

Exterior Pipe Free of Cracks	Y	Ν	N/A
Blower Running Appropriately (no excess vibration or noise	Y	Ν	N/A
Manometer in Good Condition	Y	Ν	N/A
Caulk on Floor Penetrations in Good Condition	Y	Ν	N/A
Significant Floor Cracks or Penetrations Observed	Y	Ν	N/A
Subslab Monitoring Ports Cap Secured	Y	Ν	N/A
Tenant Log Book Properly Completed (make copy of form)	Y	Ν	N/A

PART 2 - DOCUMENTATION OF STRUCTURAL CHANGES

Any Significant Changes to the Building's HVAC System?	Y	Ν	N/A
Any new vents or openings in the roof/walls less than 10' away from the stack?	Y	Ν	N/A
Any new buildings near the mitigated building close enough that stack gasses could contaminate indoor air?	Y	Ν	N/A
Have there been any significant earthquake events?	Y	Ν	N/A

PART 3 - OTHER OBSERVATIONS/COMMENTS

Comments: