

August 23, 2011

By Fed Ex

Mr. Brian Stonebrink
Arizona Department of Environmental Quality
1110 W. Washington Street
Phoenix, AZ 85007

Subject: *Submittal of Prioritization and Selection of Buildings for a Phase 2 Soil Gas-to-Indoor Air Vapor Intrusion Assessment Technical Memorandum, Honeywell 34th Street Facility, Phoenix, Arizona and Phase 2 Soil Gas-to-Indoor Air Vapor Intrusion Assessment Work Plan, Honeywell 34th Street Facility, Phoenix, Arizona*

Dear Mr. Stonebrink:

On March 18, 2011, Honeywell submitted its *Final Focused Human Health Risk Assessment Report, Honeywell 34th Street Facility, Phoenix, Arizona* to ADEQ stating that further evaluation of the Vapor Intrusion (VI) Pathway would be proposed. ADEQ and EPA provided comments on this submittal on June 9, 2011. Honeywell will be providing a Response to Comments to this new input. Notwithstanding the continued dialogue with the Agencies, Honeywell is submitting the *Prioritization and Selection of Buildings for a Phase 2 Soil Gas-to-Indoor Air Vapor Intrusion Assessment Technical Memorandum (Phase 2 VI TM), Honeywell 34th Street Facility, Phoenix, Arizona* and the *Phase 2 Soil Gas-to-Indoor Air Vapor Intrusion Assessment Work Plan (Phase 2 VI WP), Honeywell 34th Street Facility, Phoenix* (included as Attachment A to the Phase 2 VI TM).

This technical memorandum incorporates the input received from the Agencies and their consultants during a site walk on July 19, 2011. The memorandum presents the steps used to prioritize and select buildings for the Phase 2 soil gas-to-indoor air vapor intrusion assessment (e.g., indoor air sampling) at the Honeywell International Inc. 34th Street Engines Product Center and presents the work plan for conducting indoor air, outdoor air, and subslab soil gas sampling.

If you should have any questions or require discussion, please contact me at (973) 455-4279 or Tasha Lewis at 480-295-3932. For your convenience, my e-mail address is troy.j.meyer@honeywell.com and Tasha's email address is tasha.lewis@ch2m.com.

Sincerely,



Troy Kennedy
Honeywell - Health, Safety, Environment and Remediation
Remediation Portfolio Director

Mr. Brian Stonebrink

August 23, 2011

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Prioritization and Selection of Buildings for a Phase 2 Soil Gas-to-Indoor Air Vapor Intrusion Assessment, Honeywell 34th Street Facility, Phoenix, Arizona

PREPARED FOR: Arizona Department of Environmental Quality and United States Environmental Protection Agency

PREPARED BY: CH2M HILL on behalf of Honeywell International Inc.

DATE: August 23, 2011

1.0 Introduction

The steps used to prioritize and select buildings for the Phase 2 soil gas-to-indoor air vapor intrusion (VI) assessment (e.g., indoor air sampling) at the Honeywell International Inc. (Honeywell) 34th Street Engines Product Center (Facility or Honeywell facility), Phoenix, Arizona are described in this technical memorandum (TM). In addition to the historical soil gas data evaluated in the *Final Focused Human Health Risk Assessment Report, Honeywell 34th Street Facility, Phoenix, Arizona* (FHHRA; CH2M HILL, 2011a), this TM considers soil gas data collected 1) after startup of the Arizona Department of Environmental Quality (ADEQ)-approved biologically enhanced soil vapor extraction (BSVE) system (between November 1, 2009, and December 31, 2010), and 2) as part of the *Additional Field Work and Focused Feasibility Study Work Plan, Honeywell 34th Street Facility, Phoenix, Arizona* (FFS Work Plan; CH2M HILL, 2009a).

The BSVE system is the ADEQ-approved remedial alternative selected for remediating petroleum hydrocarbon impacted soils associated with the leaking underground storage tank (LUST) Area of Interest (AOI) (LUST File #0393.02-.10, .15-.20, Facility ID #0-002227).¹ The ADEQ approval also includes monitoring and treatment requirements related to the presence of CVOCs in soil. Specific details regarding the progress of the remediation since the system began operation on May 27, 2009, can be found in the semiannual (formerly quarterly) remediation status reports submitted to ADEQ, as well as Section 1.26 and Appendix A of the FHHRA (CH2M HILL, 2011a).

Soil gas data collected as part of the data-gap investigation presented in the FFS Work Plan have also been considered during the building prioritization and selection process in this VI assessment. These data were collected between June 6 and June 9, 2009, to evaluate the potential data gaps presented in the *Subsurface Structures Survey, Phase I & Phase II Sampling Report, Honeywell 34th Street Facility, Phoenix, Arizona* (Phase I and Phase II Report; CH2M

¹ Ongoing data collection, evaluation, and risk management decisions related to the remediation of site-related petroleum hydrocarbons are being reported in the semiannual (formerly quarterly) remediation status reports for Honeywell's LUST File Nos. 0393.02-.10, .15-.20, Facility ID No. 0 002227. This is consistent with agreements with ADEQ's Underground Storage Tank program, the Maricopa County Air Quality District, and the City of Phoenix Aviation Department.

HILL, 2008a) and the *Focused Remedial Investigation Report Addendum, Honeywell 4th Street Facility, Phoenix, Arizona* (FRI Addendum; CH2M HILL, 2008b).

This VI TM includes the following sections:

- **1.0 Introduction** presents the organization of the VI TM.
- **2.0 Purpose and Objectives** summarizes the purpose and specific objectives of the VI TM.
- **3.0 Background** summarizes the first phase of the VI assessment that was conducted as part of the FHHRA (CH2M HILL, 2011a), which was submitted to ADEQ and the U.S. Environmental Protection Agency (USEPA) on March 18, 2011.
- **4.0 Regulatory Guidance** presents the list of guidance and policy documents used to prepare this VI TM.
- **5.0 Vapor Intrusion Conceptual Site Model and Investigative Approach** provides information related to the VI conceptual site model (CSM), a summary of the overall VI investigation process, and a summary of the methods used to prioritize the selection of buildings of interest that will be further evaluated during the Phase 2 VI assessment.
- **6.0 References**

2.0 Purpose and Objectives

The primary purpose of this VI TM is to describe the prioritization and selection process used to identify buildings of interest for the Phase 2 soil gas-to-indoor air VI assessment at the (see Figure 1 and Figure 2 for Facility location information). A brief discussion of the phased VI investigation process is also included in this TM to provide context for the proposed Phase 2 VI assessment. The procedures for conducting the Phase 2 sampling are described in the *Phase 2 Soil Gas-to-Indoor Air Vapor Intrusion Assessment Work Plan, Honeywell 34th Street Facility, Phoenix, Arizona* (Phase 2 VI WP; CH2M HILL, 2011b) and included as Attachment 1 to this VI TM.

The specific objectives of this TM include:

- 1) Providing a brief discussion of the phased VI investigation process to provide context for the proposed Phase 2 VI assessment.
- 2) Evaluating the existing data to determine if any conditions currently exist that exceed the lower end of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) target cancer risk range (1E-06; USEPA, 1991) in the North, South, and Phoenix Sky Harbor International Airport (PSHIA) Exposure Areas (Figure 3). If such condition exists, identify the buildings of interest for further VI assessment.
- 3) Providing a summary of the lines of evidence and methods used to select the buildings of interest where concurrent indoor air, outdoor air, and subslab soil gas samples will be collected during the Phase 2 VI assessment.

- 4) Referencing the sampling methodology that is described in the Phase 2 VI WP (CH2M HILL, 2011b; see Attachment 1).

The scope presented in this VI TM is limited to existing buildings within the North, South, and PSHIA Exposure Areas, and assumes an industrial land use scenario. However, current and future land use information was obtained from the City of Phoenix General Plan adopted by City Council Resolution on December 5, 2001, in accordance with action taken at its final public hearing on November 7, 2001 [City of Phoenix, 2002] and is presented in Figure 4 and Figure 5.

Although there are no buildings within the PSHIA Exposure Area, locations exceeding the NCP target cancer risk range of $1E-06$ were reviewed as part of this VI TM.

The Offsite Exposure Area was not included in this VI TM because site-related groundwater impacts from the Facility are commingled with the Motorola 52nd Street Superfund Site regional chlorinated volatile organic compound (CVOC) groundwater plume and levels are not inconsistent with levels found upgradient of the Honeywell facility. The potential off-site vapor intrusion risks and hazards associated with the commingled regional CVOC groundwater plume will be evaluated as part of the final Operable Unit 2 (OU2) remedial investigation/feasibility study (RI/FS) being overseen by ADEQ.

Subsurface utility vaults located in the North, South, and PSHIA Exposure Areas are not evaluated as part of this scope of work because protection of workers entering vaults is covered under the Occupational Safety and Health Administration's (OSHA's) Confined Entry Guidelines 29 CFR, Part 1910.146 (OSHA, 1970). Ongoing monitoring of the subsurface utility vaults is conducted as part of the operation of the BSVE system and described in the *Operation and Maintenance Manual for the Biologically-Enhanced Soil Vapor Extraction System, Honeywell 34th Street Facility, Revision 4, Phoenix, Arizona, Facility ID No. 0-002227, LUST File No. 0393.02-.10, .15-.20*. (BSVE O&M Manual; CH2M HILL, 2010a).

3.0 Background

The first phase of the VI assessment was conducted as part of the FHHRA Report (CH2M HILL, 2011a) that was submitted to ADEQ and the USEPA on March 18, 2011. The VI assessment presented in the FHHRA consisted of a screening-level analysis that identified chemicals of potential concern (COPCs; see Table 1) for the VI pathway in each exposure area within the FHHRA study area (Figure 3).

Screening level cumulative excess lifetime cancer risk (ELCR) and noncancer hazard index (HI) estimates were calculated in the FHHRA for two baseline subsurface VI scenarios: soil gas-to-indoor air (1994 through 2008 data), and groundwater-to-indoor air (March 2005 through September 2008 data). More weight can be placed on soil gas-to-indoor air estimates when assessing the vapor intrusion pathway since VOCs off-gassing from groundwater and/or soil are accounted for with soil-gas measurements. However, the groundwater-to-indoor air estimates can be used to evaluate the VI predictive model and assess the potential contribution of groundwater as a VOC source (refer to the FHHRA for a comparison between the soil-gas-to-indoor air versus groundwater-to-indoor air risk estimates). This VI TM is based primarily on the results of the soil-gas-to-indoor air scenario. Potential VI risk drivers were identified in the FHHRA and were based on

cumulative ELCR estimates greater than the lower end (1E-06) of the USEPA's (1991) NCP (40 CFR 300) target risk range (1E-06 to 1E-04) and cumulative HI of one. This is consistent with a USEPA comment on the FHHRA (ADEQ, 2010) requesting that a Phase 2 VI assessment be conducted at select buildings based on risk estimates greater than 1E-06.

Screening-level cumulative VI risk estimates, hazard estimates, and the risk drivers based on detected chemicals were presented on a series of figures (or "risk maps") in the FHHRA. These included Figures 5-1A, 5-1B, 5-2 and 5-3 (copies of these figures are provided for reference in Attachment 2 of this VI TM). The upper-bound hypothetical cancer risks for soil gas to industrial indoor air based on nondetect sample quantitation limits (SQLs) were also evaluated in the FHHRA to determine if the historical soil gas samples had elevated SQLs that could lead to uncertainty in characterizing risks or hazards above risk-management target levels. Figures 6-1A to 6-1F of the FHHRA present the upper-bound hypothetical cancer risks for soil gas to industrial indoor air based on SQLs (copies of these figures are provided for reference in Attachment 2 of this VI TM).

The information presented in the FHHRA risk maps is one line of evidence considered in this TM to prioritize and select buildings of interest for the Phase 2 VI investigation. Key observations from the FHHRA risk maps include the following:

- Screening level (i.e., baseline and pre-BSVE remedy) cumulative industrial VI ELCRs using detected analytes ranged from less than 1E-06 to slightly greater than 1E-04 (Attachment 2, Figures 5-1A, 5-1B, 5-2, and 5-3). ADEQ (2010) comments on the draft FHHRA (CH2M HILL, 2009b) requested that a site-specific indoor air evaluation be conducted (i.e., a Phase 2 assessment) at select building based on risk estimates greater than 1E-06. The building selection and prioritization results presented in this VI TM considers both the baseline estimates from the FHHRA risk maps and soil gas data collected during operation of the BSVE (i.e., post-baseline).
- The highest calculated ELCRs and HIs for both the soil gas and groundwater data sets were in the eastern-central portion of the South Exposure Area and within the BSVE target treatment area (TTA). As summarized in the FHHRA (CH2M HILL, 2011a), the ongoing ADEQ-approved BSVE remedial alternative has been successfully remediating petroleum free product detected at the Honeywell facility, consistent with the approved Corrective Action Plan (CAP). There was only one location (DSV-2) with a baseline cumulative ELCR greater than the upper end of the target risk range (1E-04) for the soil gas to indoor air pathway. However, ELCRs from nearby locations (between approximately 35 and 70 feet away; for example, SG-12, P-3, P-1, and SSG-22) were nearly two orders of magnitude lower (Figure 5-1B in Attachment 2). Although DSV-2 exceeded a 1E-04 risk for the soil gas to indoor air pathway, this area has been remediated using soil vapor extraction. A soil vapor extraction system was operated in the area of DSV-2 between April 1998 and November 1999 and removed approximately 2,600 pounds of CVOCs and an estimated 400,000-plus pounds of petroleum hydrocarbons. Therefore, the 1997 soil gas results reported for DSV-2 were not representative of pre-BSVE conditions in 2008. Specific details regarding this remedial action can be found in Appendix B of the Final FRI Report (CH2M HILL, 2005).
- None of the groundwater-to-indoor air screening-level ELCR estimates exceeded 1E-04 (Figure 5-2 in Attachment 2).

- The dominant potentially site-related cancer risk and noncancer drivers were benzene, ethylbenzene, naphthalene, perchloroethylene (PCE), trichloroethylene (TCE), and vinyl chloride (VC). Target level exceedances for benzene, naphthalene, and ethylbenzene were primarily limited to within the BSVE TTA (that is, the approximate extent of the leaking underground storage tank [LUST] Area of Interest [AOI] [LUST File #0393.02 .10, .15 .20, Facility ID #0 002227]). Trihalomethanes were also risk drivers at a few locations, but were likely related to anthropogenic background levels.

4.0 Regulatory Guidance

The following guidance and policy documents were used in this VI assessment:

- Interstate Technology Regulatory Council (ITRC; 2007) *Vapor Intrusion Pathway: A Practical Guideline*
- USEPA (2002) *OSWER Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils (Subsurface Vapor Intrusion Guidance)*
- USEPA (2008) *U.S. EPA's Vapor Intrusion Database: Preliminary Evaluation of Attenuation Factors*
- USEPA (2010a) *Review of the Draft 2002 Subsurface Vapor Intrusion Guidance*
- USEPA (2010b) *EPA Region 9's Suggested Framework for Investigating and Evaluating Vapor Intrusion to Indoor Air of Residential or Industrial Buildings Motorola 52nd Street Superfund Site (Region 9 Suggested Framework for M52 or Framework)*

The State of Arizona does not have VI guidance or policy documents, but defers to USEPA guidance, which it currently considers on a site-by-site basis.

The ITRC VI guidance (ITRC, 2007) is intended to be used in conjunction with federal and state VI policies and guidance documents. The guidance presents a 13-step phased approach to evaluate VI using multiple lines of evidence. The objective of the phased approach is to trace the pathway from source to receptor, conducting the investigation to the point where it can be demonstrated that there is no complete pathway. USEPA has verbally endorsed the ITRC VI guidance (ITRC, 2007) at multiple VI workshops since its release.

USEPA VI guidance (USEPA, 2002; USEPA, 2008) was developed for use in multiple programs without superseding state guidance. Although the USEPA guidance is draft, USEPA anticipates updating and issuing final guidance by November 2012. USEPA recommends continuing to use the 2002 draft, along with other available guidance and/or information reflective of best practices, to address VI in the interim. The USEPA guidance (USEPA, 2002) presents a tiered approach for VI evaluation: 1) primary screening (or Tier 1) to determine if there is a potential VI pathway and if immediate action is warranted, 2) secondary screening (or Tier 2) to compare estimated groundwater and soil gas concentrations to generic screening levels provided in the document, and 3) a site-specific pathway assessment (Tier 3) to measure actual sub-slab soil gas and indoor air concentrations.

The USEPA Office of Solid Waste and Emergency Response (OSWER) recently published a review of the 2002 OSWER Draft Vapor Intrusion Evaluation Guidance, including suggested

changes and amendments to the document. Key updates to their guidance will likely include using a multiple lines of evidence approach, rather than using a single line of evidence to "screen out" sites; collecting indoor air samples earlier in the screening process; and expanding the VI evaluation to include all types of buildings.

The USEPA's Region 9 Suggested Framework for M52 was developed for investigating and evaluating vapor intrusion to indoor air at residential and industrial properties. The Framework uses health-based screening values or Motorola 52nd Street modified human health screen levels (MHHSLs; also known as the soil gas human health screening levels [SGHHSLs]) to evaluate sample results and to determine if indoor air sampling is required. The Framework assesses subsurface soil gas samples collected outside of buildings (typically 5 and 15 feet bgs as is the case with the OU1 soil gas sampling program [Clear Creek Associates, 2010]). For industrial buildings soil gas results are compared to the industrial SGHHSLs. If the soil vapor results are less than 10% of the SGHHSL, it is unlikely that USEPA would recommend further steps such as indoor air testing of the nearby buildings. If the soil gas results are greater than or equal to 10% of the industrial SGHHSL, building surveys would be performed to determine the next steps. If the highest reported soil gas results are greater than the industrial SGHHSLs, USEPA recommends indoor air sampling.

The approach described in the VI TM uses elements from each of these guidance documents, with a primary focus on assessing multiple lines of evidence.

5.0 Vapor Intrusion Conceptual Site Model and Investigative Approach

The purpose of this section is to provide information related to the VI CSM, a summary of the overall VI investigation process, and a summary of the methods used to prioritize selection of the buildings of interest for the Phase 2 assessment.

5.1 Overview of Vapor Intrusion Conceptual Model

VI CSMs integrate available, relevant, and reliable information into a comprehensive representation of the VI exposure pathway, which consists of the following three components:

- A source of volatile organic compounds (VOCs; for example, a spill or leak)
- A migration route to allow the VOCs to be transported to the point of exposure (for example, through groundwater and soil gas)
- A receptor or potential future receptor present at the point of exposure (for example, humans working in a building at the site)

If one or more of these fundamental components is absent in the exposure pathway, VI will not occur. Henry's law is used to describe the equilibrium partitioning between the aqueous phase in groundwater and soil gas. Reliable methods are lacking for estimating partitioning between sorbed-phase contaminants in the vadose zone and soil gas. Thus, soil gas concentrations are typically measured directly when a vadose zone vapor source is suspected.

Once in the soil gas, other factors influence the movement of contaminants through the soil gas, such as geology, depth to groundwater, soil moisture, and soil type. Concentration gradients affect the vapor movement because vapors tend to move by molecular diffusion from areas of higher concentration to areas of lower concentration.

Pressure gradients also affect the movement of vapor into the building through advection and convection currents caused by factors such as weather, wind, and building air flow. Pressure differences are generated from the action of atmospheric air, ventilation systems, natural convection in soil, and even temperature changes. Advection occurs mainly in the shallow subsurface areas, particularly within a building's zone of influence. When the internal air pressure within the building drops, external air or soil gas is forced into the building by advection.

The presence of above-ground background sources of VOCs in outdoor or indoor air (for example, solvents, cleaning products, dry cleaning, products used in the building processes, etc.) is a key component of VI CSMs. It is necessary to consider whether vapor intrusion or background sources are the primary cause of VOCs detected in indoor air.

An example of a generic VI CSM is provided on Figure 6 for reference purposes. Additional information on the potential vapor sources at the Honeywell 34th Street Facility, their migration, and receptors is provided in the following sections.

5.1.1 Potential Vapor Sources

General site characteristics, including the physical setting (geology and hydrogeology; Figure 7) and a depiction of potential site- and offsite-related chemical impacts are summarized on the overall CSM (Figure 8). Specific details regarding these figures can be found in the FHHRA (CH2M HILL, 2011a) or the Final FRI Report (CH2M HILL, 2005).

Operations at the Facility have included the use of a variety of chemicals in Areas 1 through 5. The design and manufacturing operations typically have consisted of metal fabrication, machining, painting and plating. Chemicals include lubricating and cutting oils in the machining operations, various solvents for degreasing (for example, TCE), acids for etching, metal solutions for plating and paints, various types of jet fuel, and refrigerants for cooling engine test facilities (for example, TCE).

The primary vapor sources of potential site-related chemicals within the FHHRA study area include:

- Historical CVOC (TCE and 1,1,1-TCA) solvent use in the manufacturing processes at the Honeywell facility, as well as by other Motorola 52nd Street Superfund Site (OU1 and OU2) potentially responsible parties (PRPs)
- Jet fuel used for jet engine testing operations stored in underground storage tanks (USTs) at the Honeywell facility

Potential subsurface sources of site-related VOCs at the Honeywell facility that may potentially be contributing to the VI pathway include CVOCs and petroleum hydrocarbon-related VOCs detected in groundwater, soil, and soil gas. Figure 9 presents a summary of potential sources at the Facility and identifies those areas that are considered the primary

release points (that is, key potential source areas) for both the CVOCs (CH2M HILL, 2005) and the petroleum hydrocarbon-related VOCs (CH2M HILL, 2004a and b; Honeywell, 2002).

As presented in the FHHRA (CH2M HILL, 2011a) and the Final FRI Report (CH2M HILL, 2005), the following potential source areas are considered the key potential sources areas for CVOCs:

- Area 1 Oil Yard
- Building 102
- Building 105
- Building 115
- Building 202 LACCs
- Building 203 Test Cells
- Building 204 Test Cells
- Building 404
- Building 417
- Building 422
- Ground Disposal Areas in Areas 1 and 4

As presented in the FHHRA (CH2M HILL, 2011a) and the *UST Site Characterization Report, Honeywell International, Inc. 34th Street Facility, Phoenix, Arizona* (Honeywell, 2002), the primary source areas for petroleum hydrocarbon-related VOCs include the original Area 2 Fuel Farm, which was located in the southwest corner of the current footprint of Building 230, the small tank farm north of Building 203, piping adjacent to Building 211 and Building 223, and the current Area 2 Fuel Farm located in the southeast corner of Area 2.

Although the current risk estimates for the groundwater to indoor air were not evaluated as part of this VI TM because Honeywell has moved well beyond this initial phase, plume maps depicting secondary sources of CVOCs and petroleum hydrocarbon-related VOCs in the shallow groundwater (that is, Salt River Gravels hydrostratigraphic subunit) are included in Attachment 3. These plume maps are based on the most recent sitewide sampling event performed in September 2010. Specific details regarding this event and a discussion of the results can be found in the *September 2010 Annual Groundwater Monitoring Report, Honeywell 34th Street Facility, Phoenix, Arizona* (CH2M HILL, 2011c) for CVOCs (TCE, PCE, vinyl chloride, 1,1-dichloroethane, 1,2-dichloroethene, and cis-1,2-dichloroethene) and in the *Third Quarter 2010 Remediation Status Report, Honeywell 34th Street Facility, Phoenix, Arizona Facility ID No. 0-002227 LUST File Nos. 0393.02-.10,.05 -.20* (CH2M HILL, 2010b) for benzene, naphthalene, and methyl tertiary butyl ether.

5.1.2 Vapor Migration

Volatile chemicals in groundwater and soil can volatilize, migrate through soil gas, and subsequently intrude into indoor spaces. VOCs in soil gas migrate primarily through

diffusion until they reach a zone right beneath a building that is influenced by advection. Fick's law is used to describe molecular diffusion, and states that the VOC flux through soil gas is proportional to the concentration gradient (that is, the difference in concentration divided by the distance between high-VOC and low-VOC concentration areas).

The air-filled porosity of the soil affects vapor migration; air-filled porosity is dependent on soil properties such as total porosity, clay or silt content, and moisture content. Vapor diffusion in soil decreases with low air-filled porosity, high moisture content, and low air diffusion coefficients (see Appendix J of the Final FRI Report for site-specific soil property information, and Section 6 of the Final FRI Report for fate and transport details [CH2M HILL, 2005]). Volatile chemicals dissolved in groundwater partition into the vapor phase, as predicted using temperature-adjusted Henry's law constants. Subsequent vapor transport in the subsurface is then dependent on the properties of the capillary fringe and vadose zone.

Convective air movement immediately beneath the building foundation is the primary transport mechanism for vapor transport through cracks in the foundation. This convective sweep through the slab (into or out of the building) is induced by negative or positive pressure differences between the structure and the subsurface caused by numerous factors, such as barometric pumping, wind effects, air handling and exchange, and building dimensions. Many of the buildings at the Honeywell facility are constructed as slab on grade (for example, Buildings 101, 102, 103, 202, 301, 302, 404, and 503), or have subfloors that act as secondary containment for plating operations (for example, Buildings 105, 422, and 429). Honeywell also has several other types of buildings such as modular buildings on blocks with enclosed crawl spaces (for example, Buildings 158, 551, 552, 553, and 554), storage canopies, and test cells used for testing aircraft engines.

5.1.3 Receptors

As presented in Figure 3-1 of the FHHRA (Figure 10 in this VI TM), human receptors that could potentially be exposed to COPCs via the vapor intrusion pathway are: current and future commercial/industrial workers in the North, South, and PSHIA Exposure Areas.

Currently, there may be sensitive subpopulations that work at the Facility; for example, long-term employees with chronic health issues. Exposures by these potential sensitive subpopulations are incorporated into the exposure assumptions as presented in Section 3.3 of the FHHRA (CH2M HILL, 2011a). No other sensitive subpopulations, such as school children, hospital patients, or day care children, are present within the North, South, and PSHIA Exposure Areas.

5.2 General Vapor Intrusion Assessment Approach

The overall approach for conducting a VI investigation is shown on Figure 11 and reflects USEPA (2002, 2008, and 2010a) and ITRC (2007) VI guidance. The VI pathway was incorporated into the CSMs provided in the FHHRA (CH2M HILL, 2011a). The threshold assessment, along with a screening VI evaluation of historical groundwater and soil gas data, were performed as part of the FHHRA. Per the FHHRA (CH2M HILL, 2011a) and consistent with USEPA (2002, 2008, 2010a) and ITRC (2007) VI guidance, and consistent with the request by ADEQ (2010), significant VI could not be ruled out based on the screening level cumulative risk and hazard estimates; therefore, Honeywell has moved to the next phase of the VI assessment.

The current approach to VI investigations is to collect and evaluate multiple lines of evidence to support decision making regarding the VI pathway. Not all of the example lines of evidence shown on Figure 12 need to be evaluated to investigate the VI pathway. To date, Honeywell has evaluated data associated with baseline conditions (that is, before the operation of the BSVE system) at the Facility as presented in the FHHRA, and assessed various lines of evidence. These include groundwater data, soil gas data, results of fate and transport modeling, sub-slab data, ambient air data, and the impact of site geology (assessment is included in the J&E modeling).

5.3 Summary of Data Collected after October 2008

As stated in Section 3 of this VI TM, the FHHRA (CH2M HILL, 2011a) evaluated both groundwater data (March 2005 through September 2008) and soil gas data (1994 through October 2008) to assess baseline risks and hazards for the soil gas to indoor air and groundwater to indoor air pathways.

Honeywell continued to collect soil gas data (analyzed by USEPA Method TO-15) after October 2008 in preparation for and following the initial operation of the BSVE system on May 27, 2009. These data have been collected quarterly from the ADEQ-approved BSVE soil gas monitoring well network (Figure 13) and summarized in the semiannual UST remediation status reports. Sampling locations consist of individual probes as well as sets of co-located nested probes (Table 2).

In addition to the ongoing quarterly soil gas monitoring performed in conjunction with the operation of the BSVE system, Honeywell collected soil gas data (analyzed by USEPA Method 8260B) to evaluate potential data gaps in accordance with the FFS Work Plan (CH2M HILL, 2009a) between June 2 and June 9, 2009. Figure 14 presents the locations of the potential data gaps as identified in the FFS Work Plan. Soil gas samples were collected around the perimeter of Building 302 and adjacent to subsurface structures Interceptor 1-9, Pit 1-10, Sump 2-50, Pump Station 2-51, Pump Station 2-68, Trench 2-69, Pump Station 3-6, Sump 4-2, Sump 4-4, Interceptor 4-7, and Sump 4-29.

The results associated with these data collection events were evaluated as part of this VI TM to estimate current cumulative VI screening level risks (Table 3). These estimates were calculated using the same methods presented in the FHHRA (CH2M HILL, 2011a). Data used to calculate current cumulative VI screening level risk estimates included the following data sets:

- Soil gas data (analyzed by USEPA Method TO-15) collected between November 1, 2009 and December 31, 2010, as part of the ongoing BSVE quarterly soil-gas sampling (see Table 1 in Attachment 4 of this VI TM).
- Soil gas data collected between June 6 and June 9, 2009, to evaluate potential data gaps in accordance with the FFS Work Plan (see Table 2 in Attachment 2 of this VI TM).

Figure 15 presents the *current* (i.e., *post-baseline and commencement of the BSVE system*) screening level cumulative cancer risks for soil gas to industrial indoor air based on detected COPCs. If multiple sampling depths were present at a location (that is, a location “cluster”),

the cumulative risk for each interval was calculated separately, but only the highest calculated risk is shown in the figure.

Figure 16 presents the *current* (i.e., *post-baseline and commencement of the BSVE system*) upper bound hypothetical cancer risks for soil gas to industrial indoor air based on sample quantitation limits.

Key observations based on the *current* (i.e., *post-baseline and commencement of the BSVE system*) screening level VI risk and hazard maps include the following:

- With the exception of P-35, the screening level ELCRs for soil gas to indoor air using *detected* COPCs for *current* (i.e., *post-baseline and commencement of the BSVE system*) data were less than 1E-06.
- The highest calculated ELCR (2E-06) and HI (3E-03) for the *current* (i.e., *post-baseline and commencement of the BSVE system*) soil gas data sets only slightly exceeded the lower end of the USEPA (1991) NCP target risk range of 1E-06 and was located at P-35 (risk driver is PCE, which accounts for 95% of the cumulative risk) inside Building 102 and adjacent to the former blade tip grinder. Honeywell performed excavation activities September 2007 and January 2008 in the area of the former blade tip grinder to remove PCE-impacted soil (CH2M HILL, 2008c). Honeywell was unable to remove all of the PCE-impacted soil because of the depth of the impacted soils (greater than 4.5 feet below ground surface [bgs]) and building construction limitations. Soil with concentrations exceeding the residential soil remediation level (SRL) of 5.1 milligram per kilogram (mg/kg) for PCE at three sampling locations (B102_EX-013 at 5 to 6.5 feet bgs [27 mg/kg], B102_EX-014 at 8-9.5 feet bgs [12 mg/kg], and B102_EX-017 at 12.5-14 feet bgs [5.1 mg/kg]) was left in place. Only one sample location, B102_EX-013 at 5-6.5 feet bgs (27 mg/kg) exceeded the nonresidential SRL for PCE of 13 mg/kg (CH2M HILL, 2008c). In July 2008, Honeywell installed monitoring well ASE-130A in July 2008 to evaluate the threat to groundwater from the former blade tip grinder (CH2M HILL, 2008c). As of September 2010, PCE concentrations in the groundwater were nondetect below the laboratory reporting limit of 1.7 µg/L (CH2M HILL, 2011c).

In addition to calculating the cumulative VI screening level risk estimates, the most current data sets (Fourth Quarter 2010 [November 2 through November 25, 2010] and First Quarter 2011 [February 1 through February 18, 2011] BSVE quarterly soil gas data [Attachment 4, Table 3]; and soil gas data collected as part of the FFS Work Plan [June 2 through 9, 2009]; Attachment 4, Table 4) were compared to the industrial SGHHSLs (USEPA, 2010b) and the FHHRA risk-based screening levels (RBSLs; CH2M HILL, 2011a). With the exception of one location, P-35 at 6 feet bgs, COPCs at all other soil gas sampling locations with data collected less than 10 feet bgs, were below the industrial SGHHSLs and FHHRA RBSLs. P-35 which is located inside Building 102 exceeded the PCE industrial SGHHSL of 1,800 micrograms per cubic meter (µg/m³). PCE concentrations at P-35 did not exceed the FHHRA RBSL of 3,500 µg/m³.

Honeywell also collected radon and helium data from 13 of the shallowest soil-gas monitoring well locations between January 18 and January 20, 2011, to evaluate attenuation factors and reconfirm that well head leakage is not occurring in these soil-gas monitoring well locations. The helium and radon data are summarized in Tables 5 and 6 in Attachment

4, respectively. Based on the results of the helium leak testing (helium was not detected above field instrument detection limit of 0.0025%), well head leakage is not occurring in these shall soil-gas monitoring well locations beneath the slabs. Evaluation of radon data yielded a sitewide attenuation factor of 1.8E-04, which was generally consistent with the attenuation factor used in the FHHRA Johnson & Ettinger modeling.

5.4 Prioritizing Buildings for Further Vapor Intrusion Investigation

The multiple lines of evidence methodology used to identify and prioritize the buildings of interest for further VI investigation is described in this section. This evaluation consisted of an iterative five-step approach, with step 5 incorporating an evaluation the more recent BSVE soil gas data compared to the industrial SGHSLs and a site visit with ADEQ and USEPA on July 19 and 20, 2011 to inspect the Primary Buildings of Interest (BOIs). The process served to eliminate buildings from further consideration or retain and classify buildings as Primary or Secondary BOIs based on the following factors:

- type, use, and construction of each building;
- location of each building relative to site-specific, historical, and recent soil gas VI screening level target risk exceedances of greater than 1E-06;
- proximity to key potential subsurface VOC source areas; and
- ADEQ and USEPA site visit to inspect the buildings.

Prioritizing buildings for further assessment based on multiple lines of evidence is consistent with ITRC's *Vapor Intrusion Pathway: A Practical Guideline* (ITRC, 2007), and U.S. Environmental Protection Agency (USEPA) vapor intrusion guidance documents (USEPA, 2002).

The Facility is comprised of 106 numbered buildings, as identified by Honeywell. All numbered buildings located within the site boundary were considered for this evaluation and are summarized in Table 4. A flow chart summarizing the logic for the five step building prioritization decision process is shown on Figure 17. The following sections provide summaries of the decision steps and the results.

5.4.1 Step 1 – Identification of Preliminary Buildings of Interest

Buildings identified by Honeywell (see Figure 18) as being unoccupiable (such as a tank or tank farm), used for storage only (for example, utility shed), not enclosed (for example, a canopy), and jet engine test cells/test consoles were excluded from further consideration during Step 1. This is because vapors cannot accumulate in structures that are not fully enclosed, exposure is insignificant in storage, utility sheds, or test cells, and there is no completed exposure pathway for tanks.

As shown in Table 5, a total of 48 buildings were excluded during Step 1. The remaining 58 buildings were retained for Step 2 and are shown in Figure 19.

5.4.2 Step 2 – Identification of Primary and Secondary Buildings of Interest

This step considered the location of the buildings relative to subsurface vapor sources. USEPA (2002) conservatively assumes that VI cannot be ruled out for buildings within 100

feet laterally or vertically of measured/extrapolated soil gas concentrations above applicable VI screening levels. Soil gas data collected prior to BSVE operation and the corresponding VI risks estimated in the FHHRA (CH2M HILL, 2011a) were considered during this step (refer to Figures 5-1A, 5-1B, and 6-1A included in Attachment 2). A 100-foot buffer zone was drawn around each soil gas data point exceeding estimated FHHRA cumulative cancer risks greater than 1E-06 based on: 1) detected chemicals at concentrations resulting in estimated risks greater than 1E-06; and 2) where the hypothetical risks based on nondetect reporting limits exceeded 1E-06. These exceedances and the 100-foot buffer zones are shown on Figure 20.

As shown on the flowchart on Figure 17, buildings that were not intersected by the 100-foot buffer zones around samples exceeding 1E-06 risk were potentially excluded from further consideration. For these buildings, if soil gas data were available within 100 feet, they were eliminated from further consideration. However, if soil gas data were not available within 100 feet, then the building was retained for Step 3 as a Secondary BOI. This is because it could not be determined from the soil gas data if risks were below 1E-06 in the vicinity of the building. Of the 58 preliminary BOIs retained from Step 1, one building was excluded from further consideration (Building 434).

Buildings within 100 feet of sample locations with estimated risks greater than 1E-06 based on detected concentrations were categorized as higher priority (that is, primary) buildings, as opposed to being based on hypothetical risks using nondetect reporting limits. Table 6 and Figure 21 summarize the results of the Step 2 evaluation, with 33 and 24 buildings retained for Step 3 as Primary and Secondary BOIs, respectively.

5.4.3 Step 3 – Refined Building Prioritization Based on Sub-slab Data and Key Potential Source Areas

In Step 3, building priority was refined based on the availability of sub-slab soil gas data (in this case, shallow soil gas 5 to 6.5 feet bgs beneath the building) and whether a building identified as a Key Potential Source Area (KPSA) in the Final FRI Report (CH2M HILL, 2005) and the FHHRA (CH2M HILL, 2011a) had subslab impacts (Figure 22). The flow chart in Figure 17 illustrates the decision process for Step 3.

The availability of sub-slab data and the corresponding estimated risks above or below the 1E-06 target risk level based on detected concentrations were considered during this step. Sub-slab data are a better indicator of potential VI risk within a building than exterior soil gas data because they provide a more direct measurement of potential VOC concentrations beneath a building. If the detected sub-slab concentrations did not result in screening level risks greater than 1E-06, the building was reclassified as a Secondary BOI. If sub-slab data were not available for a particular building, then it was retained as a Primary BOI for Step 4. Secondary Buildings of Interest identified as KPSAs in the Final FRI Report (CH2M HILL, 2005) or FRI Addendum (CH2M HILL, 2008a) where subsurface impacts could not be ruled out were reclassified as Primary Buildings of Interest for Step 4 in order to confirm a subsurface release has not occurred that could result in significant VI concerns.

The final evaluation in Step 3 was to evaluate buildings located in Facility operational areas and specifically those buildings located in Area 5. Buildings 501, 503, 551, 552, 553, and 554 were eliminated for further consideration because these buildings are located in Area 5. Per

the FRI Report, Area 5 is not considered a key potential source area for CVOCs or petroleum hydrocarbons. No vapor degreasers, recycling stills, above ground storage tanks containing solvents, chip storage areas, or potential and known ground disposal areas have existed in Area 5 (CH2M HILL, 2005). Additionally, no known accidental releases have occurred in Area 5 (CH2M HILL, 2005).

Table 7 and Figure 23 summarize the results of the Step 3 evaluation, with 26 and 25 buildings retained for Step 4 as Primary and Secondary BOIs, respectively.

5.4.4 Step 4 - Refined of Building Prioritization Based on Post-baseline (i.e., Operation of BSVE System) Data Results

Step 4 evaluated new soil gas data collected after commencing operation of the BSVE system in May 2009 (that is, post-FHHRA baseline data) and data collected to evaluate potential data gaps in accordance with the FFS Work Plan (June 2009) (see Figure 24).

This step in the building prioritization process is important for the following reasons:

- On May 27, 2009, operation of the ADEQ-approved BSVE system to remediate petroleum hydrocarbons was commenced. As part of the ADEQ-approved system, ADEQ required a soil vapor monitoring program to evaluate the possible migration of soil vapors caused by the operation of the BSVE system. A comprehensive network of soil vapor monitoring wells has been monitored since 2006 with all results provided to the ADEQ LUST, ADEQ Federal Project Unit, and USEPA Superfund remediation managers.
- New data were collected after October 2008, which was the cutoff date used to evaluate baseline data in the FHHRA. Updated cumulative screening level risks were estimated using these new soil gas data (that is, post-BSVE operation) and the FHHRA methods (CH2M HILL, 2011a). These updated cumulative screening levels risks were estimated using detected (Figure 15) and reporting limit non-detect (Figure 16) levels. The soil gas data used to estimate these risks are provided in Table 1 of Attachment 4.
- As of March 2011, approximately 2,320,000 pounds of petroleum-related hydrocarbons are estimated to have been removed by combined biodegradation and volatilization and 276 pounds of CVOCs are estimated to have been removed by volatilization (CH2M HILL, 2011d).
- The BSVE system is operating at a 2:1 extraction/injection scenario and has been effectively treating vapors inside the TTA as demonstrated by the increase in oxygen concentrations throughout the TTA (see pre-BSVE and post-BSVE conditions on Figure 25) and decrease of methane concentrations throughout the TTA (see pre-BSVE and post-BSVE conditions on Figure 26).
- Soil gas data were collected in accordance with the FFS Work Plan (CH2M HILL, 2009a) from 11 subsurface structures and around the perimeter of Building 302 to evaluate potential data gaps for CVOCs as identified in the Phase I and Phase II Report (CH2M HILL, 2008b) and the FRI Addendum (CH2M HILL, 2008a). These updated cumulative screening levels risks were estimated using detected (Figure 15) and reporting limit non-

detect (Figure 16) levels. The soil gas data used to estimate these risks are provided in Table 2 of Attachment 4.

In Step 4, Primary BOIs were identified as inside or outside (or intersecting) the BSVE TTA (Figure 24). If a building was located outside (or intersecting) the BSVE TTA (6), it was retained as a Primary BOI for Step 5. If a building was located inside the BSVE TTA (20) and risks for soil gas data collected during the operation of the BSVE system were less than 1E-06, the building (18) was reclassified as a Secondary BOI. If risks were greater than 1 E-06, the building (2) was retained as a Primary BOI for Step 5.

With the exception of one location beneath Building 102 (P-35), soil gas-to-indoor air screening level cumulative risk estimates were less than 1E-06 for all locations based on the maximum detected concentrations measured inside or adjacent to the TTA, during BSVE operation, and post-FHHRA (see Figure 15). These updated screening level risk estimates along with the increase in oxygen and decrease in methane concentrations provide supporting evidence that the BSVE system under the current operating scenario has reduced VOC concentrations inside the TTA to levels not expected to cause VI risks above 1E-06. Based on these lines of evidence, the only buildings retained as Primary BOIs inside the TTA are Buildings 101 and 102. These were retained even though the estimated risk associated with P-35 only slightly exceeded 1E-06 (by 2 times). Building 101 was retained as a Primary BOI because it is attached to Building 102 and was formerly used as office space. Honeywell is in the process of developing a plan to monitor changing conditions that may arise as a result of changes in BSVE operation scenarios (for example, going from 2:1 extraction/injection to 1:1 extraction/injection or injection only).

Although a sensitivity analysis was performed to determine whether any of the new soil gas samples had elevated nondetect SQLs that could result in risks or hazards being underestimated relative to a risk-management target (for example, NCP target cancer risk range of 1E-06 to 1E-04) (see Figure 16), none of these risk numbers changed the overall building ranking prioritization. As shown on Figure 16, the new data sampling points with nondetect COPC elevated SQLs correspond to industrial-based VI ELCRs in the 1E-06 to 1E-05 range. Following the same rationale used to prioritize the buildings based on the historical data (that is, baseline data included in the FHRHA), the building prioritization did not change.

Table 8 and Figure 27 summarize the results of the Step 4 evaluation, with 8 and 43 buildings retained for Step 5 as Primary and Secondary BOIs, respectively.

5.4.5 Step 5 - Comparison of BSVE Soil-gas Data to the Motorola 52nd Street Industrial SGHSLs and ADEQ/USEPA Site Walk to Inspect Buildings

On July 19 and 20, 2011, representatives from ADEQ and USEPA inspected the Primary BOIs. Based on this inspection and in efforts to maintain some consistency with the USEPA's Region 9 Suggested Framework for M52, Building 404 was reclassified as a Secondary BOI and at this time no samples are proposed for this building. Although the building was identified as a Primary BOI in Step 4 because it was a KPSA, none of the historical soil gas data indicates further assessment is required.

As stated in Section 5.2, the most recent BSVE soil gas data sets for buildings inside the BSVE TTA were compared to the industrial SGHSLs. Based on these data and using the USEPA's Region 9 Suggested Framework for M52 only Buildings 101 and 102 (both located

inside the BSVE TTA) would be selected for concurrent indoor air, outdoor air, and subslab soil gas sampling. This is consistent with the prioritization of buildings identified in Steps 1 through 4. Based on Steps 1 through 4 and the comparison of the most recent BSVE soil gas data, Buildings 101 and 102 are the only buildings inside the BSVE TTA identified as Primary BOIs and selected for further Phase 2 VI assessment.

5.4.6 Selection of Buildings for Further Vapor Intrusion Assessment

In summary, a five-step screening process was used to classify 106 buildings as Primary or Secondary BOIs, or exclude them from further consideration. The final list of Primary BOIs is presented in Exhibit 1.

EXHIBIT 1
Final List of Primary BOIs

Primary BOIs
Building 101 (inside the BSVE TTA)
Building 102 (inside the BSVE TTA)
Building 142 (outside the BSVE TTA)
Building 302 (outside/intersecting the BSVE TTA)
Building 310 (outside the BSVE TTA)
Building 422 (outside the BSVE TTA)
Building 429 (outside the BSVE TTA)

The seven buildings retained as Primary BOIs will be evaluated for further VI assessment by collecting concurrent indoor air, outdoor air, and sub-slab soil gas samples. The specific details regarding the sampling procedures for this second phase of the VI assessment are presented in the Phase 2 VI WP included in Attachment 1. The Phase 2 VI WP also presents the locations and number of samples that are proposed for concurrent indoor air, outdoor air, and subslab soil gas. If the results of the Phase 2 VI assessment show VI concerns exist in the Primary BOIs, then the Secondary BOIs will be evaluated further.

6.0 References

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Tables

TABLE 1

FHHRA COPCs for Soil Gas-to-Indoor Industrial Air

Honeywell 34th Street Facility, Phoenix, Arizona

Soil Gas-to-Indoor Industrial Air

1,1,1,2-Tetrachloroethane
1,1,1-Trichloroethane
1,1-Dichloroethane
1,2-Dichloroethane
Benzene
Ethylbenzene
Naphthalene
Tetrachloroethene
Trichloroethene
Vinyl chloride

Notes:

FHHRA = focused human health risk assessment

COPCs = chemicals of potential concern

Originator: Eric Davis	<i>Eric Davis</i> (Signature)
Checked by: Tasha Lewis	<i>Tasha Lewis</i> (Signature)
Approved by STC or PM: Loren Lund	<i>Loren Lund</i> (Signature)

TABLE 2
 Soil Gas Location Clusters
 Honeywell 34th Street Facility, Phoenix, Arizona

Location ID/Soil Gas Location Cluster	Individual Soil Gas Sampling Locations
BSVE Soil Gas Monitoring Locations	
P-32	P-32
SMW-12	SMW-12-U
SMW-13	SMW-13-M
P-24	P-24-U
P-25	P-25-U
P-26	P-26-U
P-28	P-28-M
P-28	P-28-U
P-30	P-30-U
P-31	P-31
P-33	P-33
P-35	P-35
P-36	P-36
P-37	P-37
P-38	P-38
P-39	P-39
P-41	P-41
P-46	P-46-M
	P-46-U
PMW-1	PMW-1-M
	PMW-1-U
PMW-2	PMW-2-M
	PMW-2-U
PMW-3	PMW-3-M
	PMW-3-U
PMW-4	PMW-4-M
	PMW-4-U
PMW-5	PMW-5-M
	PMW-5-U
PMW-6	PMW-6-M
	PMW-6-U
PMW-7	PMW-7-M
	PMW-7-U
PMW-8	PMW-8-M
	PMW-8-U
PMW-9	PMW-9-M
	PMW-9-U
PMW-10	PMW-10-M
	PMW-10-U
PMW-11	PMW-11-M
	PMW-11-U
PMW-12	PMW-12-M
	PMW-12-U
PMW-13	PMW-13-M
	PMW-13-U

TABLE 2

Soil Gas Location Clusters

Honeywell 34th Street Facility, Phoenix, Arizona

Location ID/Soil Gas Location Cluster	Individual Soil Gas Sampling Locations
PMW-14	PMW-14-M
PMW-15	PMW-15-M
	PMW-15-U
SMW-1	SMW-1-M
	SMW-1-U
SMW-2	SMW-2-M
	P-47
SMW-3	SMW-3-M
	SMW-3-U
SMW-4	SMW-4-M
	SMW-4-U
SMW-5	SMW-5-M
	SMW-5-U
SMW-6	SMW-6-M
	SMW-6-U
SMW-7	SMW-7-M
	SMW-7-U
SMW-8	SMW-8-M
	SMW-8-U
SMW-9	SMW-9-M
	SMW-9-U
SMW-10	SMW-10-M
	SMW-10-U
SMW-11	SMW-11-M
	SMW-11-U
SMW-12	SMW-12-M
	SMW-12-U
SMW-13	SMW-13-M
	SMW-13-U
SMW-14	SMW-14-M
	SMW-14-U
SVV-1	SVV-1
SVV-2	SVV-2
SVV-3	SVV-3
SVV-4	SVV-4
FFS Work Plan Soil Gas Monitoring Locations	
BLDG302-01	BLDG302_01-10
	BLDG302_01-15
BLDG302-02	BLDG302_02-05
	BLDG302_02-10
BLDG302-03	BLDG302_03-05
	BLDG302_03-10

TABLE 2

Soil Gas Location Clusters

Honeywell 34th Street Facility, Phoenix, Arizona

Location ID/Soil Gas Location Cluster	Individual Soil Gas Sampling Locations
BLDG302-04	BLDG302_04-05
	BLDG302_04-10
BLDG302-05	BLDG302_05-05
	BLDG302_05-10
BLDG302-06	BLDG302_06-05
	BLDG302_06-10
BLDG302-07	BLDG302_07-05
	BLDG302_07-05-DUP1
	BLDG302_07-10
BLDG302-08	BLDG302_08-05
	BLDG302_08-10
BLDG302-09	BLDG302_09-05
	BLDG302_09-10
BLDG302-10	BLDG302_10-05
	BLDG302_10-10
BLDG302-11	BLDG302_11-05
	BLDG302_11-10
BLDG302-12	BLDG302_12-05
	BLDG302_12-10
BLDG302-13	BLDG302_13-05
	BLDG302_13-10
	BLDG302_13-10-DUP1
BLDG302-14	BLDG302_14-05
	BLDG302_14-10
	BLDG302_14-10-DUP1
BLDG302-15	BLDG302_15-05
	BLDG302_15-07
BLDG302-16	BLDG302_16-05
	BLDG302_16-10
BLDG302-17	BLDG302_17-05
	BLDG302_17-08
BLDG302-18	BLDG302_18-05
	BLDG302_18-08
SS_1-10-01	SS_1-10-01-05
	SS_1-10-01-08
	SS_1-10-01-08-DUP1
SS_1-10-02	SS_1-10-02-05
	SS_1-10-02-08
SS_1-9-01	SS_1-9-01-05
	SS_1-9-01-07
	SS_1-9-01-07-DUP1

TABLE 2

Soil Gas Location Clusters

Honeywell 34th Street Facility, Phoenix, Arizona

Location ID/Soil Gas Location Cluster	Individual Soil Gas Sampling Locations
SS_1-9-02	SS_1-9-02-05
	SS_1-9-02-05B
	SS_1-9-02-08
	SS_1-9-02-08B
SS_2-50-01	SS_2-50-01-05
	SS_2-50-01-05-DUP1
	SS_2-50-01-08
SS_2-51-01	SS_2-51-01-05
	SS_2-51-01-10
SS_2-51-02	SS_2-51-02-05
	SS_2-51-02-09
SS_2-68-01	SS_2-68-01-05.5
	SS_2-68-01-10
SS_2-68-02	SS_2-68-02-05
	SS_2-68-02-05-DUP1
	SS_2-68-02-09
SS_2-69-01	SS_2-69-01-05
	SS_2-69-01-05B
	SS_2-69-01-08B
SS_2-69-02	SS_2-69-02-05
	SS_2-69-02-10
SS_2-69-03	SS_2-69-03-05
	SS_2-69-03-10
SS_2-69-04	SS_2-69-04-05
	SS_2-69-04-10
SS_3-6-01	SS_3-6-01-05
	SS_3-6-01-08
SS_3-6-02	SS_3-6-02-05
	SS_3-6-02-10
	SS_3-6-02-10-DUP1
SS_4-2-01	SS_4-2-01-05
	SS_4-2-01-07.5
SS_4-2-02A	SS_4-2-02-05.5
SS_4-2-02B	SS_4-2-02-10
SS_4-29-01	SS_4-29-01-05
	SS_4-29-01-10
SS_4-4-01	SS_4-4-01-05
	SS_4-4-01-10-1PV
	SS_4-4-01-10-3PV
	SS_4-4-01-10-7PV

TABLE 2

Soil Gas Location Clusters

Honeywell 34th Street Facility, Phoenix, Arizona

Location ID/Soil Gas Location Cluster	Individual Soil Gas Sampling Locations
SS_4-4-02	SS_4-4-02-05
	SS_4-4-02-10
	SS_4-4-02-10-DUP1
SS_4-7-01	SS_4-7-01-06-1PV
	SS_4-7-01-06-3PV
	SS_4-7-01-06-7PV
	SS_4-7-01-06-7PV-DUP1

Notes:

ID = Identification

Originator: Benny Pataray	<i>Benny Pataray</i> (Signature)
Checked by: Tasha Lewis	<i>Tasha Lewis</i> (Signature)
Approved by STC or PM: Loren Lund	<i>Loren Lund</i> (Signature)

TABLE 3

Summary of Risk Estimates for Soil Gas-to-Indoor Industrial Air

Honeywell 34th Street Facility, Phoenix, Arizona

Location ID	ELCR	HI	Risk Drivers ⁽¹⁾
Honeywell Facility North Exposure Area - Industrial Exposure Scenario - Cancer (ELCR)			
BLDG302-01	3E-07	--	
BLDG302-02	3E-07	--	
BLDG302-03	3E-07	--	
BLDG302-04	3E-07	--	
BLDG302-05	3E-07	--	
BLDG302-06	3E-07	--	
BLDG302-07	2E-07	--	
BLDG302-08	2E-07	--	
BLDG302-09	2E-07	--	
BLDG302-10	1E-07	--	
BLDG302-11	1E-07	--	
BLDG302-12	2E-07	--	
BLDG302-13	2E-07	--	
BLDG302-14	1E-07	--	
BLDG302-15	1E-07	--	
BLDG302-16	7E-08	--	
BLDG302-17	1E-07	--	
BLDG302-18	2E-07	--	
P-30	9E-09	--	
P-31	3E-09	--	
P-32	2E-07	--	
P-36	1E-07	--	
P-39	7E-09	--	
P-41	4E-08	--	
P-46	5E-08	--	
PMW-1	3E-08	--	
PMW-2	1E-08	--	
PMW-3	3E-08	--	
PMW-4	1E-08	--	
PMW-6	9E-09	--	
SMW-2	3E-08	--	
SMW-3	3E-08	--	
SMW-4	4E-07	--	
SMW-6	8E-08	--	
SS_2-68-01	2E-07	--	
SS_2-68-02	1E-07	--	
SS_3-6-01	2E-07	--	
SS_3-6-02	1E-07	--	
SVV-1	3E-08	--	
Honeywell Facility North Exposure Area - Industrial Exposure Scenario - Non-Cancer (HI)			
BLDG302-01	--	5E-04	
BLDG302-02	--	6E-04	

TABLE 3

Summary of Risk Estimates for Soil Gas-to-Indoor Industrial Air

Honeywell 34th Street Facility, Phoenix, Arizona

Location ID	ELCR	HI	Risk Drivers ⁽¹⁾
BLDG302-03	--	4E-04	
BLDG302-04	--	4E-04	
BLDG302-05	--	6E-04	
BLDG302-06	--	6E-04	
BLDG302-07	--	4E-04	
BLDG302-08	--	4E-04	
BLDG302-09	--	3E-04	
BLDG302-10	--	3E-04	
BLDG302-11	--	2E-04	
BLDG302-12	--	3E-04	
BLDG302-13	--	3E-04	
BLDG302-14	--	2E-04	
BLDG302-15	--	2E-04	
BLDG302-16	--	1E-04	
BLDG302-17	--	2E-04	
BLDG302-18	--	3E-04	
P-30	--	1E-05	
P-31	--	2E-05	
P-32	--	4E-05	
P-36	--	2E-05	
P-39	--	1E-05	
P-41	--	3E-05	
P-46	--	4E-04	
PMW-1	--	2E-04	
PMW-2	--	5E-05	
PMW-3	--	6E-05	
PMW-4	--	9E-05	
PMW-6	--	3E-05	
SMW-2	--	3E-04	
SMW-3	--	1E-04	
SMW-4	--	3E-04	
SMW-6	--	7E-04	
SS_2-68-01	--	3E-04	
SS_2-68-02	--	2E-04	
SS_3-6-01	--	3E-04	
SS_3-6-02	--	2E-04	
SVV-1	--	2E-04	
Honeywell Facility South Exposure Area Industrial Exposure Scenario - Cancer (ELCR)			
P-28	3E-08	--	
P-33	3E-08	--	
P-35	2E-06	--	PCE (95%)
P-37	3E-09	--	
P-38	1E-07	--	

TABLE 3

Summary of Risk Estimates for Soil Gas-to-Indoor Industrial Air

Honeywell 34th Street Facility, Phoenix, Arizona

Location ID	ELCR	HI	Risk Drivers ⁽¹⁾
PMW-10	4E-08	--	
PMW-5	8E-08	--	
PMW-7	1E-08	--	
PMW-8	6E-09	--	
PMW-9	4E-08	--	
SMW-7	3E-08	--	
SS_4-2-01	5E-07	--	
SS_4-2-02A	3E-07	--	
SS_4-2-02B	2E-07	--	
SS_4-4-01	6E-07	--	
SS_4-4-02	4E-07	--	
SS_4-7-01	4E-07	--	
SVV-2	2E-08	--	
SVV-3	2E-08	--	
SVV-4	2E-08	--	
Honeywell Facility South Exposure Area Industrial Exposure Scenario - Non-Cancer (HI)			
P-28	--	1E-04	
P-33	--	4E-05	
P-35	--	3E-03	
P-38	--	4E-04	
PMW-10	--	3E-04	
PMW-5	--	6E-04	
PMW-7	--	4E-05	
PMW-8	--	4E-05	
PMW-9	--	3E-04	
SMW-7	--	2E-04	
SS_4-2-01	--	6E-04	
SS_4-2-02A	--	3E-04	
SS_4-2-02B	--	2E-04	
SS_4-4-01	--	7E-04	
SS_4-4-02	--	5E-04	
SS_4-7-01	--	7E-04	
SVV-2	--	4E-05	
SVV-3	--	1E-04	
SVV-4	--	8E-05	
PSHIA Exposure Area - Industrial Exposure Scenario - Cancer (ELCR)			
P-24	1E-08	--	
P-25	5E-08	--	
P-26	3E-08	--	
PMW-11	8E-09	--	
PMW-12	5E-09	--	
PMW-13	3E-09	--	
PMW-14	5E-09	--	

TABLE 3

Summary of Risk Estimates for Soil Gas-to-Indoor Industrial Air
Honeywell 34th Street Facility, Phoenix, Arizona

Location ID	ELCR	HI	Risk Drivers ⁽¹⁾
PMW-15	2E-09	--	
SMW-10	9E-09	--	
SMW-11	2E-08	--	
SMW-12	2E-08	--	
SMW-13	4E-08	--	
SMW-14	1E-08	--	
SMW-8	5E-08	--	
SMW-9	3E-09	--	
PSHIA Exposure Area - Industrial Exposure Scenario - Non-Cancer (HI)			
P-24	--	2E-05	
P-25	--	1E-04	
P-26	--	4E-04	
PMW-11	--	1E-04	
PMW-12	--	2E-05	
PMW-13	--	6E-06	
PMW-14	--	3E-05	
PMW-15	--	3E-06	
SMW-10	--	5E-05	
SMW-11	--	2E-04	
SMW-12	--	3E-05	
SMW-13	--	2E-04	
SMW-14	--	3E-05	
SMW-8	--	5E-05	
SMW-9	--	6E-06	
Offsite Exposure Area - Industrial Exposure Scenario - Cancer (ELCR)			
SMW-1	1E-07	--	
SMW-5	3E-07	--	
Offsite Exposure Area - Industrial Exposure Scenario - Non-Cancer (HI)			
SMW-1	--	3E-04	
SMW-5	--	6E-04	

Notes:

ELCR = excess lifetime

HI = hazard index

ID = identification

PCE = tetrachloroethene

PSHIA = Phoenix Sky Harbor International Airport

% = percent

-- = not applicable

⁽¹⁾ Risk drivers are provided for ELCRs greater than 1E-06 and HIs greater than 1

Originator: Benny Pataray	<i>Benny Pataray</i> (Signature)
Checked by: Michael Novak	<i>Michael Novak</i> (Signature)
Approved by STC or PM: Tasha Lewis	<i>Tasha Lewis</i> (Signature)

TABLE 4

Honeywell Building List
Honeywell 34th Street Facility, Phoenix, Arizona

Building Number	Description	Total Area (ft ²)	Location Relative to BSVE TTA	Comments
BDLG 101	MAIN PLANT OFFICE	69,324	Inside	Office Space
BLDG 102	MAIN PLANT/MANUFACTURING	247,606	Inside	
BLDG 103	GEAR MANUFACTURING	115,157	Outside	
BLDG 104	SWITCH HOUSE	336	Inside	Houses Tank/Chamber
BLDG 105	HEAT TREAT & PLATING	14,427	Inside	
BLDG 106	IT SUPPORT BADGE SHOP	2,947	Inside	
BLDG 108	ELECTRICAL PUMP HOUSE	320	Inside	Pump House
BLDG 109	MAIN GUARD OFFICE	975	Inside	
BLDG 110	PRESSURE TEST & PROD. PAINT	6,960	Inside	
BLDG 111	HAND FINISH AREA	1,635	Inside	
BLDG 112	PREASSEMBLY TOOL & DIE REPAIR 17	289	Inside	
BLDG 114	MANUFACTURING TECHNOLOGY LAB	5,488	Inside	
BLDG 115	TEST CELLS 70 76	3,378	Inside	Test Cell
BLDG 116	MATERIALS PROCESS LAB	4,533	Inside	
BLDG 117	ROTO FINISH FACILITY	1,862	Inside	
BLDG 118	TPE TEST CELLS 77 79	161	Inside	Test Cell
BLDG 119	PUMP HOUSE	428	Outside	Pump House
BLDG 120	WATER RESERVOIR	0	Outside	Tank
BLDG 121	FLIGHT LINE STORAGE	517	Inside	Storage Area
BLDG 122	CREDIT UNION	1,044	Inside	
BLDG 124	TEST CANOPY	1,371	Inside	Canopy
BLDG 125	TEST CONSOLE	204	Inside	Test Console
BLDG 126	TEST CELL	802	Inside	Test Cell
BLDG 128	HANGAR	7,636	Outside	
BLDG 129	HANGAR SHOP & OFFICE	13,931	Outside	Office Space
BLDG 130	TRAILER - STORAGE		Inside	Trailer
BLDG 138	STORAGE	1,011	Outside	Storage Area
BLDG 139	LABORATORY STORAGE CANOPY	496	Inside	Canopy
BLDG 140	CHEMICAL STORAGE CANOPY	7,081	Inside	Canopy
BLDG 142	FITNESS CENTER	9,884	Outside	
BLDG 150	TRAILER	288	Inside	Trailer
BLDG 151	TEST CELL	403	Inside	Test Cell
BLDG 153	TRAINING SCHOOL CELL	166	Inside	Test Cell
BLDG 154	N.D.E GROUP MAN. TEST. TECH	1,377	Inside	
BLDG 158	HEALTH AND SAFETY/MEDICAL	7,028	Outside	Office Space
BLDG 160	FACILITIES	1,337	Outside	
BLDG 202	POWER SHOP & TEST FACILITY	67,507	Inside	
BLDG 203	TEST CELLS	11,128	Inside	Test Cell
BLDG 204	TEST CELLS	10,768	Inside	Test Cell
BLDG 206	INDUSTRIAL VALVE TEST FACILITY	2,515	Inside	
BLDG 208	FUEL CONTROL	1,933	Inside	Control Office
BLDG 209	WATER TEST FACILITY - CANOPY	802	Inside	Canopy
BLDG 210	HIGH OIL FLOW FACILITY	394	Inside	Other
BLDG 211	BEARING & SEAL TEST FACILITY	3,151	Inside	
BLDG 212	DEVELOPMENT FACILITY	22,441	Inside	
BLDG 213	LABORATORY MAINTENANCE	468	Inside	
BLDG 214	TPE TEST CELLS	4,888	Inside	Test Cell
BLDG 215	ANALOG RECORDING	1,577	Inside	
BLDG 217	EOR TEST CANOPY	2,528	Inside	Canopy
BLDG 219	GUARD HOUSE	126	Inside	
BLDG 221	LABORATORY MAINTENANCE OFFICE	532	Inside	
BLDG 222	TFE CELLS	8,448	Inside	Test Cell
BLDG 223	TFE CELLS	8,537	Inside	Test Cell
BLDG 224	ELECTRICAL ENTRANCE	1,797	Inside	

TABLE 4
Honeywell Building List
Honeywell 34th Street Facility, Phoenix, Arizona

Building Number	Description	Total Area (ft ²)	Location Relative to BSVE TTA	Comments
BLDG 225	TPE CELLS	3,650	Inside	Test Cell
BLDG 226	AEROTHERMODYNAMIC FACILITY	1,446	Inside	
BLDG 228	LAB 1	1,729	Inside	
BLDG 229	CANOPY	314	Inside	Canopy
BLDG 230	LHX TEST CELL	13,071	Inside	Test Cell
BLDG 231	FUEL FARM CONT. BLDG	128	Inside	
BLDG 232	TEST CONSOLE	214	Inside	Test Console
BLDG 233	FIRE DEPARTMENT STORAGE	413	Inside	Storage Area
BLDG 234	TEST FACILITY	4,816	Inside	
BLDG 235	WAREHOUSE	55,300	Outside	
BLDG 236	FUEL FARM	1,125	Inside	Fuel Farm
BLDG 238	CHEMICAL STORAGE CANOPY	561	Inside	Canopy
BLDG 240	CHEMICAL STORAGE CANOPY	237	Inside	Canopy
BLDG 253	ELECTRICAL CONTROL TRAILER	1,293	Inside	
BLDG 301	ADMINISTRATION OFFICES ASSEMBLY	185,199	Intersects	Office
BLDG 302	STORE MATERIALS ENGINEERING LAB AND OFFICE	43,148	Intersects	Office
BLDG 303	RECEIVING DOCK	2,968	Inside	
BLDG 310	PHOTO LAB	2,433	Outside	
BLDG 311	GUARD OFFICE	112	Outside	
BLDG 312	TFE IPPS ASSEMBLY	3,229	Inside	
BLDG 350	PHOTO LAB TRAILER	1,300	Inside	
BLDG 401	PARK CANOPY	1,600	Outside	Canopy
BLDG 402	SHIPPING WAREHOUSE	58,963	Outside	
BLDG 403	INSPECTION RECEIVING WAREHOUSE & METAL PREP	59,004	Outside	
BLDG 404	MANUFACTURING METAL JOINING & GEAR LINE	285,198	Outside	
BLDG 405	SAND BLAST SHED CANOPY	335	Outside	Canopy
BLDG 406	LOADING DOCK CANOPY	5,368	Outside	Canopy
BLDG 407	GUARD STATION	36	Outside	
BLDG 409	GUARD OFFICE	82	Outside	
BLDG 410	SHREDDER BUILDING (CANOPY)	238	Outside	Canopy
BLDG 411	MAINTENANCE CANOPY	765	Outside	Canopy
BLDG 412	MAINTENANCE STORAGE	983	Outside	Storage Area
BLDG 413	MAINTENANCE EQUIPMENT STORAGE/KEY SHOP	593	Outside	
BLDG 415	SALVAGE YARD OFFICE	87	Outside	
BLDG 417	CANOPY STORAGE	5,562	Outside	
BLDG 422	TREATMENT	31,851	Outside	
BLDG 423	STORAGE AREA	584	Outside	Storage Area
BLDG 424	MAINTENANCE SALVAGE YARD CANOPY	845	Outside	Canopy
BLDG 425	PAINT STORAGE	125	Outside	Storage Area
BLDG 426	MAINTENANCE STORAGE	809	Outside	Storage Area
BLDG 427	MAINTENANCE OFFICE SHOP	3,992	Outside	
BLDG 428	MAINTENANCE PAINT BOOTH & CANOPY	353	Outside	Canopy
BLDG 429	WAREHOUSE MANUFACTURING	57,101	Outside	
BLDG 430	CHEMICAL STORAGE CANOPY	4,569	Outside	Canopy
BLDG 434	OFFICE	68	Outside	
BLDG 451	ENVIRONMENTAL STORAGE	208	Outside	Storage Area
BLDG 501	CUSTOMER REP BUILDING	722	Outside	
BLDG 503	ENGINEERING	214,795	Outside	Office
BLDG 551	ENGINEERING	8,258	Outside	Office Space; Elevated with Crawl Space

TABLE 4
Honeywell Building List
Honeywell 34th Street Facility, Phoenix, Arizona

Building Number	Description	Total Area (ft ²)	Location Relative to BSVE TTA	Comments
BLDG 552	RESTROOMS	616	Outside	Restrooms; Elevated with Crawl Space
BLDG 553	ENGINEERING	9,835	Outside	Office Space; Elevated with Crawl Space
BLDG 554	ENGINEERING	16,746	Outside	Office Space; Elevated with Crawl Space
Total Number of Buildings:		106		

Notes:
BLDG = Building
BSVE = biologically enhanced soil vapor extraction
ft = feet
TTA = target treatment area
TPE = turbo-prop engine
TFE = turbo-fan engine

Originator:	Honeywell
Checked by: Eric Davis	<i>Eric Davis</i> (Signature)
Approved by STC or PM: Tasha Lewis	<i>Tasha Lewis</i> (Signature)

TABLE 5

Step 1 - Identification of Preliminary Buildings of Interest

Honeywell 34th Street Facility, Phoenix, Arizona

	Description	Building Type	Is the building excluded from further evaluation because it's a tank or tank farm, used for storage only, test cell/test console, or not fully enclosed (Y/N)?	Is the building retained as a Preliminary Building of Interest for Step 2 Evaluation (Y/N)?
BLDG 101	MAIN PLANT OFFICE	Office Space	N	Y
BLDG 102	MAIN PLANT/MANUFACTURING		N	Y
BLDG 103	GEAR MANUFACTURING		N	Y
BLDG 104	SWITCH HOUSE	Houses Tank/Chamber	Y	N
BLDG 105	HEAT TREAT & PLATING		N	Y
BLDG 106	IT SUPPORT BADGE SHOP		N	Y
BLDG 108	ELECTRICAL PUMP HOUSE	Pump House	Y	N
BLDG 109	MAIN GUARD OFFICE		N	Y
BLDG 110	PRESSURE TEST & PROD. PAINT		N	Y
BLDG 111	HAND FINISH AREA		N	Y
BLDG 112	PREASSEMBLY TOOL & DIE REPAIR 17		N	Y
BLDG 114	MNFG. TECHNOLOGY LAB		N	Y
BLDG 115	TEST CELLS 70 76	Test Cell	Y	N
BLDG 116	MATERIALS PROCESS LAB		N	Y
BLDG 117	ROTO FINISH FACILITY		N	Y
BLDG 118	TPE TEST CELLS 77 79	Test Cell	Y	N
BLDG 119	PUMP HOUSE	Pump House	Y	N
BLDG 120	WATER RESERVOIR	Tank	Y	N
BLDG 121	FLIGHT LINE STORAGE	Storage Area	Y	N
BLDG 122	CREDIT UNION		N	Y
BLDG 124	TEST CANOPY	Canopy	Y	N
BLDG 125	TEST CONSOLE	Test Console	Y	N
BLDG 126	TEST CELL	Test Cell	Y	N
BLDG 128	HANGAR		N	Y
BLDG 129	HANGAR SHOP & OFFICE	Office Space	N	Y
BLDG 130	TRAILER - STORAGE	Trailer	Y	N
BLDG 138	STORAGE	Storage Area	Y	N
BLDG 139	LABORATORY STORAGE CANOPY	Canopy	Y	N
BLDG 140	CHEMICAL STORAGE CANOPY	Canopy	Y	N
BLDG 142	FITNESS CENTER		N	Y
BLDG 150	TRAILER	Trailer	N	Y
BLDG 151	TEST CELL	Test Cell	Y	N
BLDG 153	TRAINING SCHOOL CELL	Test Cell	Y	N
BLDG 154	N.D.E GROUP MAN. TEST. TECH		N	Y
BLDG 158	HEALTH AND SAFETY/MEDICAL	Office Space	N	Y
BLDG 160	FACILITIES		N	Y
BLDG 202	POWER SHOP & TEST FACILITY		N	Y

TABLE 5

Step 1 - Identification of Preliminary Buildings of Interest

Honeywell 34th Street Facility, Phoenix, Arizona

	Description	Building Type	Is the building excluded from further evaluation because it's a tank or tank farm, used for storage only, test cell/test console, or not fully enclosed (Y/N)?	Is the building retained as a Preliminary Building of Interest for Step 2 Evaluation (Y/N)?
BLDG 203	TEST CELLS	Test Cell	Y	N
BLDG 204	TEST CELLS	Test Cell	Y	N
BLDG 206	INDUSTRIAL VALVE TEST FACILITY		N	Y
BLDG 208	FUEL CONTROL	Control Office	N	Y
BLDG 209	WATER TEST FACILITY - CANOPY	Canopy	Y	N
BLDG 210	HIGH OIL FLOW FACILITY	Other	N	Y
BLDG 211	BEARING & SEAL TEST FACILITY		N	Y
BLDG 212	DEVELOPMENT FACILITY		N	Y
BLDG 213	LABORATORY MAINTENANCE		N	Y
BLDG 214	TPE TEST CELLS	Test Cell	Y	N
BLDG 215	ANALOG RECORDING		N	Y
BLDG 217	EOR TEST CANOPY	Canopy	Y	N
BLDG 219	GUARD HOUSE		N	Y
BLDG 221	LABORATORY MAINTENANCE OFFICE		N	Y
BLDG 222	TFE CELLS	Test Cell	Y	N
BLDG 223	TFE CELLS	Test Cell	Y	N
BLDG 224	ELECTRICAL ENTRANCE		N	Y
BLDG 225	TPE CELLS	Test Cell	Y	N
BLDG 226	AEROTHERMODYNAMIC FACILITY		N	Y
BLDG 228	LAB 1		N	Y
BLDG 229	CANOPY	Canopy	Y	N
BLDG 230	LHX TEST CELL	Test Cell	Y	N
BLDG 231	FUEL FARM CONTROL BLDG		Y	N
BLDG 232	TEST CONSOLE	Test Console	Y	N
BLDG 233	FIRE DEPARTMENT STORAGE	Storage Area	Y	N
BLDG 234	TEST FACILITY		N	Y
BLDG 235	WAREHOUSE		N	Y
BLDG 236	FUEL FARM	Fuel Farm	Y	N
BLDG 238	CHEMICAL STORAGE CANOPY	Canopy	Y	N
BLDG 240	CHEMICAL STORAGE CANOPY	Canopy	Y	N
BLDG 253	ELECTRICAL CONTROL TRAILER		N	Y
BLDG 301	ADMINISTRATION OFFICES ASSEMBLY	Office	N	Y
BLDG 302	ENGINEERING LAB OFFICE FINISH PARTS STORE MATERIALS ENGINEERING LAB AND OFFICE	Office	N	Y
BLDG 303	RECEIVING DOCK		Y	N
BLDG 310	PHOTO LAB		N	Y
BLDG 311	GUARD OFFICE		N	Y

TABLE 5

Step 1 - Identification of Preliminary Buildings of Interest

Honeywell 34th Street Facility, Phoenix, Arizona

	Description	Building Type	Is the building excluded from further evaluation because it's a tank or tank farm, used for storage only, test cell/test console, or not fully enclosed (Y/N)?	Is the building retained as a Preliminary Building of Interest for Step 2 Evaluation (Y/N)?
BLDG 312	TFE IPPS ASSEMBLY		N	Y
BLDG 350	PHOTO LAB TRAILER		N	Y
BLDG 401	PARK CANOPY	Canopy	Y	N
BLDG 402	SHIPPING WAREHOUSE		N	Y
BLDG 403	INSPECTION RECEIVING WAREHOUSE & METAL PREP		N	Y
BLDG 404	MANUFACTURING METAL JOINING & GEAR LINE		N	Y
BLDG 405	SAND BLAST SHED CANOPY	Canopy	Y	N
BLDG 406	LOADING DOCK CANOPY	Canopy	Y	N
BLDG 407	GUARD STATION		N	Y
BLDG 409	GUARD OFFICE		N	Y
BLDG 410	SHREDDER BUILDING (CANOPY)	Canopy	Y	N
BLDG 411	MAINTENANCE CANOPY	Canopy	Y	N
BLDG 412	MAINTENANCE STORAGE	Storage Area	Y	N
BLDG 413	SHOP		Y	N
BLDG 415	SALVAGE YARD OFFICE		N	Y
BLDG 417	CANOPY STORAGE		Y	N
BLDG 422	HEAT TREAT PLATING WASTE TREATMENT		N	Y
BLDG 423	STORAGE AREA	Storage Area	Y	N
BLDG 424	MAINTENANCE SALVAGE YARD CANOPY	Canopy	Y	N
BLDG 425	PAINT STORAGE	Storage Area	Y	N
BLDG 426	MAINTENANCE STORAGE	Storage Area	Y	N
BLDG 427	MAINTENANCE OFFICE SHOP		N	Y
BLDG 428	MAINTENANCE PAINT BOOTH & CANOPY	Canopy	Y	N
BLDG 429	WAREHOUSE MANUFACTURING		N	Y
BLDG 430	CHEMICAL STORAGE CANOPY	Canopy	Y	N
BLDG 434	OFFICE		N	Y
BLDG 451	ENVIRONMENTAL STORAGE	Storage Area	Y	N
BLDG 501	CUSTOMER REP. BUILDING		N	Y
BLDG 503	ENGINEERING	Office	N	Y
BLDG 551	ENGINEERING	Office Space; Elevated with Crawl Space	N	Y
BLDG 552	RESTROOMS	Restrooms; Elevated with Crawl Space	N	Y
BLDG 553	ENGINEERING	Office Space; Elevated with Crawl Space	N	Y

TABLE 5

Step 1 - Identification of Preliminary Buildings of Interest

Honeywell 34th Street Facility, Phoenix, Arizona

	Description	Building Type	Is the building excluded from further evaluation because it's a tank or tank farm, used for storage only, test cell/test console, or not fully enclosed (Y/N)?	Is the building retained as a Preliminary Building of Interest for Step 2 Evaluation (Y/N)?
BLDG 554	ENGINEERING	Office Space; Elevated with Crawl Space	N	Y

Summary	
Total No. of Buildings as Identified by Honeywell	106
Total No. of Buildings Eliminated from Further Consideration	48
Total No. of Buildings Identified as Preliminary Building of Interest and Retained for Step 2	58

Notes:

BLDG = building

BSVE = biologically enhanced soil vapor extraction

ft = feet

TTA = target treatment area

TPE = turbo-prop engine

TFE = turbo-fan engine

Originator: Eric Davis	<i>Eric Davis</i> (Signature)
Checked by: Michael Niemet	<i>Michael Niemet</i> (Signature)
Approved by STC or PM: Tasha Lewis	<i>Tasha Lewis</i> (Signature)

TABLE 6

Step 2 - Building Priority Based on 100-foot Exceedance Buffer Evaluation

Honeywell 34th Street Facility, Phoenix, Arizona

Building Number	Were soil gas samples collected within 100 feet of the building (Y/N)?	Is building \leq 100 feet of sampling location $>$ 1E-06 cumulative ELCR based on <u>detected</u> chemicals or <u>nondetect</u> reporting limits (Y/N)?	Is building \leq 100 feet of sampling location $>$ 1E-06 cumulative ELCR based on at least <u>one detected</u> chemical (Y/N)?	Priority Ranking based on Step 2 Evaluation
BLDG 101	Y	Y	Y	1 Primary
BLDG 102	Y	Y	Y	1 Primary
BLDG 103	Y	Y	Y	1 Primary
BLDG 105	Y	Y	Y	1 Primary
BLDG 106	Y	Y	Y	1 Primary
BLDG 109	Y	Y	Y	1 Primary
BLDG 110	Y	Y	Y	1 Primary
BLDG 111	Y	Y	Y	1 Primary
BLDG 112	Y	Y	Y	1 Primary
BLDG 114	Y	Y	Y	1 Primary
BLDG 116	Y	Y	N	2 Secondary
BLDG 117	Y	Y	Y	1 Primary
BLDG 122	Y	Y	Y	1 Primary
BLDG 128	Y	Y	N	2 Secondary
BLDG 129	Y	Y	N	2 Secondary
BLDG 142	Y	Y	Y	1 Primary
BLDG 150	Y	Y	N	2 Secondary
BLDG 154	Y	Y	Y	1 Primary
BLDG 158	Y	Y	N	2 Secondary
BLDG 160	Y	Y	N	2 Secondary
BLDG 202	Y	Y	Y	1 Primary
BLDG 206	Y	Y	Y	1 Primary
BLDG 208	Y	Y	Y	1 Primary
BLDG 210	Y	Y	N	2 Secondary
BLDG 211	Y	Y	Y	1 Primary
BLDG 212	Y	Y	Y	1 Primary
BLDG 213	Y	Y	Y	1 Primary
BLDG 215	Y	Y	N	2 Secondary
BLDG 219	Y	Y	Y	1 Primary
BLDG 221	Y	Y	N	2 Secondary
BLDG 224	Y	Y	Y	1 Primary
BLDG 226	Y	Y	Y	1 Primary
BLDG 228	Y	Y	Y	1 Primary
BLDG 234	Y	Y	Y	1 Primary
BLDG 235	N	N	NA	2 Secondary
BLDG 253	Y	Y	Y	1 Primary
BLDG 301	Y	Y	Y	1 Primary
BLDG 302	Y	Y	Y	1 Primary
BLDG 310	Y	Y	Y	1 Primary
BLDG 311	N	N	NA	2 Secondary
BLDG 312	Y	Y	Y	1 Primary
BLDG 350	Y	Y	Y	1 Primary
BLDG 402	Y	Y	N	2 Secondary
BLDG 403	Y	Y	N	2 Secondary
BLDG 404	Y	Y	Y	1 Primary
BLDG 407	Y	Y	N	2 Secondary

TABLE 6

Step 2 - Building Priority Based on 100-foot Exceedance Buffer Evaluation
 Honeywell 34th Street Facility, Phoenix, Arizona

Building Number	Were soil gas samples collected within 100 feet of the building (Y/N)?	Is building ≤ 100 feet of sampling location > 1E-06 cumulative ELCR based on <u>detected</u> chemicals or <u>nondetect</u> reporting limits (Y/N)?	Is building ≤ 100 feet of sampling location > 1E-06 cumulative ELCR based on at least <u>one detected</u> chemical (Y/N)?	Priority Ranking based on Step 2 Evaluation
BLDG 409	N	N	NA	2 Secondary
BLDG 415	Y	Y	N	2 Secondary
BLDG 422	Y	Y	N	2 Secondary
BLDG 427	Y	Y	N	2 Secondary
BLDG 429	Y	Y	Y	1 Primary
BLDG 434	Y	N	NA	0 Excluded
BLDG 501	Y	Y	N	2 Secondary
BLDG 503	Y	Y	N	2 Secondary
BLDG 551	Y	Y	N	2 Secondary
BLDG 552	Y	Y	N	2 Secondary
BLDG 553	Y	Y	N	2 Secondary
BLDG 554	Y	Y	N	2 Secondary

Summary	
Total No. of Preliminary Buildings Retained from Step 1	58
Total No. of Preliminary Buildings of Interest Retained as Primary Buildings of Interest for Step 3	33
Total No. of Preliminary Buildings of Interest Retained as Secondary Buildings of Interest for Step 3	24
Total No. of Preliminary Buildings of Interest Eliminated from further consideration based on Step 2	1

Notes:
 BLDG = building
 ELCR = excess lifetime cancer risk
 NA = not applicable

Originator: Eric Davis	<i>Eric Davis</i> (Signature)
Checked by: Michael Niemet	<i>Michael Niemet</i> (Signature)
Approved by STC or PM: Tasha Lewis	<i>Tasha Lewis</i> (Signature)

TABLE 7

Step 3 - Refined Building Priority Based on Subslab Data and KPSA Evaluation
Honeywell 34th Street Facility, Phoenix, Arizona

Building Number	Priority Ranking based on Step 2	Does the building have sub-slab data (Y/N)?	Is subslab data based on <i>detected</i> chemicals (Y/N)?	Is detected subslab data > 1E-06 cumulative ELCR (Y/N)?	Is the building a KPSA (Y/N)?	Does priority change because of KPSA (Y/N)?	Priority Ranking based on Step 3 Evaluation
BLDG 101	1 Primary	N	NA	NA	N	N	1 Primary
BLDG 102	1 Primary	Y	Y	Y	Y	N	1 Primary
BLDG 103	1 Primary	Y	N	NA	N	Y	2 Secondary
BLDG 105	1 Primary	N	NA	NA	Y	N	1 Primary
BLDG 106	1 Primary	Y	N	NA	N	Y	2 Secondary
BLDG 109	1 Primary	N	NA	NA	N	N	1 Primary
BLDG 110	1 Primary	N	NA	NA	N	N	1 Primary
BLDG 111	1 Primary	N	NA	NA	N	N	1 Primary
BLDG 112	1 Primary	Y	N	NA	N	Y	2 Secondary
BLDG 114	1 Primary	N	NA	NA	N	N	1 Primary
BLDG 116	2 Secondary	N	NA	NA	N	N	2 Secondary
BLDG 117	1 Primary	N	NA	NA	N	N	1 Primary
BLDG 122	1 Primary	Y	N	NA	N	Y	2 Secondary
BLDG 128	2 Secondary	N	NA	NA	N	N	2 Secondary
BLDG 129	2 Secondary	Y	N	NA	N	N	2 Secondary
BLDG 142	1 Primary	N	NA	NA	N	N	1 Primary
BLDG 150	2 Secondary	N	NA	NA	N	N	2 Secondary
BLDG 154	1 Primary	N	NA	NA	N	N	1 Primary
BLDG 158	2 Secondary	N	NA	NA	N	N	2 Secondary
BLDG 160	2 Secondary	N	NA	NA	N	N	2 Secondary
BLDG 202	1 Primary	Y	Y	Y	Y	N	1 Primary
BLDG 206	1 Primary	N	NA	NA	N	N	1 Primary
BLDG 208	1 Primary	Y	N	NA	N	Y	2 Secondary
BLDG 210	2 Secondary	N	NA	NA	N	N	2 Secondary
BLDG 211	1 Primary	Y	N	NA	Y	N	1 Primary
BLDG 212	1 Primary	Y	N	NA	N	Y	2 Secondary
BLDG 213	1 Primary	Y	N	NA	N	Y	2 Secondary
BLDG 215	2 Secondary	N	NA	NA	N	N	2 Secondary
BLDG 219	1 Primary	N	NA	NA	N	N	1 Primary
BLDG 221	2 Secondary	N	NA	NA	N	N	2 Secondary
BLDG 224	1 Primary	N	NA	NA	N	N	1 Primary
BLDG 226	1 Primary	N	NA	NA	N	N	1 Primary
BLDG 228	1 Primary	N	NA	NA	N	N	1 Primary
BLDG 234	1 Primary	N	NA	NA	N	N	1 Primary
BLDG 235	2 Secondary	N	NA	NA	N	N	2 Secondary
BLDG 253	1 Primary	N	NA	NA	N	N	1 Primary
BLDG 301	1 Primary	Y	N	NA	N	Y	2 Secondary
BLDG 302	1 Primary	Y	Y	Y	N	N	1 Primary
BLDG 310	1 Primary	N	NA	NA	N	N	1 Primary
BLDG 311	2 Secondary	N	NA	NA	N	N	2 Secondary
BLDG 312	1 Primary	N	NA	NA	N	N	1 Primary
BLDG 350	1 Primary	N	NA	NA	N	N	1 Primary
BLDG 402	2 Secondary	Y	N	NA	N	N	2 Secondary
BLDG 403	2 Secondary	Y	N	NA	N	N	2 Secondary
BLDG 404	1 Primary	Y	N	NA	Y	N	1 Primary
BLDG 407	2 Secondary	N	NA	NA	N	N	2 Secondary
BLDG 409	2 Secondary	N	NA	NA	N	N	2 Secondary
BLDG 415	2 Secondary	N	NA	NA	N	N	2 Secondary
BLDG 422	2 Secondary	N	NA	NA	Y	Y	1 Primary

TABLE 7

Step 3 - Refined Building Priority Based on Subslab Data and KPSA Evaluation
 Honeywell 34th Street Facility, Phoenix, Arizona

Building Number	Priority Ranking based on Step 2	Does the building have sub-slab data (Y/N)?	Is subslab data based on <u>detected</u> chemicals (Y/N)?	Is detected subslab data > 1E-06 cumulative ELCR (Y/N)?	Is the building a KPSA (Y/N)?	Does priority change because of KPSA (Y/N)?	Priority Ranking based on Step 3 Evaluation	
BLDG 427	2 Secondary	Y	N	NA	N	N	2 Secondary	
BLDG 429	1 Primary	Y	Y	Y	N	N	1 Primary	
BLDG 501 ^a	2 Secondary	N	NA	NA	N	N	0 Exclude	
BLDG 503 ^a	2 Secondary	N	NA	NA	N	N	0 Exclude	
BLDG 551 ^a	2 Secondary	N	NA	NA	N	N	0 Exclude	
BLDG 552 ^a	2 Secondary	N	NA	NA	N	N	0 Exclude	
BLDG 553 ^a	2 Secondary	N	NA	NA	N	N	0 Exclude	
BLDG 554 ^a	2 Secondary	N	NA	NA	N	N	0 Exclude	
Totals:								
	33 Primary						→	26 Primary
	24 Secondary						→	25 Secondary
	0 Excluded						→	6 Excluded

Summary	
Total No. of Buildings Retained from Step 2	57
Total No. of Preliminary Buildings of Interest Retained as Primary Buildings of Interest for Step 4	26
Total No. of Preliminary Buildings of Interest Retained as Secondary Buildings of Interest for Step 4	25
Total No. of Preliminary Buildings of Interest Eliminated for further consideration based on Step 3	6

Notes:
 BLDG = building
 ELCR = excess lifetime cancer risk
 CVOCs = chlorinated volatile organic compounds
 KPSA = key potential source area
 NA = not applicable

^a Buildings 501, 503, 551, 552, 553, and 554 were eliminated for further consideration because these buildings are located in Area 5. Per the FRI Report, Area 5 is not considered a key potential source area for CVOCs or petroleum hydrocarbons. No vapor degreasers, recycling stills, ASTs, chip storage areas, or potential and known ground disposal areas have existed in this area. Additionally, no known accidental releases have occurred in this area.

Originator: Eric Davis	<u>Eric Davis</u> (Signature)
Checked by: Michael Niemet	<u>Michael Niemet</u> (Signature)
Approved by STC or PM: Tasha Lewis	<u>Tasha Lewis</u> (Signature)

TABLE 8

Step 4 - Refined Building Priority Based on Post-Baseline (i.e., operation of BSVE System) Data Results
 Honeywell 34th Street Facility, Phoenix, Arizona

Building Number	Priority Ranking based on Step 3 Evaluation	Do post-baseline (i.e., operation of BSVE system) risks at sampling location exceed 1E-06 cumulative ELCR based on <u>detected</u> chemicals (if available) (Y/N)?	Location Relative to TTA	Is building priority ranking changed from primary to secondary based on Step 4 Evaluation (Y/N)?	Priority Ranking based on Step 4 Evaluation		
BLDG 101	1	Primary	Y (connected to BLDG 102)	Inside	N	1	Primary
BLDG 102	1	Primary	Y	Inside	N	1	Primary
BLDG 103	2	Secondary	NA	Outside	N	2	Secondary
BLDG 105	1	Primary	N	Inside	Y	2	Secondary
BLDG 106	2	Secondary	NA	Inside	N	2	Secondary
BLDG 109	1	Primary	NA	Inside	Y	2	Secondary
BLDG 110	1	Primary	N	Inside	Y	2	Secondary
BLDG 111	1	Primary	NA	Inside	Y	2	Secondary
BLDG 112	2	Secondary	NA	Inside	N	2	Secondary
BLDG 114	1	Primary	NA	Inside	Y	2	Secondary
BLDG 116	2	Secondary	NA	Inside	N	2	Secondary
BLDG 117	1	Primary	N	Inside	Y	2	Secondary
BLDG 122	2	Secondary	NA	Inside	N	2	Secondary
BLDG 128	2	Secondary	NA	Outside	N	2	Secondary
BLDG 129	2	Secondary	N	Outside	N	2	Secondary
BLDG 142	1	Primary	NA	Outside	N	1	Primary
BLDG 150	2	Secondary	NA	Inside	N	2	Secondary
BLDG 154	1	Primary	NA	Inside	Y	2	Secondary
BLDG 158	2	Secondary	NA	Outside	NA	2	Secondary
BLDG 160	2	Secondary	NA	Outside	NA	2	Secondary
BLDG 202	1	Primary	N	Inside	Y	2	Secondary
BLDG 206	1	Primary	NA	Inside	Y	2	Secondary
BLDG 208	2	Secondary	N	Inside	N	2	Secondary
BLDG 210	2	Secondary	NA	Inside	NA	2	Secondary
BLDG 211	1	Primary	N	Inside	N	2	Secondary
BLDG 212	2	Secondary	N	Inside	N	2	Secondary
BLDG 213	2	Secondary	N	Inside	Y	2	Secondary
BLDG 215	2	Secondary	NA	Inside	NA	2	Secondary
BLDG 219	1	Primary	N	Inside	Y	2	Secondary
BLDG 221	2	Secondary	NA	Inside	NA	2	Secondary
BLDG 224	1	Primary	N	Inside	Y	2	Secondary
BLDG 226	1	Primary	NA	Inside	Y	2	Secondary
BLDG 228	1	Primary	N	Inside	Y	2	Secondary
BLDG 234	1	Primary	NA	Inside	Y	2	Secondary
BLDG 235	2	Secondary	NA	Outside	NA	2	Secondary
BLDG 253	1	Primary	NA	Inside	Y	2	Secondary
BLDG 301	2	Secondary	N	Intersects	N	2	Secondary
BLDG 302	1	Primary	N	Intersects	N	1	Primary
BLDG 310	1	Primary	NA	Outside	N	1	Primary
BLDG 311	2	Secondary	NA	Outside	NA	2	Secondary
BLDG 312	1	Primary	NA	Inside	Y	2	Secondary
BLDG 350	1	Primary	NA	Inside	Y	2	Secondary
BLDG 402	2	Secondary	NA	Outside	NA	2	Secondary
BLDG 403	2	Secondary	NA	Outside	NA	2	Secondary
BLDG 404	1	Primary	NA	Outside	N	1	Primary
BLDG 407	2	Secondary	NA	Outside	NA	2	Secondary
BLDG 409	2	Secondary	NA	Outside	NA	2	Secondary

TABLE 8

Step 4 - Refined Building Priority Based on Post-Baseline (i.e., operation of BSVE System) Data Results
 Honeywell 34th Street Facility, Phoenix, Arizona

Building Number	Priority Ranking based on Step 3 Evaluation	Do post-baseline (i.e., operation of BSVE system) risks at sampling location exceed 1E-06 cumulative ELCR based on <u>detected</u> chemicals (if available) (Y/N)?	Location Relative to TTA	Is building priority ranking changed from primary to secondary based on Step 4 Evaluation (Y/N)?	Priority Ranking based on Step 4 Evaluation
BLDG 415	2 Secondary	NA	Outside	NA	2 Secondary
BLDG 422	1 Primary	NA	Outside	N	1 Primary
BLDG 427	2 Secondary	NA	Outside	NA	2 Secondary
BLDG 429	1 Primary	NA	Outside	N	1 Primary
Totals:					26 Primary
					25 Secondary
					8 Primary
					43 Secondary

Summary	
Total No. of Buildings Retained from Step 3	51
Total No. of Preliminary Buildings of Interest Retained as Primary Buildings of Interest for Step 5	8
Total No. of Preliminary Buildings of Interest Retained as Secondary Buildings of Interest for Step 5	43

Notes:
 BLDG = building
 BSVE = biologically enhanced soil vapor extraction
 ELCR = excess lifetime cancer risk
 TTA = target treatment area
 NA = not applicable

Originator: Eric Davis	<i>Eric Davis</i> (Signature)
Checked by: Michael Niemet	<i>Michael Niemet</i> (Signature)
Approved by STC or PM: Tasha Lewis	<i>Tasha Lewis</i> (Signature)

TABLE 9

Step 5 - Refined Building Priority Based on July 19, 2011 ADEQ and USEPA Site Walk and Building Inspection

Honeywell 34th Street Facility, Phoenix, Arizona

Building Number	Priority Ranking based on Step 4 Evaluation		Location Relative to TTA	Priority Ranking based on Step 5 Evaluation		Comments
	1	2		1	2	
BLDG 101	1	Primary	Inside	1	Primary	
BLDG 102	1	Primary	Inside	1	Primary	
BLDG 103	2	Secondary	Outside	2	Secondary	
BLDG 105	2	Secondary	Inside	2	Secondary	
BLDG 106	2	Secondary	Inside	2	Secondary	
BLDG 109	2	Secondary	Inside	2	Secondary	
BLDG 110	2	Secondary	Inside	2	Secondary	
BLDG 111	2	Secondary	Inside	2	Secondary	
BLDG 112	2	Secondary	Inside	2	Secondary	
BLDG 114	2	Secondary	Inside	2	Secondary	
BLDG 116	2	Secondary	Inside	2	Secondary	
BLDG 117	2	Secondary	Inside	2	Secondary	
BLDG 122	2	Secondary	Inside	2	Secondary	
BLDG 128	2	Secondary	Outside	2	Secondary	
BLDG 129	2	Secondary	Outside	2	Secondary	
BLDG 142	1	Primary	Outside	1	Primary	
BLDG 150	2	Secondary	Inside	2	Secondary	
BLDG 154	2	Secondary	Inside	2	Secondary	
BLDG 158	2	Secondary	Outside	2	Secondary	
BLDG 160	2	Secondary	Outside	2	Secondary	
BLDG 202	2	Secondary	Inside	2	Secondary	
BLDG 206	2	Secondary	Inside	2	Secondary	
BLDG 208	2	Secondary	Inside	2	Secondary	
BLDG 210	2	Secondary	Inside	2	Secondary	
BLDG 211	2	Secondary	Inside	2	Secondary	
BLDG 212	2	Secondary	Inside	2	Secondary	
BLDG 213	2	Secondary	Inside	2	Secondary	
BLDG 215	2	Secondary	Inside	2	Secondary	
BLDG 219	2	Secondary	Inside	2	Secondary	
BLDG 221	2	Secondary	Inside	2	Secondary	
BLDG 224	2	Secondary	Inside	2	Secondary	
BLDG 226	2	Secondary	Inside	2	Secondary	
BLDG 228	2	Secondary	Inside	2	Secondary	
BLDG 234	2	Secondary	Inside	2	Secondary	
BLDG 235	2	Secondary	Outside	2	Secondary	
BLDG 253	2	Secondary	Inside	2	Secondary	
BLDG 301	2	Secondary	Intersects	2	Secondary	
BLDG 302	1	Primary	Intersects	1	Primary	

TABLE 9

Step 5 - Refined Building Priority Based on July 19, 2011 ADEQ and USEPA Site Walk and Building Inspection
 Honeywell 34th Street Facility, Phoenix, Arizona

Building Number	Priority Ranking based on Step 4 Evaluation		Location Relative to TTA	Priority Ranking based on Step 5 Evaluation		Comments
BLDG 310	1	Primary	Outside	1	Primary	
BLDG 311	2	Secondary	Outside	2	Secondary	
BLDG 312	2	Secondary	Inside	2	Secondary	
BLDG 350	2	Secondary	Inside	2	Secondary	
BLDG 402	2	Secondary	Outside	2	Secondary	
BLDG 403	2	Secondary	Outside	2	Secondary	
BLDG 404	1	Primary	Outside	2	Secondary	Although Building 404 was identified as a key potential source area in the FRI Report, none of the data collected indicates further investigation is needed.
BLDG 407	2	Secondary	Outside	2	Secondary	
BLDG 409	2	Secondary	Outside	2	Secondary	
BLDG 415	2	Secondary	Outside	2	Secondary	
BLDG 422	1	Primary	Outside	1	Primary	
BLDG 427	2	Secondary	Outside	2	Secondary	
BLDG 429	1	Primary	Outside	1	Primary	
Totals:		8	Primary	7	Primary	
		43	Secondary	44	Secondary	

Summary	
Total No. of Buildings Retained from Step 4	51
Retained as Primary Buildings of Interest for Step 5	7
Retained as Secondary Buildings of Interest for Step 5	44

Notes:
 ADEQ = Arizona Department of Environmental Quality
 BLDG = building
 BSVE = biologically enhanced soil vapor extraction
 ELCR = excess lifetime cancer risk
 NA = not applicable
 TTA = target treatment area
 USEPA = U.S. Environmental Protection Agency

Originator: Tasha Lewis	<i>Tasha Lewis</i> (Signature)
Checked by: Andrew O'Malley	<i>Andrew O'Malley</i> (Signature)
Approved by STC or PM: Tasha Lewis	<i>Tasha Lewis</i> (Signature)

TABLE 10

Final List of Primary and Secondary Buildings of Interest Selected Phase 2 Vapor Intrusion Assessment
Honeywell 34th Street Facility, Phoenix, Arizona

Primary Buildings of Interest	
BLDG 101	BLDG 310
BLDG 102	BLDG 422
BLDG 142	BLDG 429
BLDG 302	
Secondary Buildings of Interest	
BLDG 103	BLDG 212
BLDG 105	BLDG 213
BLDG 106	BLDG 215
BLDG 109	BLDG 219
BLDG 110	BLDG 221
BLDG 111	BLDG 224
BLDG 112	BLDG 226
BLDG 114	BLDG 228
BLDG 116	BLDG 234
BLDG 117	BLDG 235
BLDG 122	BLDG 253
BLDG 128	BLDG 301
BLDG 129	BLDG 311
BLDG 150	BLDG 312
BLDG 154	BLDG 350
BLDG 158	BLDG 402
BLDG 160	BLDG 403
BLDG 202	BLDG 404
BLDG 206	BLDG 407
BLDG 208	BLDG 409
BLDG 210	BLDG 415
BLDG 211	BLDG 427

Notes:

BLDG = buildings

Originator: Eric Davis	<i>Eric Davis</i> (Signature)
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Honeywell 34th Street Facility, Phoenix, Arizona

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Acronym List
Honeywell 34th Street Facility, Phoenix, Arizona

General Acronyms	
AOI	Area of Interest
BLDG	building
BOI	building of interest
BSVE	biologically enhanced soil vapor extraction
COP	City of Phoenix
CSM	conceptual site model
CVOC	chlorinated volatile organic compound
ELCR	excess lifetime cancer risk
FFS	focused feasibility study
FHHRA	Focused Human Health Risk Assessment
FRI	Focused Remedial Investigation
EW	extraction well
GW	groundwater
KPSA	key potential source area
LACC	large altitude cold chambers
LNAPL	light non-aqueous phase liquid
LUST	leaking underground storage tank
OU	Operable Unit
PM	project manager
PSHIA	Phoenix Sky Harbor International Airport

Acronym List
Honeywell 34th Street Facility, Phoenix, Arizona

RBSL	risk-based screening level
RSL	Regional Screening Level
SG	soil gas
SGHHS	soil gas human health screening level
SRG	Salt River Gravels
SSV	subslab soil gas
STC	senior technical consultant
TTA	target treatment area
UST	underground storage tank
VI	vapor intrusion
VOC	volatile organic compound

Unified Soil Classification System Acronyms

CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, lean clays
GW	Well-graded gravels or gravel-sand mixtures, little or no fines
GP	Poorly-graded gravels or gravel-sand mixtures, little or no fines
GM	Silty gravels, gravel-sand-silt mixtures
GC	Clayey gravels, gravel-sand-clay mixtures
ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands, or clayey silts with slight plasticity
SW	Well-graded sands or gravelly sands, little or no fines
SP	Poorly-graded sands or gravelly sands, little or no fines
SM	Silty sands, sand-silt mixtures
SC	Clayey sands, sand-silt mixtures

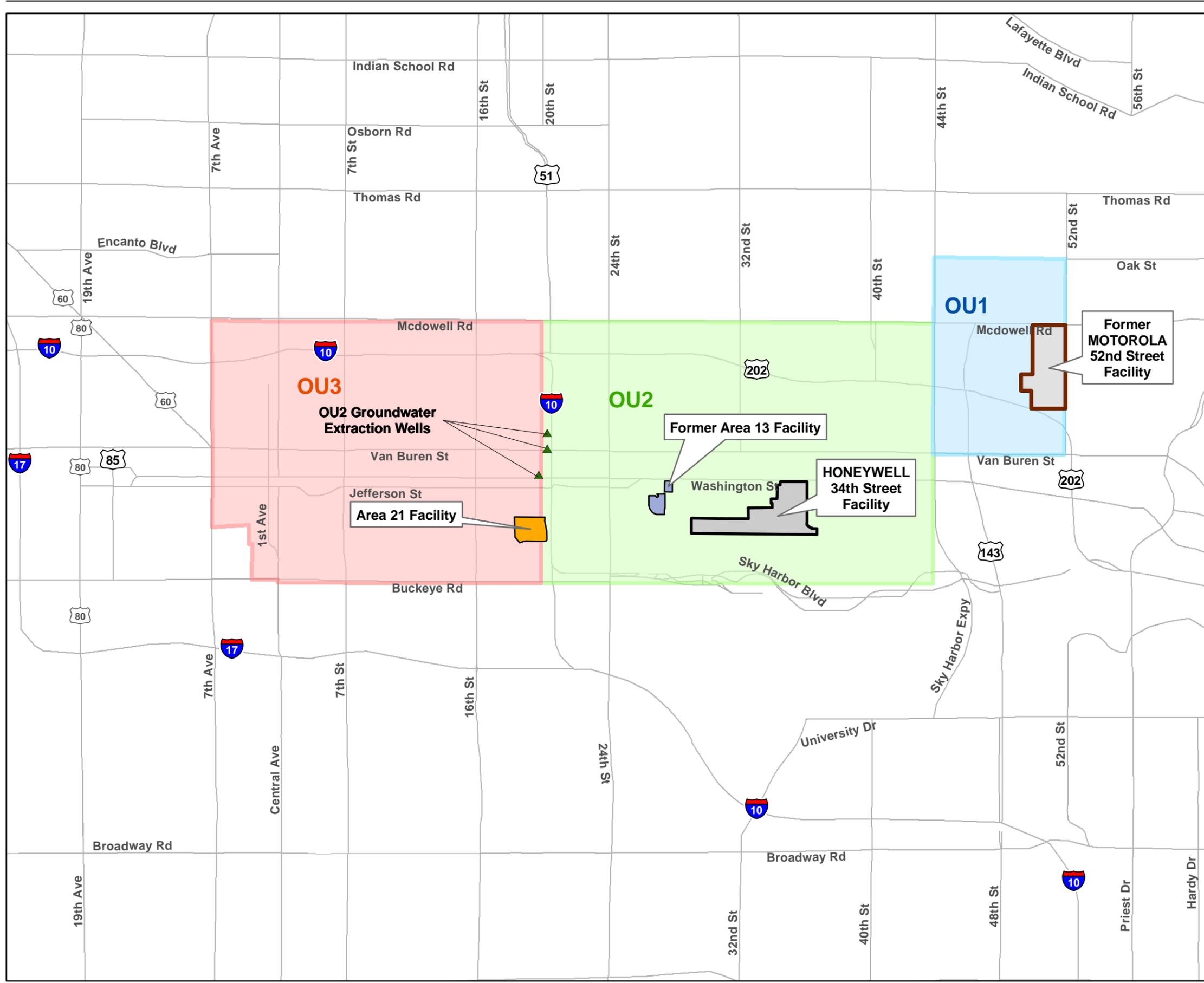
Chemical Acronyms

1,1,2,2-PCA	1,1,2,2-Tetrachloroethane
1,1,2-TCA	1,1,2-Trichloroethane
1,2,4-TMB	1,2,4-Trimethylbenzene
1,1-DCA	1,1-Dichloroethane
1,2-DCA	1,2-Dichloroethane
1,3,5-TMB	1,3,5-Trimethylbenzene
BNZ	Benzene
CLFM	Chloroform
ETHBZN	Ethylbenzene

Acronym List
Honeywell 34th Street Facility, Phoenix, Arizona

HxCBU	Hexachlorobutadiene
NAPH	Naphthalene

N-HEXANE	N-Hexane
PCE	Tetrachloroethene
TCE	Trichloroethene
VC	Vinyl Chloride



- LEGEND**
- ▲ OU2 Groundwater Extraction Wells
 - Former Area 13 Facility
 - Area 21 Facility
 - Honeywell 34th Street Facility
 - Former Motorola 52nd Street Facility

Originator: Andrew O'Malley	<i>Andrew O'Malley</i> (Signature)
Checked by: Corey Schwabenlander	<i>Corey Schwabenlander</i> (Signature)
Approved by STC or PM: Loren Lund	<i>Loren Lund</i> (Signature)

Notes:
1. Refer to Figure Index for abbreviation/acronym definitions.

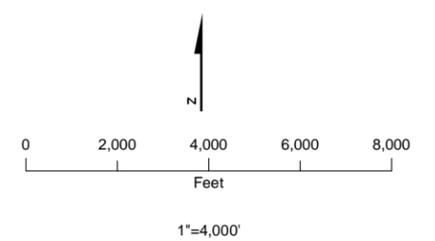
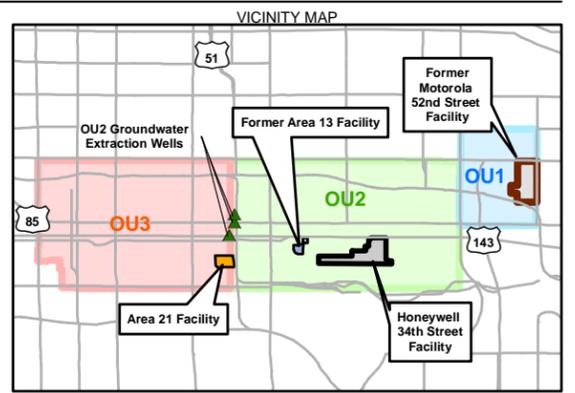
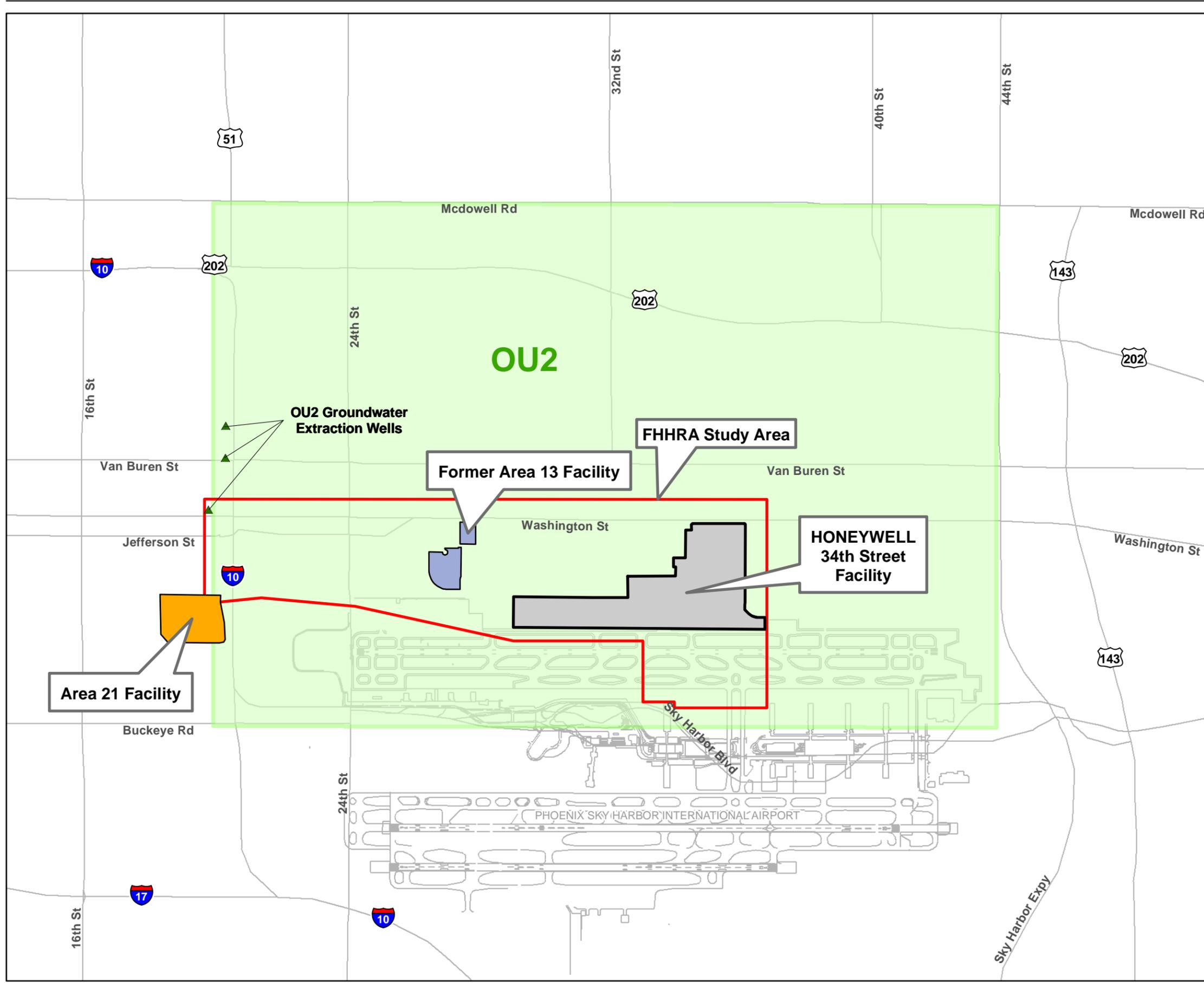


FIGURE 1
MOTOROLA 52ND STREET
SUPERFUND SITE
Honeywell 34th Street Facility
Phoenix, Arizona



- LEGEND
- ▲ OU2 Groundwater Extraction Wells
 - Former Area 13 Facility
 - Area 21 Facility
 - Honeywell 34th Street Facility
 - FHHRA Study Area
 - OU2

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Checked by: Corey Schwabenlander	<i>Corey Schwabenlander</i> (Signature)
Approved by STC or PM: Loren Lund	<i>Loren Lund</i> (Signature)

Notes:
1. Refer to Figure Index for abbreviation/acronym definitions.

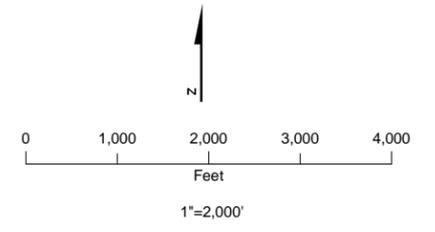
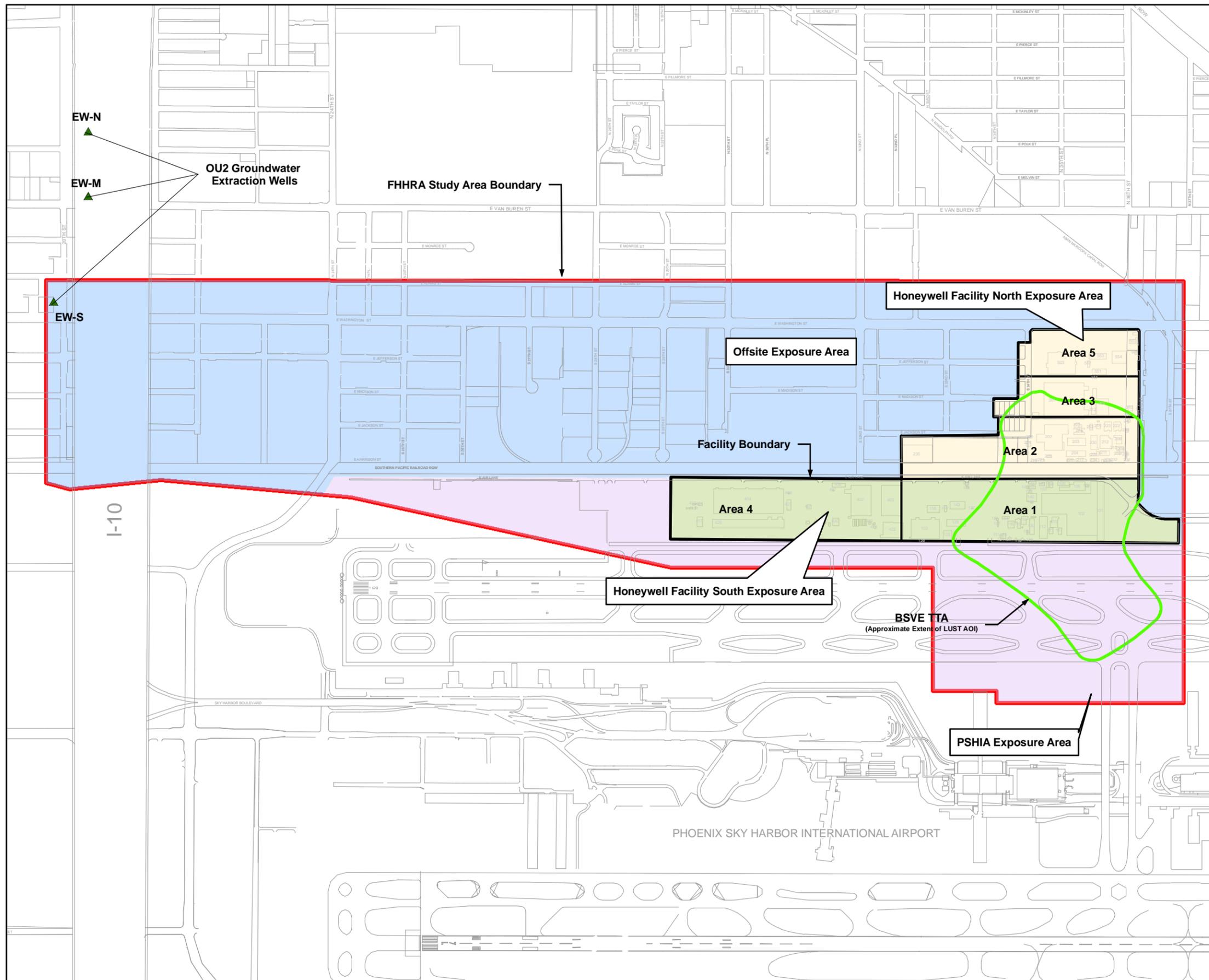


FIGURE 2
HONEYWELL 34TH STREET
FACILITY FHHRA STUDY AREA
WITHIN OU2
 Honeywell 34th Street Facility
 Phoenix, Arizona



- LEGEND**
- ▲ OU2 Groundwater Extraction Wells
 - BSVE Target Treatment Area (TTA)
 - Operational Area
 - Honeywell 34th Street Facility
 - Facility North Exposure Area
 - Facility South Exposure Area
 - PSHIA Exposure Area
 - Offsite Exposure Area
 - FHHRA Study Area

Originator: Andrew O'Malley	<i>Andrew O'Malley</i> (Signature)
Checked by: Corey Schwabenlander	<i>Corey Schwabenlander</i> (Signature)
Approved by STC or PM: Loren Lund	<i>Loren Lund</i> (Signature)

Notes:
1. Refer to Figure Index for abbreviation/acronym definitions.

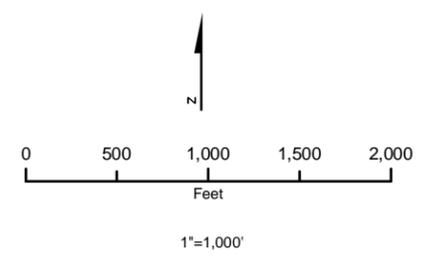
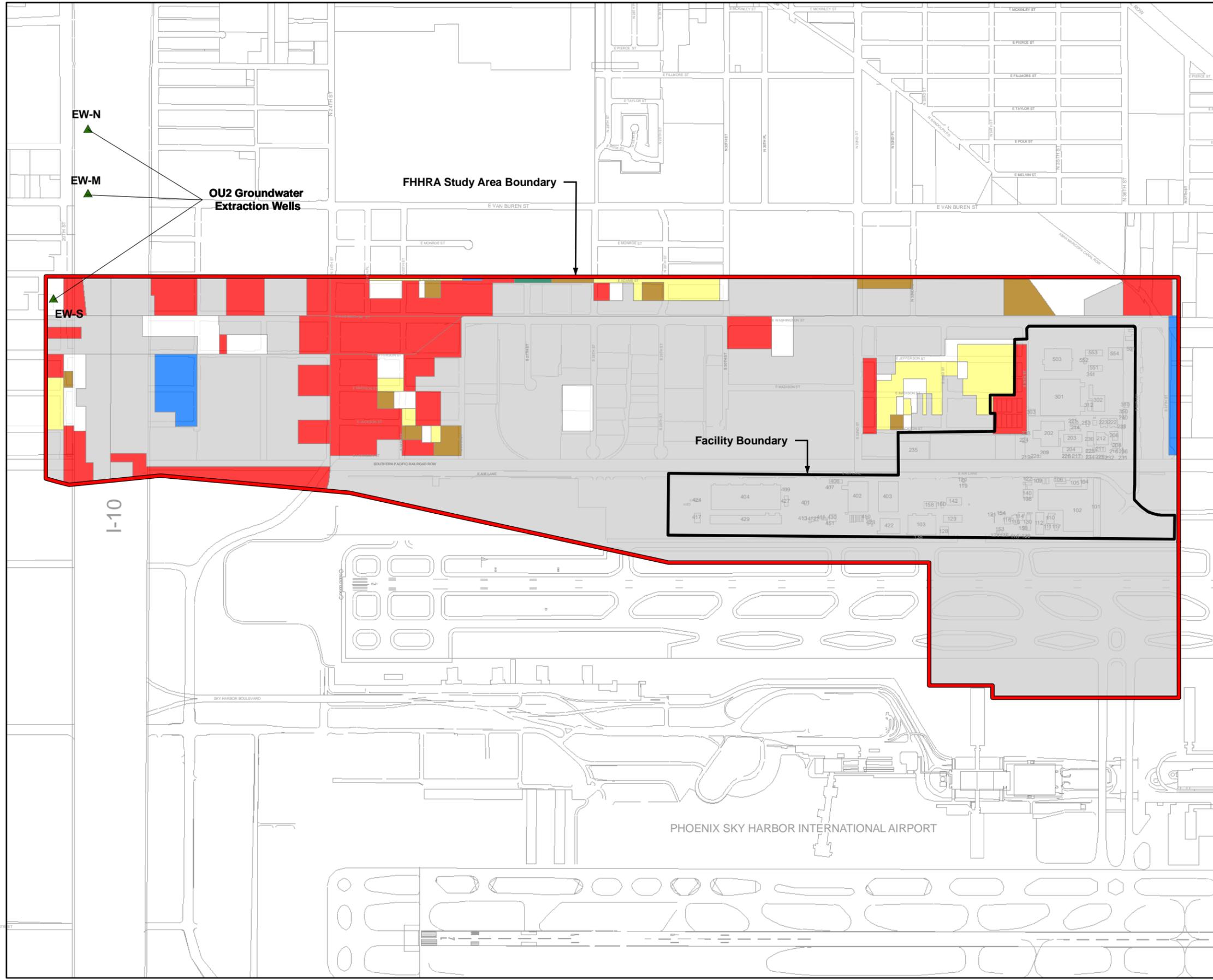


FIGURE 3
EXPOSURE AREAS WITHIN
HONEYWELL 34TH STREET
FHHRA STUDY AREA
 Honeywell 34th Street Facility
 Phoenix, Arizona



- LEGEND**
- ▲ OU2 Groundwater Extraction Wells
 - Street and Airport Features
 - ▭ FHHRA Study Area
 - ▭ Honeywell 34th Street Facility
 - 404 Honeywell Buildings
 - Existing Land Use**
 - Single Family
 - Multi-Family Residential
 - Commercial
 - Public Facility
 - Industrial
 - Open Space
 - Vacant

Originator: Andrew O'Malley	<i>Andrew O'Malley</i> (Signature)
Checked by: Tasha Lewis	<i>Tasha Lewis</i> (Signature)
Approved by STC or PM: Tasha Lewis	<i>Tasha Lewis</i> (Signature)

- Notes:
1. Refer to Figure Index for abbreviation/acronym definitions.
 2. Land use information presented on this figure was obtained from the City of Phoenix General Plan adopted by the City Council Resolution on December 5, 2001 in accordance with action taken at its final public hearing on November 7, 2001 (COP, 2002).

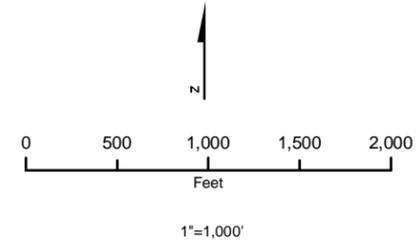
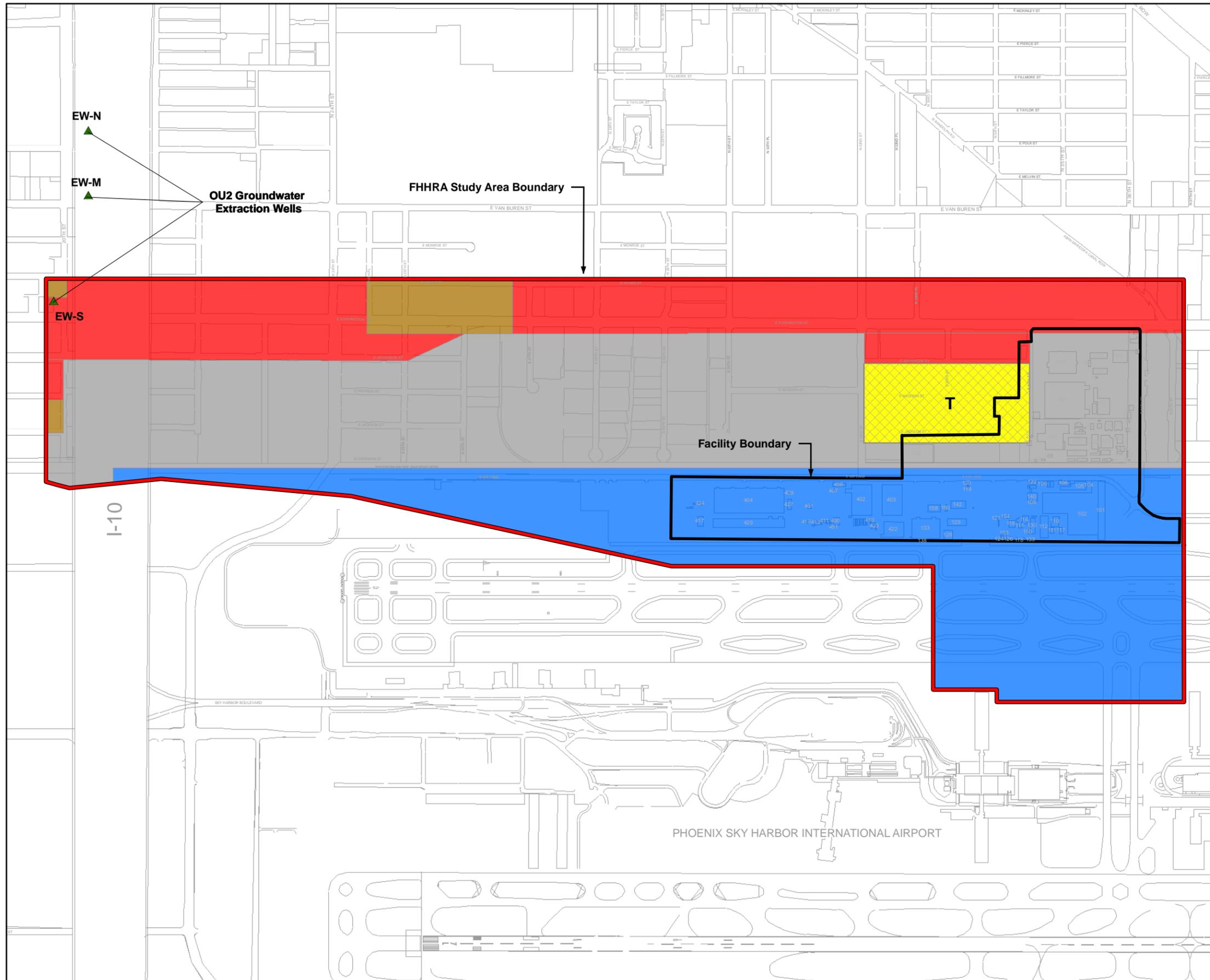


FIGURE 4
EXISTING LAND USE
 Honeywell 34th Street Facility
 Phoenix, Arizona



LEGEND

- ▲ OU2 Groundwater Extraction Wells
- Street and Airport Features
- ▭ FHHRA Study Area
- ▭ Honeywell 34th Street Facility
- 404 Honeywell Buildings
- Future Land Use**
- 10 to 15 dwelling units/acre - Higher density attached townhouses, condos or apartments
- Commercial
- Industrial
- Public/Quasi Public
- 3.5 to 5 dwelling units/acre - Traditional Lot
- Mixed Use Transition - Crosshatch color (grey) represents future use; background color (yellow) represents previous use

Originator: Andrew O'Malley	<i>Andrew O'Malley</i> (Signature)
Checked by: Tasha Lewis	<i>Tasha Lewis</i> (Signature)
Approved by STC or PM: Tasha Lewis	<i>Tasha Lewis</i> (Signature)

- Notes:
1. Refer to Figure Index for abbreviation/acronym definitions.
 2. Land use information presented on this figure was obtained from the City of Phoenix General Plan adopted by the City Council Resolution on December 5, 2001 in accordance with action taken at its final public hearing on November 7, 2001 (COP, 2002) and the Phoenix Sky Harbor International Airport Master Plan Update Technical Report dated September 1989 (Howard Needles Tammen & Bergendoff, 1989).

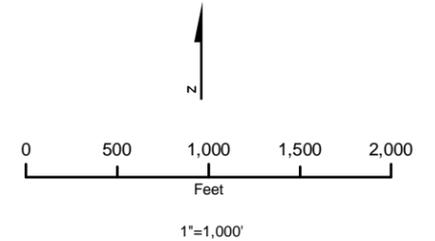
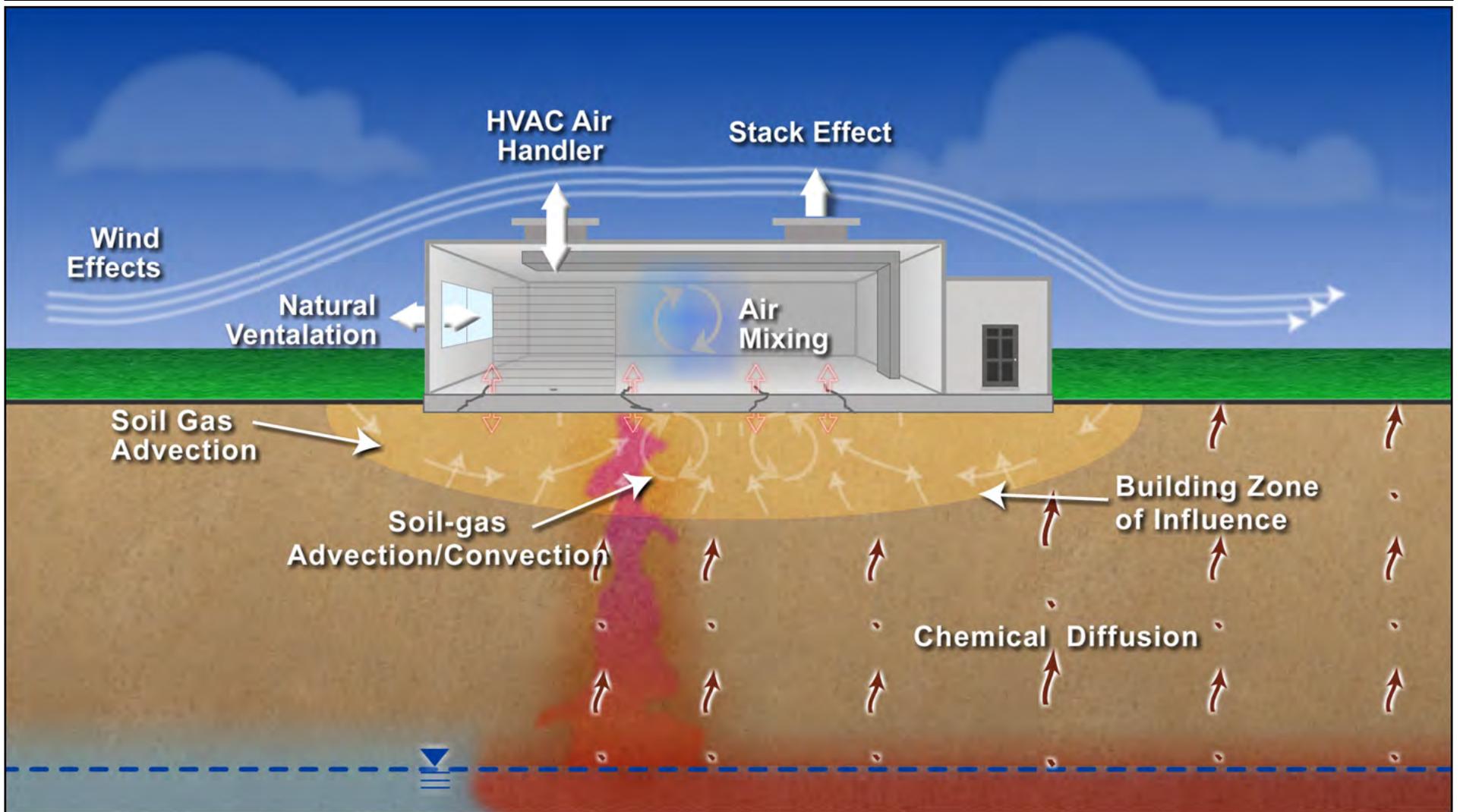
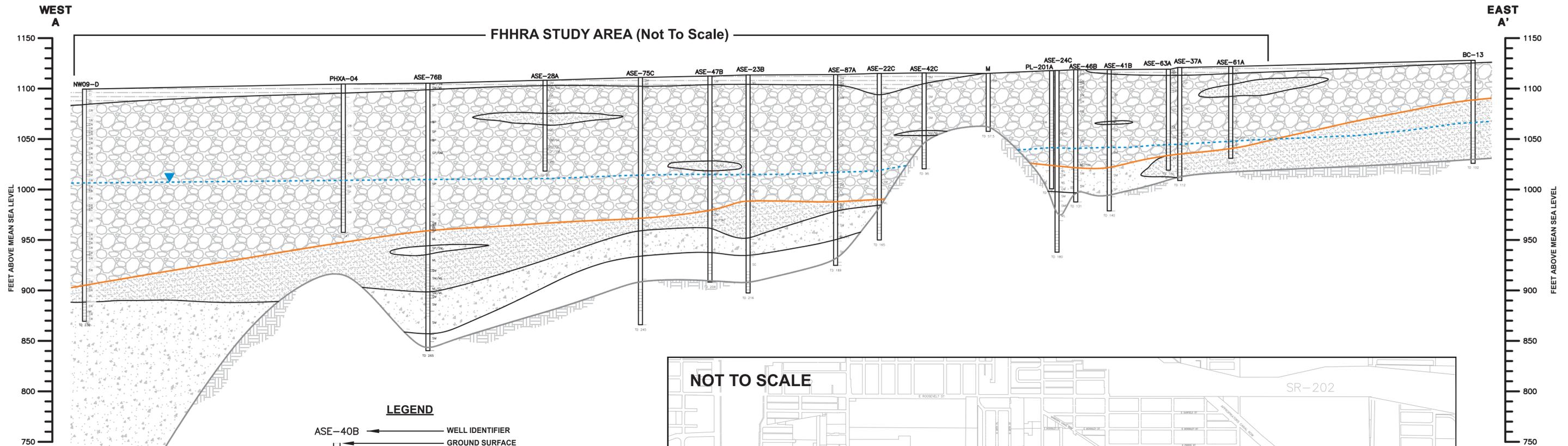


FIGURE 5
FUTURE LAND USE
Honeywell 34th Street Facility
Phoenix, Arizona



Originator:	Anja Schoenberger	<i>Anja Schoenberger</i> (Signature)
Checked by:	Tasha Lewis	<i>Tasha Lewis</i> (Signature)
Approved by STC or PM:	Loren Lund	<i>Loren Lund</i> (Signature)

FIGURE 6
GENERIC VAPOR INTRUSION
CONCEPTUAL SITE MODEL
 Honeywell 34th Street Facility
 Phoenix Arizona



LEGEND

ASE-40B ← WELL IDENTIFIER
 ← GROUND SURFACE

SM ← UNIFIED SOIL CLASSIFICATION SYSTEM

← GROUNDWATER ELEVATION

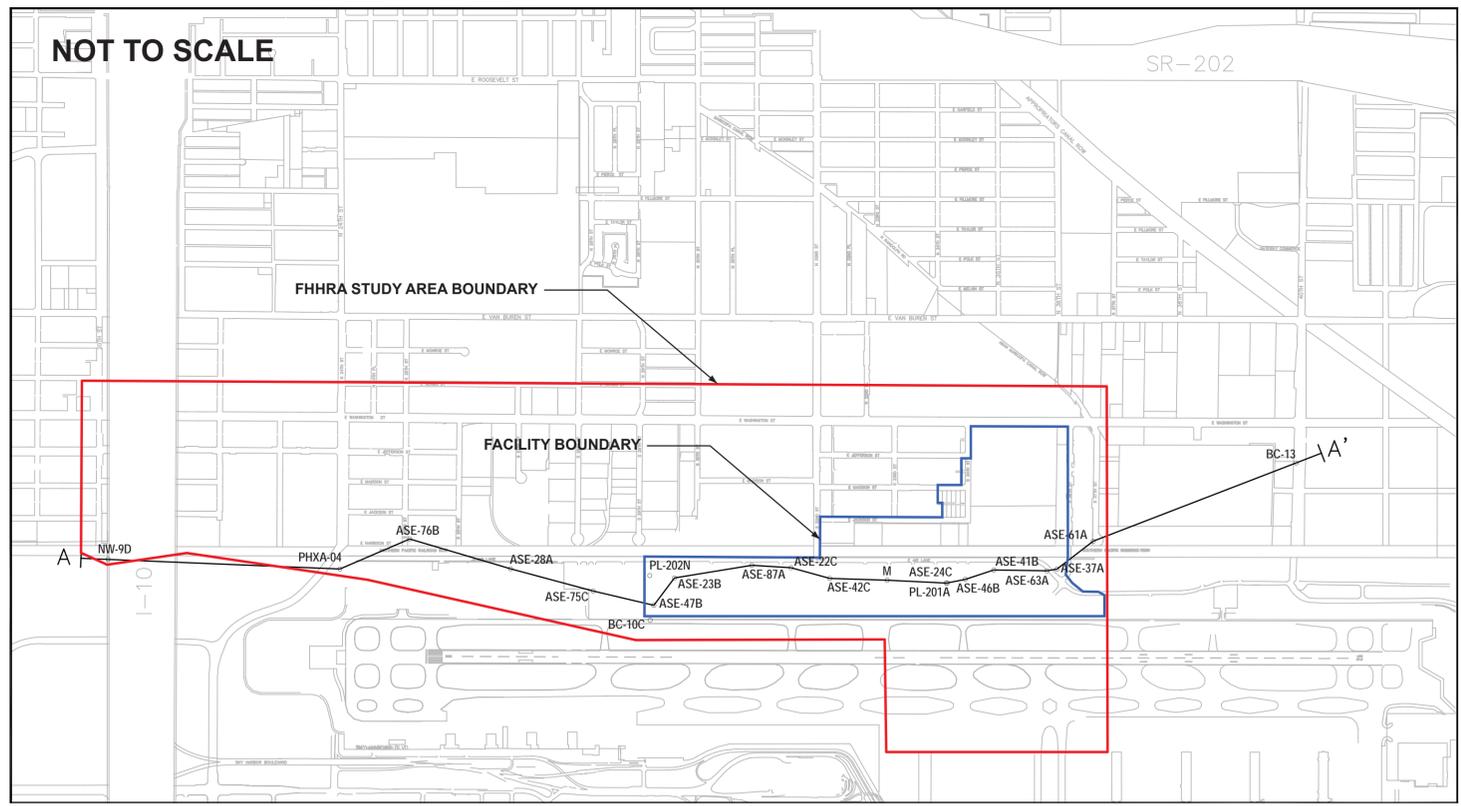
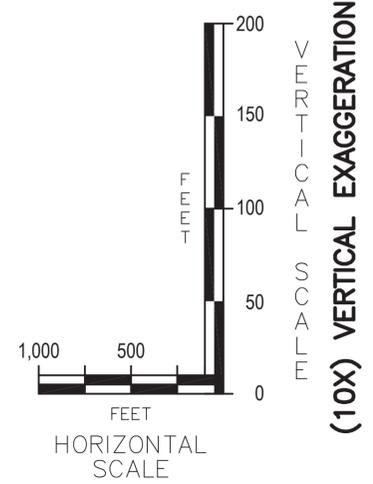
← SCREENED INTERVAL
 BEDROCK GROUNDWATER CONCENTRATIONS:

SP
 BR

TD 140 ← TOTAL DEPTH, 140 FEET BELOW LAND SURFACE

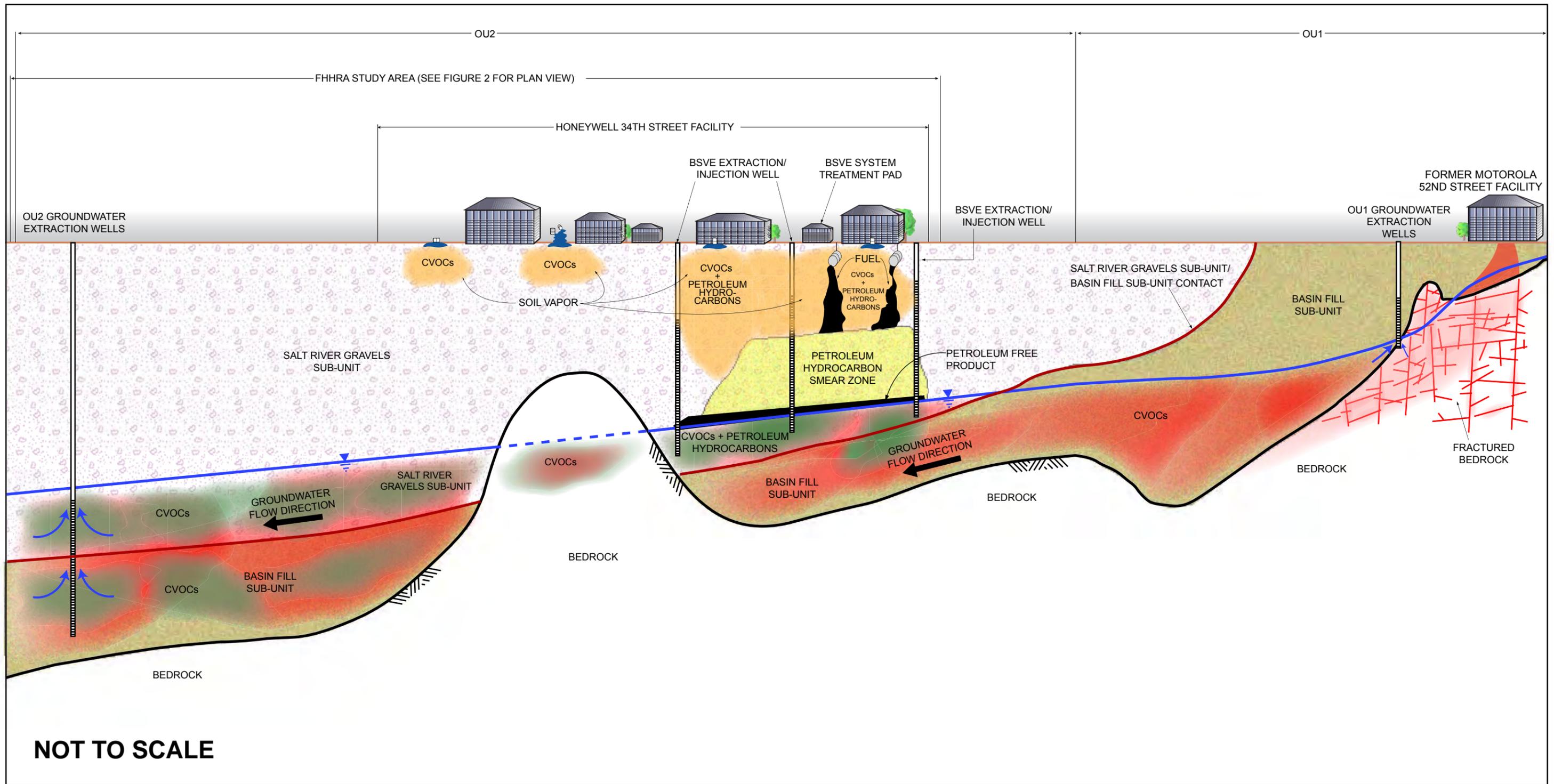
- SURFACE SAND-SILT
- SALT RIVER GRAVELS SUB-UNIT
- APPROXIMATE CONTACT BETWEEN SALT RIVER GRAVELS SUB-UNIT AND BASIN FILL SUB-UNIT
- BASIN FILL SUB-UNIT (FINE GRAINED)
- BASIN FILL SUB-UNIT (COARSE GRAINED)
- BEDROCK CONTACT
- WEATHERED BEDROCK/COLLUVIUM
- BEDROCK

Notes:
 1. Refer to Figure Index for abbreviation/acronym definitions.



Originator: Final FRI Report (CH2M HILL, 2005)	
Modification: Anja Schoenberger	<i>Anja Schoenberger</i> (Signature)
Checked by: Tasha Lewis	<i>Tasha Lewis</i> (Signature)
Approved by STC or PM: Robert Frank	<i>Robert Frank</i> (Signature)

FIGURE 7
LITHOLOGIC CROSS SECTION
 Honeywell 34th Street Facility
 Phoenix Arizona

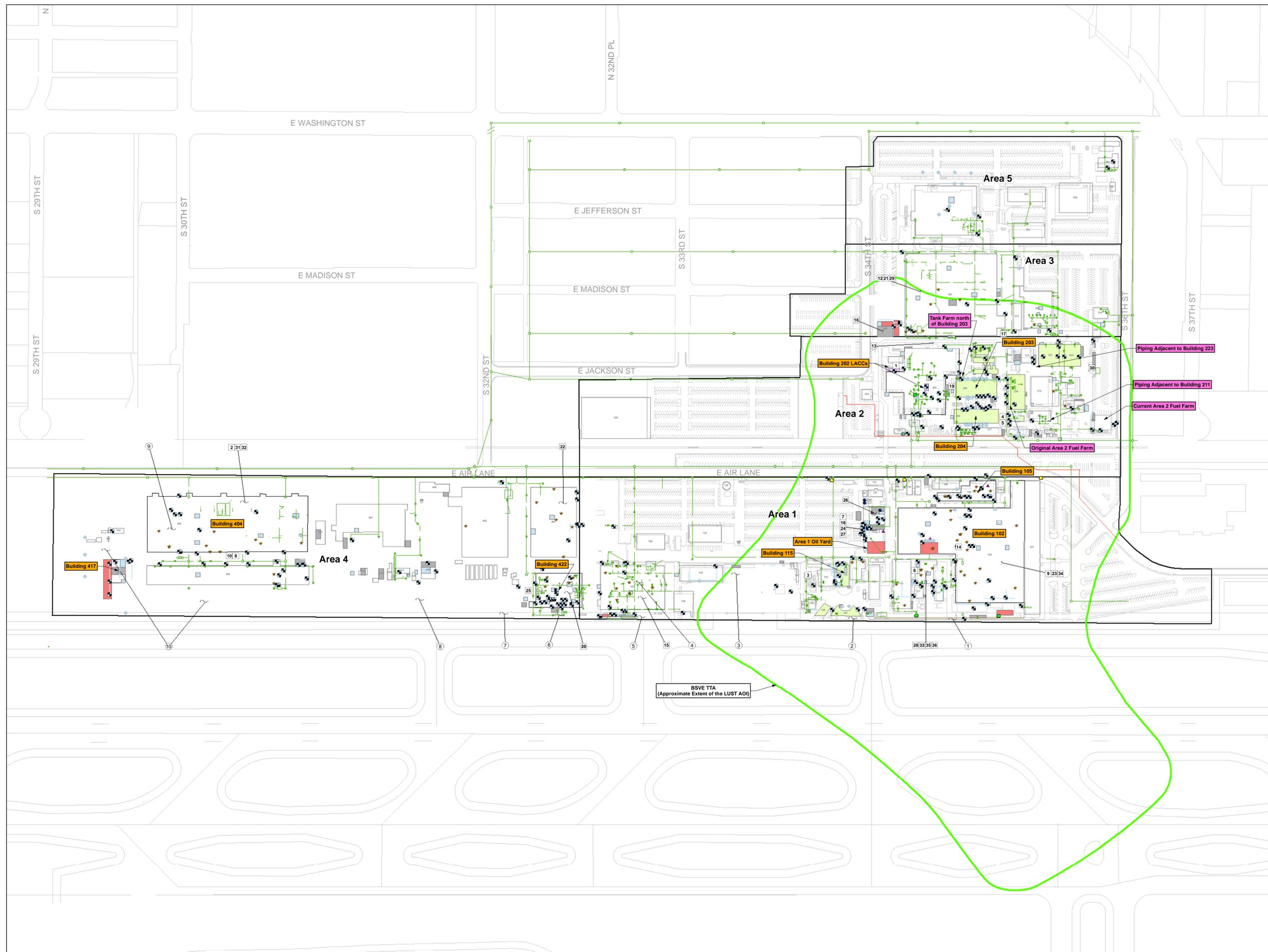


- NOTES:**
1. Refer to Figure Index for abbreviation/acronym definitions.
 2. Original Conceptual Site Model was presented in Figure 6-1 of the approved Final FRI Report (CH2M HILL, 2005) and has been modified to include the Former Motorola 52nd Street Facility, OU2 Groundwater Extraction Wells, and the BSVE system.
 3. Petroleum Hydrocarbons in groundwater are limited to the eastern portion of the Facility and located in the LUST AOI.

- LEGEND**
- SALT RIVER GRAVELS SUB-UNIT
 - BASIN FILL SUB-UNIT
 - BEDROCK
 - PETROLEUM HYDROCARBON SMEAR ZONE
 - CVOCs AND/OR PETROLEUM HYDROCARBONS IN SOIL VAPOR
 - HONEYWELL CVOC PLUME IN GROUNDWATER
 - MOTOROLA CVOC PLUME IN GROUNDWATER
 - SALT RIVER GRAVELS/BASIN FILL CONTACT
 - SURFICIAL SOLVENT (CVOCs) RELEASES
 - PETROLEUM FREE PRODUCT
 - CVOC PLUME IN GROUNDWATER
 - GROUNDWATER TABLE
- LUST AOI = Leaking Underground Storage Tank Area of Interest

Originator: Final FRI Report (CH2M HILL, 2005b)	
Modification: Anja Schoenberger	<i>Anja Schoenberger</i> (Signature)
Checked by: Tasha Lewis	<i>Tasha Lewis</i> (Signature)
Approved by STC or PM: Robert Frank	<i>Robert Frank</i> (Signature)

FIGURE 8
CONCEPTUAL SITE MODEL
 Honeywell 34th Street Facility
 Phoenix Arizona



- LEGEND**
- ☒ Sumps, Interceptors, Pits, Tanks, Pump Stations, Utility Vaults, & Stormwater Drains
 - ⊕ Issue Drywells
 - Trenches
 - ☐ Potential and Known Ground Disposal Areas
 - ⊙ Accidental Releases
 - Dirty Solvent Waste Oil Tank
 - Pre-Cooling System-Extraction Wells
 - Pre-Cooling System-Injection Wells
 - ▲ Recycling Stills
 - Return Well
 - Aboveground Storage Tanks
 - TCE Supply Tank
 - ★ Vapor Degreasers
 - Oleander Ditch
 - Sewer Lines
 - Dutch Ditch
 - Chemical Storage Areas
 - Chip Storage Areas
 - Large Altitude Cold Chambers (LACC)
 - Satellite Accumulation Areas
 - Test Cells
 - ☐ Operational Area
 - ☐ Honeywell Buildings
 - 🟩 BSVE Target Treatment Area (TTA)

- Key Potential Source Areas for CVOCs as Identified in the Final FRI Report (CH2M HILL, 2005)**
- | | |
|-----------------|--------------------------------------|
| 1. Building 102 | 7. Building 417 |
| 2. Building 105 | 8. Building 422 |
| 3. Building 115 | 9. Area 1 Oil Yard |
| 4. Building 203 | 10. Building 202 LACCs |
| 5. Building 204 | 11. Ground Disposals in Area 1 and 4 |
| 6. Building 404 | |
- Primary Source Areas for Petroleum Hydrocarbon-Related VOCs as Identified in the UST Site Characterization Report, Honeywell 34th Street Facility, Phoenix, Arizona Facility ID#0-00227 LUST File Nos. 0393.02-10 and CAP (Honeywell, 2002b; CH2M HILL, 2004a-b).**
1. Original Area 2 Fuel Farm (southwest corner of Building 230)
 2. Tank Farm north of Building 203
 3. Piping Adjacent to Building 211
 4. Piping Adjacent to Building 223
 2. Current Area 2 Fuel Farm

Notes:

1. Refer to Figure Index for abbreviation/acronym definitions.
2. For details pertaining to accidental releases and potential and known ground disposal areas refer to the Final FRI Report.
3. Orange Call-out boxes represent the Key Potential Source Areas for CVOCs.
4. Pink Call-out boxes represent the Primary Source Areas for Petroleum Hydrocarbon-Related VOCs.

Originator:	Chris von Freeden	<i>Chris von Freeden</i> (Signature)
Checked by:	Tasha Lewis	<i>Tasha Lewis</i> (Signature)
Approved by STC or PM:	Robert Frank	<i>Robert Frank</i> (Signature)

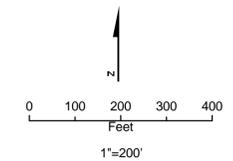
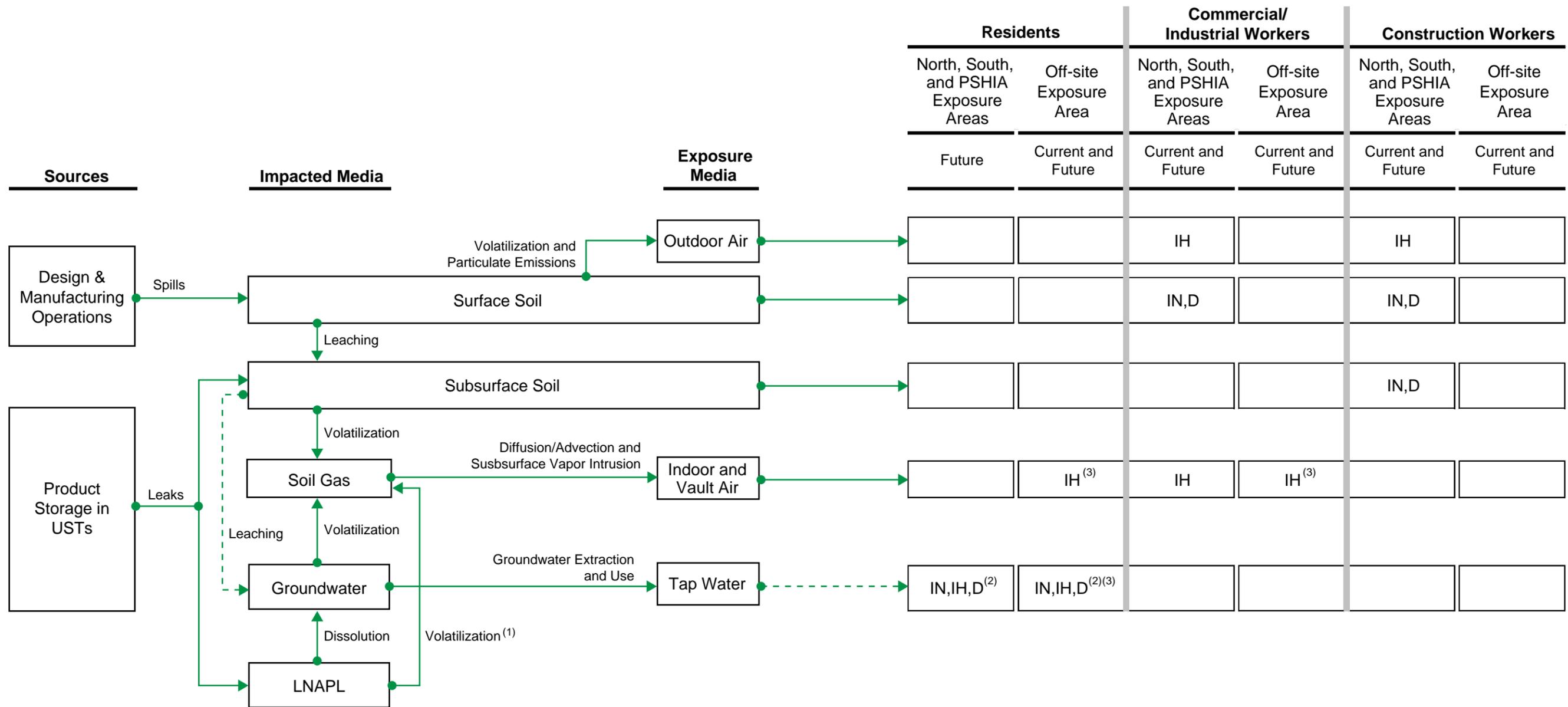


FIGURE 9
SUMMARY OF POTENTIAL SOURCES
 Honeywell 34th Street Facility
 Phoenix, Arizona



Residents		Commercial/Industrial Workers		Construction Workers	
North, South, and PSHIA Exposure Areas	Off-site Exposure Area	North, South, and PSHIA Exposure Areas	Off-site Exposure Area	North, South, and PSHIA Exposure Areas	Off-site Exposure Area
Future	Current and Future	Current and Future	Current and Future	Current and Future	Current and Future
		IH		IH	
		IN,D		IN,D	
				IN,D	
	IH ⁽³⁾	IH	IH ⁽³⁾		
IN,IH,D ⁽²⁾	IN,IH,D ⁽²⁾⁽³⁾				

LEGEND

- Complete or Potentially Complete Transport Pathway
- - - - -→ Potentially Complete but Insignificant Transport Pathway

- "IN" Ingestion
- "IH" Inhalation
- "D" Dermal
- Incomplete

Refer to Figure Index for abbreviation/acronym definitions.

(1) While potentially complete, the pathway is not directly assessed - soil gas concentrations are used as a proxy.
 (2) While not a complete exposure pathway, potential exposure to groundwater is evaluated in the FHHRA because human consumption is an identified beneficial use of groundwater.
 (3) Offsite Exposure Area risk estimates associated with the regional conditions in the Motorola 52nd Street Superfund Site plume are provided for informational purposes in the FHHRA .

Originator: Corey Schwabenlander	<i>Corey Schwabenlander</i> (Signature)
Checked by: Michael Novak	<i>Michael Novak</i> (Signature)
Approved by STC or PM: Loren Lund	<i>Loren Lund</i> (Signature)

FIGURE 10
SITE CONCEPTUAL EXPOSURE MODEL
 Honeywell 34th Street Facility
 Phoenix, Arizona

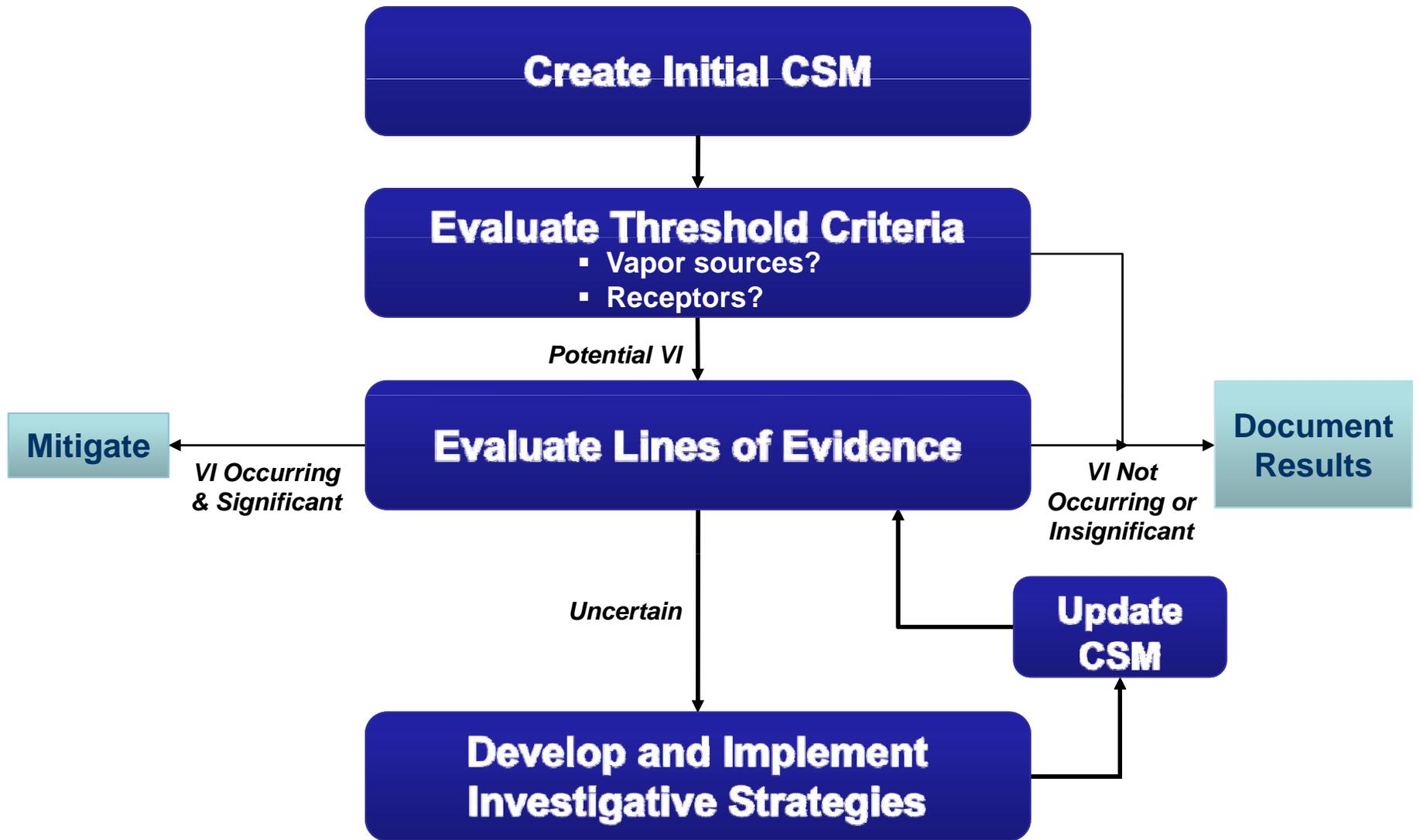
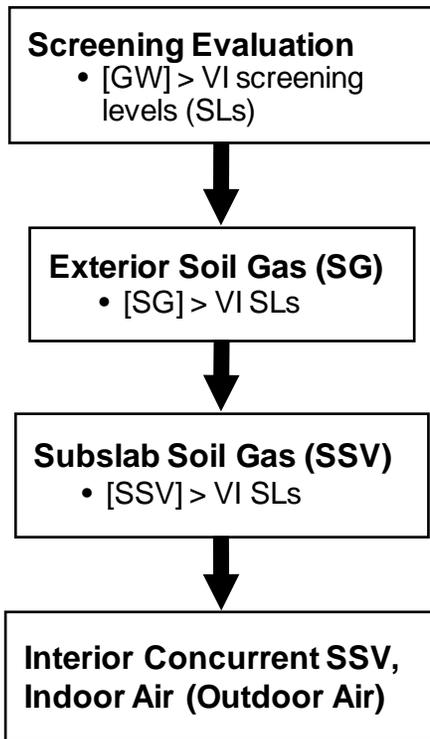


FIGURE 11
VI DECISION ROADMAP
 Honeywell 34TH Street Facility
 Phoenix, Arizona

Originator:	Anja Schoenberger	<i>Anja Schoenberger</i> (Signature)
Checked by:	Tasha Lewis	<i>Tasha Lewis</i> (Signature)
Approved by STC or PM:	Loren Lund	<i>Loren Lund</i> (Signature)

Linear Single Line of Evidence

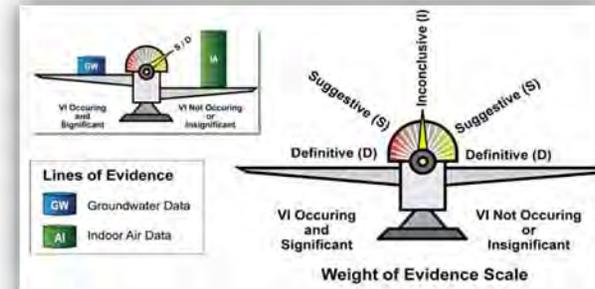
2002



Non-Linear Multiple Lines of Evidence

2011

- Multiple lines of evidence are typically required
- Not all lines of evidence are created equal
- Strength of the evidence depends on the CSM



Example Multiple Lines of Evidence

- Site history and soil characteristics
- Soil gas (exterior or sub-slab) data
- Groundwater data
- Building construction/conditions (e.g., air pressure)
- Building activities & occupancy
- Indoor air data
- Concurrent outdoor air samples
- Indoor/outdoor background
- Chemical ratios / forensics
- Tracer compounds
- Fate-and-transport modeling
- Results of the risk assessment

Other considerations

- Intrusiveness
- Occupant relations
- Ownership/access
- Sustainability
- Schedule, Cost
- Other data needs

Originator:	Anja Schoenberger	<i>Anja Schoenberger</i> (Signature)
Checked by:	Tasha Lewis	<i>Tasha Lewis</i> (Signature)
Approved by STC or PM:	Loren Lund	<i>Loren Lund</i> (Signature)

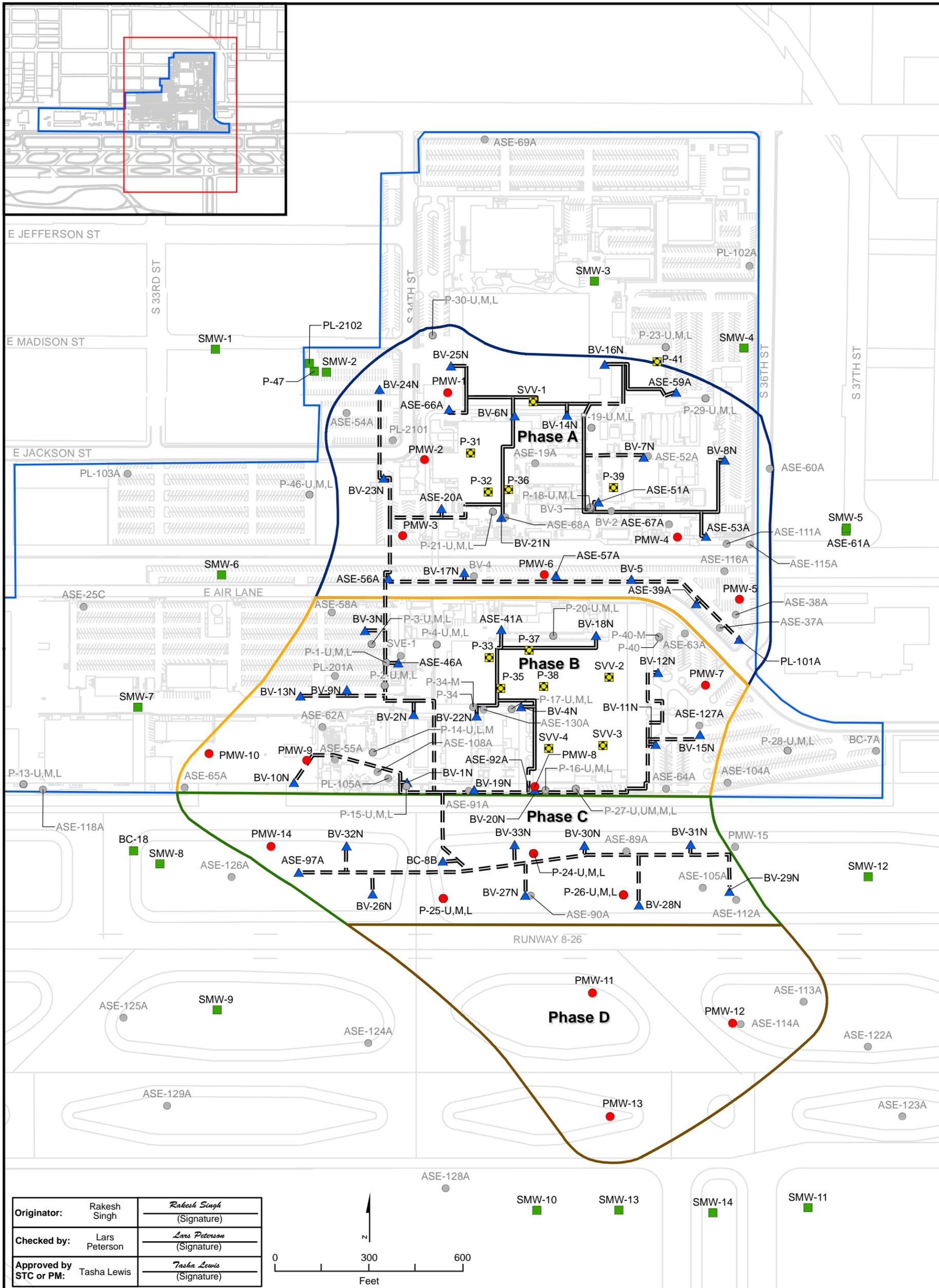
NOTES:

Source file by NAVFAC

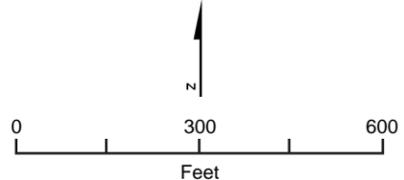
ES08111144232PHX_Figure12_02.ai (08/2011)

FIGURE 12 EVOLUTION OF VAPOR INTRUSION PRACTICE

Honeywell 34th Street Facility
Phoenix Arizona



Originator:	Rakesh Singh	<i>Rakesh Singh</i> (Signature)
Checked by:	Lars Peterson	<i>Lars Peterson</i> (Signature)
Approved by STC or PM:	Tasha Lewis	<i>Tasha Lewis</i> (Signature)



Legend

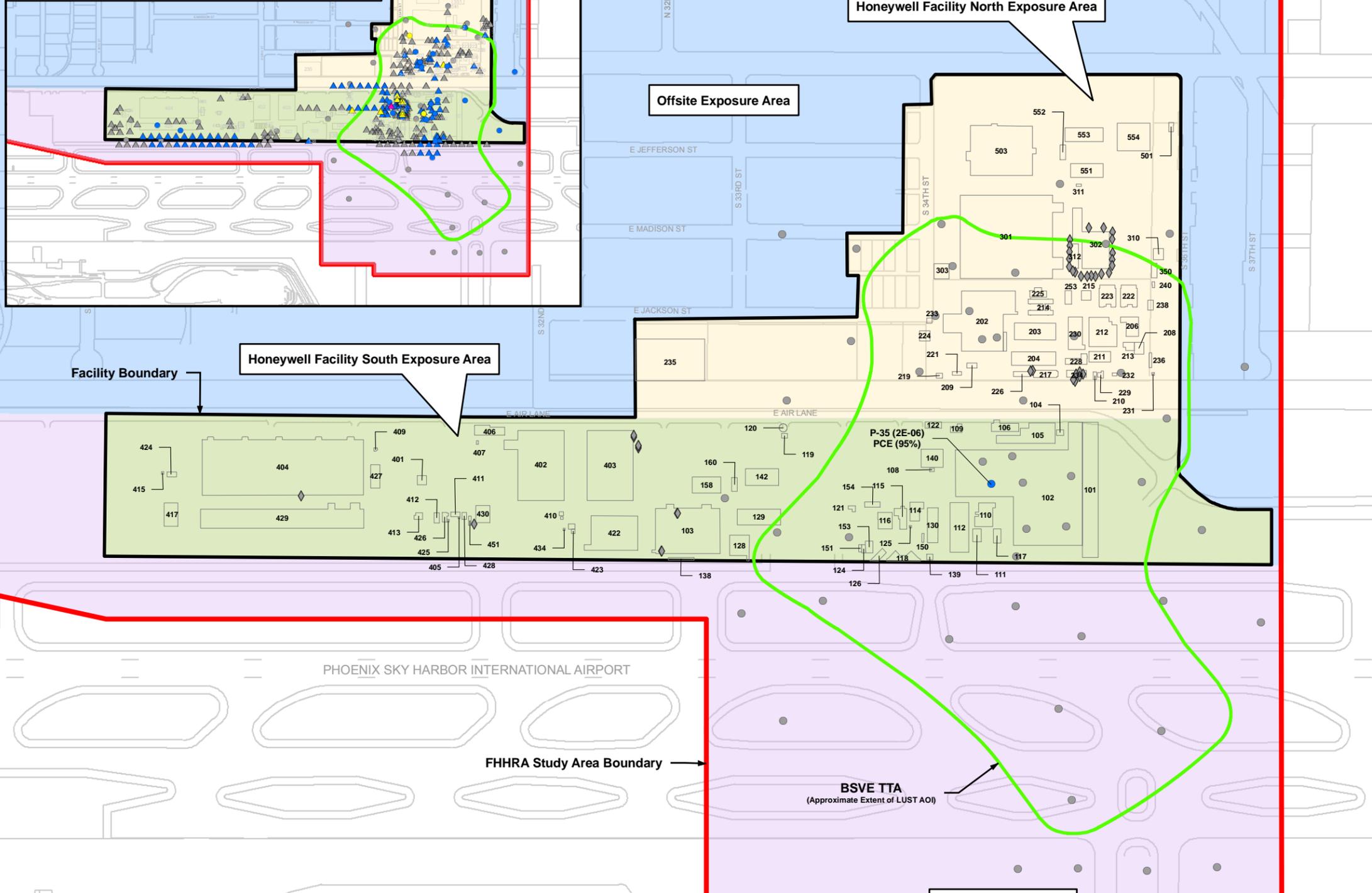
- ▲ Injection/Extraction Well, Triangle, Blue
- Process Monitoring Well, Circle, Red
- Sentinel Monitoring Well, Square, Green
- Potential Data Gap Well, Circle, Gray
- Sub-slab Monitoring Well
- Street and Airport Features
- ▭ Honeywell Facility
- Aboveground piping
- == Underground piping
- Honeywell-owned Property, Phase A
- Honeywell-leased Property, Phase B
- PSHIA Property North of Runway 8-26, Phase C
- PSHIA Property South of Runway 8-26, Phase D

Notes:
 1. BSVE = Biologically Enhanced Soil Vapor Extraction.
 2. Groundwater wells with a top of screen less than or equal to 75 feet below ground surface presented in figure.
 3. Utility Vault, and Manhole Monitoring locations not presented.

**FIGURE 13
 BSVE SYSTEM SOIL-VAPOR
 MONITORING NETWORK**

*Honeywell 34th Street Facility
 Phoenix Arizona*

Figure 5-1A from the Final FHHRA Report - Baseline (Pre-BSVE) Risk Evaluation: Screening Level Cumulative Cancer Risks for Soil Gas to Industrial Air Based on Detected Chemicals (All Sample Depths)



LABELING EXPLANATION

P-35 (2E-06) — LOCATION (CUMULATIVE RISK)
PCE (95%) — VOC1 (% CONTRIBUTION)

Where VOC1, VOC2 ... are the VOCs contributing at least 10% of the cumulative risk.

LEGEND

Risk Results for Locations with 8260 Analysis (Collected as part of the Additional Field Work and FFS Work Plan)

- ◆ ELCR ≤ 1E-06

Risk Results for Locations with TO-15 Analysis

- ELCR ≤ 1E-06
- ELCR > 1E-06 to ≤ 1E-05

- 301 Facility Buildings
- Honeywell Facility North Exposure Area
- Honeywell Facility South Exposure Area
- PSHIA Exposure Area
- Offsite Exposure Area
- BSVE Target Treatment Area (TTA)
- Honeywell 34th Street Facility
- FHHRA Study Area
- Street and Airport Features

Originator: Andrew O'Malley	<i>Andrew O'Malley</i> (Signature)
Checked by: Eric Davis	<i>Eric Davis</i> (Signature)
Approved by STC or PM: Tasha Lewis	<i>Tasha Lewis</i> (Signature)

- Notes:
- Refer to Figure Index for abbreviation/acronym definitions.
 - The screening level risks presented on this figure were based on:
 - Chemicals detected in soil gas samples collected from all sampling depths as part of the ongoing operation of the BSVE system from 11/1/2009 – 12/31/2010, and as part of the FFS additional data collection field work from 6/2/2009 – 6/9/2009. Samples from soil vapor wells with screens intersecting the water table were excluded.
 - No location had a non-cancer hazard index greater than one; therefore a hazard index map was not prepared.

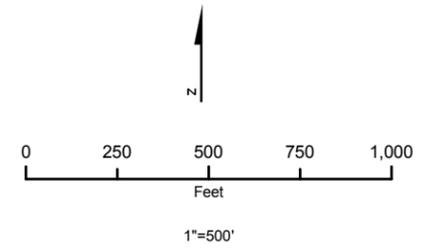
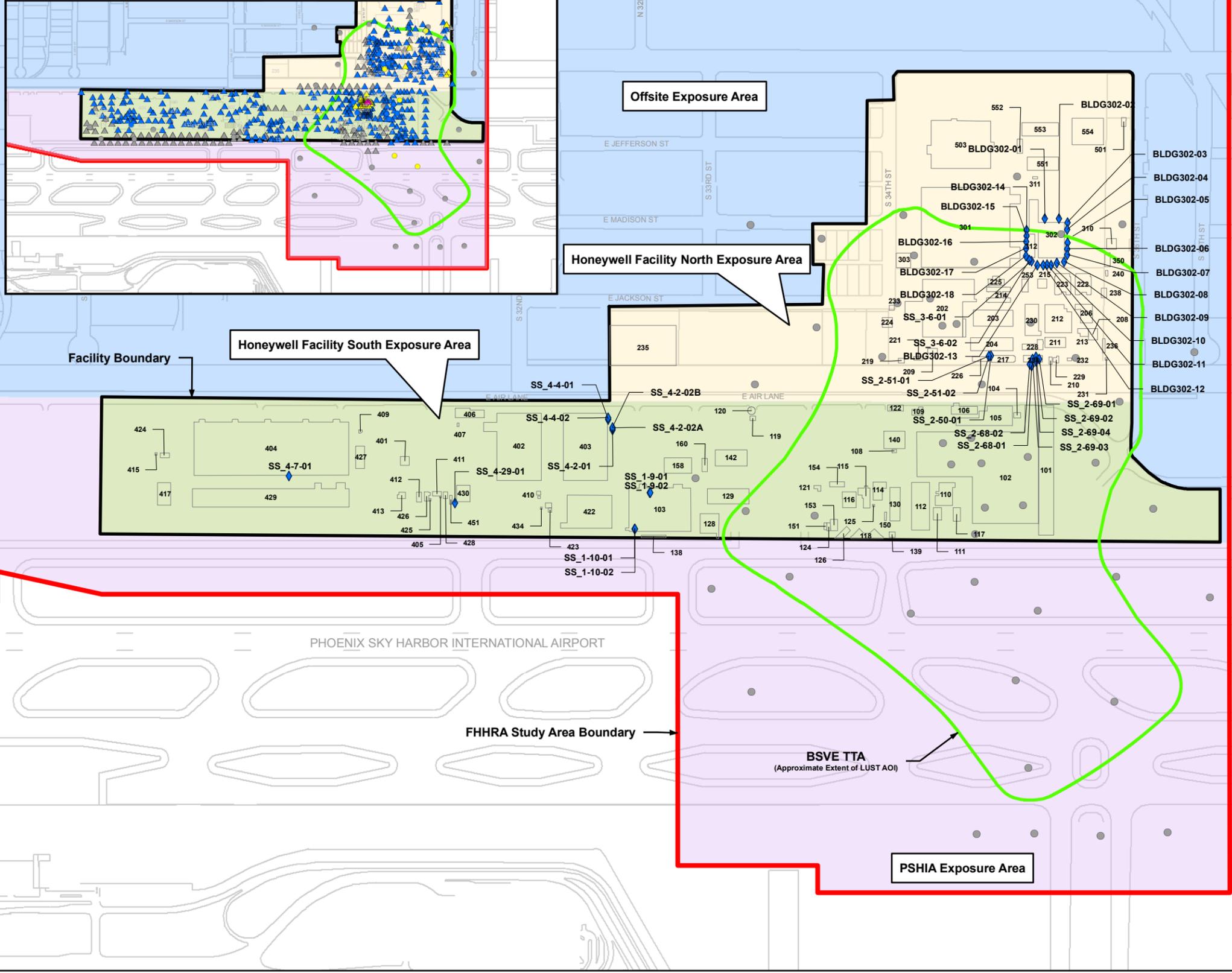


FIGURE 15
POST-BASELINE (I.E., OPERATION OF BSVE SYSTEM) RISK EVALUATION: SCREENING LEVEL CUMULATIVE CANCER RISKS FOR SOIL GAS TO INDUSTRIAL AIR BASED ON DETECTED CHEMICALS (ALL SAMPLING DEPTHS)
Honeywell 34th Street Facility
Phoenix, Arizona

Figure 6-1A from the Final FHHRA Report - Baseline (Pre-BSVE) Risk Evaluation: Sensitivity Analysis: Cancer Risk Estimates For Soil Gas to Industrial Air Based on the Reporting Limits of Non-Detect Results



LEGEND

- Risk Results for Locations with 8260 Analysis (Collected as part of the Additional Field Work and FFS Work Plan)
 - ◆ ELCR > 1E-06 to ≤ 1E-05
- Risk Results for Locations with TO-15 Analysis
 - ELCR ≤ 1E-06
- 301 Facility Buildings
- Honeywell Facility North Exposure Area
- Honeywell Facility South Exposure Area
- PSHIA Exposure Area
- Offsite Exposure Area
- BSVE Target Treatment Area (TTA)
- Honeywell 34th Street Facility
- FHHRA Study Area
- Street and Airport Features

Originator: Andrew O'Malley	<i>Andrew O'Malley</i> (Signature)
Checked by: Eric Davis	<i>Eric Davis</i> (Signature)
Approved by STC or PM: Tasha Lewis	<i>Tasha Lewis</i> (Signature)

- Notes:
1. Refer to Figure Index for abbreviation/acronym definitions.
 2. The screening level risks presented on this figure were based on:
 - a. Chemicals detected in soil gas samples collected from all sampling depths as part of the ongoing operation of the BSVE system from 11/1/2009 – 12/31/2010, and as part of the FFS additional data collection field work from 6/2/2009 – 6/9/2009. Samples from soil vapor wells with screens intersecting the water table were excluded.
 - b. No location had a non-cancer index greater than one; therefore a hazard index map was not prepared.

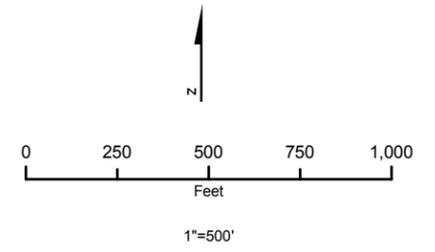
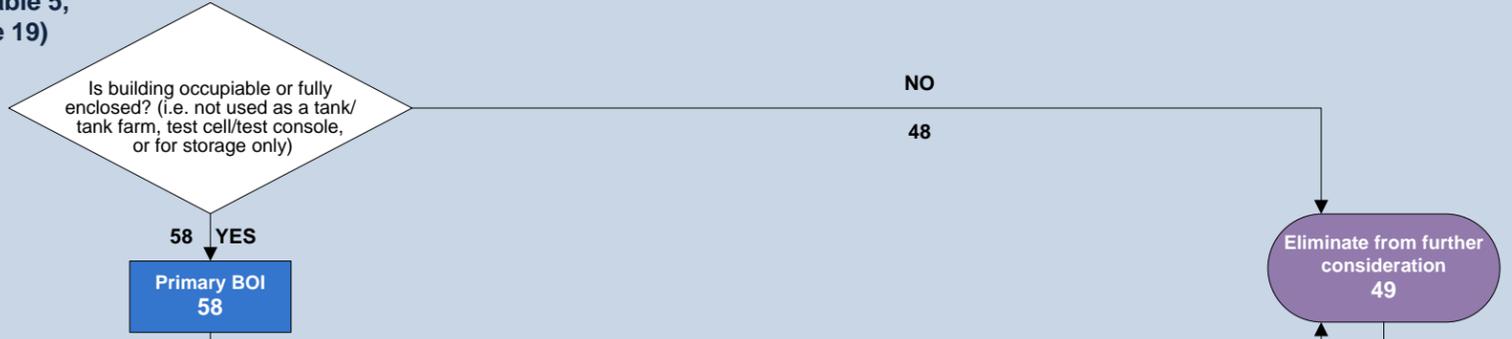
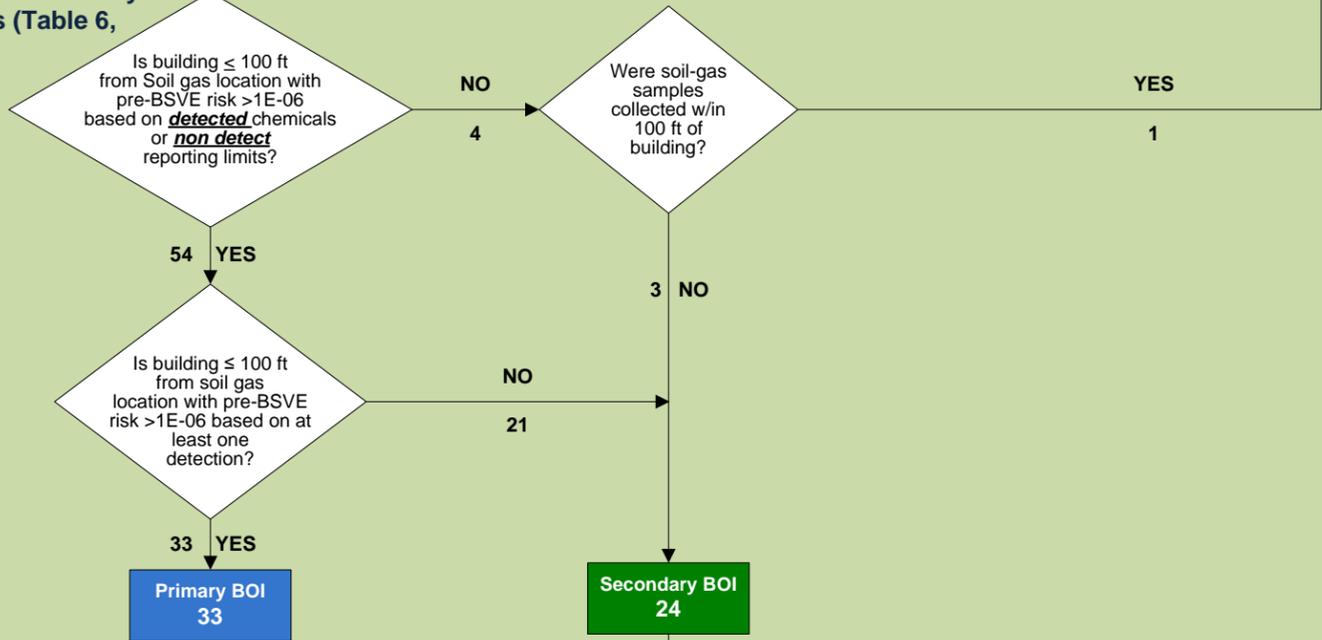


FIGURE 16
POST-BASELINE (I.E., OPERATION OF BSVE SYSTEM) RISK EVALUATION: SENSITIVITY ANALYSIS – CANCER RISK ESTIMATES FOR SOIL GAS TO INDUSTRIAL INDOOR AIR BASED ON THE REPORTING LIMITS OF NON-DETECT RESULTS
 Honeywell 34th Street Facility
 Phoenix, Arizona

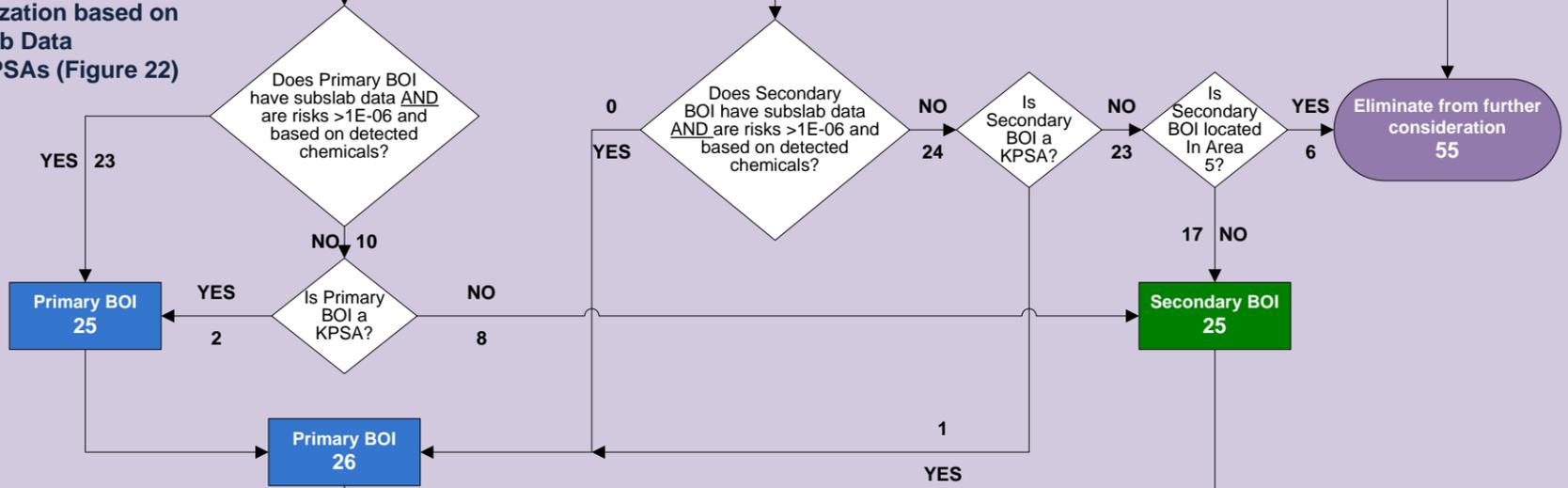
Step 1: Identification of Preliminary BOIs (Table 5, Figure 18 and Figure 19)



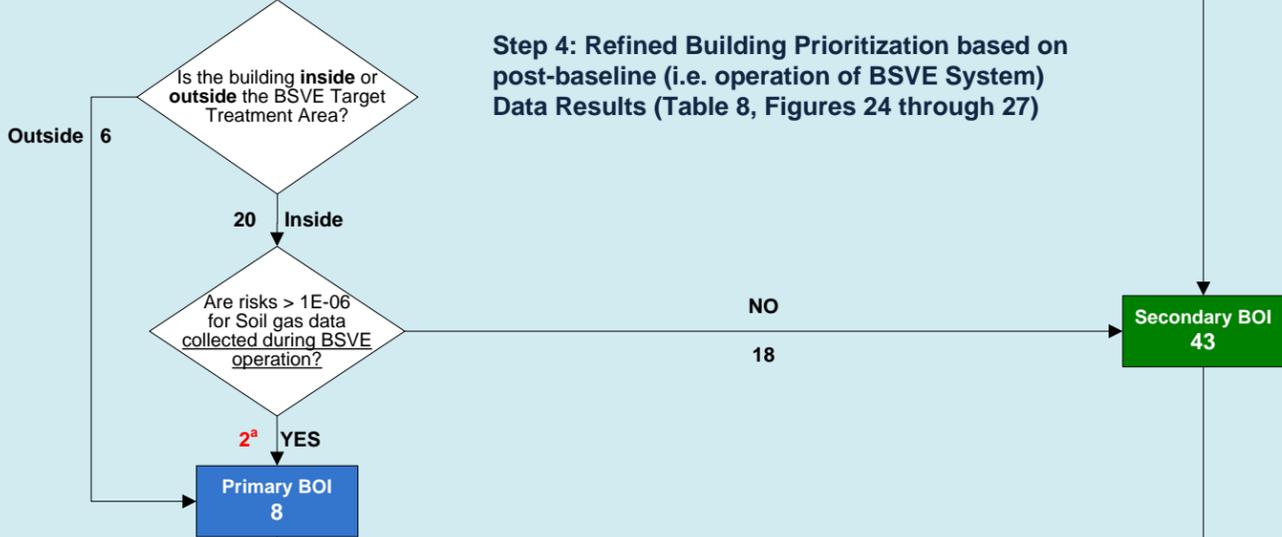
Step 2: Identification of Primary and Secondary BOIs (Table 6, Figure 20 and 21)



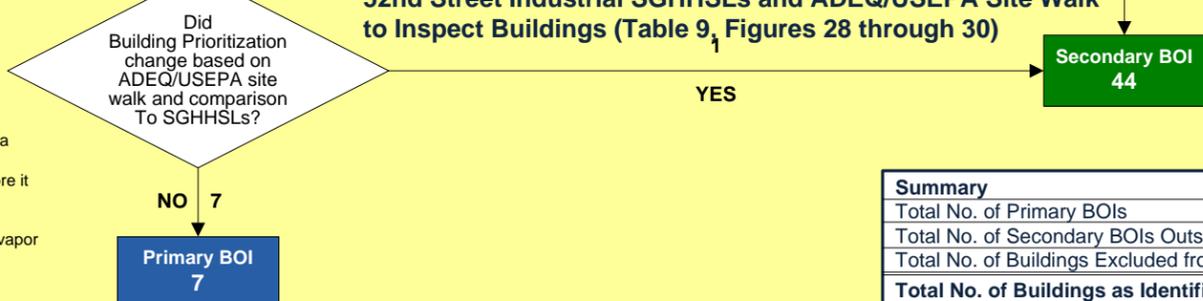
Step 3: Refined Building Prioritization based on Subslab Data and KPSAs (Figure 22)



Step 4: Refined Building Prioritization based on post-baseline (i.e. operation of BSVE System) Data Results (Table 8, Figures 24 through 27)



Step 5: Comparison of BSVE Soil-gas Data to the Motorola 52nd Street Industrial SGHHSs and ADEQ/USEPA Site Walk to Inspect Buildings (Table 9, Figures 28 through 30)



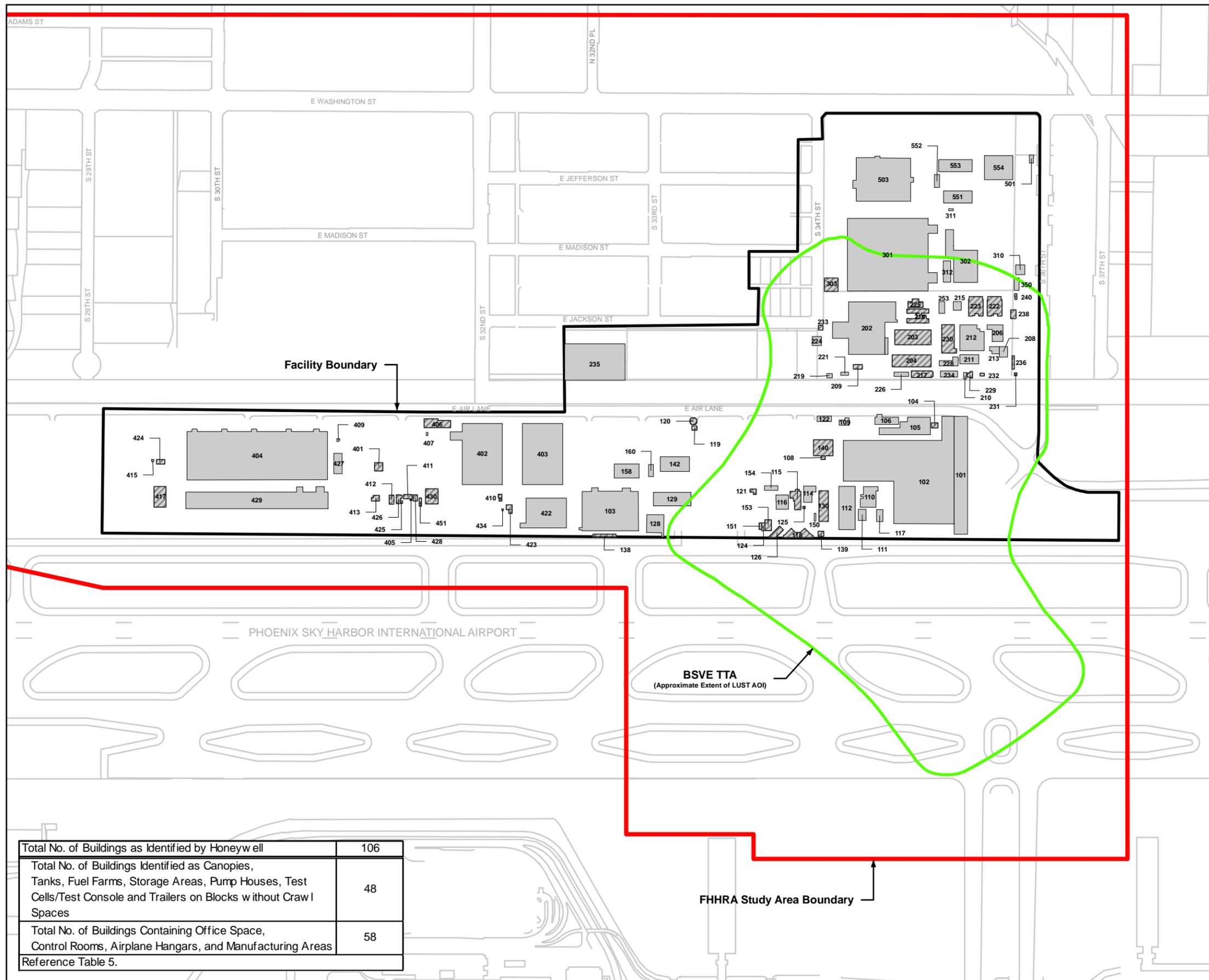
Notes:

^a While Building 101 does not have a subslab exceedance > 1E-06, it is connected to Building 102, therefore it was retained as a primary BOI.
 BOI = Building of Interest
 BSVE = biologically-enhanced soil vapor extraction
 KPSA = key potential source area
 TTA = target treatment area

Summary	
Total No. of Primary BOIs	7
Total No. of Secondary BOIs Outside BSVE TTA	44
Total No. of Buildings Excluded from Further Consideration	55
Total No. of Buildings as Identified by Honeywell	106

Originator: Eric Davis	<i>Eric Davis</i> Signature
Checked by: Tasha Lewis	<i>Tasha Lewis</i> Signature
Approved by STC or PM: Mike Novak	<i>Mike Novak</i> Signature

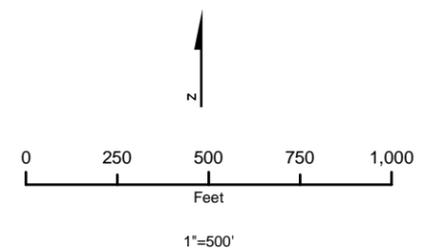
FIGURE 17
DECISION LOGIC FOR IDENTIFYING AND PRIORITIZING BUILDINGS FOR PHASE 2 VAPOR INTRUSION ASSESSMENT
 Honeywell 34th Street Facility
 Phoenix, Arizona



- LEGEND**
- 301 Existing Buildings Containing Office Space, Control Rooms, Airplane Hangars, and Manufacturing Related Areas
 - 303 Buildings Identified as Canopies, Tanks, Fuel Tank Farms, Storage Areas, Test Cells/Test Console, Pump Houses and Trailer on Blocks without Crawl Spaces
 - BSVE Target Treatment Area (TTA)
 - Honeywell 34th Street Facility
 - FHHRA Study Area
 - Street and Airport Features

Originator: Andrew O'Malley	<i>Andrew O'Malley</i> (Signature)
Checked by: Eric Davis	<i>Eric Davis</i> (Signature)
Approved by STC or PM: Tasha Lewis	<i>Tasha Lewis</i> (Signature)

Notes:
1. Refer to Figure Index for abbreviation/acronym definitions.



Total No. of Buildings as Identified by Honeywell	106
Total No. of Buildings Identified as Canopies, Tanks, Fuel Farms, Storage Areas, Pump Houses, Test Cells/Test Console and Trailers on Blocks without Crawl Spaces	48
Total No. of Buildings Containing Office Space, Control Rooms, Airplane Hangars, and Manufacturing Areas	58
Reference Table 5.	

FIGURE 18
HONEYWELL BUILDING OVERVIEW
Honeywell 34th Street Facility
Phoenix, Arizona