Honeywell - Engines, Systems & Services
111 South 34th Street
Phoenix, AZ
Permit Number V97-008, Issued
January 26, 2006
Significant Revisions 315257, 329292 and 349423,
December 27, 2007

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GENERAL PERMIT CONDITIONS:

In accordance with Maricopa County Air Pollution Control Rules and Regulations (Rules), Rule 210 § 302.2, all Conditions of this Permit are federally enforceable unless they are identified as being locally enforceable only. However, any Permit Condition identified as locally enforceable only will become federally enforceable if, during the term of this Permit, the underlying requirement becomes a requirement of the Clean Air Act (CAA) or any of the CAA's applicable requirements.

All federally enforceable terms and conditions of this Permit are enforceable by the Administrator of the United States Environmental Protection Agency (Administrator or Administrator of the USEPA hereafter) and citizens under Section 304 of the CAA.

Any cited regulatory paragraphs or section numbers refer to the version of the regulation that was in effect on the first date of public notice of the applicable Permit Condition unless specified otherwise.

The general permit conditions, 1 through 17, are standard conditions that are in every Title V permit. Theses conditions are the 1-10-05 version.

GENERAL CONDITIONS:

1. **AIR POLLUTION PROHIBITED:** [County Rule 100 §301] [SIP Rule 3]
The Permittee shall not discharge from any source whatever into the atmosphere regulated air pollutants which exceed in quantity or concentration that specified and allowed in the County or State Implementation Plan (SIP) Rules, the Arizona Administrative Code (AAC) or the Arizona Revised Statutes (ARS), or which cause damage to property or unreasonably interfere with the comfortable enjoyment of life or property of a substantial part of a community, or obscure visibility, or which in any way degrade the quality of the ambient air below the standards established by the Maricopa County Board of Supervisors or the Director of the Arizona Department of Environmental Quality (ADEQ).

2. **CIRCUMVENTION:** [County Rule 100 §104] [40 CFR 60.12] [40 CFR 63.4(b)]
The Permittee shall not build, erect, install, or use any article, machine, equipment, condition, or any contrivance, the use of which, without resulting in a reduction in the total release of regulated air pollutants to the atmosphere, conceals or dilutes an emission which would otherwise constitute a violation of this Permit or any Rule or any emission limitation or standard. The Permittee shall not circumvent the requirements concerning dilution of regulated air pollutants by using more emission openings than is considered normal practice by the industry or activity in question.

3. **CERTIFICATION OF TRUTH, ACCURACY, AND COMPLETENESS:**
[County Rule 100 §401] [County Rule 210 §§301.7, 302.1e(1), 305.1c(1) & 305.1e]
Any application form, report, or compliance certification submitted under the County Rules or these Permit Conditions shall contain certification by a responsible official of truth, accuracy, and completeness of the application form or report as of the time of submittal. This certification and any other certification required under the County Rules or these Permit Conditions shall state that, based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete.

4. COMPLIANCE:

A. COMPLIANCE REQUIRED:

1) The Permittee must comply with all conditions of this permit and with all applicable requirements of Arizona air quality statutes and the air quality rules. Compliance with permit terms and conditions does not relieve, modify, or otherwise affect the Permittee's duty to comply with all applicable requirements of Arizona air quality statutes and the Maricopa County Air Pollution Control Regulations. Any permit non-compliance is grounds for enforcement action; for a permit termination, revocation and reissuance, or revision; or for denial of a permit renewal application. Noncompliance with any federally enforceable requirement in this Permit constitutes a violation of the Act. [This Condition is federally enforceable if the condition or requirement itself is federally enforceable and only locally enforceable if the condition or requirement itself is locally enforceable only]

[County Rule 210 §§301.8b(4) & 302.1h(1)]

2) The Permittee shall halt or reduce the permitted activity in order to maintain compliance with applicable requirements of Federal laws, Arizona laws, the County Rules, or other conditions of this Permit.

[County Rule 210 §302.1h(2)]

3) For any major source operating in a nonattainment area for any pollutant(s) for which the source is classified as a major source, the source shall comply with reasonably available control technology (RACT) as defined in County Rule 100.

[County Rule 210 §302.1(h)(6)] [SIP Rule 220 §302.2]

4) For any major source operating in a nonattainment area designated as serious for PM_{10}, for which the source is classified as a major source for PM_{10}, the source shall comply with the best available control technology (BACT), as defined in County Rule 100.

[County Rule 210 §302.1(h)(7)]

B. COMPLIANCE CERTIFICATION REQUIREMENTS: [County Rule 210 §305.1d]

The Permittee shall file an annual compliance certification with the Control Officer and also with the Administrator of the USEPA. The report shall certify compliance with the terms and conditions contained in this Permit, including emission limitations, standards, or work practices. The certification shall be on a form supplied or approved by the Control Officer and shall include each of the following:

1) The identification of each term or condition of the permit that is the basis of the certification;
2) The compliance status;
3) Whether compliance was continuous or intermittent;
4) The method(s) used for determining the compliance status of the source, currently and over the reporting period; and
5) Other facts as the Control Officer may require to determine the compliance status of the source.

The annual certification shall be filed at the same time as the second semiannual monitoring report required by the Specific Condition section of these Permit Conditions and every 12 months thereafter.

C. COMPLIANCE PLAN: [County Rule 210 §305.1g]

Based on the certified information contained in the application for this Permit, the facility is in compliance with all applicable requirements in effect as of the first date of public notice of the proposed conditions for this Permit unless a compliance plan is included in the Specific Conditions section of this Permit. The Permittee shall continue to comply with all applicable requirements and shall meet any applicable requirements that may become effective during the term of this permit on a timely basis. [This Condition is federally enforceable if the applicable requirement itself is federally enforceable and only locally enforceable if the applicable requirement itself is locally enforceable only]

5. CONFIDENTIALITY CLAIMS:

Any records, reports or information obtained from the Permittee under the County Rules or this Permit shall be available to the public, unless the Permittee files a claim of confidentiality in accordance with ARS §49-487(c) which:

A. precisely identifies the information in the permit(s), records, or reports which is considered confidential, and

B. provides sufficient supporting information to allow the Control Officer to evaluate whether such information satisfies the requirements related to trade secrets or, if applicable, how the information, if disclosed, could cause substantial harm to the person's competitive position.

The claim of confidentiality is subject to the determination by the Control Officer as to whether the claim satisfies the claim for trade secrets.

[County Rule 100 §402] [County Rule200 §411]

A claim of confidentiality shall not excuse the Permittee from providing any and all information required or requested by the Control Officer and shall not be a defense for failure to provide such information.

[County Rule 100 §402]

If the Permittee submits information with an application under a claim of confidentiality under ARS §49-487 and County Rule 200, the Permittee shall submit a copy of such information directly to the Administrator of the USEPA.

[County Rule 210 §301.5]

6. CONTINGENT REQUIREMENTS:

NOTE: This Permit Condition covers activities and processes addressed by the CAA which may or may not be present at the facility. This condition is intended to meet the requirements of both Section 504(a) of the 1990 Amendments to the CAA, which requires that Title V permits contain conditions necessary to assure compliance with applicable requirements of the Act as well as the Acid Rain provisions required to be in all Title V permits.

A. ACID RAIN: [County Rule 210 §§302.1b(2) & 302.1f] [County Rule 371 §301]

1). Where an applicable requirement of the Act is more stringent than an applicable requirement of regulations promulgated under Title IV of the CAA and incorporated under County Rule 371, both provisions shall be incorporated into this Permit and shall be enforceable by the Administrator.

2) The Permittee shall not allow emissions exceeding any allowances that the source lawfully holds under Title IV of the CAA or the regulations promulgated thereunder and incorporated under County Rule 371.

a) No permit revision shall be required for increases in emissions that are authorized by allowances acquired under the acid rain program and incorporated under County Rule 371, provided that such increases do not require a permit revision under any other applicable requirement.
b) No limit is placed on the number of allowances held by the Permittee. The Permittee may not, however, use allowances as a defense to non-compliance with any other applicable requirement.
c) Any such allowance shall be accounted for according to the procedures established in regulations promulgated under Title IV of the CAA.
d) All of the following prohibitions apply to any unit subject to the provisions of Title IV of the CAA and incorporated into this Permit under County Rule 371:
   (1) Annual emissions of sulfur dioxide in excess of the number of allowances to emit sulfur dioxide held by the owners or operators of the unit or the designated representative of the owners or operators.
   (2) Exceedances of applicable emission rates.
   (3) The use of any allowance prior to the year for which it was allocated.
   (4) Violation of any other provision of the permit.

B. ASBESTOS: [40 CFR 61, Subpart M] [County Rule 370 §301.8 - locally enforceable only]
The Permittee shall comply with the applicable requirements of Sections 61.145 through 61.147 and 61.150 of the National Emission Standard for Asbestos and County Rule 370 for all demolition and renovation projects.

C. RISK MANAGEMENT PLAN (RMP): [40 CFR 68]
Should this stationary source, as defined in 40 CFR 68.3, be subject to the accidental release prevention regulations in 40 CFR Part 68, then the Permittee shall submit an RMP by the date specified in 40 CFR Section 68.10 and shall certify compliance with the requirements of 40 CFR Part 68 as part of the annual compliance certification as required by 40 CFR Part 70. However, neither the RMP nor modifications to the RMP shall be considered to be a part of this Permit.

D. STRATOSPHERIC OZONE PROTECTION: [40 CFR 82 Subparts E, F, and G]
If applicable, the Permittee shall follow the requirements of 40 CFR 82.106 through 82.124 with respect to the labeling of products using ozone depleting substances.

If applicable, the Permittee shall comply with all of the following requirements with respect to recycling and emissions reductions:
1) Persons opening appliances for maintenance, service, repair, or disposal must comply with the required practices under 40 CFR 82.156.
2) Equipment used during maintenance, service, repair, or disposal of appliances must meet the standards for recycling and recovery equipment in accordance with 40 CFR 82.158.
3) Persons performing maintenance, service, repair, or disposal of appliances must be certified by a certified technician under 40 CFR 82.161.

If applicable, the Permittee shall follow the requirements of 40CFR 82 Subpart G, including all Appendices, with respect to the safe alternatives policy on the acceptability of substitutes for ozone-depleting compounds.

7. DUTY TO SUPPLEMENT OR CORRECT APPLICATION: [County Rule 210 §301.6]

If the Permittee fails to submit any relevant facts or has submitted incorrect information in a permit application, the Permittee shall, upon becoming aware of such failure or incorrect submittal, promptly submit such supplementary facts or corrected information. In addition, the Permittee shall provide additional information as necessary to address any requirements that become applicable to the source after the date it filed a complete application but prior to release of a proposed permit.

8. EMERGENCY EPISODES: [County Rule 600 §302] [SIP Rule 600 §302]

If an air pollution alert, warning, or emergency has been declared, the Permittee shall comply with any applicable requirements of County Rule 600 §302.

9. EMERGENCY PROVISIONS: [County Rule 130 §§201 & 402]

An "emergency" means any situation arising from sudden and reasonably unforeseeable events beyond the control of the source, including acts of God, that require immediate corrective action to restore normal operation, and that cause the source to exceed a technology-based emission limitation under this permit, due to unavoidable increases in emissions attributable to the emergency. An emergency shall not include noncompliance to the extent caused by improperly designed equipment, lack of preventative maintenance, careless or improper operation, or operator error.

An emergency constitutes an affirmative defense to an action brought for noncompliance with the technology-based emission limitations if the requirements of this Permit Condition are met.

The affirmative defense of emergency shall be demonstrated through properly signed, contemporaneous operating logs, or other relevant evidence that:

A. An emergency occurred and that the Permittee can identify the cause or causes of the emergency;
B. At the time of the emergency, the permitted source was being properly operated;
C. During the period of the emergency, the Permittee took all reasonable steps to minimize levels of emissions that exceeded the emissions standards or other requirements in this permit; and
D. The Permittee as soon as possible telephoned the Control Officer, giving notice of the emergency, and submitted notice of the emergency to the Control Officer by certified mail, facsimile, or hand delivery within 2 working days of the time when emission limitations were exceeded due to the emergency. This notice fulfills the requirement of County Rule 210 §302.1.e(2) with respect to deviation reporting. This notice shall contain a description of the emergency, any steps taken to mitigate emissions, and corrective action taken.

In any enforcement proceeding, the Permittee seeking to establish the occurrence of an emergency has the burden of proof.

This provision is in addition to any emergency or upset provision contained in any applicable requirement.

10. EXCESS EMISSIONS: [County Rule 140 §§103, 400]

NOTE: There are reporting requirements associated with excess emissions. These requirements are contained in the Reporting section of the General Permit Conditions in a subparagraph called Excess Emissions. The definition of excess emissions can be found in County Rule 100 §200.

A. Exemptions: The excess emissions provisions of this Permit Condition do not apply to the following standards and limitations:

1) Promulgated pursuant to Section 111 (Standards Of Performance for New Stationary Sources) of the Clean Air Act (Act) or Section 112 (National Emission Standards For Hazardous Air Pollutants) of the Act;
2) Promulgated pursuant to Title IV (Acid Deposition Control) of the Act or the regulations promulgated thereunder and incorporated under Rule 371 (Acid Rain) of these rules or Title VI (Stratospheric Ozone Protection) of the Act;
3) Contained in any Prevention Of Significant Deterioration (PSD) or New Source Review (NSR) permit issued by the Environmental Protection Agency (EPA);
4) Included in a permit to meet the requirements of Rule 240 (Permit Requirements For New Major Sources And Major Modifications To Existing Major Sources), Subsection 308.1(e) (Permit Requirements For Sources Located In Attainment And Unclassified Areas) of these rules.

B. Affirmative Defense For Malfunctions: Emissions in excess of an applicable emission limitation due to malfunction shall constitute a violation. The owner and/or operator of a source with emissions in excess of an applicable emission limitation due to malfunction has an affirmative defense to a civil or administrative enforcement proceeding based on that violation, other than a judicial action seeking injunctive relief, if the owner and/or operator of the source has complied with the excess emissions reporting requirements of these Permit Conditions and has demonstrated all of the following:
1) The excess emissions resulted from a sudden and unavoidable breakdown of the process equipment or the air pollution control equipment beyond the reasonable control of the operator;
2) The source's air pollution control equipment, process equipment, or processes were at all times maintained and operated in a manner consistent with good practice for minimizing emissions;
3) If repairs were required, the repairs were made in an expeditious fashion when the applicable emission limitations were being exceeded. Off-shift labor and overtime were utilized where practicable to ensure that the repairs were made as expeditiously as possible. If off-shift labor and overtime were not utilized, then the owner and/or operator satisfactorily demonstrated that such measures were impractical;
4) The amount and duration of the excess emissions (including any bypass operation) were minimized to the maximum extent practicable during periods of such emissions;
5) All reasonable steps were taken to minimize the impact of the excess emissions on ambient air quality;
6) The excess emissions were not part of a recurring pattern indicative of inadequate design, operation, or maintenance;
7) During the period of excess emissions, there were no exceedances of the relevant ambient air quality standards established in County Rule 510 that could be attributed to the emitting source;
8) The excess emissions did not stem from any activity or event that could have been foreseen and avoided, or planned, and could not have been avoided by better operations and maintenance practices;
9) All emissions monitoring systems were kept in operation, if at all practicable; and
10) The owner's and/or operator's actions in response to the excess emissions were documented by contemporaneous records.

C. Affirmative Defense For Startup And Shutdown:

1) Except as provided in paragraph 2) below, and unless otherwise provided for in the applicable requirement, emissions in excess of an applicable emission limitation due to startup and shutdown shall constitute a violation. The owner and/or operator of a source with emissions in excess of an applicable emission limitation due to startup and shutdown has an affirmative defense to a civil or administrative enforcement proceeding based on that violation, other than a judicial action seeking injunctive relief, if the owner and/or operator of the source has complied with the excess emissions reporting requirements of these Permit Conditions and has demonstrated all of the following:

a. The excess emissions could not have been prevented through careful and prudent planning and design;

b. If the excess emissions were the result of a bypass of control equipment, the bypass was unavoidable to prevent loss of life, personal injury, or severe damage to air pollution control equipment, production equipment, or other property;

c. The source's air pollution control equipment, process equipment, or processes were at all times maintained and operated in a manner consistent with good practice for minimizing emissions;

d. The amount and duration of the excess emissions (including any bypass operation) were minimized to the maximum extent practicable, during periods of such emissions;

e. All reasonable steps were taken to minimize the impact of the excess emissions on ambient air quality;

f. During the period of excess emissions, there were no exceedances of the relevant ambient air quality standards established in County Rule 510 (Air Quality Standards) that could be attributed to the emitting source;

g. All emissions monitoring systems were kept in operation, if at all practicable; and

h. The owner's and/or operator's actions in response to the excess emissions were documented by contemporaneous records.

2) If excess emissions occur due to a malfunction during routine startup and shutdown, then those instances shall be treated as other malfunctions subject to paragraph A. of this Permit Condition.

D. Affirmative Defense For Malfunctions During Scheduled Maintenance: If excess emissions occur due to malfunction during scheduled maintenance, then those instances will be treated as other malfunctions subject to paragraph B. of this Permit Condition.

E. Demonstration Of Reasonable And Practicable Measures: For an affirmative defense under paragraphs A and B of this Permit Condition, the owner and/or operator of the source shall demonstrate, through submission of the data and information required by this Permit Condition and the excess emissions reporting requirements of these Permit Conditions, that all reasonable and practicable measures within the owner's and/or operator's control were implemented to prevent the occurrence of the excess emissions.

11. FEES: [County Rule 200 §409] [County Rule 210 §§302.1i & 401]

The Permittee shall pay fees to the Control Officer under ARS 49-480(D) and County Rule 280.

12. MODELING: [County Rule 200 §407] [locally enforceable only]

Where the Control Officer requires the Permittee to perform air quality impact modeling, the Permittee shall perform the modeling in a manner consistent with the "Guideline on Air Quality Models (Revised)" (EPA-450/2-78-027R, U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards, Research Triangle Park, N.C. 27711, July 1986) and "Supplement B to the Guideline on Air Quality Models" (U.S. Environmental Protection Agency, September 1990). Both documents shall be referred to hereinafter as "Guideline", and are adopted by reference. Where the person can demonstrate that an air quality impact model specified in the guideline is inappropriate, the model may be modified or another model substituted if found to be acceptable to the Control Officer.

13. MONITORING / TESTING:

A. The Permittee shall monitor, sample, or perform other studies to quantify emissions of regulated air pollutants or levels of air pollution that may reasonably be attributable to the facility if required to do so by the Control Officer, either by Permit or by order in accordance with County Rule 200 §309.

[County Rule 200 §309] [SIP Rule 41]

B. Except as otherwise specified in these Permit Conditions or by the Control Officer, the Permittee shall conduct required testing used to determine compliance with standards or permit conditions established under the County or SIP Rules or these Permit Conditions in accordance with County Rule 270 and the applicable testing procedures contained in the applicable Rule, the Arizona Testing Manual for Air Pollutant Emissions or other approved USEPA test methods.

[County Rule 200 §408] [County Rule 210 §302.1.c] [County Rule 270 §§300 & 400] [SIP Rule 27]

C. The owner or operator of a permitted source shall provide, or cause to be provided, performance testing facilities as follows:

1) Sampling ports adequate for test methods applicable to such source.
2) Safe sampling platform(s).
3) Safe access to sampling platforms(s).
4) Utilities for sampling and testing equipment.

[County Rule 270 §405] [SIP Rule 42]

14. PERMITS:

A. BASIC: [County Rule 210 §302.1h(3)]

This Permit may be revised, reopened, revoked and reissued, or terminated for cause. The filing of a request by the Permittee for a permit revision, revocation and reissuance, or termination, or of a notification of planned changes or anticipated noncompliance does not stay any Permit Condition.

B. DUST CONTROL PLAN REQUIREMENTS:

(NOTE: If the Permittee engages in or allows any routine dust generating activities at the facility, the Permittee needs to have the routine dust generating activity covered as part of this Permit. Nonroutine activities, such as construction, require a separate Earthmoving Permit that must be obtained from the Control Officer before the activity may begin.)

1) The Permittee shall submit to the Control Officer a Dust Control Plan with any permit application that involves earthmoving operations with a disturbed surface area that equals or exceeds 0.1 acre, including both of the following situations:
   a) When submitting an application for an earthmoving permit involving earth moving operations that would equal or exceed 0.1 acre, and
   b) Before commencing any routine dust generating operation at the facility.

[County Rule 310 §303.1] [SIP Rule 310 §303.1]

2) A Dust Control Plan shall not be required to play on a ball field and/or for landscape maintenance. For the purpose of this Permit Condition, landscape maintenance does not include grading, trenching, nor any other mechanized surface disturbing activities.

[County Rule 310 §303.4] [SIP Rule 310 §303.4]

3) Any Dust Control Plan shall, at a minimum, contain all the information described in Sections 303.1, 303.3 and 304 of Rule 310.

[County Rule 310 §§303.1, 303.3 & 304] [SIP Rule 310 §§303.1, 303.3 & 304]

4) Regardless of whether an approved Dust Control Plan is in place or not, the Permittee is still subject to all requirements of Rule 310 at all times.

[County Rule 310 §303.2] [SIP Rule 310 §303.2]

C. PERMITS AND PERMIT CHANGES, AMENDMENTS AND REVISIONS:

The Permittee shall comply with the Administrative Requirements of Section 400 of County Rule 210 for all changes, amendments and revisions at the facility for any source subject to regulation under County Rule 200, shall comply with all required time frames, and shall obtain any required preapproval from the Control Officer before making changes. All applications shall be filed in the manner and form prescribed by the Control Officer. The application shall contain all the information necessary to enable the Control Officer to make the determination to grant or to deny a permit or permit revision including information listed in County Rule 200 §308 and County Rule 210 §§301 & 302.3.

[County Rule 200 §§301 & 308] [County Rule 210 §§301.4a, b, c, & 400]

2) The Permittee shall supply a complete copy of each application for a permit, a minor permit revision, or a significant permit revision directly to the Administrator of the USEPA. The Control Officer may require the application information to be submitted in a computer-readable format compatible with the Administrator's national database management system.

[County Rule 210 §§303.1a, 303.2, 405.4, & 406.4]

3) While processing an application, the Control Officer may require the applicant to provide additional information and may set a reasonable deadline for a response.

[County Rule 210 §301.4f]

4) No permit revision shall be required under any approved economic incentives, marketable permits, emissions trading and other similar programs or processes for changes that are provided for in this permit.

[County Rule 210 §302.1j]

D. POSTING:

1) The Permittee shall keep a complete permit clearly visible and accessible on the site where the equipment is installed.

[County Rule 200 §311]

2) If a Dust Control Plan, as required by Rule 310, has been approved by the Control Officer, the Permittee shall post a copy of the approved Dust Control Plan in a conspicuous location at the work site, within on-site equipment, or in an on-site vehicle, or shall otherwise keep a copy of the Dust Control Plan available on site at all times.

[County Rule 310 §401] [SIP Rule 310 §401]

E. PROHIBITION ON PERMIT MODIFICATION: [County Rule 200 §310]

The Permittee shall not willfully deface, alter, forge, counterfeit, or falsify this permit.

F. RENEWAL:

1) The Permittee shall submit an application for the renewal of this Permit in a timely and complete manner. For purposes of permit renewal, a timely application is one that is submitted at least six months, but not more than 18 months, prior to the date of permit expiration. A complete application shall contain all of the information required by the County Rules including Rule 200 §308 and Rule 210 §§301 & 302.3.

[County Rule 210 §§301.2a, 301.4a, b, c, d, h & 302.3]

2) The Permittee shall file all permit applications in the manner and form prescribed by the Control Officer. To apply for a permit renewal, the Permittee shall complete the "Standard Permit Application Form" and shall supply all information, including the information required by the "Filing Instructions" as shown in Appendix B of the County Rules, which is necessary to enable the Control Officer to make the determination to grant or to deny a permit which shall contain such terms and conditions as the Control Officer deems necessary to assure a source's compliance with the requirements of the CAA, ARS and County Rules.

[County Rule 200 §§308 & 309] [County Rule 210 §301.1]

3) The Control Officer may require the Permittee to provide additional information and may set a reasonable deadline for a response.

[County Rule 210 §301.4f]

4) If the Permittee submits a timely and complete application for a permit renewal, but the Control Officer has failed to issue or deny the renewal permit before the end of the term of the previous permit, then the permit shall not expire until the renewal permit has been issued or denied. This protection shall cease to apply if, subsequent to the completeness determination, the Permittee fails to submit, by the deadline specified by the Control Officer, any additional information identified as being needed to process the application.

[County Rule 200 §403.2] [County Rule 210 §§301.4f & 301.9]

G. REVISION / REOPENING / REVOCATION:

1) This permit shall be reopened and revised to incorporate additional applicable requirements adopted by the Administrator pursuant to the CAA that become applicable to the facility if this permit has a remaining permit term of three or more years. No such reopening is required if the effective date of the requirement is later than the date on which this Permit is due to expire unless the original permit or any of its terms have been extended pursuant to Rule 200 §403.2.

[County Rules 200 §402.1]

Any permit revision required under this Permit Condition, 14.G.1, shall reopen the entire permit and shall comply with provisions in County Rule 200 for permit renewal *(Note: this includes a facility wide application and public comment on the entire permit)* and shall reset the five year permit term.

[County Rules 200 §402.1a(1) & 210 §302.5]

2) This permit shall be reopened and revised under any of the following circumstances:
   a) Additional requirements, including excess emissions requirements, become applicable to an affected source under the acid rain program. Upon approval by the Administrator, excess emissions offset plans shall be deemed to be incorporated into the Title V permit.
   b) The Control Officer or the Administrator determines that the permit contains a material mistake or that inaccurate statements were made in establishing the emissions standards or other terms or conditions of the permit.
   c) The Control Officer or the Administrator determines that the permit must be revised or revoked to assure compliance with the applicable requirements.

   Proceedings to reopen and issue a permit under this Permit Condition, 14.G.2, shall follow the same procedures as apply to initial permit issuance and shall effect only those parts of the Permit for which cause to reopen exists.

   [County Rule 200 §402.1]

3) This permit shall be reopened by the Control Officer and any permit shield revised, when it is determined that standards or conditions in the permit are based on incorrect information provided by the applicant.

   [County Rule 210 §407.3]

4) This Permit may be revised, reopened, revoked and reissued, or terminated for cause. The filing of a request by the Permittee for a Permit revision, revocation and reissuance, or termination or of a notification of planned changes or anticipated noncompliance does not stay any Permit Condition.

   [County Rule 210 §302.1h(3)]

H. REVISION UNDER A FEDERAL HAZARDOUS AIR POLLUTANT STANDARD:

[County Rule 210 §301.2c] [locally enforceable only]

If the Permittee becomes subject to a standard promulgated by the Administrator under Section 112(d) of the CAA, the Permittee shall, within 12 months of the date on which the standard is promulgated, submit an application for a permit revision demonstrating how the source will comply with the standard.

I. REQUIREMENTS FOR A PERMIT:

1) Air Quality Permit: Except as noted under the provisions in Sections 403 and 405 of County Rule 210, no source may operate after the time that it is required to submit a timely and complete application, except in compliance with a permit issued under County Rule 210. Permit expiration terminates the Permittee's right to operate. However, if a source submits a timely and complete application, as defined in County Rule 210 §301,

for permit issuance, revision, or renewal, the source's failure to have a permit is not a violation of the County Rules until the Control Officer takes final action on the application. The Source's ability to operate without a permit as set forth in this paragraph shall be in effect from the date the application is determined to be complete until the final permit is issued. This protection shall cease to apply if, subsequent to the completeness determination, the applicant fails to submit, by the deadline specified in writing by the Control Officer, any additional information identified as being needed to process the application. If a source submits a timely and complete application for a permit renewal, but the Control Officer has failed to issue or deny the renewal permit before the end of the term of the previous permit, then the permit shall not expire until the permit renewal has been issued or denied.

[County Rule 210 §301.9]

2) Earthmoving Permit:
(NOTE: If the Permittee engages in or allows any routine dust generating activities at the facility, the Permittee needs to have the routine dust generating activity covered as part of this Permit. Non-routine activities, such as construction, require a separate Earthmoving Permit that must be obtained from the Control Officer before the activity may begin.)
The Permittee shall not cause, commence, suffer, allow, or engage in any earthmoving operation that disturbs a total surface area of 0.10 acre or more without first obtaining a permit from the Control Officer. Permits shall not be required for earthmoving operations for emergency repair of utilities, paved roads, unpaved roads, shoulders, and/or alleys.

[County Rule 200 §305]

3) Burn Permit: The Permittee shall obtain a Permit To Burn from the Control Officer before conducting any open outdoor fire except for the activities listed in County Rule 314 §§302.1 and 302.2.

[County Rule 314] [County Rule 200 §306] [SIP Rule 314]

J. RIGHTS AND PRIVILEGES: [County Rule 210 §302.1h (4)]
This Permit does not convey any property rights nor exclusive privilege of any sort.

K. SEVERABILITY: [County Rule 210 §302.1g]
The provisions of this Permit are severable, and, if any provision of this Permit is held invalid, the remainder of this Permit shall not be affected thereby.

L. SCOPE:
The issuance of any permit or permit revision shall not relieve the Permittee from compliance with any Federal laws, Arizona laws, or the County or SIP Rules, nor does any other law, regulation or permit relieve the Permittee from obtaining a permit or permit revision required under the County Rules.

[County Rule 200 §308]

Nothing in this permit shall alter or affect the following:
1) The provisions of Section 303 of the Act (Emergency Orders), including the authority of the Administrator of the USEPA under that section.

2) The liability of the Permittee for any violation of applicable requirements prior to or at the time of permit issuance.
3) The applicable requirements of the acid rain program, consistent with Section 408(a) of the Act.
4) The ability of the Administrator of the USEPA or of the Control Officer to obtain information from the Permittee under Section 114 of the Act, or any provision of State law.
5) The authority of the Control Officer to require compliance with new applicable requirements adopted after the permit is issued. [locally enforceable only]

[County Rule 210 §407.2]

M. TERM OF PERMIT: [County Rule 210 §§302.1a & 402]

This Permit shall remain in effect for no more than 5 years from the date of issuance.

N. TRANSFER: [County Rule 200 §404]

Except as provided in ARS §49-429 and County Rule 200, this permit may be transferred to another person if the Permittee gives notice to the Control Officer in writing at least 30 days before the proposed transfer and complies with the permit transfer requirements of County Rule 200 and the administrative permit amendment procedures under County Rule 210.

15. RECORDKEEPING:

A. RECORDS REQUIRED: [County Rule 100 §501] [County Rule 310 §502] [SIP Rule 40 A]

The Permittee shall maintain records of all emissions testing and monitoring, records detailing all malfunctions which may cause any applicable emission limitation to be exceeded, records detailing the implementation of approved control plans and compliance schedules, records required as a condition of any permit, records of materials used or produced, and any other records relating to the emission of air contaminants which may be requested by the Control Officer.

B. RETENTION OF RECORDS:

Unless a longer time frame is specified by these Permit Conditions, information and records required by applicable requirements and copies of summarizing reports recorded by the Permittee and submitted to the Control Officer shall be retained by the Permittee for 5 years after the date on which the information is recorded or the report is submitted

[County Rule 100 §504] [SIP Rule 40 C]

The Permittee shall retain records of all required monitoring data and support information for a period of at least five years from the date of the monitoring sample, measurement, report, or application. Support information includes all calibration and maintenance records and all original strip-chart recordings for continuous monitoring instrumentation, and copies of all reports required by the permit.

[County Rule 210 §§302.1d(2)]

C. MONITORING RECORDS: [County Rule 210 §§302.1d(1) & 305.1b]

Records of any monitoring required by this Permit shall include the following:
1) The date, place as defined in the permit, and time of sampling or measurements;
2) The date(s) analyses were performed;
3) The name of the company or entity that performed the analysis;

4) The analytical techniques or methods used;
5) The results of such analysis; and
6) The operating conditions as existing at the time of sampling or measurement.

D. RIGHT OF INSPECTION OF RECORDS: [County Rule 100 §106] [SIP Rule 40 D]
When the Control Officer has reasonable cause to believe that the Permittee has violated or is in violation of any provision of County Rule 100 or any County Rule adopted under County Rule 100, or any requirement of this permit, the Control Officer may request, in writing, that the Permittee produce all existing books, records, and other documents evidencing tests, inspections, or studies which may reasonably relate to compliance or noncompliance with County Rules adopted under County Rule 100. No person shall fail nor refuse to produce all existing documents required in such written request by the Control Officer.

16. REPORTING:
NOTE: See the Permit Condition titled Certification Of Truth, Accuracy and Completeness in conjunction with reporting requirements.

A. ANNUAL EMISSION INVENTORY REPORT: [County Rule 100 §505] [SIP Rule 40 B]
Upon request of the Control Officer and as directed by the Control Officer, the Permittee shall complete and shall submit to the Control Officer an annual emissions inventory report. The report is due by April 30, or 90 days after the Control Officer makes the inventory form(s) available, whichever occurs later.

The annual emissions inventory report shall be in the format provided by the Control Officer.

The Control Officer may require submittal of supplemental emissions inventory information forms for air contaminants under ARS §49-476.01, ARS §49-480.03 and ARS §49-480.04.

B. DATA REPORTING: [County Rule 100 §502]
When requested by the Control Officer, the Permittee shall furnish to the Maricopa County Air Quality Division (Division hereafter) information to locate and classify air contaminant sources according to type, level, duration, frequency, and other characteristics of emissions and such other information as may be necessary. This information shall be sufficient to evaluate the effect on air quality and compliance with the County or SIP Rules. The Permittee may subsequently be required to submit annually, or at such intervals specified by the Control Officer, reports detailing any changes in the nature of the source since the previous report and the total annual quantities of materials used or air contaminants emitted.

C. DEVIATION REPORTING: [County Rule 210 §§302.1e & 305.1c]
The Permittee shall promptly report deviations from permit requirements, including those attributable to upset conditions. Unless specified otherwise elsewhere in these Permit Conditions, an upset for the purposes of this Permit Condition shall be defined as the operation of any process, equipment or air pollution control device outside of either its normal design criteria or operating conditions specified in this Permit and which results in an exceedance of any applicable emission limitation or standard. The Permittee shall submit the report to the Control Officer within 2 working days from knowledge of the deviation. The report shall contain a description of the probable cause of such deviations and any corrective actions or preventive measures taken. In addition, the Permittee shall report within a reasonable time of

any long-term corrective actions or preventative actions taken as the result of any deviations from permit requirements.

All instances of deviations from the requirements of this Permit shall also be clearly identified in the semiannual monitoring reports required in the Specific Condition section of these Permit Conditions.

D. EMERGENCY REPORTING: [County Rule 130 §402.4]

(NOTE: Emergency Reporting is one of the special requirements which must be met by a Permittee wishing to claim an affirmative defense under the emergency provisions of County Rule 130. These provisions are listed earlier in these General Conditions in the section titled "Emergency Provisions". Since it is a form of deviation reporting, the filing of an emergency report also satisfies the requirement of County Rule 210 to file a deviation report.)

The Permittee shall, as soon as possible, telephone the Control Officer giving notice of the emergency, and submitted notice of the emergency to the Control Officer by certified mail, facsimile, or hand delivery within 2 working days of the time when emission limitations were exceeded due to the emergency. This notice shall contain a description of the emergency, any steps taken to mitigate emissions, and corrective action taken.

E. EMISSION STATEMENTS REQUIRED AS STATED IN THE ACT:

[County Rule 100 §503]

Upon request of the Control Officer and as directed by the Control Officer, the Permittee shall provide the Control Officer with an emission statement, in such form as the Control Officer prescribes, showing measured actual emissions or estimated actual emissions of NO_x and volatile organic compounds (VOC) from that source. At a minimum, the emission statement shall contain all information contained in the "Guidance on Emission Statements" document as described in the USEPA's Aerometric Information Retrieval System (AIRS) Fixed Format Report (AFP 644). The statement shall contain emissions for the time period specified by the Control Officer. Statements shall be submitted annually.

F. EXCESS EMISSIONS REPORTING: [County Rule 140 §500] [locally enforceable only]

(NOTE: This reporting subsection is associated with the requirements listed earlier in these General Conditions in the section titled "Excess Emissions".)

1) The owner and/or operator of any source shall report to the Control Officer any emissions in excess of the limits established by the County or SIP Rules or by these Permit Conditions. The report shall be in two parts as specified below:
   a) Notification by telephone or facsimile within 24 hours of the time when the owner and/or operator first learned of the occurrence of excess emissions that includes all available information from paragraph 2) of this Permit Condition.
   b) Detailed written notification by submission of an excess emissions report within 72 hours of the notification required by paragraph 1) a) of this Permit Condition.

2) The excess emissions report shall contain the following information:
   a) The identity of each stack or other emission point where the excess emissions occurred;
   b) The magnitude of the excess emissions expressed in the units of the applicable emission limitation and the operating data and calculations used in determining the magnitude of the excess emissions;
   c) The time and duration or expected duration of the excess emissions;

d) The identity of the equipment from which the excess emissions emanated;
e) The nature and cause of such emissions;
f) The steps taken, if the excess emissions were the result of a malfunction, to remedy the malfunction and the steps taken or planned to prevent the recurrence of such malfunctions;
g) The steps that were or are being taken to limit the excess emissions; and
h) If this Permit contains procedures governing source operation during periods of startup or malfunction and the excess emissions resulted from startup or malfunction, a list of the steps taken to comply with the Permit procedures.

3) In the case of continuous or recurring excess emissions, the notification requirements of this Permit Condition shall be satisfied if the source provides the required notification after excess emissions are first detected and includes in the notification an estimate of the time the excess emissions will continue. Excess emissions occurring after the estimated time period or changes in the nature of the emissions as originally reported shall require additional notification pursuant to paragraphs 1) and 2) of this Permit Condition.

G. OTHER REPORTING: [County Rule 210 §302.1h(5)]

The Permittee shall furnish to the Control Officer, within a reasonable time, any information that the Control Officer may request in writing to determine whether cause exists for revising, revoking and reissuing this permit, or terminating this permit, or to determine compliance with this permit. Upon request, the Permittee shall also furnish to the Control Officer copies of records required to be kept by this Permit. For information claimed to be confidential, the Permittee shall furnish a copy of such records directly to the Administrator of the USEPA along with a claim of confidentiality as covered elsewhere in these Permit Conditions.

17. RIGHT TO ENTRY AND INSPECTION OF PREMISES:

The Control Officer, during reasonable hours, for the purpose of enforcing and administering County Rules or any provision of ARS relating to the emission or control prescribed pursuant thereto, may enter every building, premises, or other place, except the interior of structures used as private residences. Every person is guilty of a petty offense under ARS §49-488 who in any way denies, obstructs or hampers such entrance or inspection that is lawfully authorized by warrant.

[County Rule 100 §105]

The Permittee shall allow the Control Officer or his authorized representative, upon presentation of proper credentials and other documents as may be required by law, to:

A. Enter upon the Permittee's premises where a source is located or emissions-related activity is conducted, or where records are required to be kept under the conditions of the permit;

[County Rule 210 §305.1f] [SIP Rule 43]

B. Have access to and copy, at reasonable times, any records that are required to be kept under the conditions of the permit;

[County Rule 210 §305.1f] [SIP Rule 43]

C. Inspect, at reasonable times, any sources, equipment (including monitoring and air pollution control equipment), practices, or operations regulated or required under this permit;

[County Rule 210 §305.1f] [SIP Rule 43]

D. Sample or monitor, at reasonable times, substances or parameters for the purpose of assuring compliance with the permit or other applicable requirements; and

[County Rule 210 §305.1f] [SIP Rule 43]

E. To record any inspection by use of written, electronic, magnetic, and photographic media.
[County Rule 210 §305.1f] [Locally enforceable only]

18. FACILITY WIDE ALLOWABLE EMISSION LIMITS:

A. Opacity Requirements:

1) The Permittee shall not discharge into the ambient air from any single source of emissions any air contaminant, other than uncombined water, in excess of 20 percent opacity, except as provided in County Rule 300 §302.
[County Rule 300 §301][Locally enforceable only]

2) The opacity of any plume or effluent from any source of emissions, other than uncombined water, shall not be greater than 40 percent opacity as determined by Reference Method 9 in the Arizona Testing Manual.
[SIP Rule 30 §A]

B. The Permittee shall not emit gaseous or odorous air contaminants from equipment, operations or premises under his control in such quantities or concentrations as to cause air pollution.
[County Rule 320 §300]
[SIP Rule 32(A)]

C. Particulate Matter Limits for Fuel Burning Equipment:
The Permittee shall not discharge or cause or allow the discharge of particulate matter emissions, caused by combustion of fuel, from any fuel burning operation in excess of amounts determined by the following equation:

$E = 1.02\ Q^{0.769}$

Where:
E = The maximum allowable emission rate in pounds-mass per hour, and
Q = The heat output in million BTU per hour.
[SIP Rule 311 §304.1]
[SIP Rule 31(H)]

D. Facility-Wide Requirements

1) The Permittee shall not cause, allow, or permit emissions in excess of the monthly and 12 month rolling limits shown in Table 18.1.

TABLE 18.1: Facility-Wide Emissions Limits

	Rolling 12 - Month Emission Limits
Any Single Hazardous Air Pollutant (HAP)	9.0 tons
Total Hazardous Air Pollutants (HAPs)	22.5 tons

The rolling 12 month limit shall be calculated by summing the monthly emissions from all processes that have HAP emissions for the most recent 12 calendar months.
[County Rule 210 §302.1b][County Rule 100 §§200.16 and 200.49]

19. FACILITY WIDE OPERATIONAL LIMITATIONS AND REQUIREMENTS:

A. Materials including, but not limited to, solvents or other volatile compounds, paints, acids, alkali's, pesticides, fertilizer and manure shall be processed, stored, used and transported in such

a manner and by such means that they will not unreasonably evaporate, leak, escape or be otherwise discharged into the ambient air so as to cause or contribute to air pollution. Where means are available to reduce effectively the contribution to air pollution from evaporation, leakage or discharge, the installation and use of such control methods, devices or equipment shall be mandatory.

[SIP Rule 32C][County Rule 320 §302]

B. Where a stack, vent or other outlet is at such a level that air contaminants are discharged to adjoining property, the Control Officer may require the installation of abatement equipment or the alteration of such stack, vent, or other outlet to a degree that will adequately dilute, reduce or eliminate the discharge of air contaminants to adjoining property.

[SIP Rule 32D][County Rule 320 §303]

C. Volatile Organic Compound (VOC) Containment and Disposal:
No person shall store, discard, or dispose of VOC or VOC-containing material in a way intended to cause or to allow the evaporation of VOC to the atmosphere. Reasonable measures shall be taken to prevent such evaporation, which include but are not limited to the following:

1) All materials from which VOC can evaporate, including fresh solvent, waste solvent and solvent soaked rags and residues, shall be stored in closed containers; and
2) Such containers one gallon and larger shall be legibly labeled with their contents; and
3) Records of the disposal/recovery of such materials shall be kept. Records of hazardous waste disposal shall be kept in accordance with hazardous waste disposal statutes.

[SIP Rule 32C] [County Rule 330§ 306]

D. The Permittee shall limit the facility-wide anhydrous ammonia usage to 270,864 pounds per year. The usage calculation shall be made monthly and assessed on a rolling twelve month basis.

[County Rule 210 §302.1b]

20. FACILITY WIDE MONITORING AND RECORD KEEPING REQUIREMENTS

A. The Permittee shall maintain a log of complaints of odors detected off-site. The log shall contain a description of the complaint, date and time that the complaint was received, and if given, name and/or phone number of the complainant. The logbook shall describe what actions were performed to investigate the complaint, the results of the investigation, and any corrective actions that were taken.

[County Rule 210 §302.1c] [SIP Rule 32]
[County Rule 320]

B. The Permittee shall log the following information for all visible emissions observations and Method 9 opacity readings required by this permit:

1) The date and time the visible emissions observation or Method 9 opacity reading was taken
2) The name of the observer
3) Whether or not visible emissions were present
4) If visible emissions are present and the controls and facility processes are operating in a mode other than their normal operating conditions, such as startup or shutdown, a description of the operating conditions at the time that the opacity is observed

5) The opacity determined by a Method 9 opacity reading, if a Method 9 reading is required by these permit conditions
6) If applicable, a description of any corrective action(s) taken, including the date of such action(s) and
7) Any other related information.

[County Rule 300] [County Rule 210 §302.1]

C. The Permittee shall conduct a weekly facility walk-through and observe for visible emissions. The visible observations shall be conducted for the overall facility (stacks and other general emission points and for any specific emission source specified in this Permit.

[County Rules 300] [County Rule 210 §302.1c]

D. If visible emissions, other than uncombined water, are observed being discharged into the ambient air, the Permittee shall monitor for compliance with the opacity standards specified in this permit by having a certified visible emissions evaluator determine the opacity of the visible emissions being discharged into the ambient air using the techniques specified in EPA Reference Method 9.

The initial Method 9 opacity reading shall be taken within one day, (24 hours), of observing visible emissions. If the emitting equipment is not operating on the day that the initial Method 9 opacity reading is required to be taken, then the initial Method 9 opacity reading shall be taken the next day that the emitting equipment is in operation. If the problem causing the visible emissions is corrected before the initial Method 9 opacity reading is required to be performed, and there are no visible emissions (excluding uncombined water) observed from the previously emitting equipment while the equipment is in normal operation, the Permittee shall not be required to conduct the Method 9 opacity readings.

Follow-up Method 9 opacity readings shall be performed by a certified visible emissions evaluator while the emitting equipment is in its standard mode of operation in accordance with the following schedule:

1) Daily:
   a) Except as provided in paragraph 3) of this Permit Condition, a Method 9 opacity reading shall be conducted each day that the emitting equipment is operating until a minimum of 14 daily Method 9 readings have occurred.
   b) If the Method 9 opacity readings required by this Permit Condition are less than 20% for 14 consecutive days, the frequency of Method 9 opacity readings may be decreased to weekly, in accordance with paragraph 2) of this Permit Condition.
2) Weekly:
   a) If the Permittee has obtained 14 consecutive daily Method 9 readings which do not exceed 20% opacity, the frequency of Method 9 readings may be decreased to once per week for any week in which the equipment is operated.
   b) If the opacity measured during a weekly Method 9 reading exceeds 20%, the frequency of Method 9 opacity readings shall revert to daily, in accordance with paragraph 1) of this Permit Condition.
   c) If the opacity measured during the required weekly Method 9 readings never exceeds 20%, the Permittee shall continue to obtain weekly opacity readings until the requirements of paragraph 3) of this Permit Condition are met.

3) Cease Follow-up Method 9 Opacity Monitoring:
Regardless of the applicable monitoring schedule, follow-up Method 9 opacity readings may cease if the emitting equipment, while in its standard mode of operation, has no visible emissions, other than uncombined water, during every observation taken during a Method 9 procedure.

[County Rule 210 §302.1c]

E. Opacity Readings

1) Opacity shall be determined by observations of visible emissions conducted in accordance with 40 CFR Part 60 Appendix A, Method 9.

[40 CFR 60.11.b] [County Rule 300 §501]

2) Opacity of visible emissions from intermittent sources as defined by County Rule 300 §201 shall be determined by observations conducted in accordance with 40 CFR Part 60 Appendix A, Method 9, except that at least 12 rather than 24 consecutive readings shall be required at 15-second intervals for the averaging time.

[County Rule 300 §502] [Locally enforceable only]

F. Determination of Compliance of Organic Solvents:
Determination of the organic solvent content and composition of a solvent or material shall be made as of the time that the solvent or material is in its final form for application or employment, notwithstanding any prior blending, reducing, thinning or other preparation for application or employment. Emissions resulting from air or heat drying of products for the first 12 hours after the removal from any machine, equipment, device or other article shall be included in determining compliance with this rule.

[County Rule 330 §502][locally enforceable only]

G. VOC Containing Materials:

1) Current List:
Maintain a current list of coatings, adhesives, makeup solvents, and any other VOC containing materials; state the VOC content of each in pounds per gallon or grams per liter. VOC content shall be expressed less water and non-precursor compounds for materials, which are not used for cleanup.

[County Rule 330 §503][Locally enforceable only]

2) Monthly Usage Records:
Maintain monthly records of the amount of each coating; adhesive; makeup solvent; solvent used for surface preparation, for cleanup, and for the removal of materials; and any other VOC-containing material used.

[County Rule 330 §503][Locally enforceable only]

3) Discarded VOC Materials:
Maintain records of the type, amount, and method of disposing of VOC-containing materials on each day of disposal.

[County Rule 330 §503][Locally enforceable only]

H. HAPs Emission Limits
The Permittee shall monitor for compliance with the facility-wide HAP emissions limits of these Permit Conditions by monthly calculating and recording the monthly and the rolling 12 month emissions of HAPs. The calculations shall be made no later than the end of the

following month. The 12 month rolling emissions total shall be calculated by summing the emissions for the most recent complete 12 calendar months. The monthly and rolling 12 month total emissions of HAPs from the facility shall be calculated based upon the usage records or emission factors for each month.

[County Rule 210 §302.1 c]

I. Ammonia Emission Limits

The Permittee shall monitor for compliance with the facility-wide and nitriding process ammonia usage limits of these Permit Conditions by monthly calculating and recording the monthly and the rolling 12 month usage of ammonia. The calculations shall be made no later than the end of the following month. The 12 month rolling emissions total shall be calculated by summing the usages for the most recent complete 12 calendar months. The monthly and rolling 12 month total emissions of ammonia from the facility and the nitriding process shall be calculated based upon the usage records for each month.

[County Rule 210 §302.1 c]

21. FACILITY-WIDE REPORTING REQUIREMENTS:

The Permittee shall file semiannual monitoring reports with the Control Officer, Attn: Large Source Compliance Supervisor. The initial reporting period shall begin on the permit issuance date and shall cover a period of 6 months or less. The second and subsequent reporting periods shall be in 6-month intervals after the end of the initial reporting period. The semiannual monitoring reports shall be filed by the end of the month following the reporting period. The semi-annual monitoring report shall be certified as to its truth, accuracy and completeness by a responsible official in the manner required by County Rule 210 §§301.7 and 305.1(e) and shall contain the following information, at a minimum:

A. Deviation Reporting:

The Permittee shall identify all instances of deviations from the permit requirements in the semi-annual monitoring report. The Permittee shall include the probable cause of such deviations, and any corrective actions or preventive measures taken.

[County Rule 210 §302.1e]

B. Odor Log:

The Permittee shall provide a copy of the portion of the portion of the odor log that covers the applicable 6-month reporting period. If no complaints were received during the reporting period, a statement to that effect may be substituted for a copy of the odor log.

[County Rule 210 §302.1e(1)]

C. Visible Emissions:

1) The dates of any week that the required visible emissions observations were not taken, an explanation for the deviation from the monitoring requirement, and a description of any action taken to ensure that future observations are performed, if applicable.
2) The source and location from which visible emissions were observed;
3) Any date which visible emissions were observed;
4) The approximate time of the observation;
5) The name of the observer;
6) A description of any corrective actions taken, if any, to reduce the visible emissions;
7) If a follow-up Method 9 reading was required, the opacity of the emissions determined by Method 9, a copy of the visual determination of opacity record showing all information required by the Method and any other related information.

[County Rule 210 §302.1e]

D. Emissions Calculations:
The Permittee shall include the results of the monthly and the rolling 12-month HAP emissions calculations for each month in the six-month reporting period.

[County Rule 210 §302.1e]

E. Ammonia Usage Calculations:
The Permittee shall include the results of the monthly and the rolling 12-month facility wide and nitriding process ammonia usage calculations for each month in the six-month reporting period.

[County Rule 210 §302.1e]

**NOTE: Additional reporting requirements are found in the Specific Permit Conditions.*

SPECIFIC PERMIT CONDITIONS:

22. ABRASIVE BLASTING OPERATIONS

A. Operational Requirements

1) All abrasive blasting performed at the facility shall be in a confined enclosure with a forced air exhaust through a Department approved emission control device.

[County Rule 312 §303][SIP Rule 312 §302.1]

2) The Permittee shall not discharge or cause or allow the discharge of particulate matter into the ambient air from the thermal spray coating operation in excess of the allowable hourly emission rate determined by the following equation:

$E = 3.59\ P^{0.62}$

Where:
E = Emissions in pounds per hour, and
P = Process weight rate in tons per hour.

[County Rule 311 §301.1][SIP Rule 311 §301.1]

B. Conditions for Confined Blasting

1) Allowable Emissions:

a) The Permittee shall not discharge into the atmosphere from any abrasive blasting operation any air contaminant for an observation period or periods aggregating more than three minutes in any sixty minute period an opacity equal to or greater than 20 percent. An indicated excess will be considered to have occurred if any cumulative period of 15-second increments totaling more than three minutes within any sixty minute period was in excess of the opacity standard.

[County Rule 312 §305] [Locally enforceable only]

b) The Permittee shall not discharge into the atmosphere from any abrasive blasting any air contaminant for a period or periods aggregating more than three minutes in any one-hour period which is a shade or density darker than 20 percent opacity.

[SIP Rule 312 §301]

2) Requirements for Confined Blasting:
Dry abrasive blasting in a confined enclosure with a forced air exhaust shall be conducted by implementing either of the following:
a) Using a certified abrasive, or
b) Venting to an ECS

[County Rule 312 §303] [Locally enforceable only]

3) Operational Requirements for Emission Control System
Note: There are five dust collectors that require weekly monitoring of the pressure differential and weekly visible emission checks according to this permit condition, (Permit Condition 22. B.3). They include maintenance number 92401649 in Building 105, maintenance number 92401472 in Building 202, maintenance number 92401360 in Building 110, maintenance number 92401352 in Building 404, and maintenance number 92401739 in Building 105 (MAC2 dust collector).

a) The Permittee shall install, operate and maintain an approved emission control system (ECS) on all abrasive blasting equipment vented outdoors. Such abrasive blasting equipment shall be vented to the control device without bypass.

[County Rule 100 §301][County Rule 241 §302] [SIP Rule 3]

b) The Permittee shall operate the ECSs at a parametric range of 1.0 to 6.0 inches of water except for the MAC2 Dust Collector in Building 105 Maintenance Number 92401739, which shall be operated at a parametric range of 1.0 to 5.0 inches of water.

[County Rule 210§302.1][SIP Rule 3]

c) The Permittee shall comply with all the identified actions and schedules provided in the O&M Plan.

[County Rule 312 §304.1] [Locally enforceable only]

d) The Permittee shall install and maintain in calibration, pressure monitors in good working order and in operation for all control devices that capture the exhaust for abrasive blasting units that;
(1) Have a blasting volume of equal to or greater than fifty cubic feet and,
(2) Use a blasting media that is not CARB certified, and
(3) Vent to the ambient air.

[County Rule 312 §304.2] [Locally enforceable only]

e) The Permittee shall record weekly pressure differential readings. The Permittee shall log all pressure differential readings, including the date when the reading was taken, identify each ECS and the name or initials of the person who took the reading. The Permittee shall investigate the cause of any reading outside the range of the O&M plan to identify, correct or repair the problem and record in a log book the cause of the problem and the corrective action initiated to remedy the abnormal pressure differential reading. The Department may require the Permittee to submit a Corrective Action Plan (CAP).

[County Rule 312 §304] [Locally enforceable only]

f) Visible Emissions Monitoring
The Permittee shall observe for visible emissions weekly from each of the ECS exhaust streams during normal operation.

[County Rules 300] [County Rule 210 §302.1c]

(1) If visible emissions, other than uncombined water, are observed being discharged into the ambient air, the Permittee shall monitor for compliance with the opacity standards specified in this permit by having a certified visible emissions evaluator determine the opacity of the visible emissions being discharged into the ambient air using the techniques specified in EPA Reference Method 9.

The initial Method 9 opacity reading shall be taken within one day, (24 hours), from the time of observing visible emissions. If the emitting equipment is not operating on the day that the initial Method 9 opacity reading is required to be taken, then the initial Method 9 opacity reading shall be taken the next day that the emitting equipment is in operation. If the problem causing the visible emissions is corrected before the initial Method 9 opacity reading is required to be performed, and there are no visible emissions (excluding uncombined water) observed from the previously emitting equipment while the equipment is in normal operation, the Permittee shall not be required to conduct the Method 9 opacity readings.

Follow-up Method 9 opacity readings shall be performed by a certified visible emissions evaluator while the emitting equipment in its standard mode of operation in accordance with the following schedule:

(a) Daily:
  i) Except as provided in paragraph (c) of this Permit Condition, a Method 9 opacity reading shall be conducted each day that the emitting equipment is operating until a minimum of 14 daily Method 9 readings have occurred.
  ii) If the Method 9 opacity readings required by this Permit Condition are less than 20% for 14 consecutive days, the frequency of Method 9 opacity readings may be decreased to weekly, in accordance with paragraph (b) of this Permit Condition.

(b) Weekly:
  i) If the Permittee has obtained 14 consecutive daily Method 9 readings which do not exceed 20% opacity, the frequency of Method 9 readings may be decreased to once per week for any week in which the equipment is operated.
  ii) If the opacity measured during a weekly Method 9 reading exceeds 20%, the frequency of Method 9 opacity readings shall revert to daily, in accordance with paragraph (a) of this Permit Condition.
  iii) If the opacity measured during the required weekly Method 9 readings never exceeds 20%, the Permittee shall continue to

obtain weekly opacity readings until the requirements of paragraph (c) of this Permit Condition are met.

(c) Cease Follow-up Method 9 Opacity Monitoring:
Regardless of the applicable monitoring schedule, follow-up Method 9 opacity readings may cease if the emitting equipment, while in its standard mode of operation, has no visible emissions, other than uncombined water, during an observation taken during a Method 9 procedure.

[County Rule 210 §302.1c]

(2) Opacity Observations
Opacity shall be determined by observations of visible emissions conducted in accordance with EPA Reference Method 9 and with the following provisions:

(a) Emissions from unconfined blasting shall be observed at the densest point of the emission from the closest point of discharge, after a major portion of the spent abrasives has fallen out.

(b) Emissions from unconfined blasting employing multiple nozzles shall be considered a single source unless it can be demonstrated by the owner or operator that each nozzle, evaluated separately, meets the emission standards of County Rule 312.

(c) Emissions from confined blasting shall be observed at the densest point after the air contaminant leaves the enclosure or associated ECS.

[County Rule 312 §505] [Locally enforceable only]

(3) Partial Exemptions
Equipment that meets the following two criteria and is operated and maintained in accordance with manufacturers' specifications is exempt from the Operational Requirements of the ECS of this section.

(a) Self-contained and the total internal volume of the blast section is 50 cubic feet or less, and

(b) Vented to an ECS

[County Rule 312 §304] [SIP Rule 312 §§§501.1,501.2,501.3]

4) Work Practices
At the end of the work shift, the Permittee shall clean up spillage, carry-out, and or trackout of any spent abrasive material with the potential to be transported during a wind event.

[County Rule 312 §308] [Locally enforceable only]

5) Recordkeeping Requirements for Blasting Operations
The Permittee shall keep the following records onsite and maintain all of the specified records for a total of five years and shall make them available to the control officer upon request:

a) A list of the blasting equipment
b) A description of the type of blasting
c) The locations of the blasting equipment
d) A description of the ECS associated with the blasting operation
e) The days of the week blasting occurs
f) The normal hours of operation

[County Rule 312 §501.1][County Rule 210§302.1 d]

g) The type and amount of solid abrasive material consumed on a monthly basis. Include name of certified abrasive used, if applicable

[County Rule 312 §501.3][County Rule 210§302.1 d]

h) The Permittee shall maintain records of the weekly differential pressure readings for the ECS required by the O&M Plans.
i) The Permittee shall log all visual observations and readings including the following:
   (1) The date and time that a visible observation or Method 9 reading was taken;
   (2) The name of the person who made the observation or reading;
   (3) Whether or not visible emissions were present;
   (4) The opacity of visual emissions determined by a Method 9 reading, if applicable;
   (5) A description of any corrective actions taken, including date, if applicable;

[County Rule 210 §302.1d]

6) Reporting Requirements:
**NOTE: Additional reporting requirements are found in the general conditions of this permit and in the Specific Permit Conditions.*

Semi-Annual Monitoring Report
The Permittee shall submit a semi-annual monitoring report, which shall be certified as to its truth, accuracy and completeness by a responsible official in the manner required by County Rule 210 §§301.7 and 305.1(e), and which shall contain the following information, at a minimum:

a) Deviation Reporting
The Permittee shall identify all instances of deviations from permit requirements for abrasive blasting in the semi-annual monitoring report. The Permittee shall include the probable cause of such deviations, and any corrective actions or preventive measures taken.

[County Rule 210 §302.1e(1)]

b) Visible Emissions
   (1) The dates of any week that the required visible emissions observations were not taken, an explanation for the deviation from that monitoring requirement, and a description of any action taken to ensure that the future observations are performed, if applicable.
   (2) Any date on which visible emissions were observed;
   (3) The approximate time of the observation;
   (4) Name of the observer;
   (5) A description of any corrective actions taken, if any, to reduce the visible emissions;

(6) If a follow-up Method 9 reading was required, the opacity of the emissions determined by Method 9 and a copy of the visual determination of opacity record showing all information required by the Method 9.

[County Rule 210 §302.1e]

C. Performance Test Requirements:

1) Testing Requirements:
The Permittee shall conduct performance tests on the following equipment within 60 days after the permit issuance date or within 60 days after the new applicable equipment has achieved the capability to operate at its maximum production rate on a sustained basis, whichever occurs last. The testing deadline may be extended by the Control Officer for good cause, but in no case shall the testing deadline, including test report submittal, extend beyond 180 days after the permit issuance date.

[County Rule 270 §401][SIP Rule 27 §A][40 CFR §60.8(a)]

a) Building 105 Dust Collector (92401739):
(1) The Permittee shall measure the PM10 emission rate of the dust collector to demonstrate compliance with an emission rate of 0.0170 grains per standard cubic foot. The compliance test shall be conducted when at least 500 pounds of abrasive is being used in the abrasive blasting equipment.
(2) A visible emissions evaluation shall demonstrate that emissions do not exceed 20 percent opacity.
(3) Following the initial performance test for this permit, the Permittee shall conduct a performance test at least once every 36 months.

2) Testing Criteria:
Performance tests shall be conducted and data reduced in accordance with the test methods and procedures specified unless the Control Officer and Administrator specifies or approves minor changes in methodology to a reference method, approves the use of an equivalent test method, approves the use of an alternative method that has been determined to be acceptable for demonstrating compliance, or waives the requirement for performance tests because the Permittee has demonstrated by other means that the source is in compliance with the standard. For NSPS facilities, only EPA has the authority to waive initial testing requirements.

[County Rule 270 §402][SIP Rule 27 §B][40 CFR §60.8(b)

3) Test Methods:
Sampling sites and velocity traverse points shall be selected in accordance with EPA Test Method 1or 1A. The gas volumetric flow rate shall be measured in accordance with EPA Test Method 2, 2A, 2C, 2D, 2F, 2G or 19. The dry molecular weight shall be determined in accordance with EPA Test Method 3, 3A or 3B. The stack gas moisture shall be determined in accordance with EPA Test Method 4. These methods must be performed, as applicable, during each test run.

[County Rule 270 §301.1][SIP Rule 27 §B]

a) Building 105 Dust Collector (92401739):
(1) PM10 testing shall be conducted in accordance with EPA Test Method 5.

(2) The visible emissions evaluation shall be conducted in accordance with EPA Test Method 9.

4) Operating Conditions:
Performance tests shall be conducted under representative operating conditions and all equipment shall be operated during testing in accordance with the most recently approved O&M Plan or according to its operations manual if no O&M Plan is required. The Permittee shall make available to the Control Officer any records necessary to determine appropriate conditions for performance tests. Operations during periods of startup, shutdown, and equipment malfunction shall not constitute representative conditions for performance tests unless otherwise specified in the applicable standard or permit conditions.

[County Rule 270 §403][40 CFR §60.8(c)]

5) Monitoring Requirements:
The Permittee shall record all process and control equipment information that are necessary to document operating conditions during the test and explain why the conditions represent normal operation. Operational parameters shall be monitored and recorded at least once every 30 minutes during each of the required test runs and documented in the test report. The operational parameters monitored shall be capable of indicating that the equipment is operating within the permitted limits, both during and after the performance tests.

[County Rule 270 §301.1][SIP Rule 27 §B]

a) Building 105 Dust Collector (92401739):
The Permittee shall record the dust collector pressure drop during the performance test. This and any additional operational parameters shall be identified in the test protocol and recorded during testing.

6) Test Protocol Submittal:
The Permittee shall submit a separate test protocol for each performance test to the Department for review and approval at least 30 days prior to each performance test. The test protocol shall be prepared in accordance with the Department's "Air Quality Performance Test Guidelines for Compliance Determination in Maricopa County" dated June 17, 2005. A completed copy of the Department's "Test Protocol Submittal Form" shall accompany each test protocol.

[County Rule 270 §301.1][SIP Rule 27 §B][40 CFR §60.8(d)]

7) Notice of Testing:
The Permittee shall notify the Department in writing at least two weeks in advance of the actual date and time of each performance test so that the Department may have a representative attend.

[County Rule 270 §404][40 CFR §60.8(d)]

8) Testing Facilities Required:
The Permittee shall install any and all sample ports or platforms necessary to conduct the performance tests, provide safe access to any platforms and provide the necessary utilities for testing equipment.

[County Rule 270 §405][SIP Rule 42][40 CFR §60.8(e)]

9) Minimum Testing Requirements:
Each performance test shall consist of three separate test runs with each test run being at least one hour in duration unless otherwise specified in the applicable standard or in this permit. The same test methods shall be conducted for both the inlet and outlet measurements, if applicable, which must be conducted simultaneously. Emissions rates, concentrations, grain loadings, and/or efficiencies shall be determined as the arithmetic average of the values determined for each individual test run. Performance tests may only be stopped for good cause, which includes forced shutdown, failure of an irreplaceable portion of the sample train, extreme meteorological conditions, or other circumstances beyond the Permittee's control. Termination of a performance test without good cause after the first test run has commenced shall constitute a failure of the performance test.

[County Rule 270 §406][40 CFR §60.8(f)]

10) Test Report Submittal:
The Permittee shall complete and submit a separate test report for each performance test to the Department within 30 days after the completion of testing. The test report shall be prepared in accordance with the Department's "Air Quality Performance Test Guidelines for Compliance Determination in Maricopa County" dated June 17, 2005. A completed copy of the Department's "Test Report Submittal Form" shall accompany each test report.

[County Rule 270 §301.1][SIP Rule 27 §B]

11) Compliance with Emission Limits:
Compliance with allowable emission limits and standards shall be determined by the performance tests specified in this permit. If test results do not demonstrate compliance with the requirements of these permit conditions, the Permittee shall make the necessary repairs and/or adjustments to the equipment and demonstrate compliance through retesting. This will not nullify the fact that test results did not demonstrate compliance with the requirements of the permit conditions or nullify any violations that may result from this noncompliance. In addition to compliance demonstrations, test results shall be used for annual emissions inventory purposes, if applicable.

[County Rule 270 §407]

12) All test extension requests, test protocols, test date notifications, and test reports required by this permit shall be submitted to the Department and addressed to the attention of the Performance Test Evaluation Supervisor.

[County Rule 270 §301.1][SIP Rule 27 §B]

23. SOLVENT (DIP) CLEANING

A. Operational Limitations:
All cleaning machines shall be one of the following types:
1) Batch loaded cold cleaners with remote reservoir;
2) Batch loaded cold cleaners without a remote reservoir (such as a solvent dip tank).
3) Shall use only low VOC cleaner (A low VOC cleaner is any solution or homogeneous suspension that, as used, contains less than 50 grams of VOC per liter of material (0.42

lb. VOC/gal) or is at least 95% water by weight or volume as determined by an applicable test method in Section 502 of County Rule 331).

4) The Permittee shall not use any heated, agitated or non-conforming solvent in its batch cleaning machines.

[County Rule 210§ 302.1]

B. Solvent Handling Requirements:

1) All cleaning-solvent, including solvent soaked materials, shall be kept in closed leak-free containers that are opened only when adding or removing material. Rags used for wipe cleaning shall be stored in closed containers when not in use. Each container shall be clearly labeled with its contents.

2) If a cleaning-solvent escapes from a container:
   a) Wipe up or otherwise remove immediately if in accessible areas.
   b) For areas where access in not feasible during normal production, remove as soon as reasonably possible.

3) Unless records show that VOC-containing cleaning material was sent offsite for legal disposal, it will be assumed that it evaporated on site.

[County Rule 331 §301][SIP Rule 331 §301]

C. Equipment Requirements:

1) The Permittee shall provide a leak-free container (degreaser) for the solvents and the articles being cleaned.
   a) The VOC-containment portion shall be impervious to VOC-containing liquid and vapors.
   b) No surface of any freeboard required by this rule shall have an opening or duct through which VOC can escape to the atmosphere except as required by OSHA.

[County Rule 331 §302.1] [SIP Rule 331 §302.1]

2) The Permittee shall maintain and operate all cleaning machine equipment required by this rule and any of its emission controls required by this rule.

[County Rule 331 §302.2] [SIP Rule 331 §302.2]

D. Specific Operating & Signage Requirements:

1) The Permittee shall conform to the following operating requirements when cleaning with cleaning-solvents other than Low-VOC Cleaners:
   a) Comfort fans shall not be used near cleaning machines;
   b) Do not remove any device designed to cover the solvent unless processing work in the cleaning machine or maintaining the machine;
   c) Drain cleaned parts for at least (15) fifteen seconds after cleaning or until dripping ceases, whichever is later;
   d) When cleaning-solvent spray system:
      (1) Use only a continuous, undivided stream (not a fine, atomized, or shower type spray).
      (2) Pressure at the orifice from which the solvent emerges shall not exceed (10) ten- psig and shall not cause liquid solvent to splash outside the solvent container.
      (3) In an in-line-cleaning machine, a shower-type spray is allowed, provided that the spraying is conducted in a totally confined space that is separated from the environment.

(4) Exceptions to the foregoing subsections 1), 2), and 3) are provided for in Special Non-vapor Cleaning Situations in the section titled the same below.

e) The Permittee shall not cause agitation of a cleaning-solvent in a cleaning machine by sparging with air or other gas. Covers shall be placed over ultrasonic cleaners when the cleaning cycle exceeds (15) fifteen seconds;

f) The Permittee shall not place porous or absorbent materials in or on a cleaning machine. This includes, but is not limited to, cloth, leather, wood, and rope. No object with a sealed wood handle, including a brush, is allowed;

g) The ventilation rate at the cleaning machine shall not exceed 65 cfm per square foot of evaporative surface (20 $m^3/min/m^2$), unless that rate must be changed to meet a standard specified and certified by a Certified Safety Professional, a Certified Industrial Hygienist, or a licensed professional engineer experienced in ventilation, to meet health and safety requirements;

h) Limit the vertical speed of mechanical hoists moving parts in and out of the cleaning machine to a maximum of 2.2 inches per second and (11) eleven ft/min (3.3 m/min);

i) The Permittee shall prevent cross contamination of solvents regulated by Section 304 of Rule 331 with solvents that are not so regulated. Use signs, separated work-areas, or other effective means for this purpose. This includes those spray gun cleaning solvents that are regulated by another rule.

[County Rule 331 §303.1] [SIP Rule 331 §303.1]

2) When using cleaning-solvent, other than Low-VOC Cleaner, in any solvent cleaning machine (degreaser) or dip tank, the Permittee shall provide the following signage requirements on the machine, or within 3¼ feet (1 meter) of the machine, a permanent, conspicuous label, or placard which includes, at a minimum, each of the following applicable instructions, or its equivalent:

a) "Keep cover closed when parts are not being handled." (This is not required for remote reservoir cleaners.)

b) "Drain parts until they can be removed without dripping."

c) "Do not blow off parts before they have stopped dripping."

d) "Wipe up spills and drips as soon as possible; store used spill rags [or 'wiping material'] in covered container."

e) "Don't leave cloth or any absorbent materials in or on this tank."

f) For cleaning machines with moving parts such as hoists, pumps, or conveyors, post: "Operating instructions can be obtained from _____" where the Permittee shall list a person or place where the instructions are available.

[County Rule 331 §303.2] [SIP Rule 331 §303.2]

E. Solvent Specification:

All cleaning solvents, except Low-VOC Cleaners, shall be conforming solvents. A conforming solvent is one which has a total VOC vapor pressure at 68ºF (20ºC) not exceeding one (1) millimeter of mercury column maximum total VOC vapor pressure.

[County Rule 331 §304] [SIP Rule 331 §304]

F. Batch Cleaning Machines:

1) The Permittee shall equip each batch-cleaning machine with remote reservoir, including the cabinet type(s), with the following:

a) A sink-like work area or basin which is sloped sufficiently towards the drain so as to prevent pooling of cleaning-solvent.
b) A single, unimpeded drain opening or cluster of openings served by a single drain for the cleaning-solvent to flow from the sink into the enclosed reservoir. Such opening(s) shall be contained within a contiguous area not larger than 15.5 square inches (100 cm^2).
c) Provide a means for drainage of cleaned parts such that the drained solvent is returned to the cleaning machine.

[County Rule 331 §305.1] [SIP Rule 331 §305.1]

2) The Permittee shall equip each batch-cleaning machine without a remote reservoir with all of the following:
a) Have and use an internal drainage rack or other assembly that confines within the freeboard all cleaning-solvent dripping from parts and returns it to the hold of the cleaning machine (degreaser).
b) Have an impervious cover which when closed prevents cleaning-solvent vapors in the cleaning machine from escaping into the air/atmosphere when not processing work in the cleaning machine. The cover shall be fitted so that in its closed position the cover is between the cleaning-solvent and any lip exhaust or other safety vent, except that such position of cover and venting may be altered by an operator for valid concerns of flammability established in writing and certified to by a Certified Safety Professional or a Certified Industrial Hygienist to meet health and safety requirements.
c) The freeboard height shall be no less than 6 inches (15.2 cm). Freeboard height for batch cleaning machines is the vertical distance from the solvent/air interface to the least elevated point of the top-rim when the cover is open or removed, measured during idling mode.
d) The freeboard zone shall have a permanent, conspicuous mark that locates the maximum allowable solvent level which conforms to the applicable freeboard requirements.

[County Rule 331 §305.2][SIP Rule 331 §305.2]

G. Special Non-Vapor Cleaning Situations:
1) Blasting/Misting with Conforming Solvent: Any person blasting or misting with conforming solvent shall operate and equip the device(s) as follows:
a) Equipment: The device shall have internal drainage, a reservoir or sump, and a completely enclosed cleaning chamber, designed so as to prevent any perceptible liquid from emerging from the device; and
b) Operation: The device shall be operated such that there is no perceptible leakage from the device except for incidental drops from drained, removed parts.

[County Rule 331 §307.1][SIP Rule 331 §307.1]

H. Monitoring and Record Keeping:
1) The Permittee shall maintain a current list of cleaning-solvents; state the VOC-content of each in pounds VOC per gallon of material or grams per liter of material.
2) If the Permittee uses any cleaning-solvent subject to the vapor-pressure limits of County Rule 331 §304.1 shall have on site the written value of the total VOC vapor pressure of each such solvent in one of the following forms:
a) A manufacturer's technical data sheet,

b) A manufacturer's safety data sheet (MSDS), or
c) Actual test results.

3) The Permittee shall record the amount of cleaning-solvent used at the end of each month for the previous month. Show the type and amount of each make-up and all other cleaning-solvent.

4) Annually the Permittee shall document the use of concentrate that is used only in the formulation of Low VOC Cleaner.

5) Annually the Permittee may, for purposes of recording usage, give cleaning-solvents of similar VOC content a single group-name, distinct from any product names in the group. The total usage of all products in that group are then recorded under just one name. (In such case the Permittee shall also keep a separate list that identifies the product names of the particular solvents included under the group name.) To the group name shall be assigned the highest VOC content among the members of that group, rounded to the nearest 10th of a pound of VOC per gallon of material, or to the nearest gram VOC per liter of material.

[County Rule 331 §501][SIP Rule 331 §501]

I. Reporting:

The Permittee shall include the following information in each semiannual compliance report:

1) Certification from a responsible company official stating the Permittee's compliance status with the permit conditions specifically applicable to the Permittee's solvent cleaning.

2) The monthly summary of the solvent usage and legal disposal of solvents for the six month semiannual reporting period

3) A summary of any testing that may have been performed during the period.

[County Rule 210 §302.1.e]

J. Partial Exemption

Small Cleaners: The provisions of Sections 303 through 307 of County Rule 315 do not apply to any non-vapor cleaning machine (degreaser) or dip-tank fitting either of the following descriptions, except that these shall be covered when work is not being processed:

1) A small cleaner having a liquid surface area of 1 square foot (0.09 square meters) or less, or

2) A small cleaner having a maximum capacity of one gallon (3.79 liters) or less.

[County Rule 331 § 308.2][SIP Rule 331 § 308.2]

24. SOLVENT USE OTHER THAN DIP CLEANING:

A. Operational Requirements:

The following requirements apply to solvent cleaning operations:

1) Hand-wipe cleaning: Cleaning solvents used in hand-wipe cleaning operations shall utilize an aqueous cleaning solvent, or have a VOC composite vapor pressure less than or equal to 45 millimeters of mercury (mm Hg) at 20ºF.

2) Flush Cleaning: For cleaning solvents used in the flush cleaning of parts, assemblies, and coating unit components, the used cleaning solvent (except semi-aqueous cleaning solvents) must be emptied into an enclosed container or collection system that is kept closed when not in use or captured with wipers, provided they comply with the VOC Containment and Disposal requirements located in this section of the Permit Conditions.

[County Rule 348 §305] [SIP 348 §305]

B. VOC Containment and Disposal:
All fresh and used VOC containing material, including but not limited to cleaning solvents, coatings, thinners, rags, and their residues, shall be stored in closed, leak free, legibly labeled containers when not in use. In addition, the Permittee must implement handling and transfer procedures to minimize spills during filling and transferring the cleaning solvent to or from enclosed systems, vats, waste containers, and other cleaning operation equipment that hold or store fresh or used cleaning solvents.

[County Rule 348 §307] [SIP 348 §307]

C. Record Keeping:
1) Maintain a current list of all aqueous and semi-aqueous hand-wipe cleaning solvents used with corresponding water contents.
2) Maintain a current list of all vapor pressure compliant hand-wipe cleaning solvents in use with their respective vapor pressures or, for blended solvents, VOC composite vapor pressures and records of the monthly usage of such cleaning solvents.
3) Maintain a current list of all hand-wipe cleaning processes using cleaning solvents with a vapor pressure greater than 45 mm Hg and records of the monthly usage of such cleaning solvents.

[County Rule 348 §501.2] [SIP 348 §501.2]

D. Reporting:
The Permittee shall include the following information in each semiannual compliance report.
1) Certification from a responsible company official stating the Permittee's compliance status with these permit conditions.
2) A summary of the usage records for each solvent and of any testing that may have been performed during the period.
3) This requirement can be combined with “Dip Cleaning” requirements contained within this Permit**.**

[County Rule 210 §302.1.e]

E. Solvent Cleaning Exemptions:
The following are exempt from the solvent cleaning requirements of County and SIP Rule 348 section 305 and the conditions of this permit that are based on that requirement.
1) Cleaning during the manufacture, assembly, installation, maintenance, or testing of components of breathing oxygen systems that are exposed to the breathing oxygen.
2) Cleaning during the manufacture, assembly, installation, maintenance, or testing of parts, subassemblies, or assemblies that are exposed to strong oxidizers or reducers (e.g. nitrogen tetroxide, liquid oxygen, hydrazine);
3) Cleaning and surface activation prior to adhesive bonding;
4) Cleaning of electronics parts and assemblies containing electronic parts;
5) Cleaning of aircraft and ground support equipment fluid systems that are exposed to the fluid, including air-to-air heat exchangers and hydraulic systems;
6) Cleaning of fuel cells, fuel tanks, and confined spaces;
7) Surface cleaning of solar cells, coated optics, and thermal control surfaces;
8) Cleaning during fabrication, assembly, installation, and maintenance of upholstery, curtains, carpet, and other textile materials used on the interior of the aircraft;

9) Cleaning of metallic and nonmetallic materials used to honeycomb cores during the manufacture or maintenance of these cores, and cleaning of the completed cores used in the manufacture of aerospace vehicles or components;
10) Cleaning of aircraft transparencies, polycarbonate, or glass substrates;
11) Cleaning and solvent usage associated with research and development, quality control, or laboratory testing;
12) Cleaning operations using nonflammable liquids conducted within 5 feet of energized electrical systems. Energized electrical systems means any AC or DC electrical circuit on an assembled aircraft once electrical power is connected, including interior passenger and cargo areas, wheel wells and tail sections; and
13) Cleaning operations identified in an Essential Use Waiver, which has been reviewed and approved by the U.S. EPA and the voting parties of the International Protocol Committee [Sections 604(d)(1) and (g)(2) of the ACT]

[County Rule 348 §308.3] [SIP 348 §308.3]

F. General Exemptions:
Cotton-tipped swabs used for very small cleaning operations and aqueous cleaning solvents are exempt from the VOC containment and disposal requirements of Rule 348 section 307 and the conditions of this permit that are based on that requirement.

[County Rule 348 §308.4] [SIP 348 §308.4]

G. Compliance Determination:
1) For aqueous and semi-aqueous cleaning solvents, manufacturers' supplied data shall be used to determine the water content.
2) For hand-wipe cleaning solvents, manufacturers' supplied data or standard engineering reference texts or other equivalent methods shall be used to determine the vapor pressure or VOC composite vapor pressure for blended cleaning solvents.

[County Rule 348 §502.1c] [SIP 348 §502.1c]

25. SPRAY COATING OPERATIONS (NON-THERMAL)

A. Operational Limitations:
1) The Permittee shall operate all spray coating equipment inside an enclosure which has at least three sides a minimum of eight feet in height and able to contain any object(s) being coated.
a) For three-sided enclosures, the Permittee shall direct the spray in a horizontal or downward pointing manner so that overspray is directed at the walls or floor of the enclosure. No spraying shall be conducted within three feet of any open end and/or within two feet of the top of the enclosure.
(1) For three-sided enclosures, the Permittee shall direct the spray in a horizontal or downward pointing manner so that overspray is directed at the walls or floor of the enclosure. No spraying shall be conducted within three feet of any open end and/or within two feet of the top of the enclosure.
(2) For enclosures with three sides and a roof, or for complete enclosures, the Permittee shall direct the spray into the enclosure so that the overspray is directed away from any opening in the enclosure. No spraying shall be conducted within three feet of any open end and/or within two feet of any open top of the enclosure.

[County Rule 315 §301.1][Locally enforceable only]

b) The Permittee shall install and operate a filtering system on any spray booth or enclosure with forced air exhaust.
   (1) The filtering system shall have an average overspray removal efficiency of at least 92% by weight, as specified in writing by the manufacturer, for the type of material being sprayed.
   (2) No gaps, sags or holes shall be present in the filters and all exhaust must be discharged into the atmosphere.

[County Rule 315 §301.2] [Locally enforceable only]

2) The Permittee shall be exempt from Subsection A of this Permit Condition if the spray coating operation is one of the following:
   a) Spray coating of buildings or dwellings, including appurtenances and any other ornamental objects that are not normally removed prior to coating;
   b) Spray coating of facility equipment or structures which are fixed in a permanent location and cannot easily be moved into an enclosure or spray booth and which are not normally dismantled or moved prior to coating;
   c) Spray coating of objects which cannot fit inside of an enclosure with internal dimensions of 10'W x 25'L x 8'H;
   d) Enclosures and spray booths and exhausts located entirely in a completely enclosed building, providing that any vents or openings do not allow overspray to be emitted into the outside air; or
   e) Coating operations utilizing only hand-held aerosol cans.

[County Rule 315 §302][Locally enforceable only]

3) The Permittee shall not apply any surface coating including any VOC-containing materials added to the original coating supplied by the manufacturer, which contain VOC in excess of the limits in Tables 25.1 and 25.2.

TABLE 25.1 VOC EMISSION LIMITS

PRIMER or TOPCOAT TYPE	VOC LIMITS (g/L)
All Primers (except Specialty or General Aviation Rework Facility Primers)	350 g/l
All Topcoats (except Specialty or General Aviation Rework Facility Topcoats)	420 g/l
General Aviation Rework Facility Primers	540 g/l
General Aviation Rework Facility Topcoats	540 g/l

TABLE 25.2 VOC EMISSION LIMITS

Type of Specialty Coating	VOC Limits (g/L)
Ablative Coating	600
Adhesion Promoter	890
Adhesive Bonding Primers: Cured at 250°F or below	850
Adhesive Bonding Primers: Cured above 250°F	1030
Adhesives: Commercial Interior	760
Adhesives: Cyanoacrylate	1,020
Adhesives: Fuel Tank	620
Adhesives: Nonstructural	360

Adhesives: Rocket Motor Bonding	890
Adhesives: Rubber-based	850
Adhesives: Structural Autoclavable	60
Adhesives: Structural Nonautoclavable	850
Antichafe Coating	660
Bearing Coating Compounds	620
Caulking and Smoothing Compounds	850
Chemical Agent-Resistant Coating	550
Clear Coating	720
Commercial Exterior Aerodynamic Structure Primer	350
Compatible Substrate Primer	350
Corrosion Prevention Compound	710
Cryogenic Flexible Primer	350
Cryoprotective Coating	600
Coatings Related To Electromagnetism And/Or Other Radiation Electric Or Radiation-Effect Coating	600
Electrostatic Discharge and Electromagnetic Interference (EMI) Coating	800
Type of Specialty Coating	**VOC Limits (g/L)**
Elevated Temperature Skydrol Resistant Commercial Primer	350
Epoxy Polyamide Topcoat	420
Fire-Resistant (Interior) Coating	800
Flexible Primer	350
Flight-Test Coatings: Missile or Single Use Aircraft	420
Flight-Test Coatings: All Other	840
Fuel-Tank Coating	720
High-Temperature Coating	850
Insulation Covering	740
Intermediate Release Coating	750
Lacquer	830
Maskant: Bonding Maskant	420
Maskant: Critical Use and Line Sealer Maskant	420
Maskant: Seal Coat Maskant	420
Metallized Epoxy Coating	740
Mold Release	780
Optical Anti-Reflective Coating	750
Part Marking Coating	850
Pretreatment Coating	780
Rain Erosion-Resistant Coating	420
Resin Surface Sealer	695
Rocket Motor Nozzle Coating	660
Scale Inhibitor	880
Screen Print Ink	840
Sealants: Extrudable/Rollable/Brushable Sealant	240
Sealants: Sprayable Sealant	600
Self-priming Topcoat	420
Silicone Insulation Material	850

Solid Film Lubricant	880
Specialized Function Coating	890
Temporary Protective Coating	250
Thermal Control Coating	800
Wet Fastener Installation Coating	675
Wing Coating	420

[County Rule 348 §301][SIP Rule 348 §301]

4) Application Equipment:
The Permittee shall use one or more of the following application techniques in applying any primer or topcoat to aerospace vehicles or components: flow/curtain coat; dip coat; roll coating; brush coating; cotton-tipped swab application; electro deposition (DIP) coating; high volume low pressure (HVLP) spraying; electrostatic spray; or any other coating application methods that can demonstrate and be approved by the Control Officer as having at least 65% transfer efficiency, which is equivalent to the transfer efficiency of HVLP or electrostatic spray application methods.
[County Rule 348 §304] [SIP Rule 348 §304]

5) Spray Gun Cleaning:
All Spray guns must be cleaned by one or more of the following methods:
a) Enclosed spray gun cleaning system, provided that it is kept closed when not in use and leaks are repaired within 14 days from when the leak is first discovered. If the leak is not repaired by the 15th day after detection, the solvent shall be removed and the enclosed cleaner shall be shut down until the leak is repaired or its use is permanently discontinued.
b) Un-atomized discharge of solvent into a waste container that is kept closed when not in use.
c) Disassembly of the spray gun and cleaning in a vat that is kept closed when not in use; or
d) Atomized spray into a waste container that is fitted with a device designed to capture atomized solvent emissions.
[County Rule 348 §306] [SIP Rule 348 §306]

6) Coating Exemptions:
The following coatings are exempted from the VOC limits set forth in Tables 25.1 and 25.2 of this Permit.
a) Touchup coatings;
b) Hand-held aerosol can operations;
c) DOD "classified" coatings;
d) Coating of space vehicles; and
e) Low usage coatings used in separate formulations in volumes of less than 50 gallons per year with a maximum exemption of 200 gallons total for such formulations applied annually.
[County Rule 348 §308.1][SIP Rule 348 §308.1]

7) Application Equipment Exemptions:
The following operations are exempt from the application equipment requirements.

a) Any situation that normally requires the use of an airbrush or an extension on the spray gun to properly reach limited access spaces;
b) The application of specialty coatings
c) The application of coatings that contain fillers that adversely affect atomization with HVLP spray guns and that the permitting agency has determined cannot be applied by any of the application methods.
d) The application of coatings that normally have a dried film thickness of less than 0.0013 centimeter (0.0005 in.) and that the Department has determined cannot be applied by any of the application methods;
e) The use of airbrush application methods for stenciling, lettering, and other identification markings; and
f) Touch up and repair operations.

[County Rule 348 §308.2][SIP Rule 348 §308.2]

B. Monitoring and Record Keeping**:**

1) The Permittee shall inspect each filter installed on a spray booth or enclosure, for gaps, sags or holes once per week
   a) Should the Permittee observe any gaps, sags or holes in any of the filters, the Permittee shall immediately repair or replace the filter and record in a logbook, the name of the inspector, and the time and date that the filter was replaced
   b) If no gaps, sags or holes are observed in any of the filters, the Permittee shall record in a logbook, the name of the inspector and the time and date that the filter was inspected.

[County Rule 210 §302.1c&d]

2) The Permittee shall inspect the facility for evidence of any spraying activity that occurred outside of the spray booth once per week and record in a log book, the name of the inspector, the time, date and observations in a log book.

[County Rule 210 §302.1d]

3) The Permittee shall maintain on file and make available to the Control Officer upon request, a copy of the manufacturer's specifications verifying that the average overspray removal efficiency for the filter is at least 92%.

[County Rule 210 §302.1d]

4) Coatings:
The Permittee using coatings listed in Table 25.1 and 25.2 shall maintain a current list of coatings in use, VOC content as applied, HAP content as applied and records of monthly usage of such materials in pounds per gallon or gram per liter.

[County Rule 348 §501.1] [SIP Rule 348 §501.1]

5) Enclosed Spray Gun Cleaners:
Any person using an enclosed spray gun cleaner shall visibly inspect the seals and all other potential sources of leaks at least once per month while the spray gun cleaner is in operation. Records of these inspections shall be kept and made available upon request by the Control Officer.

[County Rule 348 §501.3][SIP Rule 348 §501.1]

C. Reporting:

For the purposes of the semi-annual compliance certification, the Permittee shall provide the following information:

1) If the Permittee operates spray coating equipment outside of a building and inside an enclosure without fixed air exhaust, the Permittee shall provide a statement certifying the following:
   a) That the enclosure has at least three sides that are a minimum of eight feet in height;
   b) That no spraying was conducted within three feet of any open end, or within two feet of any open top of the enclosure; and
   c) That the spray is directed in a horizontal or downward pointing manner for three-sided enclosures, or away from any opening for complete enclosures and three-sided enclosures with roofs.

   [County Rule 210 §302.1.e]

2) For all spray coating equipment with a filtering system on a spray booth or enclosure with forced air exhaust, the Permittee shall provide a statement certifying the following:
   a) That each filter installed on a spray booth or enclosure was inspected for gaps, sags or holes once every week;
   b) That all filters that were observed to have gaps, sags or holes were immediately replaced; and
   c) Details of the make and manufacturer of each filter used as well as the overspray control efficiency.

   [County Rule 210 §302.1.e]

3) The Permittee shall provide a statement certifying that no spraying occurred outside of the paint booths. If evidence of spraying outside of the booth was found, the Permittee shall instead submit a statement detailing any corrective action taken in order to ensure that future spraying occurs inside the spray booth.

   [County Rule 210 §302.1.e]

4) The Permittee shall provide a summary of the following:
   a) A summary of the listed spray coatings at the facility and state the VOC and HAP content of each in pounds per gallon of material or grams per liter of material.
   b) The individual monthly usage totals for each spray coating in gallons or liters for the for the 6-month semiannual reporting period;
   c) A list of all non-compliant coatings that were used, the date they were used, the amount used and the reason for their use. If all coatings were compliant, submit a statement to that fact.

   [County Rule 210 §302.1.e]

26. HARD CHROMIUM ELECTROPLATING

A. Operational Limitations:

1) During tank operation and also apply during periods of startup and shutdown, the Permittee shall control chromium emissions discharged into the atmosphere by not allowing the concentration of total chromium in the exhaust gas stream discharged into the atmosphere to exceed 0.03 mg/dscm ($1.3*10^{-5}$ gr./dscf).

   [40CFR 63.342][County Rule 370 §302.10]

2) The Permittee shall demonstrate the size of the hard chromium electroplating facility to be designated small by limiting the cumulative rectifier capacity to less than 60 million amp hours per rolling 12-month period.

[40 CFR 63.342] [County Rule 370 §302.10]

B. Monitoring and Record Keeping:

1) The Permittee shall monitor and record the velocity pressure at the inlet to the packed bed scrubber and the pressure drop across the scrubber system once each day that any affected source is operating. To be in compliance with the standards, the scrubber system shall be operated within the allowable ranges of Table 26.1:

TABLE 26.1

Inlet Velocity Pressure	0.22" – 0.28 " of water column
Differential Pressure across the system	0.3" – 2.3" of water column

[40 CFR §63.343(c)(2)(ii)] [County Rule 370 §302.10]

2) The Permittee shall maintain the following records:

a) Inspection records for the packed bed scrubber and monitoring equipment, to document that the inspection and maintenance required by the work practice standards of 40CFR §63.342 and Table 1 of 40CFR §63.342 have taken place. The record can take the form of a checklist and should identify the device inspected, the date of inspection, a brief description of the working condition of the device during inspection, and any actions taken to correct deficiencies found during the inspection.

b) Records of all maintenance performed on the affected source, the packed bed scrubber, and monitoring equipment.

c) Records of each occurrence, duration, and cause (if known) of each malfunction of process, packed bed scrubber, and monitoring equipment.

d) Records of actions taken during periods of malfunction when such actions are inconsistent with the operation and maintenance plan.

e) Other records, which may take the form of checklists, necessary to demonstrate consistency with the provisions of the operation and maintenance plan required by 40CFR§63.342(f)(3).

f) Test reports documenting results of all performance tests.

g) All measurements as may be necessary to determine the conditions of performance tests, including measurements necessary to determine compliance procedures of 40 CFR§63.344(e).

h) Records of monitoring data required by 40CFR§63.343(c) that are used to demonstrate compliance with the standard including the date and time the data are collected.

i) The specific identification (i.e., the date and time of commencement and completion) of each period of excess emissions, as indicated by monitoring data, that occurs during malfunction of the process, wet scrubber, or monitoring equipment.

j) The specific identification (i.e., the date and time of commencement and completion) of each period of excess emissions, as indicated by monitoring data, that occurs during periods other than malfunction of the process, add-on air pollution control, or monitoring data.

k) The total process operating time of the affected source during the semi-annual reporting period.
l) Records of actual cumulative rectifier capacity of hard chromium electroplating tanks at a facility expended during each month of the reporting period, and the total capacity expended to date for a reporting period.
m) All documentation supporting the notifications and reports required by 40 CFR§ 63.9, §63.10
n) All records shall be maintained for a period of 5 years in accordance with 40CFR§63.10(b)(1).

[40 CFR §63.346(b)] [County Rule 370 §302.10]

C. Reporting:
The semi-annual report shall also contain the following information at a minimum:

1) The Permittee shall file semiannual monitoring reports with the Control Officer, Attn: Large Source Compliance Supervisor. The initial reporting period shall begin on the permit issuance date and shall cover a period of 6 months or less. The second and subsequent reporting periods shall be in 6-month intervals after the end of the initial reporting period. The semiannual monitoring reports shall be filed by the end of the month following the reporting period. Each report shall cover all instances of deviations from these permit conditions during the reporting period, the cause of the deviations if any were present, and any applicable corrective actions taken.

[County Rule 210 §302.1 e (1)]

2) Ongoing compliance status reports.
a) The Permittee shall submit a summary report to the Control Officer to document the ongoing compliance status of the affected source. The report shall contain the following information and shall be submitted semiannually:
(1) The company name and address of the affected source;
(2) An identification of the operating parameter that is monitored (actual cumulative rectifier capacity) for compliance determination, as required by CFR40§63.343(c);
(3) The relevant emission limitation for the affected source, and the operating parameter value, or range of values, that correspond to compliance with this emission limitation as specified in the notification of compliance status required by the requirements of the 40 CFR §63.346(b);
(4) The beginning and ending dates of the reporting period;
(5) A description of the type of process performed in the affected source;
(6) The total operating time of the affected source during the reporting period;
(7) The actual cumulative rectifier capacity expended during the reporting period, on a month-by-month basis.
(8) A summary of operating parameter values, including the total duration of excess emissions during the reporting period as indicated by those values, the total duration of excess emissions expressed as a percent of the total source operating time during that reporting period, and a breakdown of the total duration of excess emissions during the reporting period into those that are due to the process upsets, control equipment malfunctions, other known causes, and unknown causes.

(9) A certification by a responsible official as defined in 40CFR§63.2, that the work practice standards in 40CFR§63.342(f) were followed in accordance with the operation and maintenance plan for the source.

(10) If the operation and maintenance plan required by 40CFR§63.342(f)(3) was not followed, an explanation of the reasons for not following the provisions, an assessment of whether any excess emission and/or parameter monitoring exceedances are believed to have occurred, and a copy of the report(s) required by 40CFR§63.342(f)(3)(iv) documenting that the operation and maintenance plan was not followed;

(11) A description of any changes in monitoring, processes, or controls since the last reporting period.

(12) The name, title and signature of the responsible official who is certifying the accuracy of the report; and

(13) The date of the report.

b) Exceptions to the ongoing compliance reports specified in the "Ongoing compliance status reports", required by this section of the Permit Condition are as follows:

(1) The Control Officer or the Administrator determines on a case-by-case basis that more frequent reporting is necessary to accurately assess the compliance status of the source; or

(2) The monitoring data collected by the Permittee in accordance with 40CFR§343(c) show that the emission limit has been exceeded, in which case quarterly reports shall be submitted. Once the Permittee reports an exceedance, ongoing compliance status reports shall be submitted quarterly until a request to reduce reporting frequency is approved.

[40 CFR §63.347(g)] [County Rule 370 §302.10]

D. Work Practice Standards:

The Permittee is subject to work practice standards, which require completion of an operation and maintenance (O&M) plan that contains the minimum elements of 40 CFR§ 63.342(f)(3) and Table 26.2. The work practice standards of this section address operation and maintenance practices.

1) At all times, including periods of startup, shutdown, and malfunction, the Permittee shall operate and maintain any affected source, including associated packed bed scrubber and monitoring equipment, in a manner consistent with good air pollution control practices, consistent with the operation and maintenance plan.

2) Malfunctions shall be corrected as soon as practicable after their occurrence in accordance with the operation and maintenance plan.

3) Operation and maintenance requirements established pursuant to section 112 of the Act are enforceable and independent of emissions limitations or other requirements in relevant standards.

[40 CFR §63.342(f)] [County Rule 370 §302.10]

TABLE 26.2: SUMMARY OF WORK PRACTICE STANDARDS

Packed-bed scrubber (PBS)

Work Practice Standards	Frequency

1. Visually inspect device to ensure there is proper drainage, no chromic acid buildup on the packed beds, and no evidence of chemical attack on the structural integrity of the device	1. 1/quarter
2. Visually inspect ductwork from tank to the control device to ensure there are no leaks	2. 1/quarter
3. Add fresh makeup water to the packed bed	3. Whenever makeup is needed

[40 CFR §63.342(f)][County Rule 370 §302.10]

E. Testing Requirements:

1) The Permittee is required to conduct a performance test of the packed bed scrubber system that is used to control emissions from hard chromium electroplating tanks. This performance test must be completed no later than 180 days after the issuance of the Title V Permit. The Permittee shall conduct the following performance tests using the same test methods within a window of 24 - 30 months from the initial test date.

The Permittee shall use either EPA Method 306 or Method 306A, to determine the chromium concentration from the hard chromium electroplating tanks. The sampling time and sample volume for each run of Methods 306 and 306A, shall be at least 120 minutes and 1.70 dscm (60 dscf) respectively. Methods 306 and 306A shall allow the measurement of either total chromium or hexavalent chromium emissions. Sources using chromic acid baths can demonstrate compliance with the emission limits of 40 CFR Sec. 63.342 by measuring either total chromium or hexavalent chromium. Hence, the hexavalent chromium concentration measured by these methods is equal to the total chromium concentration for the affected operations.

During the performance test, the Permittee complying with the emission limitations in 40CFR§63.342 through use of a packed bed scrubber system shall determine the outlet chromium concentration using the procedures in 40CFR§63.344(c), and shall establish as site specific operating parameters the pressure drop across the system and the velocity pressure at the common inlet of the control device, setting the value that corresponds to compliance with the applicable emission limitation using procedures in 40CFR§63.344(d) (4) & (5). The Permittee may conduct multiple performance tests to establish a range of compliant operating parameter values. Alternatively, the Permittee may set as the compliant value the average pressure drop and inlet velocity pressure measured over three test runs of one performance test, and accept ± 1 inch of water column from the pressure drop value and ±10 percent from the velocity pressure values as the compliant range.

[40 CFR §63.344)] [County Rule 370 §302.10]

2) Notification of Performance Test:

a) The Permittee shall notify the Department and the Administrator in writing of his or her intention to conduct a performance test at least 60 calendar days before the test is scheduled to begin to allow the Department to have an observer present during the test. Observation of the performance test by the county is optional.

b) In the event the Permittee is unable to conduct the performance test as scheduled, the provisions of 40CFR§63.7(b)(2) apply.

c) After a Title V permit has been issued, the Permittee is required to submit to the Control Officer a notification of compliance status, signed by the responsible official (as defined in 40 CFR §63.2) who shall certify its accuracy, attesting to whether the affected source has complied with this subpart. The notification of compliance status shall be submitted to the Department. The notification shall list for each affected source

(1) The applicable emission limitation and methods that were used to determine compliance with this limitation.

(2) The test report documenting the results of the performance test, which contains the elements required by 40CFR§63.344(a), including measurements and calculations to support the special compliance provisions of 40 CFR §63.344(e).

(3) For each monitored parameter, the specific operating parameter value, or range of values, that corresponds to compliance with the applicable emission limit.

(4) The methods that will be used to determine continuous compliance, including a description of monitoring and reporting requirements.

(5) The description of each air pollution control technique for each emission point.

(6) A statement that the Permittee has completed and has on file the operation and maintenance plan as required by the work practice standards in 40CFR§63.342(f).

(7) Records to support that the facility is small. Records from any 12-month period preceding the compliance date shall be used.

(8) A statement by the Permittee as to whether the source has complied with the provisions of this subpart.

d) The notification of compliance status shall be submitted to the Department no later than 90 calendar days following completion of the compliance demonstration required by 40 CFR §63.7 & §63.43(b).

[40 CFR 60 §63.347(d)] [County Rule 370 §302.10]

3) Testing Protocol:

a) Performance tests shall be conducted under such conditions, as the Control Officer shall specify based upon representative performance of the source or facility. The Permittee shall make available to the Control Officer such records as may be necessary to determine the conditions of the performance tests. Operations during periods of start-up, shutdown, and malfunction shall not constitute representative conditions of performance tests unless otherwise specified in the applicable standard.

[County Rule 270 §403]

b) The Permittee shall submit a test protocol to the Department for review and approval at least 30 days prior to the emissions test.

[County Rule 270 §301.1] [County Rule 280 §301.5]

c) The Permittee shall notify the Department in writing at least two weeks in advance of the actual time and date of the emissions test so that the Department may schedule a representative to attend.

[County Rule 270 §404]

d) The Permittee shall complete and submit a report to the Department within 30 days after completion of the emissions test. The report shall summarize the results of the testing in sufficient detail to allow a compliance determination to be made.
[County Rule 270 §§301.1 & 401]

F. Operation and Maintenance Plan:

1) The Permittee must have on file with the Department an approved O&M Plan for the packed bed scrubber to control Chromium emissions.
[40 CFR 60 §63.342(f)] [County Rule 370 §302.10]

27. VOC STORAGE TANKS

A. Operational Limitations:

1) The Permittee can not store any volatile organic liquid (VOL) that has a true vapor pressure greater or equal to 27.6 kPa (207 mmHg) in any storage vessel greater than 75 m^3.
[40 CFR 60 §110b][County Rule 360 §301.17]

2) The Permittee shall not transport any VOL that has a true vapor pressure greater than 1.5 psia, (10.3 kPa), in a delivery vessel.
[County Rule 210 §302.1b]

3) The Permittee shall limit annual throughput of methanol in the Building 422 underground methanol tank to less than 88,301 gallons methanol per year. Usage calculations shall be made monthly and assessed on a rolling twelve month basis.
[County Rule 210 §302.1b]

B. Monitoring and Record Keeping:

1) The Permittee shall keep copies of records readily accessible showing the dimensions of the storage vessels and an analysis showing the capacity for each of the storage vessels. This record shall be kept for the life of the source.
[40 CFR 60.116b(b)][County Rule 360 §301.17]

2) The Permittee shall keep copies of records readily accessible showing the VOL contained in each storage vessel and that the maximum true vapor pressure of each VOL at 92°F or a temperature from available data of the storage temperature.
[40 CFR 60 §110b][County Rule 360 §301.17]

3) Available data on the storage temperature may be used to determine the maximum true vapor pressure as determined below.

a) For vessels operated above or below ambient temperatures, the maximum true vapor pressure is calculated based upon the highest expected calendar-month average of the storage temperature. For vessels operated at ambient temperatures, the maximum true vapor pressure is calculated based upon the maximum local monthly average ambient temperature as reported by the National Weather Service.

b) The vapor pressure may be obtained by the following.

(1) Available data on the Reid vapor pressure and the maximum expected storage temperature based on the highest expected calendar-month average temperature of the stored product may be used to determine the maximum

true vapor pressure from the nomographs contained in API Bulletin 2517 (incorporated by reference-see 40 CFR §60.17), unless the Control Officer specifically requests that the liquid be sampled, the actual storage temperature determined, the Reid vapor pressure determined from the sample(s).

(2) The true vapor pressure may be obtained from standard reference texts, or

(3) Determined by ASTM D2879-83, 96, or 97 (incorporated by reference-see 40 CFR §60.17); or

(4) Measured by an appropriate method approved by the Control Officer and the Administrator; or

(5) Calculated by an appropriate method approved by the Control Officer and the Administrator.

[40 CFR 60 §116b(e)][County Rule 360 §301.17]

4) For each vessel storing a waste mixture of indeterminate or variable composition, the maximum true vapor pressure shall be recorded as the highest maximum true vapor pressure for the range of anticipated liquid compositions to be stored using the methods described in part 3) of this section.

[40 CFR 60 §116b][County Rule 360 §301.17]

5) The Permittee shall monitor for compliance with the methanol usage limits of these Permit Conditions by monthly calculating and recording the monthly and the rolling 12 month usage of methanol. The calculations shall be made no later than the end of the following month. The 12 month rolling emissions total shall be calculated by summing the usages for the most recent complete 12 calendar months. The monthly and rolling 12 month total usage of methanol from the facility shall be calculated based upon the usage records for each month.

[County Rule 210 §302.1b]

28. THERMAL SPRAY COATING:

A. Allowable Emissions:

1) The Permittee shall not discharge or cause or allow the discharge of particulate matter into the ambient air from the thermal spray coating operation in excess of the allowable hourly emission rate determined by the following equation:

$E = 3.59\ P^{0.62}$

Where:
E = Emissions in pounds per hour, and
P = Process weight rate in tons per hour.

[County Rule 311 §301.1][SIP Rule 311 §301.1]

The total process weight from all similar operations at a facility, plant or premises shall be used for determining the maximum allowable emissions of particulate matter.

[County Rule 311 §302][SIP Rule 311 §302]

2) In the event that the Permittee exceeds the applicable standard set forth in County Rule 311 §301.1 and above, the Permittee shall comply by installing and operating an

approved emission control system.

[County Rule 311 §304][SIP Rule 311 §304]

B. Operational Limitations:

1) The Permittee shall operate the ECS at a parametric range of 6.5 to 10.5 inches of water.

[County Rule 210§302.1][SIP Rule 3]

2) The ECSs shall be operated and maintained in accordance within operating parameters specified in Operation and Maintenance (O&M) Plan most recently approved in writing by the control officer.

[County Rule 210 §302.1b]

3) The Permittee shall not bypass the approved ECS.

[County Rule 210 §302.1b]

C. Monitoring and Record Keeping:

1) The Permittee shall observe for visible emissions weekly from each of the thermal spray coating exhaust streams during normal operation. If thermal spray operation was not performed during the entire week and because of this the observations of visible emissions could not be performed, a statement to that effect shall be documented.

a) If visible emissions, other than uncombined water, are observed being discharged into the ambient air, the Permittee shall monitor for compliance with the opacity standards specified in this permit by having a certified visible emissions evaluator determine the opacity of the visible emissions being discharged into the ambient air using the techniques specified in EPA Reference Method 9.

The initial Method 9 opacity reading shall be taken within one day, (24 hours), from the time of observing visible emissions. If the emitting equipment is not operating on the day that the initial Method 9 opacity reading is required to be taken, then the initial Method 9 opacity reading shall be taken the next day that the emitting equipment is in operation. If the problem causing the visible emissions is corrected before the initial Method 9 opacity reading is required to be performed, and there are no visible emissions (excluding uncombined water) observed from the previously emitting equipment while the equipment is in normal operation, the Permittee shall not be required to conduct the Method 9 opacity readings.

Follow-up Method 9 opacity readings shall be performed by a certified visible emissions evaluator while the emitting equipment in its standard mode of operation in accordance with the following schedule:

(1) Daily:

(a) Except as provided in paragraph (3) of this Permit Condition, a Method 9 opacity reading shall be conducted each day that the emitting equipment is operating until a minimum of 14 daily Method 9 readings have occurred.

(b) If the Method 9 opacity readings required by this Permit Condition are less than 20% for 14 consecutive days, the frequency of Method 9

opacity readings may be decreased to weekly, in accordance with paragraph (2) of this Permit Condition.

(2) Weekly:

(a) If the Permittee has obtained 14 consecutive daily Method 9 readings which do not exceed 20% opacity, the frequency of Method 9 readings may be decreased to once per week for any week in which the equipment is operated.

(b) If the opacity measured during a weekly Method 9 reading exceeds 20%, the frequency of Method 9 opacity readings shall revert to daily, in accordance with paragraph (1) of this Permit Condition.

(c) If the opacity measured during the required weekly Method 9 readings never exceeds 20%, the Permittee shall continue to obtain weekly opacity readings until the requirements of paragraph (3) of this Permit Condition are met.

(3) Cease Follow-up Method 9 Opacity Monitoring:
Regardless of the applicable monitoring schedule, follow-up Method 9 opacity readings may cease if the emitting equipment, while in its standard mode of operation, has no visible emissions, other than uncombined water, during an observation taken during a Method 9 procedure.

[County Rule 210 §302.1c]

2) The Permittee shall log all visual observations including the following:

a) The date and time that the visual emissions or Method 9 reading was taken;
b) The name of the person who performed the reading;
c) Whether or not visible emissions were present;
d) The opacity of visual emissions determined by the Method 9 reading, if applicable;
e) A description of any corrective actions taken, including date, if applicable;
f) Any other related information, including all information required to be recorded pursuant to EPA Reference Method 9.

[County Rule 210 §302.1c][Locally enforceable only]

3) The Permittee shall record weekly pressure differential readings. The Permittee shall log all pressure differential readings, including the date when the reading was taken, identify each ECS, and the name or initials of the person who took the reading. The Permittee shall investigate the cause of any reading outside the range of the O&M plan to identify, correct or repair the problem and record in a log book the cause of the problem and the corrective action initiated to remedy the abnormal pressure differential reading. The Department may require the Permittee to submit a Corrective Action Plan (CAP).

[County Rule 210 §302.1c]

4) These records shall be updated each day of operation and include at a minimum the following information: a record of the total weight of all process materials including raw materials, additives, fuels, etc., which are put into a process flow at the beginning of each batch process shall be kept on site. This shall include all materials which participate in the process and are changed in mass, form, state or in other characteristics by means of their interaction in the given process. The duration of each separate batch process shall also be recorded.

(a) Batch process records**:** Maintain a record of the total weight of all process materials including raw materials, additives, and fuels which are put into a process flow at the beginning of each batch process shall be kept. This shall include all materials which participate in the process and are changed in mass, form, state or in other characteristics by means of their interaction in the given process. The duration of each separate batch process shall also be recorded.

(b) Continuous or semi-continuous process records: Maintain a daily record of the weight of all process material entering into each process including raw materials, additives, fuels, the start time and the duration of each process run. In addition to the foregoing, records shall be kept for processes which run continuously for more than 24 hours. Such records shall include the total weight of any material entering into the process over the entire duration of the process run from start up to shut down and the total elapsed time of operation.

[County Rule 311 §502.2] [SIP 311§502.2]

D. Reporting:

Semi-Annual Monitoring Report

The Permittee shall submit a semi-annual monitoring report, which shall be certified as to its truth, accuracy and completeness by a responsible official in the manner required by County Rule 210 §§301.7 and 305.1(e), and which shall contain the following information, at a minimum:

a) Deviation Reporting

The Permittee shall identify all instances of deviations from permit requirements for thermal spray coating in the semi-annual monitoring report. The Permittee shall include the probable cause of such deviations, and any corrective actions or preventive measures taken.

[County Rule 210 §302.1e(1)]

b) Visible Emissions

(1) The dates of any week that the required visible emissions observations were not taken, an explanation for the deviation from that monitoring requirement, and a description of any action taken to ensure that the future observations are performed, if applicable.
(2) Any date on which visible emissions were observed;
(3) The approximate time of the observation;
(4) Name of the observer;
(5) A description of any corrective actions taken, if any, to reduce the visible emissions;
(6) If a follow-up Method 9 reading was required, the opacity of the emissions determined by Method 9 and a copy of the visual determination of opacity record showing all information required by the Method 9.
(7) Any other related information.

[County Rule 210 §302.1e]

E. Testing Requirements for Thermal Spray:

Note: All the test protocols, notifications and reports required by this permit condition should be addressed to the attention of the Air Quality Technical Services Unit Manager.

1) The Permittee shall conduct a performance test to determine total particulate emissions from the following rotoclones;
   a) Maintenance number 92401299 located in Building 114
   b) Maintenance number 92401615 located in Building 404
   c) Maintenance number 92401219 located in Building 404
   d) Maintenance number 92401344 located in Building 114

   The testing shall be completed within 180 days after the issuance date of this permit. The testing shall be conducted in accordance with EPA Reference Method 5. Alternative testing methods may be approved by the Control Officer as provided by County Rule 270§ 301.4. The results shall be used to evaluate for compliance with County and SIP Rule 311 §301.1

   [County Rules 200 §309 and 270][SIP Rule 270]

2) Performance tests shall be conducted under such conditions as the Control Officer shall specify based upon representative performance of the source or facility. The Permittee shall make available to the Control Officer such records as may be necessary to determine the conditions of the performance tests. Operations during periods of start-up, shutdown, and malfunction shall not constitute representative conditions of performance tests unless otherwise specified in the applicable standard. The Permittee shall monitor the pressure differential across the ECS during each test to confirm or modify the operational range in the O&M Plan. The pressure differential monitoring method shall be included in the test protocol.

   [County Rule 270 §403]

3) The Permittee shall monitor and record the pressure differential across the ECS during each test to confirm or modify the operational range in the O&M Plan. The pressure differential monitoring method shall be included in the test protocol.

   [County Rule 210 §302.1c][County Rule 270 §301.4]

4) The Permittee shall provide, or cause to be provided, source testing facilities as follows:
   a) Test reports adequate for the applicable test methods
   b) Safe sampling platform(s)
   c) Safe access to sampling platform(s)
   d) Utilities for testing and sampling equipment.

   [County Rule 270 §405]

5) The Permittee shall submit separate approvable test protocols for each rotoclone to the Department for review and approval at least 30 days prior to the test.

   [County Rule 270 §301.1]

6) The Permittee shall notify the Department in writing at least two weeks in advance of the actual time and date of the emissions test so that the Department may have a representative to attend.

   [County Rule 270 §404]

7) The Permittee shall complete and submit a separate report for each test to the Department within 30 days after completion of the emissions test. The report shall

summarize the results of the testing in sufficient detail to allow a compliance determination and demonstration to be made.

[County Rule 270 §§301.1 & 401]

29. PERMIT CONDITIONS FOR ARCHITECTURAL COATING

A. Operational Limitations:

The Permittee shall limit the volatile organic compound (VOC) content of architectural coatings as follows:

1) Bituminous Pavement Sealer

The Permittee shall not apply any architectural coating manufactured after July 13, 1988, which is recommended for use as a bituminous pavement sealer unless it is an emulsion type coating.

[County Rule 335 §301][SIP Rule 335 §301]

2) Non-Flat Architectural Coating

The Permittee shall not apply any non-flat architectural coating manufactured after July 13, 1990, which contains more than 2.1 lbs (250 g/l) of volatile organic compounds per gallon of coating, excluding water and any colorant added to tint bases. These limits do not apply to specialty coatings listed in Table 29.1.

[County Rule 335 §303][SIP Rule 335 §303]

3) Flat Architectural Coating

The Permittee shall not apply any flat architectural coating manufactured after July 13, 1989, which contains more than 2.1 lbs (250 g/l) of volatile organic compounds per gallon of coating, excluding water and any colorant added to tint bases. These limits do not apply to specialty coatings listed in Table 29.1.

[County Rule 335 §304][SIP Rule 335 §304]

4) Specialty Coatings

The Permittee shall not apply any architectural coating manufactured after July 13, 1991 that exceeds the limits listed in Table 29.1. The limits are expressed in pounds of VOC per gallon of coating as applied, excluding water and any colorant added to tint bases.

TABLE 29.1 VOC LIMITATIONS

COATING	(lb/gal)
Concrete Curing Compounds	2.9
Dry Fog Coating	
Flat	3.5
Non-flat	3.3
Enamel Undercoaters	2.9
General Primers, Sealers	
and Undercoaters	2.9
Industrial Maintenance Primers and Topcoats	
Alkyds	3.5
Catalyzed Epoxy	3.5

Bituminous Coating Materials	3.5
Inorganic Polymers	3.5
Vinyl Chloride Polymers	3.5
Chlorinated Rubbers	3.5
Acrylic Polymers	3.5
Urethane Polymers	3.5
Silicones	3.5
Unique Vehicles	3.5
Lacquers	5.7
Opaque Stains	2.9
Wood Preservatives	2.9
Quick Dry Enamels	3.3
Roof Coatings	2.5
Semi-transparent Stains	2.9
Semi-transparent and Clear Wood Preservatives	2.9
Opaque Wood Preservatives	2.9
Specialty Flat Products	3.3
Specialty Primers, Sealers & Undercoaters	2.9
Traffic Coatings	
Applied to Public Streets and Highways	2.1
Applied to other Surfaces	2.1
Black Traffic Coatings	2.1
Varnishes	2.9
Waterproof Mastic Coating	2.5
Waterproof Sealers	3.3

[County Rule 335 §305][SIP Rule 335 §305]

5) Exemptions:

The VOC content requirement of this Section shall not apply to the following:

a) Architectural coatings supplied in containers having capacities of one quart or less.

b) Architectural coatings recommended by the manufacturer for use solely as one or more of the following:

(1) Below ground wood preservative coatings.
(2) Bond breakers.
(3) Fire retardant coatings.
(4) Graphic arts coatings (sign paints)
(5) Mastic texture coatings.
(6) Metallic pigmented coatings.
(7) Multi-colored paints.
(8) Quick-dry primers, sealers and undercoaters.
(9) Shellacs.
(10) Swimming pool paints.
(11) Tile-like glaze coatings.

[County Rule 335 §§306and 307][SIP Rule 335 §§306and 307]

B. Monitoring and Record Keeping:
The Permittee shall keep a material list of all coatings used. The material list shall contain the name of each coating, a short description of the material, the pounds of VOCs per gallon of coating excluding water and colorant added to tint bases, and the amount of each coating used. If the coating is exempt from the volatile organic compounds content requirements, the justification for the determination shall be documented and kept on file.

[County Rule 210 §302.1c] [County Rule 210 §302.1e]

C. Reporting:
The Permittee shall submit a report if any non-compliant architectural coatings were used during the six-month reporting period in the semi-annual monitoring report. The report shall include the name, the VOC content per gallon and the amount of any non-compliant architectural coating used on site.

[County Rule 210 §302.1e][Locally enforceable only]

30. PLATING OPERATIONS OTHER THAN CHROME PLATING

A. Operational Limitations:
1) The Permittee shall vent the exhaust gases from the acid baths to the ECSs without bypass.
2) The Permittee shall operate and maintain the ECSs in accordance with Table 30.1 in these permit conditions and the most recently submitted Operation and Maintenance (O&M) Plan. The O&M Plan shall contain, at a minimum, key operating limits and maintenance procedures acceptable to the Control Officer.
3) If an ECS is found to be operating outside of the operating limits specified in Table 30.1, the Permittee shall investigate and take corrective action necessary to bring the ECS back into proper operation.
4) The batch wastewater treatment packed bed scrubber in Building 422 Maintenance Number 92415025 shall meet the operating limits specified in Table 30.1. The batch wastewater treatment packed bed scrubber is required to be in operation when treating cyanide bearing waste, metal-bearing waste, and lead anode waste..

[County Rule 210 §302.1b]

B. Monitoring and Record Keeping:
1) The Permittee shall record the differential pressure, recirculation water flow rate, blowdown flow rate, visible emission reading (and pH if noted in Table 30.1) for the ECSs once each week that the ECS is required to be in operation. The Permittee shall also note in the log the days when the ECS was not required to be in operation and therefore no readings were required. For the batch wastewater treatment scrubber in Building 422 (Maintenance Number 92415025), the Permittee shall record the start and end time of each batch treatment of cyanide bearing waste, metal-bearing waste, lead anode waste and/or any other wastewater that has the potential for chlorine or hydrogen sulfide emissions.
2) The Permittee shall maintain all records required by the O&M Plan.
3) If an ECS is found to be operating outside of the operating limits specified in Table 30.1, the Permittee shall record the following:
   a) The date and time when the ECS was found to be operating outside of its operating limits and the date and time that it returned to operating within its limits.
   b) The results of the investigation into the cause of the excursion outside of the operating limits.

c) A description of any corrective actions taken to return the ECS to normal operation. If the ECS returned to normal operation without any actions by the Permittee, that fact shall also be recorded.

[County Rule 210 §302c&d]

C. Reporting:

Semi-Annual Monitoring Report

The Permittee shall submit a semi-annual monitoring report, which shall be certified as to its truth, accuracy and completeness by a responsible official in the manner required by County Rule 210 §§301.7 and 305.1(e), and which shall contain the following information, at a minimum:

1) Deviation Reporting

The Permittee shall identify all instances of deviations from the permit requirements of this section in the semi-annual monitoring report. The Permittee shall include the probable cause of such deviations, and any corrective actions or preventive measures taken.

[County Rule 210 §302.1e(1)]

2) Visible Emissions

a) The dates of any week that the required visible emissions observations were not taken, an explanation for the deviation from that monitoring requirement, and a description of any action taken to ensure that the future observations are performed, if applicable.
b) Any date on which visible emissions were observed;
c) The approximate time of the observation;
d) Name of the observer;
e) A description of any corrective actions taken, if any, to reduce the visible emissions;
f) If a follow-up Method 9 reading was required, the opacity of the emissions determined by Method 9 and a copy of the visual determination of opacity record showing all information required by the Method 9.

[County Rule 210 §302.1e]

TABLE 30.1 ECS OPERATING PARAMETERS (PACKED BED SCRUBBERS)

Identification Number	Building	Parameter	Limits	Frequency
92415005	422	Inlet Pressure	3.6” – 4.4” wc	Daily
92415005	422	Differential Pressure	0.3” – 2.3” wc	Daily
92415005	422	Recirculation Flowrate	175 – 225 gpm (total)	Weekly
92415005	422	Blowdown flowrate	3 – 6 gpm	Weekly
92415005	422	Visible Emissions	no visible emissions	Weekly
92415006	422	Differential Pressure	0.8” – 2.3” wc	Weekly
92415006	422	Recirculation Flowrate	175 – 225 gpm (total)	Weekly
92415006	422	Blowdown flowrate	3.0 – 6.0 gpm	Weekly
92415006	422	Visible Emissions	no visible emissions	Weekly
92415007	422	Differential Pressure	0.8” – 3.0” wc	Weekly

92415007	422	Recirculation Flowrate	150 – 190 gpm (total)	Weekly
92415007	422	Blowdown flowrate	2.0 – 5.0 gpm	Weekly
92415007	422	Visible Emissions	no visible emissions	Weekly
92415013	422	Differential Pressure	0.5" – 2.0" wc	Weekly
92415013	422	Recirculation Flowrate	25 – 50 gpm (total)	Weekly
92415013	422	Blowdown flowrate	0.5 – 1.5 gpm	Weekly
92415013	422	Visible Emissions	no visible emissions	Weekly
92415014	422	Differential Pressure	0.5" – 2.0" wc	Weekly
92415014	422	Recirculation Flowrate	25 – 50 gpm (total)	Weekly
92415014	422	Blowdown flowrate	0.5 – 1.5 gpm	Weekly
92415014	422	Visible Emissions	no visible emissions	Weekly
92415019	422	Differential Pressure	0.8" – 2.8" wc	Weekly
92415019	422	Recirculation Flowrate	125 – 180 gpm (total)	Weekly
92415019	422	Blowdown flowrate	2.0 – 5.0 gpm	Weekly
92415019	422	Visible Emissions	no visible emissions	Weekly
92415020	422	Differential Pressure	0.8" – 2.8" wc	Weekly
92415020	422	Recirculation Flowrate	125 – 180 gpm (total)	Weekly
92415020	422	Blowdown flowrate	2.0 – 5.0 gpm	Weekly
92415020	422	Visible Emissions	no visible emissions	Weekly
92415021	102	Differential Pressure	2.0" – 4.5" wc	Weekly
92415021	102	Recirculation Flowrate	30 – 40 gpm (total)	Weekly
92415021	102	Blowdown flowrate	0.5 – 1.0 gpm	Weekly
92415021	102	Visible Emissions	no visible emissions	Weekly
92415022	429	Differential Pressure	0.9" – 3.0" wc	Weekly
92415022	429	Recirculation Flowrate	250 – 360 gpm (total)	Weekly
92415022	429	Blowdown flowrate	6.0 – 9.0 gpm	Weekly
92415022	429	Visible Emissions	no visible emissions	Weekly
92415025	422	Differential Pressure	1.0" – 2.5" wc	Weekly
92415025	422	Recirculation Flowrate	160-225 gpm (total)	Weekly
92415025	422	Blowdown flowrate	3.0 – 10.0 gpm	Weekly
92415025	422	Visible Emissions	no visible emissions	Weekly
92415025	422	pH	13.0 – 14.0	Weekly
92415026	422	Differential Pressure	1.0" – 2.6" wc	Weekly
92415026	422	Recirculation	35-50 gpm (total)	Weekly

		Flowrate		
92415026	422	Blowdown flowrate	0.5 – 1.5 gpm	Weekly
92415026	422	Visible Emissions	no visible emissions	Weekly
92415026	422	pH	1.0 – 3.0	Weekly
92415027	105	Differential Pressure	0.8" – 3.0" wc	Weekly
92415027	105	Recirculation Flowrate	300-550 gpm (total)	Weekly
92415027	105	Blowdown flowrate	4.0 – 15.0 gpm	Weekly
92415027	105	Visible Emissions	no visible emissions	Weekly
92415027	105	pH	9.0 – 14.0	Weekly
92415028	105	Differential Pressure	0.8" – 3.0" wc	Weekly
92415028	105	Recirculation Flowrate	300-550 gpm (total)	Weekly
92415028	105	Blowdown flowrate	4.0 – 15.0 gpm	Weekly
92415028	105	Visible Emissions	no visible emissions	Weekly

D. Performance Test Requirements:

1) Testing Requirements:
The Permittee shall conduct performance tests on the following equipment within 60 days after the permit issuance date or within 60 days after the new applicable equipment has achieved the capability to operate at its maximum production rate on a sustained basis, whichever occurs last. The testing deadline may be extended by the Control Officer for good cause, but in no case shall the testing deadline, including test report submittal, extend beyond 180 days of the equipment startup date.
[County Rule 270 §401][SIP Rule 27 §A][40 CFR §60.8(a)]

a) Building 105 East Scrubber (92415028):
(1) The Permittee shall measure the hydrogen fluoride (HF) or hydrogen chloride (HCl) concentrations (as directed by the Control Officer) in the scrubber inlet and exhaust streams to demonstrate a minimum HF or HCl removal efficiency of at least 90% by weight. Testing shall also demonstrate compliance with all applicable HF and HCl concentrations and/or emission limits of these permit conditions.
(2) If during the initial or any following performance test at least 90% removal efficiency is demonstrated for HF or HCl, the performance test shall be repeated at five year intervals.
(3) If during the initial or any following performance test, the inlet HF or HCl concentrations are less than 10 ppmv, in lieu of demonstrating at least 90% removal efficiency, an outlet concentration of 1 ppmv or less for a single constituent from the exhaust will be an acceptable demonstration of compliance. The performance test will be repeated annually for HF or HCl (i.e., for the constituent that had an inlet concentration of less than 10 ppmv and that did not demonstrate an outlet concentration of 1 ppm or less for a single constituent) until the inlet concentration of HF or HCl is 10 ppmv or greater and at least 90% removal efficiency is demonstrated.

b) Building 105 West Scrubber (92415027):
   (1) The Permittee shall measure the HF concentrations in the scrubber inlet and exhaust streams to demonstrate a minimum HF removal efficiency of at least 90% by weight. Testing shall also demonstrate compliance with all applicable HF concentrations and/or emission limits of these permit conditions.
   (2) If during the initial or any following performance test at least 90% removal efficiency is demonstrated for HF , the performance test shall be repeated at five year intervals.
   (3) If during the initial or any following performance test the inlet HF concentration is less than 10 ppmv, in lieu of demonstrating at least 90% removal efficiency, an outlet concentration of 1 ppmv or less for HF from the exhaust will be an acceptable demonstration of compliance. The performance test will be repeated annually for HF until the inlet concentration of HF is 10 ppmv or greater and at least 90% removal efficiency is demonstrated.

c) Building 422 Ammonia Scrubber (92415026):
   (1) The Permittee shall measure the ammonia (NH_3) concentrations in the scrubber inlet and exhaust streams to demonstrate a minimum NH_3 removal efficiency of 99% by weight Testing shall also demonstrate compliance with all applicable NH_3 concentrations and/or emission limits of these permit conditions.
   (2) If during the initial or any following performance test at least 90% removal efficiency is demonstrated for NH_3, the performance test shall be repeated at five year intervals.
   (3) If during the initial or any following performance test, the inlet NH3 concentration is less than 10 ppmv, in lieu of demonstrating at least 90% removal efficiency, an outlet concentration of 1 ppmv or less for NH_3 from the exhaust will be an acceptable demonstration of compliance. The performance test will be repeated annually for NH_3 until the inlet concentration of NH3 is 10 ppmv or greater and at least 90% removal efficiency is demonstrated.

d) Building 422 Batch Wastewater Treatment Tank Scrubber (92415025):
   (1) While treating cyanide-containing bearing wastes, the Permittee shall measure the chlorine (Cl_2) concentration in the scrubber inlet and exhaust streams to demonstrate a minimum Cl_2 removal efficiency of at least 87% by weight. Testing shall also demonstrate compliance with all applicable Cl_2 concentrations and/or emission limits of these permit conditions.
   (2) If during the initial or any following performance test, at least 87% removal efficiency is demonstrated, the performance test shall be repeated at five year intervals.
   (3) If during the initial or any following performance test, the inlet Cl_2 concentration is less than 10 ppmv, in lieu of demonstrating at least 87% removal efficiency, an outlet concentration of 1 ppmv or less for Cl_2 from the exhaust will be an acceptable demonstration of compliance. The performance test will be repeated annually until the inlet concentration of

Cl_2 is 10 ppmv or greater and at least 87% removal efficiency is demonstrated.

(4) While treating metal-bearing and/or lead anode wastes, the Permittee shall measure the hydrogen sulfide (H_2S) concentration in the scrubber inlet and exhaust streams to demonstrate a minimum H_2S removal efficiency of 92%.by weight. Testing shall also demonstrate compliance with all applicable H_2S concentrations and/or emission limits of these permit conditions.

(5) If during the initial or any following performance test, at least 92% removal efficiency for H_2S is demonstrated, the performance test shall be repeated at five year intervals.

(6) If during the initial or any following performance test, the inlet H_2S concentration is less than 10 ppmv, in lieu of demonstrating at least 92% removal efficiency, an outlet concentration of 1 ppmv or less for H_2S from the exhaust will be an acceptable demonstration of compliance. The performance test will be repeated annually until the inlet concentration of H_2S is 10 ppmv or greater and at least 92% removal efficiency is demonstrated.

2) Testing Criteria:
Performance tests shall be conducted and data reduced in accordance with the test methods and procedures specified unless the Control Officer and Administrator specifies or approves minor changes in methodology to a reference method, approves the use of an equivalent test method, approves the use of an alternative method that has been determined to be acceptable for demonstrating compliance, or waives the requirement for performance tests because the Permittee has demonstrated by other means that the source is in compliance with the standard. For NSPS facilities, only EPA has the authority to waive initial testing requirements.
[County Rule 270 §402][SIP Rule 27 §B][40 CFR §60.8(b)

3) Test Methods:
Sampling sites and velocity traverse points shall be selected in accordance with EPA Test Method 1or 1A. The gas volumetric flow rate shall be measured in accordance with EPA Test Method 2, 2A, 2C, 2D, 2F, 2G or 19. The dry molecular weight shall be determined in accordance with EPA Test Method 3, 3A or 3B. The stack gas moisture shall be determined in accordance with EPA Test Method 4. These methods must be performed, as applicable, during each test run.
[County Rule 270 §301.1][SIP Rule 27 §B]

a) Building 105 East Scrubber (92415028):
(1) HF and HCl testing shall be conducted in accordance with EPA Test Method 26 or 26A.

b) Building 105 West Scrubber (92415027):
(1) HF testing shall be conducted in accordance with EPA Test Method 26 or 26A.

c) Building 422 Ammonia Scrubber (92415026):

(1) NH_3 testing shall be conducted in accordance with EPA Test Method CTM-027 (USEPA Conditional Test Method) or superseding USEPA test method for NH3.

d) Building 422 Batch Wastewater Treatment Tank Scrubber (92415025):
(1) Cl_2 and H_2S testing shall be conducted in accordance with EPA Test Method 26A.
(2) H_2S testing shall be conducted in accordance with a test method to be determined by the Control Officer.

4) Operating Conditions:
Performance tests shall be conducted under representative operating conditions and all equipment shall be operated during testing in accordance with the most recently approved O&M Plan or according to its operations manual if no O&M Plan is required. The Permittee shall make available to the Control Officer any records necessary to determine appropriate conditions for performance tests. Operations during periods of startup, shutdown, and equipment malfunction shall not constitute representative conditions for performance tests unless otherwise specified in the applicable standard or permit conditions.

[County Rule 270 §403][40 CFR §60.8(c)]

5) Monitoring Requirements:
The Permittee shall record all process and control equipment information that are necessary to document operating conditions during the test and explain why the conditions represent normal operation. Operational parameters shall be monitored and recorded at least once every 30 minutes during each of the required test runs and documented in the test report. The operational parameters monitored shall be capable of indicating that the equipment is operating within the permitted limits, both during and after the performance tests.

[County Rule 270 §301.1][SIP Rule 27 §B]

a) Building 105 East Scrubber (92415028):
The Permittee shall record the scrubber pressure drop, scrubber liquid recirculation rate and scrubber liquid pH level during the performance test. These and any additional operational parameters shall be identified in the test protocol and recorded during testing.

b) Building 105 West Scrubber (92415027):
The Permittee shall record the scrubber pressure drop, scrubber liquid recirculation rate and scrubber liquid pH level during the performance test. These and any additional operational parameters shall be identified in the test protocol and recorded during testing.

c) Building 422 Ammonia Scrubber (92415026):
The Permittee shall record the scrubber pressure drop, scrubber liquid recirculation rate and scrubber liquid pH level during the performance test. These and any additional operational parameters shall be identified in the test protocol and recorded during testing.

d) Building 422 Batch Wastewater Treatment Tank Scrubber (92415025):
The Permittee shall record the scrubber pressure drop, scrubber liquid recirculation rate and scrubber liquid pH level during the performance test. These and any additional operational parameters shall be identified in the test protocol and recorded during testing.

6) Test Protocol Submittal:
The Permittee shall submit a separate test protocol for each performance test to the Department for review and approval at least 30 days prior to each performance test. The test protocol shall be prepared in accordance with the Department's "Air Quality Performance Test Guidelines for Compliance Determination in Maricopa County" dated June 17, 2005. A completed copy of the Department's "Test Protocol Submittal Form" shall accompany each test protocol.
[County Rule 270 §301.1][SIP Rule 27 §B][40 CFR §60.8(d)]

7) Notice of Testing:
The Permittee shall notify the Department in writing at least two weeks in advance of the actual date and time of each performance test so that the Department may have a representative attend.
[County Rule 270 §404][40 CFR §60.8(d)]

8) Testing Facilities Required:
The Permittee shall install any and all sample ports or platforms necessary to conduct the performance tests, provide safe access to any platforms and provide the necessary utilities for testing equipment.
[County Rule 270 §405][SIP Rule 42][40 CFR §60.8(e)]

9) Minimum Testing Requirements:
Each performance test shall consist of three separate test runs with each test run being at least one hour in duration unless otherwise specified in the applicable standard or in this permit. The same test methods shall be conducted for both the inlet and outlet measurements, if applicable, which must be conducted simultaneously. Emissions rates, concentrations, grain loadings, and/or efficiencies shall be determined as the arithmetic average of the values determined for each individual test run. Performance tests may only be stopped for good cause, which includes forced shutdown, failure of an irreplaceable portion of the sample train, extreme meteorological conditions, or other circumstances beyond the Permittee's control. Termination of a performance test without good cause after the first test run has commenced shall constitute a failure of the performance test.
[County Rule 270 §406][40 CFR §60.8(f)]

10) Test Report Submittal:
The Permittee shall complete and submit a separate test report for each performance test to the Department within 30 days after the completion of testing. The test report shall be prepared in accordance with the Department's "Air Quality Performance Test Guidelines for Compliance Determination in Maricopa County" dated June 17, 2005. A completed copy of the Department's "Test Report Submittal Form" shall accompany each test report.

[County Rule 270 §301.1][SIP Rule 27 §B]

11) Compliance with Emission Limits:
Compliance with allowable emission limits and standards shall be determined by the performance tests specified in this permit. If test results do not demonstrate compliance with the requirements of these permit conditions, the Permittee shall make the necessary repairs and/or adjustments to the equipment and demonstrate compliance through retesting. This will not nullify the fact that test results did not demonstrate compliance with the requirements of the permit conditions or nullify any violations that may result from this noncompliance. In addition to compliance demonstrations, test results shall be used for annual emissions inventory purposes, if applicable.
[County Rule 270 §407]

12) All test extension requests, test protocols, test date notifications, and test reports required by this permit shall be submitted to the Department and addressed to the attention of the Performance Test Evaluation Supervisor.
[County Rule 270 §301.1][SIP Rule 27 §B]

31. CUTBACK AND EMULSIFIED ASPHALT:

A. Operational Limitations:

1) The VOC content of asphalt materials shall be limited as follows:

a) The Permittee shall not use or apply the following materials for paving, construction, or maintenance of highways, streets, driveways, parking lots, roads, nor shall they be applied onto soil and earthworks:

(1) Rapid cure cutback asphalt.

(2) Any cutback asphalt material, road oils, or tar which contains more than 0.5 percent by volume VOCs which evaporate at 500^0F (260^0C) or less using ASTM Test Method D 402-76.

(3) Any emulsified asphalt or emulsified tar containing more than 3.0 percent by volume VOCs which evaporate at 500^0F (260^0C) or less as determined by ASTM Method D 244-89.
[County Rule 340 §301] [SIP Rule 340 §301]

b) The Permittee shall not store for use any emulsified or cutback asphalt product which contains more than 0.5 percent by volume solvent-VOC unless such material lot includes a designation of solvent-VOC content on data sheet(s) expressed in percent solvent-VOC by volume.
[County Rule 340 §303] [SIP Rule 340 §303]

2) The VOC content limitations of this Permit Condition do not apply to the following:

a) Asphalt that is used solely as a penetrating prime coat and which is not a rapid cure cutback asphalt. Penetrating prime coats do not include dust palliatives or tack coats.
[County 340 §302.1] [SIP Rule 340 §302.1]

b) The Permittee may use up to 3.0 percent solvent-VOC by volume for batches of asphalt rubber which cannot meet paving specifications by adding heat alone only if request is made to the Control Officer, who shall evaluate such requests on a case-by-case basis. The Permittee shall keep complete records and full information is supplied including

savings realized by using discarded tires. The Permittee shall not exceed 1100 lbs (500 kg) usage of solvent-VOC in asphalt rubber in a calendar year unless the Permittee can demonstrate that in the previous 12 months no solvent-VOC has been added to at least 95 percent by weight of all the asphalt rubber binder made by the Permittee or caused to be made for the Permittee. This Permit Condition does not apply to batches which yield 0.5 percent or less solvent-VOC evaporated using the test in County Rule 340 § 502.1.

[County 340 §302.3] [SIP Rule 340 §302.3]

B. Monitoring and Record Keeping:
The Permittee shall keep daily records of the amount and type of asphaltic/bituminous material containing more than 0.5 percent by volume solvent-VOCs which is used at the facility. Records must show the solvent-VOC content of this material.

Material Safety Data Sheets (MSDS) or technical data sheets shall be kept available for any asphalt materials used at the facility. Records must be maintained in a readily accessible location and must be made available to the Control Officer upon request.

[County 340 §501] [SIP Rule 340 §501] [County Rule 210 §302.1.c.(2)]

C. Reporting:
The Permittee shall include the following information in the semiannual compliance report required by these Permit Conditions:

1) A statement as to whether the recordkeeping requirements of these Permit Conditions relating to asphalt usage were met.
2) A listing of any asphalt used that exceeded the VOC content limitations of Permit Condition A. 1) of this section and whether the exceedance was covered by an exemption covered by Permit Condition A. 2) of this section or whether it was a deviation from the requirements of this Permit Condition.

County Rule 210 §302.1.e.(1)]

32. TURBINE ENGINE TEST CELLS:

A. NSR/PSD Synthetic Minor Limitations

1) The Permittee shall not exceed the limits for each modification set forth in Table 32.1. The limits are a combined total for the modifications that included two test cells where specified.

[County Rules 210§§§ 201, 301.8b(4), 302.1b]

2) The Permittee shall use the emission factors set forth in Table 32.2 when calculating the emissions for all the test cells including the calculations for the NSR/PSD annual CO and NOx limits found in Table 32.1.

County Rule 210 § 302.1b]

Table 32.1

Pollutant	Emission Factor (lbs./MMBtu)
NOx	0.88
CO	0.7
VOC	0.4

Table 32.2

Modification	Date Modified	NOx (tons/year)	CO (tons/year)
Test Cell #C-917/817	1999	10.25	90
Test Cells #930 & #931 (combined)	1979	36	90
Test Cells #941 & 942 (combined)	1985	36	90
Test Cells #943 & 944 (combined)	1987	36	90

3) The Permittee shall use the emission factors set forth in AP-42, Table 3.1-4 and 3.1-5 when calculating the HAP emissions for all the test cells.

[County Rule 210 § 302.1b]

B. Monitoring and Record Keeping

The Permittee shall keep the following records for each test cell listed in Table 32.1

1) The date, duration, fuel usage and type of engine tested on a daily basis
2) The Permittee shall calculate the monthly emissions of NO_x and CO for all tests of the turbine engines for each of the following test cells
   a) Test Cell #C-917/817
   b) Test Cell #930
   c) Test Cell #931
   d) Test Cell #941
   e) Test Cell #942
   f) Test Cell #943
   g) Test Cell #944

   These calculations shall be made no later than the end of the following month.

   [County Rule 210 § 302.1d] [County Rule 210§ 301.8b(4)]

3) The Permittee shall calculate the rolling twelve month total emissions for CO and NO_x for each of the following groups of test cells. These calculations shall be made no later than the last day of the following month
   a) Test Cell #C-917/817
   b) Test Cells #930 & #931
   c) Test Cells #941 & 942
   d) Test Cells #943 & 944

   [County Rule 210 § 302.1d] [County Rule 210§ 301.8b(4)]

C. Reporting:

1) For the purposes of the semi-annual monitoring report, the Permittee shall provide the following information for the following test cells.

   Rolling twelve month totals of CO and NOx, including the calculations using the emission factors for each of the following groups of test cells
   a) The emissions from the Test Cell #C-917/817
   b) The combined emissions from Test Cell #930 & #931
   c) The combined emissions from Test Cells #941 & 942
   d) The combined emissions from Test Cells #943 & 944

   [County Rule 210 §302.1e]

2) If at any time the rolling twelve month total for the following groups of test cells exceed the following emissions, the Permittee shall submit to the Department, new turbine engine specific emission factors or a testing protocol to determine turbine engine specific factors from the effected test cell(s) for approval. This document shall be submitted within 60 days from the day the exceeding rolling twelve month total was calculated.

Table 32.3

Modification	NOx (tons/year)	CO (tons/year)
Test Cell #C-917 / 817	7.7	68
Test Cells #930 & #931 (combined)	27	68
Test Cells #941 & 942 (combined)	27	68
Test Cells #943 & 944 (combined)	27	68

[County Rule 210 §302.1e]

33. FUEL BURNING EQUIPMENT:

The effected equipment include all air heaters and boilers listed in the equipment list

A. Allowable Emissions

1) For equipment having a heat input rating of 4,200 million BTU/hr or less, the maximum allowable emissions (E) shall be determined by the following equation:

$E = 1.02\ Q^{0.769}$

Where:

E = maximum allowable particulate emission rate in pounds-mass per hour, and
Q = The heat output in million BTU per hour

[SIP Rule 311 §304.1

2) Opacity Requirements:

a) The Permittee shall not discharge into the ambient air from any single source of emissions any air contaminant, other than uncombined water, in excess of 20 percent opacity, except as provided in County Rule 300 §302.

[County Rule 300 §301][Locally enforceable only]

b) The opacity of any plume or effluent from any source of emissions, other than uncombined water, shall not be greater than 40 percent opacity as determined by Reference Method 9 in the Arizona Testing Manual.

[SIP Rule 30 §A]

B. Operational Limitations:

The Permittee shall use only natural gas to fuel the boilers and air heaters at the facility.

[County Rule 210 §302.1b]

C. Monitoring and Reporting Requirements

The Permittee shall conduct a weekly facility walk-through and observe for visible emissions from the boilers and air heaters. This visible emission observation may be conducted with the overall facility walkthrough required by Permit Condition in the Facility Wide Monitoring and Recordkeeping Requirements.

[County Rule 300] [County Rule 210 §302.1c]

D. Permit Conditions for the two (2) 36 MMBtu boilers in building 202

1) Operational Limitations:
The Permittee shall use only natural gas to fuel the affected boilers
[County Rule 323 §303.1][Locally Enforceable Only]

2) Emission Limitations
Nitrogen Oxides:
The Permittee shall comply either with Permit Condition 33D2) a) or b) below:

a) Establish initial optimal baseline concentrations for NOx and CO utilizing the initial design burner specifications or manufacturer's recommendations to ensure good combustion practices. Tune the unit annually in accordance with good combustion practices or a manufacturer's procedure, if applicable, that will include the following at a minimum:
1) Inspect the burner system and clean and replace any components of the burner as necessary to minimize emissions of NOx and CO, and
2) Inspect the burner chamber for areas of impingement and remove if necessary, and
3) Inspect the flame pattern and make adjustments as necessary to optimize the flame pattern, and
4) Inspect the system controlling the air-to-fuel ratio and ensure that it is correctly calibrated and functioning properly, and
5) Measure the NOx and the CO concentration of the effluent stream after each adjustment was made with a handheld portable monitor to ensure optimal baseline concentrations are maintained or
[County Rule 323 §304.1a][Locally Enforceable Only]

b) Limit nitrogen oxide emissions to no more than the following amounts:
1) 155 ppm heat input, calculated as nitrogen dioxide, when burning gaseous fuel. During steady state operations, this test result using EPA Reference Method(s) 7 shall be based upon the arithmetic mean of the results of three test runs. Each test run shall have a minimum sample run time of one hour.

2) 230 ppm heat input, calculated as nitrogen dioxide, when burning liquid fuel. During steady state operations, this test result using EPA Reference Method(s) 7 shall be based upon the arithmetic mean of the results of three test runs. Each test run shall have a minimum sample run time of one hour.
[County Rule 323 §304.1b][Locally Enforceable Only]

3) Monitoring and Recordkeeping Requirements

a) The Permittee shall record for each affected boiler the type of fuel used, amount of fuel used and the days and hours of operation.
[County Rule 323 §501.1][Locally Enforceable Only]

b) Good Combustion Practice – Measurements of the temperature differential across the burners of turbines per County Rule 323, subsection 301.2, results of evaluation and corrective action taken to reduce the temperature differential or a

finding that the temperature differential returned to the range listed in subsection 301.2 a or b without any action by the owner or operator.

[County Rule 323 §501.3][Locally Enforceable Only]

c) The Permittee shall record the date that any tuning procedure was performed on the particular unit and at a minimum: stack gas temperature, flame conditions, nature of the adjustment and results of the nitrogen oxide and carbon monoxide concentrations obtained by using a handheld monitor after each adjustment.

[County Rule 323 §501.4][Locally Enforceable Only]

E. Previous Permit Conditions for Rite Boiler in Building 105
Maintenance Number 93010041

1) Operational Limitations:

a) The Permittee shall limit natural gas consumption for the Rite Boiler to no more than 18 MMSCF for any rolling 12-month period.

b) Natural gas is the only fuel source permitted.

c) The Permittee shall install, operate and monitor a functioning, dedicated non re-settable usage meter on the natural gas fuel supply line for the Rite boiler.

[County Rule 210§ 301.8b(4)]

2) Monitoring and Recordkeeping:

The Permittee shall keep monthly records of the natural gas usage for the Rite boiler. The numbers to be documented include the monthly total and a rolling 12-month total of natural gas used. The records shall be made to the Control Officer upon request:

[County Rule 210§ 301.8b(4)]

3) Reporting:

For the purposes of the semi-annual monitoring report, the Permittee shall provide the rolling twelve month emission totals of NOx, including the calculations using AP-42 emission factors for the Rite boiler in building 105.

[County Rule 210§ 302.1(e)]

F. Previous Permit Conditions for Two (2) Superior Mohawk Boilers in Building 422 Maintenance Numbers and the Two (2) GasTech Air Heaters located immediately outside Building 204

For the purposes of these Permit Conditions the rolling twelve month total allowable emissions shall be calculated monthly using the most recent twelve calendar months;

1) Emission Limitations:

a) The Permittee shall not allow emissions of Oxides of Nitrogen (NOx) from the two (2) Superior Mohawk Boilers in building 422 in excess of 1.1 tons during any rolling twelve month period

b) The Permittee shall not allow emissions of Oxides of Nitrogen (NOx) from the two (2) GasTech Air Heaters located immediately outside building 204 in excess of 3.2 tons during any rolling twelve month period.

[County Rule 210§ 301.8b(4)]

2) Operating Conditions:

(a) The Permittee shall not use more than 22 x 10^6 ft^3 of natural gas in the combination of the two (2) Superior Mohawk Boilers in building 422 during any rolling twelve month period

(b) The two (2) Superior Mohawk Boilers in building 422 shall not be operated unless the natural gas supply line has a functioning, dedicated, non-resettable usage meter on it in good operating order.

(c) The Permittee shall not use more than 45.5 x 10^6 ft^3 of natural gas in the combination of the two (2) GasTech Air Heaters located immediately outside building 204 in excess of 3.2 tons during any rolling twelve month period.

(d) The two (2) GasTech Air Heaters located immediately outside building 204 shall not be operated unless the natural gas supply line has a functioning, dedicated, non-resettable usage meter on it in good operating order.

[County Rule 210§ 301.8b(4)]

3) Monitoring and Recordkeeping

(a) The Permittee shall monitor for compliance with the Emissions Limitations of these Permit Conditions by taking a monthly reading of the dedicated fuel meter on the Superior Mohawk Boilers in building 422. The readings shall be taken during the first three days of each calendar month for the previous month of operation. Reading data and date shall be recorded simultaneously with the monitoring. The Permittee shall then calculate and record the rolling twelve month total usage of fuel using the data from the most recent twelve calendar months.

(b) The Permittee shall monitor for compliance with the Emissions Limitations of these Permit Conditions by taking a monthly reading of the dedicated fuel meter on the GasTech Air Heaters located immediately outside building 204. The readings shall be taken during the first three days of each calendar month for the previous month of operation. Reading data and date shall be recorded contemporaneously with the monitoring. The Permittee shall then calculate and record the rolling twelve month total usage of fuel using the data from the most recent twelve calendar months.

[County Rule 210§ 301.8b(4)]

4) Reporting:

For the purposes of the semi-annual monitoring report, the Permittee shall provide the rolling twelve month emission totals of NOx, including the calculations using AP-42 emission factors for the following;

(a) The rolling twelve month combined emission totals of NOx for the two (2) Superior Mohawk Boilers in building 422. The report shall include all calculations and use AP-42 emission factors.

(b) The rolling twelve month combined emission totals of NOx for the two (2) GasTech Air Heaters located immediately outside building 202. The report shall include all calculations and use AP-42 emission factors.

[County Rule 210§ 302.1(e)]

34. BIOLOGICALLY ENHANCED SOIL VAPOR EXTRACTION SYSTEM

A. General Operational Limitations

1) For all Alternate Operating Scenarios (AOS), the Biologically Enhanced Soil Vapor Extraction (BSVE) system shall be constructed and operated with all the required equipment described in Appendix B. All equipment shall be operated according to the requirements of this permit whenever soil vapor is extracted. The Permittee shall not deviate from any of the equipment described in Appendix B. All equipment shall be installed, maintained, and operated in accordance with this permit and the most recent version of the Operations and Maintenance (O&M) Plan approved in writing by the Control Officer. Changes to the operating parameter ranges specified in this permit shall require a significant permit revision.

   Permittee shall not store, discard, or dispose of VOC or VOC-containing material in a way intended to cause or allow the evaporation of VOC to the atmosphere. All control measures required by the conditions of this permit shall be taken to prevent such evaporation.

   [County Rule 200 §301] [County Rule 210 §302.1k and §405] [County Rule 330 §306]

2) The BSVE system shall be fully operational prior to the Permittee performing any air injection or soil vapor extraction from any monitoring/injection/extraction wells at the facility. Fully operational is defined as the point where all permitted equipment listed in Appendix B is capable of operating according to the manufacturers' specifications.

   [County Rule 200 §301]

3) The BSVE system extracted soil vapor airflow shall be limited to a maximum of 5,300 standard cubic feet per minute (scfm).

   [County Rule 200 §301]

4) When operating in AOS-1, AOS-2, or AOS-3, the overall air injection flow rate shall not exceed the extraction flow rate, and at all times the injection flow rate shall be equal to or less than 1,650 scfm when operating in AOS-1 or 2,650 scfm when operating in AOS-2 or AOS-3.

   [County Rule 210 §302.1b]

5) When the average inlet concentrations of TPH, benzene, and vinyl chloride have been reduced to less than 4,200 µg/L, 9.7 µg/L, and 0.3 µg/L, respectively, and the BSVE system is operating under AOS-4 or AOS-5, there is no restriction on the air injection flow rate.

   [County Rule 210 §302.1b]

6) The Permittee shall operate the BSVE system under AOS-1 as defined in Section 34.F. of this permit at all times unless one of the approved alternate operating scenarios are implemented as allowed by these permit conditions. Any change from one alternate operating scenario to another must be recorded in the operations log.

   [County Rule 210 §302.1k(1) and §403.7]

7) Where a stack, vent or other outlet is at such a height that air contaminants are discharged to adjoining property, the Control Officer may require the installation of abatement equipment or the alteration of such stack, vent, or other outlet to a degree that will adequately dilute, reduce or eliminate the discharge of air contaminants to adjoining property.

[SIP Rule 32][County Rule 320 § 303]

8) The Permittee shall not emit gaseous or odorous air contaminants from equipment, operations or premises under his control in such quantities or concentrations as to cause air pollution.

[SIP Rule 32] [County Rule 320 § 300]

9) Under AOS 4 and 5, Permittee shall demonstrate an overall VOC removal efficiency of at least 90% or shall achieve a stack exhaust VOC concentration of 10 ppmv or less measured as methane.

[County Rule 210 §302.1b] [County Rule 330 §306]

B. Allowable Emissions

1) The Permittee shall not exceed the emissions in Table 34-1 when operating under any Alternate Operating Scenario, including during changes to different alternate operating scenarios specified in this permit.

[County Rule 210 §302.1b]

Table 34-1
BSVE System Emission Limits

Pollutant	Emissions (lb/hr)	Emissions (tons/yr)	Emission Calculation Notes
NO_x	0.88	3.86	Note 1,2
CO	0.74	3.24	Note 1,3
SO_2	0.40	1.75	Note 1,4
PM_{10}	0.067	0.29	Note 1,5
VOCs	1.49	6.52	Note 1,6
HF plus HCl	1.0	1.5	Note 1,7
Vinyl Chloride	0.024	0.041	Note 1,8
Benzene	0.23	0.40	Note 1,9
Dioxin/Furans	0.000008 grams/hr	0.068 grams/yr	Note 1,10
Total Hazardous Air Pollutants	2.4	3.89	Note 1,11

[County Rule 210 §302.1b]

Note 1: Compliance with hourly emission limits shall be determined through stack testing required by this permit. Annual emissions shall be calculated on a rolling twelve (12) month basis. For the first twelve (12) months, the average monthly

emission rate for months where the system was operational shall be assumed to apply to the months where the system was not operational.

Note 2: NOx emissions shall be calculated from the actual supplemental fuel used in the thermal oxidizers multiplied by an emission factor of 100 lbs/mmscf plus the estimated methane entering the system, based on field inlet monitoring and converted to mmscf, multiplied by an emission factor of 100 lbs/mmscf.

Note 3: CO emissions shall be calculated from the actual supplemental fuel used in the thermal oxidizers multiplied by an emission factor of 84 lbs/mmscf plus the estimated methane entering the system, based on field inlet monitoring and converted to mmscf, multiplied by an emission factor of 84 lbs/mmscf.

Note 4: SO2 emissions shall be calculated from the actual supplemental fuel used in the thermal oxidizer multiplied by an emission factor of 0.6 lbs/mmscf plus the amount of total petroleum hydrocarbons entering system (in lbs/hr) multiplied by an emission factor of 0.000834 (unitless).

Note 5: PM_{10} emissions shall be calculated from the actual supplemental fuel used in the thermal oxidizers multiplied by an emission factor of 7.6 lbs/mmscf plus the estimated methane entering the system, based on field inlet monitoring and converted to mmscf, multiplied by an emission factor of 7.6 lbs/mmscf.

Note 6: When operating under AOS-1, AOS-2, or AOS-3, annual VOC emissions shall be calculated from the actual supplemental fuel used in the thermal oxidizers multiplied by an emission factor of 5.5 lbs/mmscf plus the amount of VOCs entering the BSVE system, as reported in the most recent sampling of the BSVE system inlet(s), and first applying the control efficiency determined from the most recent approved performance test (for the thermal oxidizer) and then applying a control efficiency of 70% (for the vapor-phase granular activated carbon [VGAC] vessels) only to the VOCs entering the BSVE system (not the VOCs generated through fuel combustion).

When operating under AOS-4 or AOS-5, VOC emissions shall be calculated from the amount of VOCs entering the BSVE system, as reported in the most recent sampling of the BSVE system inlet(s), and applying the removal efficiency determined during the most recent performance test conducted under AOS-4 or AOS-5, as applicable.

Note 7: HCl and HF emissions shall be calculated from the concentrations measured during the most recent approved performance test multiplied by the monthly run time and average monthly flow rate.

Note 8: Vinyl chloride emissions shall be calculated from the average concentration of the samples analyzed in the most recent month of sampling from the effluent of the first potassium permanganate adsorber (PPA) vessel in series multiplied by the blower run time and average flow rate since the last sampling event.

Note 9: Benzene emissions shall be calculated from the average concentration of the samples analyzed in the most recent month of sampling from the effluent of the first VGAC vessel in series multiplied by the blower run time and average flow rate since the last sampling event.

Note 10: Dioxin/Furan emissions shall be calculated from the most recent approved performance test results, assuming that the results apply from the time of the most recent test until the time of the calculation.

Note 11: Total HAPs emissions shall be calculated by adding the calculated HCl and HF emissions to those VOC emissions that are HAPs.

2) The Permittee shall not discharge into the ambient air from the exhaust stack any air contaminants, other than uncombined water, in excess of 20% opacity.
[County Rule 300] [Locally enforceable only]

C. Monitoring and Recordkeeping Requirements

1) The Permittee shall maintain copies of the manufacturers' specifications for all equipment identified in the equipment list in Appendix B.
[County Rule 210 §302.1b]

2) The Permittee shall retain records of all required monitoring data and support information on-site for a minimum of five years from the date of the monitoring sample, measurement, report, or application or until the site closure letter is issued by ADEQ, whichever is later. Records older than five years shall be retained in a location chosen by the Permittee.
[County Rule 210 §302.1d(2)]

3) The Permittee shall keep a log and record the operating scenario under which the source is operating.
[County Rule 210 §302.1b]

4) The Permittee shall monitor all the vapor extraction wells at least annually for TPH, using EPA Method 18, and speciated VOCs, using EPA Method TO-15. The initial monitoring event shall occur within 60 days from the date the BSVE system becomes fully operational as defined in Condition 34.A.2 of this permit. The list of speciated VOCs to be monitored shall be included in the Operations and Maintenance Plan, but at a minimum shall include the VOCs listed in Table 34-2.

Table 34-2
Speciated VOC List

Compound	Compound
1,1,1-Trichloroethane	Dichlorodifluoromethane
1,1,2-Trichlorotrifluoroethane	Ethylbenzene
1,1-Dichloroethane	Methyl Tert-Butyl Ether
1,1-Dichloroethene	Methylene Chloride
1,2-Dichloroethane	Tetrachloroethene
1,4-Dichlorobenzene	Toluene

1,4-Dioxane	Trans-1,2-Dichloroethene
Benzene	Trichloroethene
Carbon Tetrachloride	Trichlorofluoromethane
Chloroethane	Vinyl Chloride
Chloroform	Xylenes, Total
Cis-1,2-Dichloroethene	

[County Rule 210 §302.1k(1)]

5) The Permittee shall monitor and record the concentrations of TPH, benzene and vinyl chloride at the BSVE system inlet at least monthly. TPH shall be monitored using EPA Method 18 and benzene and vinyl chloride shall be monitored using EPA Method TO-15. The recorded values shall be used to determine when a change of operating scenarios is permissible and shall be used to demonstrate whether the qualifying thresholds associated with AOS-3, -4, or -5 continue to be met when Permittee is operating under one of these scenarios.

6) If, at any time after switching to AOS 3, 4, or 5, the system influent concentrations of TPH, benzene, or vinyl chloride exceed the respective qualifying threshold(s) included in Conditions 34.H.1, 34.I.1.b, or 34.J.1.b of this permit (as applicable), the Permittee shall immediately implement the appropriate AOS.

7) The Permittee shall perform daily visual stack emission checks of the BSVE system. If visible emissions are observed, Permittee shall follow the procedures required by Condition 20 of this permit.

[County Rule 200 §309]

8) The Permittee shall continuously monitor and record the inlet flow rate to the injection manifold.

[County Rule 210 §302.1c(2)]

9) The Permittee shall continuously measure and record the quantity of soil vapor entering the BSVE system.

[County Rule 210 §302.1c(2)]

D. Reporting Requirements

1) The Permittee shall submit reports of all monitoring, recordkeeping, and testing activities required by the conditions of this permit.

[County Rule 210 §302.1b]

2) The Permittee shall maintain all records required by the O&M Plans.

[County Rule 210 §302]

3) The Permittee shall submit a semi-annual monitoring report, which shall be certified as to its truth, accuracy and completeness by a responsible official in the manner required by County Rule 210 §§301.7 and 305.1(e), and which shall contain the following information, at a minimum:

a. Deviation Reporting

The Permittee shall identify all instances of deviations from the permit requirements of this section in the semi-annual monitoring report. The Permittee shall include the probable cause of such deviations, and any corrective actions or preventive measures taken.

b. Visible Emissions

i. The dates of any week that the required visible emissions observations were not taken, an explanation for the deviation from that monitoring requirement, and a description of any action taken to ensure that the future observations are performed, if applicable;

ii. Any date on which visible emissions were observed;

iii. The approximate time of the observation;

iv. Name of the observer; and

v. A description of any corrective actions taken, if any, to reduce the visible emissions.

c. If any unit is found to be operating outside of the operating limits specified in these permit conditions, the Permittee shall record the following:

i. The date and time when any unit was found to be operating outside of its operating limits and the date and time that it returned to operating within its limits.

ii. The results of the investigation into the cause of the excursion outside of the operating limits.

iii. A description of any corrective actions taken to return the unit to normal operation. If the unit returned to normal operation without any actions by the Permittee, that fact shall also be recorded.

d. Extraction Well Monitoring

The Permittee shall at least annually monitor extraction well concentrations for benzene, vinyl chloride, and TPH, and the monitoring results shall be included in the semi-annual report.

[County Rule 210 §§301.7 and 305.1(e)] [County Rule 210 §302.1e]

E. Performance Test Requirements

1) Testing Requirements: The Permittee shall conduct performance tests on the following equipment within 60 days after the permit issuance date or within 60 days after the new applicable equipment has achieved the capability to operate on a sustained basis,

whichever occurs last. The testing deadline may be extended by the Control Officer for good cause, but in no case shall the testing deadline, including test report submittal, extend beyond 180 days after the initial startup of the equipment for AOS-1 and AOS-2.
[County Rule 200 §309][County Rule 270 §401][SIP Rule 27 §A]
[Arizona Testing Manual for Air Pollutant Emissions]

a. Thermal Oxidizer

i. The Permittee shall measure VOC concentrations in the thermal oxidizer inlet and exhaust streams to demonstrate a minimum VOC destruction efficiency of 99 % by weight. Testing shall be conducted under representative operating conditions, including flow rate, and all equipment shall be operated during testing in accordance with the most recently approved O&M Plan and with the conditions required by this permit. Testing shall be designed to exclude exempt compounds, such as methane, to ensure that the reported results are representative of the true destruction efficiency for regulated VOCs.
[County Rule 270 § 407]

ii. The VOC performance test shall be conducted annually with tests occurring at least 9 months apart.
[County Rule 270 § 401]

iii. If, during the initial or any following approved performance test, the inlet VOC concentration is less than 500 ppmv, in lieu of demonstrating at least 99% destruction efficiency by weight, an outlet concentration of 5 ppmv or less for total VOCs as propane from the exhaust will be acceptable to demonstrate compliance.
[County Rule 270 § 401]

b. BSVE System

i. The Permittee shall measure the concentration of VOCs at the BSVE stack. Testing shall demonstrate compliance with all applicable VOC emission limits of the Permit Conditions.
[County Rule 270 § 407]

ii. When operating in AOS-4 and AOS-5, the Permittee shall also measure the concentration of VOCs at the BSVE system inlet when the test is conducted at the BSVE stack in Condition 34.E.1.b.i of this permit. Both tests shall be used to demonstrate a minimum VOC removal efficiency of 90% by weight, or a stack VOC exhaust concentration of 10ppmv or less measured as methane. Testing shall be designed to exclude exempt compounds, such as methane, to ensure that the reported results are representative of the true removal efficiency for regulated VOCs.
[County Rule 270 § 407]

iii. The VOC performance test shall be conducted on the BSVE system annually and within 30 days of switching between alternate operating

scenarios. Annual VOC performance tests shall occur at least 9 months apart. The VOC performance test required for switching between alternate operating scenarios may be conducted as an annual VOC performance test if the switch between alternate operating scenarios occurs within 30 days prior to when the annual test would normally be scheduled.

[County Rule 270 § 401]

iv. The Permittee shall measure the concentrations of dioxins and furans at the BSVE stack. Testing shall demonstrate compliance with all applicable dioxin/furan emission limits of these Permit Conditions.

[County Rule 270 § 407]

v. The Permittee shall conduct the dioxin/furan performance test within 30 days of switching between AOS-1 and AOS-2.

[County Rule 270 § 401]

vi. When the Permittee is operating under AOS-1, AOS-2 or AOS-3, the dioxin/furan performance test shall be conducted at the BSVE stack as follows:

a. Annually for the first two years with tests occurring at least 9 months apart.

[County Rule 270 § 401]

b. Following the first two annual performance tests, the dioxin/furan performance tests shall be conducted as follows:

1. If, during either of the approved performance tests conducted in the first two years, at least one of the toxic equivalent (TEQ) emission results is greater than 0.0000065 grams per hour (0.686 nanograms per dry standard cubic meter), the dioxin/furan performance test shall be conducted again the following year.

[County Rule 270 § 401]

2. If, during all of the approved performance tests conducted in the first two years, all of the TEQ emission results are less than 0.0000065 grams per hour, but at least one result is greater than 0.000004 grams per hour, another test will be conducted in two (2) years.

[County Rule 270 § 401]

3. If, during all of the approved performance tests conducted in the first two years, all of the TEQ emission results are less than 0.000004 grams per hour, another test will be conducted in 4 years.

[County Rule 270 § 401]

c. All subsequent dioxin/furan performance tests shall be conducted as follows:

1. If, during the most recent approved performance test, the TEQ emission result is greater than 0.0000065 grams per hour (0.686 nanograms per dry standard cubic meter), the dioxin/furan performance test shall be conducted again the following year.

[County Rule 270 § 401]

2. If, during the most recent approved performance test, the TEQ emission result is less than 0.0000065 grams per hour, but greater than 0.000004 grams per hour, another test will be conducted in two (2) years.

[County Rule 270 § 401]

3. If, during the most recent approved performance test, the TEQ emission result is less than 0.000004 grams per hour, another test will be conducted in 4 years.

[County Rule 270 § 401]

vii. When the Permittee is operating under AOS-4 or AOS-5, dioxin/furan performance testing is not required.

[County Rule 270 § 401]

viii. The Permittee shall measure the HCl and HF outlet concentrations at the BSVE stack. Testing shall demonstrate compliance with all applicable HCl and HF emission limits of the Permit Conditions.

[County Rule 270 § 407]

ix. The Permittee shall conduct the HCl and HF performance test within 30 days of switching between AOS-1 and AOS-2.

[County Rule 270 § 401]

x. When the Permittee is operating under AOS-1, AOS-2 or AOS-3, the HCl and HF performance test shall be conducted at the BSVE stack annually with tests occurring at least 9 months apart.

[County Rule 270 § 401]

xi. When the Permittee is operating under AOS-4 or AOS-5, HCl and HF performance testing is not required.

[County Rule 270 § 401]

2) Testing Criteria: Performance tests shall be conducted and data reduced in accordance with the test methods and procedures specified in the Test Methods section of this permit condition unless otherwise specified by the Control Officer and/or Administrator. The Control Officer and/or Administrator may specify or approve minor changes in methodology to a reference method, approves the use of an equivalent test method, approve the use of an alternative method that has been determined to be acceptable for

demonstrating compliance, or waive the requirement for performance tests because the Permittee has demonstrated by other means that the source is in compliance with the standard. For NSPS facilities, only EPA has the authority to waive initial testing requirements.

[County Rule 270 §402][SIP Rule 27 §B][40 CFR §60.8(b)]

3) Test Methods: Sampling sites and velocity traverse points shall be selected in accordance with EPA Test Method 1or 1A. The gas volumetric flow rate shall be measured in accordance with EPA Test Method 2, 2A, 2C, 2D, 2F, 2G or 19. The dry molecular weight shall be determined in accordance with EPA Test Method 3, 3A or 3B. The stack gas moisture shall be determined in accordance with EPA Test Method 4. These methods must be performed, as applicable, during each test run.

[County Rule 270 §301.1][SIP Rule 27 §B]

a. BSVE System

i. VOC testing shall be conducted on the BSVE system in accordance with EPA Test Method 25A with speciated VOC results. The list of speciated VOCs shall be included in the Operations and Maintenance Plan, but at a minimum shall include the VOCs listed in Table 34-2 in 34.C.4 of this permit. Testing to quantify exempt compounds, such as methane and ethane, shall be conducted in accordance with EPA Test Method 18.

[County Rule 270 § 402]

ii. The Permittee shall use EPA Method 23 to determine dioxin and furan emissions.

[County Rule 270 § 402]

iii. HCl and HF testing shall be conducted at the stack in accordance with EPA Test Method 26 or 26A.

[County Rule 270 § 402]

4) Operating Conditions: Performance tests shall be conducted under representative operating conditions and all equipment shall be operated during testing in accordance with the most recently approved O&M Plan or according to its operations manual if no O&M Plan is required. The Permittee shall make available to the Control Officer any records necessary to determine appropriate conditions for performance tests. Operations during periods of startup, shutdown, and equipment malfunction shall not constitute representative conditions for performance tests unless otherwise specified in the applicable standard or permit conditions.

[County Rule 270 §403]

5) Monitoring Requirements During Performance Testing: The Permittee shall record all process and control equipment information that are necessary to document operating conditions during the test and explain why the conditions represent normal operation. Operational parameters shall be monitored and recorded at least once every 30 minutes during each of the required test runs and documented in the test report. The operational parameters monitored shall be capable of indicating that the equipment is operating within the permitted limits, both during and after the performance tests.

a. Thermal Oxidizer

The Permittee shall record the combustion chamber temperature and combustion chamber set-point temperature during the performance test. These and any additional operational parameters shall be identified in the test protocol and recorded during testing.

[County Rule 270 §301.1]

b. Caustic Scrubber

The Permittee shall record the caustic scrubber pressure drop, caustic scrubber liquid recirculation rate and caustic scrubber liquid pH level during the performance test. These and any additional operational parameters shall be identified in the test protocol and recorded during testing.

[County Rule 270 §301.1][SIP Rule 27 §B]

6) Test Protocol Submittal: The Permittee shall submit a separate test protocol for each performance test to the Department for review and approval at least 30 days prior to each performance test. The test protocol shall be prepared in accordance with the most recent version of the Department's "Air Quality Performance Test Guidelines for Compliance Determination in Maricopa County." A completed copy of the Department's "Test Protocol Submittal Form" shall accompany each test protocol.

[County Rule 270 §301.1][SIP Rule 27 §B]

7) Notice of Testing: The Permittee shall notify the Department in writing at least two weeks in advance of the actual date and time of each performance test so that the Department may have a representative attend.

[County Rule 270 §404]

8) Testing Facilities Required: The Permittee shall install any and all sample ports or platforms necessary to conduct the performance tests, provide safe access to any platforms and provide the necessary utilities for testing equipment.

[County Rule 270 §405][SIP Rule 42]

9) Minimum Testing Requirements: Each performance test shall consist of three separate test runs with each test run being at least one hour in duration unless otherwise specified in the applicable standard or in this permit. The same test methods shall be conducted simultaneously for both the inlet and outlet measurements or justification for any necessary exceptions shall be provided in the test protocol. Emissions rates, concentrations, grain loadings, and/or efficiencies shall be determined as the arithmetic average of the values determined for each individual test run. Performance tests may only be stopped for good cause, which includes forced shutdown, failure of an irreplaceable portion of the sample train, extreme meteorological conditions, or other circumstances beyond the Permittee's control. Termination of a performance test without good cause after the first test run has commenced shall constitute a failure of the performance test.

[County Rule 270 §406]

10) Test Report Submittal: The Permittee shall complete and submit a separate test report for each performance test to the Department within 30 days after the completion of testing. The test report shall be prepared in accordance with the most recent version of the Department's "Air Quality Performance Test Guidelines for Compliance Determinations in Maricopa County." A completed copy of the Department's "Test Report Submittal Form" shall accompany each test report. Note: If circumstances prevent report submission within the required timeframe, Department approval must be requested as soon as possible and a description of the circumstance will be required for evaluation.

[County Rule 270 §301.1][SIP Rule 27 §B]

11) Compliance with Emission Limits: Compliance with allowable emission limits and standards shall be determined by the performance tests and other requirements specified in this permit. If test results do not demonstrate compliance with the requirements of these permit conditions, the Permittee shall make the necessary repairs and/or adjustments to the equipment and demonstrate compliance through retesting. This will not nullify the fact that test results did not demonstrate compliance with the requirements of the permit conditions or nullify any violations that may result from this noncompliance. In addition to compliance demonstrations, test results shall be used for annual emissions inventory purposes if the Permittee is required to complete an emissions inventory survey.

[County Rule 270 §407]

12) All test extension requests, test protocols, test date notifications, and test reports required by this permit shall be submitted to the Department and addressed to the attention of the Performance Test Evaluation Supervisor.

[County Rule 270 §301.1][SIP Rule 27 §B]

F. Alternate Operating Scenario 1 (AOS-1)

1) General Operational Limitations

a. The BSVE system shall operate only with the equipment listed in Appendix B under the “AOS-1” operating scenario.

[County Rule 210 §302.1b]

b. Exhaust from the vapor extraction blower shall be completely routed to the thermal oxidizer and associated equipment. The equipment (including the thermal oxidizer) shall be fully operational at all times that vapors are being extracted from any of the extraction wells. Fully operational is defined as the point where all permitted equipment listed in Appendix B under the “AOS-1” operating scenario is capable of operating according to the manufacturers’ specifications.

[County Rule 210 §302.1b]

c. All permitted equipment listed in Appendix B under “AOS-1” shall be interlocked so that if one of the listed pieces of equipment shuts down (except the vapor injection blower), the entire BSVE system shuts down.

[County Rule 210 §302.1b]

d. The vapor injection blower shall be interlocked with the vapor extraction blowers so that if any one of the extraction blowers shuts down, the vapor injection blower shall be immediately shut down.

[County Rule 210 §302.1b]

e. The AOS-1 BSVE system shall have a maximum airflow capacity of 3,300 scfm.

[County Rule 210 §302.1b]

2) Thermal Oxidizer

a. Operational Limitations

i. The thermal oxidizer shall be operated and maintained in accordance with the requirements of the O&M Plan most recently approved in writing by the Control Officer.

[County Rule 210 §302.1b]

ii. The Permittee shall implement a combustion temperature set point of 1500°F. A combustion temperature of less than 1450 °F which occurs during soil vapor processing is a deviation.

[County Rule 210 §302.1b]

iii. The Permittee shall use only pipeline quality natural gas as the supplemental fuel in the thermal oxidizer.

[County Rule 210 §302.1b]

iv. The Permittee shall operate the thermal oxidizer such that the exhaust from the thermal oxidizer shall be vented to the caustic scrubber without bypass.

[County Rule 210 §302.1b]

v. The destruction efficiency of the oxidizer shall be at least 99% by weight as demonstrated during the most recent approved performance test. If, during the most recent approved performance test, the inlet VOC concentration is less than 500 ppmv, an outlet concentration of 5 ppmv or less for total VOCs as propane from the exhaust will be acceptable to demonstrate compliance in lieu of demonstrating the minimum destruction efficiency of 99%.

[County Rule 210 §302.1b] [County Rule 330 §306]

vi. The thermal oxidizer shall have a minimum residence time of 0.75 seconds at the maximum permitted flow rate specified in Condition 34.F.1.e of this permit.

[County Rule 210 §302.1b]

b. Monitoring and Recordkeeping Requirements

i. The Permittee shall install and maintain a temperature recording device with an accuracy of ± 5 ºF to continuously measure and record the process temperature of the thermal oxidizer.

[County Rule 210 §302.1d]

ii. The Permittee shall install and maintain a flow measurement device to continuously measure and record the quantity of soil vapor entering the thermal oxidizers.

[County Rule 210 §302.1d]

iii. The supplemental fuel flow rate to each thermal oxidizer shall be continuously recorded.

[County Rule 210 §302.1d]

iv. Continuous temperature readings shall be performed and recorded for the thermal oxidizer whenever the thermal oxidizer operates.

a. The Permittee shall log all temperature readings, including the date and time when the reading was taken, the identity of each thermal oxidizer, the name and initials of the person who took the reading and any other related information.

[County Rule 210 §302.1c]

v. The Permittee shall comply with all conditions of Section 34.K. Operation Outside Control Device Operating Parameter Limits or Ranges.

vi. The Permittee shall maintain a record from the manufacturer showing the oxidizer meets the requirements of Condition 34.F.2.a.vi of this permit.

[County Rule 210 §302.1c]

3) Caustic Scrubber

a. Operational Limitations

i. The caustic scrubber shall be operated and maintained in accordance with the requirements of the O&M Plan most recently approved in writing by the Control Officer.

[County Rule 210, §302.1b]

ii. The caustic scrubber shall be operated at a minimum pH of 7 or within 0.5 pH units of the pH used during the most recent approved HCl and HF performance test, whichever is greater

[County Rule 210, §302.1b]

iii. The caustic scrubber shall be operated at a differential pressure between 0.5 and 50 inches of water column (in. w.c.).

[County Rule 210 §302.1b]

iv. The caustic scrubber shall be operated with a set point equal to or greater than the water recirculation flowrate achieved during the most recent performance test which demonstrated compliance. A water recirculation rate which is 90% or less of the set point is a deviation. The water recirculation flowrate shall be maintained all times above 25 gallons per minute (gpm).

[County Rule 210 §302.1b]

v. The caustic scrubber shall be operated at an air flow rate between 1,000 and 3,300 scfm.

[County Rule 210 §302.1b]

vi. The caustic scrubber exhaust shall pass through two vapor-phase granulated activated carbon (VGAC) units connected in series without bypass.

[County Rule 210 §302.1b]

b. Monitoring and Recordkeeping Requirements

i. The Permittee shall properly install, maintain, and operate monitoring devices to continuously measure the caustic scrubber pressure drop, water recirculation rate, air flow rate and water level in the caustic scrubber. The Permittee shall properly install, maintain, and operate monitoring devices to measure the pH in the caustic scrubber at least once per day.

[County Rule 210 §302.1c]

ii. The Permittee shall record the caustic scrubber pressure drop, water recirculation rate, air flow rate, pH and water level at least once per day for each day that the caustic scrubber is in operation.

[County Rule 210 §302.1c]

iii. The Permittee shall log all caustic scrubber pressure drop readings, including the date when the reading was taken, the identity of each caustic scrubber, the name and initials of the person who took the reading and any other related information.

[County Rule 210 §302.1c]

iv. The Permittee shall log all water recirculation rates and water level, including the date when the reading was taken, the identity of each caustic scrubber, the name and initials of the person who took the reading and any other related information.

[County Rule 210 §302.1c]

v. The Permittee shall log all air flow rate readings, including the date when the reading was taken, the identity of each caustic scrubber, the name and initials of the person who took the reading and any other related information.

[County Rule 210 §302.1c]

vi. The Permittee shall log all pH readings, including the date when the reading was taken, the identity of each caustic scrubber, the name and initials of the person who took the reading and any other related information.

[County Rule 210 §302.1c]

vii. The Permittee shall comply with all conditions of Section 34.K. Operation Outside Control Device Operating Parameter Limits or Ranges.

4) Granular Activated Carbon

a. Operational Limitations and Standards

i. The Permittee shall maintain a minimum of two (2) VGAC units connected in series.

[County Rule 210 §302.1b]

ii. The VGAC units shall be operated and maintained in accordance with the requirements of the O&M Plan most recently approved in writing by the Control Officer.

[County Rule 210 §302.1b]

iii. The VGAC units shall be operated at a temperature between 50 and 145 °F and at a relative humidity between 10 and 65 percent.

[County Rule 210 §302.1b]

iv. Changeout of the first VGAC unit in series shall be initiated when the benzene concentration between the two VGAC units is determined to exceed 3.2 µg/L or when the first VGAC unit's outlet VOC mass flow rate is equal to the VOC pound-per-hour permit limit in Table 34-1, whichever is earlier. The testing required by this permit, VOC monitoring required in 34.F.4.b.i. of this permit and other relevant factors, including the working capacity of the VGAC unit, shall be used to calculate the time the VGAC unit can operate before the threshold is reached.

[County Rule 210 §302.1b]

v. After changing out the first VGAC unit, the second VGAC unit shall become the first VGAC unit and the new VGAC unit shall become the second VGAC unit in the treatment train. During changeout activities, the BSVE system shall continue to operate and soil vapor may be temporarily treated in a single VGAC unit (the second VGAC unit). Treatment with a single VGAC unit shall not occur for more than 8 hours in a 60-day period, and shall only occur during VGAC changeout activities.

[County Rule 210 §302.1b]

vi. The exhaust from the VGAC units shall pass through two potassium permanganate units connected in series without bypass.

[County Rule 210 §302.1b]

vii. The Permittee shall store spent carbon removed from the system in closed containers prior to removal offsite.

[County Rule 210 §302.1c]

b. Monitoring and Recordkeeping Requirements

i. Inlet and outlet VOC concentrations of each VGAC unit, as propane, shall be measured daily in the field using a photo-ionization detector (PID) or a flame ionization detector (FID). The instrument used shall be calibrated according to manufacturer specifications. The outlet concentration from the first VGAC unit in series shall be used to calculate the outlet mass flow rate (pound per hour). This calculation shall be documented and used, in part, to determine changeout.

[County Rule 210 §302.1c]

ii. The temperature and relative humidity of the inlet gas to the first VGAC unit shall be recorded daily.

[County Rule 210 §302.1c]

iii. The outlet of the first VGAC unit shall be tested for benzene using EPA Method TO-15 in accordance with the following schedule:

a. Once per week for the first 3 months of operation.

b. Once every two weeks for the 4th through 6th months of operation.

c. Once per month for every month thereafter.

[County Rule 210 §302.1c]

iv. The Permittee shall log all temperature readings, including the date when the reading was taken, the identity of each VGAC unit, the name and initials of the person who took the reading and any other related information.

[County Rule 210 §302.1c]

v. The Permittee shall log all relative humidity readings, including the date when the reading was taken, the identity of each VGAC unit, the name and initials of the person who took the reading and any other related information.

[County Rule 210 §302.1c]

vi. The Permittee shall log all VOC readings and calculations, including the date when the reading was taken, the identity of each VGAC unit, the

name and initials of the person who took the reading and any other related information.

[County Rule 210 §302.1c]

vii. The Permittee shall record all monitoring results and calculations and shall document each changeout event, including the anticipated and actual changeout date.

[County Rule 210 §302.1c]

viii. The permittee shall maintain calibration records for the PID or FID used to monitor VOC concentrations.

[County Rule 210 §302.1c]

ix. The Permittee shall comply with all conditions of Section 34.K. Operation Outside Control Device Operating Parameter Limits or Ranges.

5) Potassium Permanganate

a. Operational Limitations and Standards

i. The Permittee shall maintain a minimum of two (2) potassium permanganate adsorber (PPA) units connected in series.

[County Rule 210 §302.1b]

ii. The PPA units shall be operated and maintained in accordance with the requirements of the O&M Plan most recently submitted to the Control Officer.

[County Rule 210 §302.1b]

iii. Changeout of the first PPA unit in series shall be initiated when the vinyl chloride concentration between the two PPA units is determined to exceed 0.33 µg/L, or when the first PPA unit's outlet vinyl chloride mass flow rate is equal to the vinyl chloride pound-per-hour permit limit in Table 34-1, whichever is earlier. The testing required by this permit, including the vinyl chloride monitoring required in 34.F.5.b.i. of this permit and other relevant factors, including the working capacity of the PPA unit, shall be used to calculate the time the PPA unit can operate before the threshold is reached.

[County Rule 210 §302.1b]

iv. After changing out the first PPA unit, the second PPA unit shall become the first PPA unit and the new PPA unit shall become the second PPA unit in the treatment train. During changeout activities, the BSVE system shall continue to operate and soil vapor may be temporarily treated in a single PPA unit (the second PPA unit). Treatment with a single PPA unit shall not occur for more than 8 hours in a 60-day period, and shall only occur during PPA changeout activities.

[County Rule 210 §302.1b]

v. The exhaust from the PPA units shall be vented through a single 44-foot high, 2-foot inside diameter exhaust stack with a conical insert to reduce the diameter to 18 inches.

[County Rule 210 §302.1b]

vi. The Permittee shall store spent potassium permanganate removed from the system in closed containers prior to removal offsite.

[County Rule 210 §302.1c]

b. Monitoring and Recordkeeping Requirements

i. The outlet of the first PPA unit shall be tested for vinyl chloride using EPA Method TO-15 in accordance with the following schedule:

a. Once per week for the first 3 months of operation;

b. Once every two weeks for the 4th through 6th months of operation;

c. Once per month for every month thereafter.

[County Rule 210 §302.1c]

ii. The outlet concentration of vinyl chloride from the first PPA unit in series, as determined in Condition 34.F.5.b.i of this permit, shall be used to calculate the outlet mass flow rate (pound per hour). This calculation shall be documented and used, in part, to determine changeout.

[County Rule 210 §302.1c]

iii. The Permittee shall record all monitoring results and calculations and shall document each changeout event, including the anticipated and actual changeout date.

[County Rule 210 §302.1c]

G. Alternate Operating Scenario 2 (AOS-2)

1) General Operational Limitations

a. AOS-2 shall be implemented when airflow capacity in excess of the amount specified in AOS-1 is exceeded to achieve the remedial objectives and only when wells beyond the Permittee's property are phased in.

[County Rule 210 §302.1b]

b. The BSVE system shall operate only with the equipment listed in Appendix B under the "AOS-2" operating scenario.

[County Rule 210 §302.1b]

c. Exhaust from the vapor extraction blower shall be completely routed to the thermal oxidizer and associated equipment. The equipment (including the thermal oxidizer) shall be fully operational at all times that vapors are being extracted from any of the extraction wells. Fully operational is defined as the point where all permitted equipment listed in Appendix B under the "AOS-2" operating scenario is capable of operating according to the manufacturers' or process design specifications

[County Rule 210 §302.1b]

d. All permitted equipment listed in Appendix B under "AOS-2" shall be interlocked so that if one of the listed pieces of equipment shuts down (except the vapor injection blower), the entire BSVE system shuts down.

[County Rule 210 §302.1b]

e. The vapor injection blower shall be interlocked with the vapor extraction blowers so that if any one of the extraction blowers shuts down, the vapor injection blower shall be immediately shut down.

[County Rule 210 §302.1b]

f. The BSVE system shall have a total capacity of 5,300 scfm (one thermal oxidizer with a flow rate of 3,300 scfm and one thermal oxidizer with a flow rate of 2,000 scfm).

[County Rule 210 §302.1b]

2) Thermal Oxidizer

a. Operational Limitations

i. The thermal oxidizer shall be operated and maintained in accordance with the requirements of the O&M Plan most recently approved in writing by the Control Officer.

[County Rule 210 §302.1b]

ii. The Permittee shall implement a combustion temperature set point of 1500^{o}F. A combustion temperature of less than 1450 ^{o}F which occurs during soil vapor processing is a deviation.

[County Rule 210 §302.1b]

iii. The Permittee shall use only pipeline quality natural gas as the supplemental fuel in the thermal oxidizer.

[County Rule 210 §302.1b]

iv. The Permittee shall operate the thermal oxidizer such that the exhaust from the thermal oxidizer shall be vented to the caustic scrubber without bypass.

[County Rule 210 §302.1b]

v. The Permittee shall maintain the two thermal oxidizer flow rates at a combined maximum inlet flow rate of 5,300 scfm.

[County Rule 210 §302.1b]

vi. The destruction efficiency of the oxidizer shall be at least 99% by weight as demonstrated during the most recent approved performance test. If, during the most recent approved performance test, the inlet VOC concentration is less than 500 ppmv, an outlet concentration of 5 ppmv or less for total VOCs as propane from the exhaust will be acceptable to demonstrate compliance in lieu of demonstrating the minimum destruction efficiency of 99%.

[County Rule 210 §302.1b] [County Rule 330 §306]

vii. The thermal oxidizers shall have a minimum residence time of 0.75 seconds at the maximum permitted flow rates specified in Condition 34.G.1.f of this permit

[County Rule 210 §302.1b]

b. Monitoring and Recordkeeping Requirements

i. The Permittee shall install and maintain a temperature recording device with an accuracy of ± 5 ºF to continuously measure and record the process temperature of the thermal oxidizer.

[County Rule 210 §302.1d]

ii. The Permittee shall install and maintain flow measurement devices to continuously measure and record the quantity of soil vapor entering the thermal oxidizers.

[County Rule 210 §302.1d]

iii. The supplemental fuel flow rate to each thermal oxidizer shall be continuously recorded.

[County Rule 210 §302.1d]

iv. Continuous temperature readings shall be performed and recorded for the thermal oxidizer whenever the thermal oxidizer operates.

a. The Permittee shall log all temperature readings, including the date and time when the reading was taken, the identity of each thermal oxidizer, the name and initials of the person who took the reading and any other related information.

[County Rule 210 §302.1c]

v. The Permittee shall comply with all conditions of Section 34.K. Operation Outside Control Device Operating Parameter Limits or Ranges.

vi. The Permittee shall maintain a record from the manufacturer showing the oxidizer meets the requirements of Condition 34.G.2.a.vii of this permit.
[County Rule 210 §302.1c]

3) Caustic Scrubber

a. Operational Limitations and Standards

i. The caustic scrubber shall be operated and maintained in accordance with the requirements of the O&M Plan most recently approved in writing by the Control Officer.
[County Rule 210 §302.1c]

ii. The caustic scrubber shall be operated at a minimum pH of 7 or within 0.5 pH units of the pH used during the most recent approved HCl and HF performance test, whichever is greater.
[County Rule 210 §302.1b]

iii. The caustic scrubber shall be operated at a differential pressure between 0.5 and 50 in. w.c..
[County Rule 210 §302.1b]

iv. The caustic scrubber shall be operated with a set point equal to or greater than the water recirculation flowrate achieved during the most recent performance test which demonstrated compliance. A water recirculation rate which is 90% or less of the set point is a deviation. The water recirculation flowrate shall be maintained all times above 25 gallons per minute (gpm).
[County Rule 210 §302.1b]

v. The caustic scrubber shall be operated at an air flow rate between 1,000 and 3,300 scfm.
[County Rule 210 §302.1b]

vi. The caustic scrubber exhaust shall pass through two VGAC units connected in series without bypass.
[County Rule 210 §302.1b]

b. Monitoring and Recordkeeping Requirements

i. The Permittee shall properly install, maintain, and operate monitoring devices to continuously measure the caustic scrubber pressure drop, water recirculation rate, air flow rate and water level in the caustic scrubber. The Permittee shall properly install, maintain, and operate monitoring devices to measure the pH in the caustic scrubber at least once per day.
[County Rule 210 §302.1c]

ii. The Permittee shall record the caustic scrubber pressure drop, water recirculation rate, air flow rate, pH and water level at least once per day for on each day that the caustic scrubber is in operation.

[County Rule 210 §302.1c]

iii. The Permittee shall log all caustic scrubber pressure drop readings, including the date when the reading was taken, the identity of each caustic scrubber, the name and initials of the person who took the reading and any other related information.

[County Rule 210 §302.1c]

iv. The Permittee shall log all water recirculation rates and water levels, including the date when the reading was taken, the identity of each caustic scrubber, the name and initials of the person who took the reading and any other related information.

[County Rule 210 §302.1c]

v. The Permittee shall log all air flow rate readings, including the date when the reading was taken, the identity of each caustic scrubber, the name and initials of the person who took the reading and any other related information.

[County Rule 210 §302.1c]

vi. The Permittee shall log all pH readings, including the date when the reading was taken, the identity of each caustic scrubber, the name and initials of the person who took the reading and any other related information.

[County Rule 210 §302.1c]

vii. The Permittee shall comply with all conditions of Section 34.K. Operation Outside Control Device Operating Parameter Limits or Ranges.

4) Granular Activated Carbon

a. Operational Limitations

i. The Permittee shall maintain a minimum of two (2) VGAC units connected in series for each thermal oxidizer (total of four (4) VGAC units).

[County Rule 210 §302.1b]

ii. The VGAC units shall be operated and maintained in accordance with the requirements of the O&M Plan most recently approved in writing by the Control Officer.

[County Rule 210 §302.1b]

iii. The VGAC units shall be operated at a temperature between 50 and 145 °F and at a relative humidity between 10 and 65 percent.

[County Rule 210 §302.1b]

iv. Changeout of the first VGAC unit in series shall be initiated when the benzene concentration between the two VGAC units is determined to exceed 3.2 µg/L, or when the first VGAC unit's outlet VOC mass flow rate is equal to the VOC pound-per-hour permit limit in Table 34-1, whichever is earlier. The testing required by this permit, VOC monitoring required in 34.G.4.b.i. of this permit and other relevant factors, including the working capacity of the VGAC unit, shall be used to calculate the time the VGAC unit can operate before the threshold is reached.

[County Rule 210 §302.1b]

v. After changing out the first VGAC unit, the second VGAC unit shall become the first VGAC unit and the new VGAC unit shall become the second VGAC unit in the treatment train. During changeout activities, the BSVE system shall continue to operate and soil vapor may be temporarily treated in a single VGAC unit (the second VGAC unit). Treatment with a single VGAC unit shall not occur for more than 8 hours in a 60-day period, and shall only occur during VGAC changeout activities.

[County Rule 210 §302.1b]

vi. The exhaust from the VGAC units shall pass through two PPA units connected in series without bypass.

[County Rule 210 §302.1b]

vii. The Permittee shall store spent carbon removed from the system in closed containers prior to removal offsite.

[County Rule 210 §302.1c]

b. Monitoring and Recordkeeping Requirements

i. Inlet and outlet VOC concentrations of each VGAC unit, as propane, shall be measured daily in the field using a photo-ionization detector (PID) or a flame ionization detector (FID). The outlet concentration from the first VGAC unit in series shall be used to calculate the outlet mass flow rate (pounds per hour). This calculation shall be documented and used to determine changeout.

[County Rule 210 §302.1c]

ii. The temperature and relative humidity of the inlet gas to the first VGAC unit shall be recorded daily.

[County Rule 210 §302.1c]

iii. The outlet of the first VGAC unit shall be tested for benzene using EPA Method TO-15 in accordance with the following schedule:

a. Once per week for the first 3 months of operation;

b. Once every two weeks for the 4th through 6th months of operation;

c. Once per month for every month thereafter.

[County Rule 210 §302.1c]

iv. The Permittee shall log all temperature readings, including the date when the reading was taken, the identity of each VGAC unit, the name and initials of the person who took the reading and any other related information.

[County Rule 210 §302.1c]

v. The Permittee shall log all relative humidity readings, including the date when the reading was taken, the identity of each VGAC unit, the name and initials of the person who took the reading and any other related information.

[County Rule 210 §302.1c]

vi. The Permittee shall log all VOC readings and calculations, including the date when the reading was taken, the identity of each VGAC unit, the name and initials of the person who took the reading and any other related information.

[County Rule 210 §302.1c]

vii. The Permittee shall record all monitoring results and calculations and shall document each changeout event, including the anticipated and actual changeout date

[County Rule 210 §302.1c]

viii. The permittee shall maintain calibration records for the PID or FID used to monitor VOC concentrations.

[County Rule 210 §302.1c]

ix. The Permittee shall comply with all conditions of Section 34.K. Operation Outside Control Device Operating Parameter Limits or Ranges.

5) Potassium Permanganate

a. Operational Limitations and Standards

i. The Permittee shall maintain a minimum of two (2) PPA units connected in series for each thermal oxidizer.

[County Rule 210 §302.1b]

ii. The PPA units shall be operated and maintained in accordance with the requirements of the O&M Plan most recently approved in writing by the Control Officer.

[County Rule 210 §302.1b]

iii. Changeout of the first PPA unit in series shall be initiated when the vinyl chloride concentration between the two PPA units is determined to exceed 0.33 µg/L, or when the first PPA unit's outlet vinyl chloride mass flow rate is equal to the vinyl chloride pound-per-hour permit limit in Table 34-1, whichever is earlier. The testing required by this permit, including the vinyl chloride monitoring required in 34.G.5.b.i. of this permit and other relevant factors, including the working capacity of the PPA unit, shall be used to calculate the time the PPA unit can operate before the threshold is reached.

[County Rule 210 §302.1b]

iv. After changing out the first PPA unit, the second PPA unit shall become the first PPA unit and the new PPA unit shall become the second PPA unit in the treatment train. During changeout activities, the BSVE system shall continue to operate and soil vapor may be temporarily treated in a single PPA unit (the second PPA unit). Treatment with a single PPA unit shall not occur for more than 8 hours in a 60-day period, and shall only occur during PPA changeout activities.

[County Rule 210 §302.1b]

v. The exhaust from the PPA units shall be vented through a single 44-foot high, 2-foot inside diameter exhaust stack.

[County Rule 210 §302.1b]

vi. The Permittee shall store spent potassium permanganate removed from the system in closed containers prior to removal offsite.

[County Rule 210 §302.1c]

b. Monitoring and Recordkeeping Requirements

i. The outlet of the first PPA unit, shall be tested for vinyl chloride using EPA Method TO-15 in accordance with the following schedule:

a. Once per week for the first 3 months of operation;

b. Once every two weeks for the 4th through 6th months of operation;

c. Once per month for every month thereafter.

[County Rule 210 §302.1c]

ii. The outlet concentration of vinyl chloride from the first PPA unit in series, as determined in Condition 34.G.5.b.i of this permit, shall be used to calculate the outlet mass flow rate (pound per hour). This calculation shall be documented and used, in part, to determine changeout.

[County Rule 210 §302.1c]

iii. The Permittee shall record all monitoring results and calculations and shall document each changeout event, including the anticipated and actual changeout date.

[County Rule 210 §302.1c]

H. Alternate Operating Scenario (AOS-3)

1) General Operational Limitations

a. AOS-3 is the operation of AOS-1 or AOS-2 with either one (1) PPA unit per thermal oxidizer or the removal of both PPA units per thermal oxidizer. All other equipment described in Appendix B under "AOS-1" or "AOS-2" is required and the Permittee shall not deviate from this equipment process setup. All equipment shall be installed, maintained, and operated in accordance with manufacturers' specifications and this permit.

[County Rule 210 §302.1b]

b. Prior to implementing AOS-3, the BSVE system influent vinyl chloride concentration shall be below the method reporting level for at least three (3) monitoring events over a period of at least six (6) months and including all monitoring events within the last six (6) months.

[County Rule 210 §302.1b]

c. AOS-3 may continue to be implemented as long as the BSVE system influent vinyl chloride concentration remains below the method reporting level for all monitoring events in the most recent past twelve (12) month period. When AOS-3 is first implemented, the six months immediately prior to implementing AOS-3 shall be used to start the twelve (12) month period.

[County Rule 210 §302.1b]

d. Exhaust from the vapor extraction blower shall be completely routed to the thermal oxidizer and associated equipment. The equipment (including the thermal oxidizer) shall be fully operational at all times vapors are being extracted from any of the extraction wells. Fully operational is defined as the point where all permitted equipment listed in Appendix B under the "AOS-1" or "AOS-2" operating scenario, with the exception of the PPA units, if removed, is capable of operating according to the manufacturers' specifications.

[County Rule 210 §302.1b]

e. All permitted equipment listed in Appendix B under "AOS-1" or "AOS-2", with the exception of the PPA units, if removed, shall be interlocked so that if one of the listed pieces of equipment shuts down (except the vapor injection blower), the entire BSVE system shuts down.

[County Rule 210 §302.1b]

f. The vapor injection blower shall be interlocked with the vapor extraction blowers so that if any one of the extraction blowers shuts down, the vapor injection blower shall be immediately shut down.

[County Rule 210 §302.1b]

g. The BSVE system shall have the same capacity as AOS-1 or AOS-2.
[County Rule 210 §302.1b]

h. The Permittee shall maintain the two thermal oxidizer flow rates at a combined inlet flow rate of not more than 5,300 scfm.
[County Rule 210 §302.1b]

2) Thermal Oxidizer

a. Operational Limitations and Standards

i. The thermal oxidizer shall be operated and maintained in accordance with the requirements of the O&M Plan most recently approved in writing by the Control Officer.
[County Rule 210 §302.1b]

ii. The Permittee shall implement a combustion temperature set point of 1500^{o}F. A combustion temperature of less than 1450 ^{o}F which occurs during soil vapor processing is a deviation.
[County Rule 210 §302.1b]

iii. The Permittee shall use only pipeline quality natural gas as the supplemental fuel in the thermal oxidizer.
[County Rule 210 §302.1b]

iv. The Permittee shall operate the thermal oxidizer such that the exhaust from the thermal oxidizer shall be vented to the caustic scrubber without bypass.
[County Rule 210 §302.1b]

v. The Permittee shall maintain the thermal oxidizer flow rates according to the flow rates specified in AOS-1 or AOS-2 at all times.
[County Rule 210 §302.1b]

vi. The destruction efficiency of the oxidizer shall be at least 99% by weight as demonstrated during the most recent approved performance test. If, during the most recent approved performance test, the inlet VOC concentration is less than 500 ppmv, an outlet concentration of 5 ppmv or less for total VOCs as propane from the exhaust will be acceptable to demonstrate compliance in lieu of demonstrating the minimum destruction efficiency of 99%.
[County Rule 210 §302.1b] [County Rule 330 §306]

vii. The thermal oxidizers shall have a minimum residence time of 0.75 seconds at the maximum permitted flow rates specified in Condition 34.H.1.h of this permit
[County Rule 210 §302.1b]

b. Monitoring and Recordkeeping Requirements

i. The Permittee shall install and maintain a temperature recording device with an accuracy of ± 5 ºF to continuously measure and record the process temperature of the thermal oxidizer.

[County Rule 210 §302.1d]

ii. The Permittee shall install and maintain flow measurement devices to continuously measure and record the quantity of soil vapor entering the thermal oxidizers.

[County Rule 210 §302.1d]

iii. The supplemental fuel flow rate to each thermal oxidizer shall be continuously recorded and reported monthly.

[County Rule 210 §302.1d]

iv. Continuous temperature readings shall be performed and recorded for the thermal oxidizer whenever the thermal oxidizer operates.

a. The Permittee shall log all temperature readings, including the date and time when the reading was taken, the identity of each thermal oxidizer, the name and initials of the person who took the reading and any other related information.

[County Rule 210 §302.1c]

v. The Permittee shall comply with all conditions of Section 34.K. Operation Outside Control Device Operating Parameter Limits or Ranges.

vi. The Permittee shall maintain a record from the manufacturing showing the oxidizer meets the requirements of Condition 34.H.2.a.vii of this permit.

[County Rule 210 §302.1c]

3) Caustic Scrubber

a. Operational Limitations

i. The caustic scrubber shall be operated and maintained in accordance with the requirements of the O&M Plan most recently approved in writing by the Control Officer.

[County Rule 210 §302.1c]

ii. The caustic scrubber shall be operated at a minimum pH of 7 or within 0.5 pH units of the pH used during the most recent approved HCl and HF performance test, whichever is greater.

[County Rule 210 §302.1b]

iii. The caustic scrubber shall be operated at a differential pressure between 0.5 and 50 in. w.c..

[County Rule 210 §302.1b]

iv. The caustic scrubber shall be operated with a set point equal to or greater than the water recirculation flowrate achieved during the most recent performance test which demonstrated compliance. A water recirculation rate which is 90% or less of the set point is a deviation. The water recirculation flowrate shall be maintained all times above 25 gallons per minute (gpm).

[County Rule 210 §302.1b]

v. The caustic scrubber shall be operated at an air flow rate between 1,000 and 3,300 scfm.

[County Rule 210 §302.1b]

vi. The caustic scrubber exhaust shall pass through two VGAC units connected in series without bypass.

[County Rule 210 §302.1b]

b. Monitoring and Recordkeeping Requirements

i. The Permittee shall properly install, maintain, and operate monitoring devices to continuously measure the caustic scrubber pressure drop, water recirculation rate, air flow rate and water level in the caustic scrubber. The Permittee shall properly install, maintain, and operate monitoring devices to measure the pH in the caustic scrubber at least once per day.

[County Rule 210 §302.1c]

ii. The Permittee shall record the caustic scrubber pressure drop, water recirculation rate, air flow rate, pH and water level least once per day for each day that the caustic scrubber is in operation.

[County Rule 210 §302.1c]

iii. The Permittee shall log all caustic scrubber pressure drop readings, including the date when the reading was taken, the identity of each caustic scrubber, the name and initials of the person who took the reading and any other related information.

[County Rule 210 §302.1c]

iv. The Permittee shall log all water recirculation rates and water level, including the date when the reading was taken, the identity of each caustic scrubber, the name and initials of the person who took the reading and any other related information.

[County Rule 210 §302.1c]

v. The Permittee shall log all air flow rate readings, including the date when the reading was taken, the identity of each caustic scrubber, the name and initials of the person who took the reading and any other related information.

[County Rule 210 §302.1c]

vi. The Permittee shall log all pH readings, including the date when the reading was taken, the identity of each caustic scrubber, the name and initials of the person who took the reading and any other related information.

[County Rule 210 §302.1c]

vii. The Permittee shall comply with all conditions of Section 34.K. Operation Outside Control Device Operating Parameter Limits or Ranges.

4) Granular Activated Carbon

a. Operational Limitations

i. The Permittee shall maintain a minimum of two (2) VGAC units connected in series for each thermal oxidizer (total of two (2) VGAC units for operation under AOS-1 and four (4) VGAC units for operation under AOS-2).

[County Rule 210 §302.1b]

ii. The Permittee shall operate and maintain VGAC units in accordance with the requirements of the O&M Plan most recently approved in writing by the Control Officer.

[County Rule 210 §302.1b]

iii. The Permittee shall operate the VGAC units at a temperature between 50 and 145 °F and at a relative humidity between 10 and 65 percent.

[County Rule 210, §302.1b]

iv. Changeout of the first VGAC unit in series shall be initiated when the benzene concentration between the two VGAC units is determined to exceed 3.2 µg/L, or when the first VGAC unit's outlet VOC mass flow rate is equal to the VOC pound-per-hour permit limit in Table 34-1, whichever is earlier. The testing required by this permit, VOC monitoring required in 34.H.4.b.i. of this permit and other relevant factors, including the working capacity of the VGAC unit, shall be used to calculate the time the VGAC unit can operate before the threshold is reached.

[County Rule 210 §302.1b]

v. After changing out the first VGAC unit, the second VGAC unit shall become the first VGAC unit and the new VGAC unit shall become the second VGAC unit in the treatment train. During changeout activities, the BSVE system shall continue to operate and soil vapor may be temporarily

treated in a single VGAC unit (the second VGAC unit). Treatment with a single VGAC unit shall not occur for more than 8 hours in a 60-day period, and shall only occur during VGAC changeout activities.

[County Rule 210 §302.1b]

vi. The exhaust from the VGAC units shall be vented through a single 44-foot high, 2-foot inside diameter exhaust stack. If the BSVE system is operating under AOS-1 conditions (i.e. 3,300 scfm), then the stack shall have a conical insert to reduce the diameter to 18 inches.

[County Rule 210 §302.1b]

vii. The Permittee shall store spent carbon removed from the system in closed containers prior to removal offsite.

[County Rule 210 §302.1c]

b. Monitoring and Recordkeeping Requirements

i. Inlet and outlet VOC concentrations of each VGAC unit, as propane, shall be measured daily in the field using a PID or a FID. The outlet concentration from the first VGAC unit in series shall be used to calculate the outlet mass flow rate (pound per hour). This calculation shall be documented and used, in part, to determine changeout.

[County Rule 210 §302.1c]

ii. The temperature and relative humidity of the inlet gas to the first VGAC unit shall be recorded daily.

[County Rule 210 §302.1c]

iii. The outlet of the first VGAC unit shall be tested for benzene using EPA Method TO-15 in accordance with the following schedule:

a. Once per week for the first 3 months of operation;

b. Once every two weeks for the 4th through 6th months of operation;

c. Once per month for every month thereafter.

[County Rule 210 §302.1c]

iv. The Permittee shall log all temperature readings, including the date when the reading was taken, the identity of each VGAC unit, the name and initials of the person who took the reading and any other related information.

[County Rule 210 §302.1c]

v. The Permittee shall log all relative humidity readings, including the date when the reading was taken, the identity of each VGAC unit, the name and initials of the person who took the reading and any other related information.

[County Rule 210 §302.1c]

vi. The Permittee shall log all VOC readings and calculations, including the date when the reading was taken, the identity of each VGAC unit, the name and initials of the person who took the reading and any other related information.

[County Rule 210 §302.1c]

vii. The Permittee shall record all monitoring results and calculations and shall document each changeout event, including the anticipated and actual changeout date.

[County Rule 210 §302.1c]

viii. The permittee shall maintain calibration records for the PID or FID used to monitor VOC concentrations.

[County Rule 210 §302.1c]

ix. The Permittee shall comply with all conditions of Section 34.K. Operation Outside Control Device Operating Parameter Limits or Ranges.

I. Alternate Operating Scenario 4 (AOS-4)

1) General Operational Limitations

a. AOS-4 is the operation of AOS-1 or AOS-2 without the thermal oxidizer(s) and caustic scrubber(s). The equipment described in Appendix B under AOS-4 is required and the Permittee shall not deviate from this equipment process setup. All equipment shall be installed, maintained, and operated in accordance with manufacturer's specifications and this permit.

[County Rule 210 §302.1b]

b. AOS-4 may be implemented only when the monitoring results of all extraction wells indicate all of the following:

i. Prior to implementing AOS-4, the average soil vapor concentration of non-methane and non-ethane TPH for all of the wells within the influence of the extraction system, based on at least three (3) monitoring events over a period of at least six (6) months and including all monitoring events within the last six (6) months, shall be less than 4,200 µg/L.

ii. Prior to implementing AOS-4, the average soil vapor concentration of benzene for all of the wells within the influence of the extraction system, based on at least three (3) monitoring events over a period of at least six (6) months and including all monitoring events within the last six (6) months, shall be less than 9.7 µg/L.

iii. AOS-4 may continue to be implemented as long as the average concentrations of TPH and benzene remain less than 4,200 µg/L and 9.7

µg/L, respectively, for all monitoring events in the most recent past twelve (12) month period. When AOS-4 is first implemented, the six months immediately prior to implementing AOS-4 shall be used to start the twelve (12) month period.

[County Rule 210 §302.1k]

c. All permitted equipment listed in Appendix B under "AOS-4"shall be interlocked so that if one of the listed pieces of equipment shuts down (except the vapor injection blower), the entire BSVE system shuts down.

[County Rule 210 §302.1b]

d. The vapor injection blower shall be interlocked with the vapor extraction blowers so that if any one of the extraction blowers shuts down, the vapor injection blower shall be immediately shut down.

[County Rule 210 §302.1b]

e. The BSVE system extracted soil vapor airflow shall be limited to a maximum of 5,300 scfm.

[County Rule 210 §302.1b]

f. The BSVE system shall operate at an overall VOC removal efficiency of at least 90% or an exhaust VOC concentration of 10ppmv or less measured as methane.

[County Rule 200 §302.1b] [Rule 330 §306]

2) Granular Activated Carbon

a. Operational Limitations

i. The Permittee shall maintain a minimum of three (3) VGAC units connected in series (total of 3 VGAC units for operation under AOS-1 and six (6) VGAC units for operation under AOS-2).

[County Rule 210 §302.1b]

ii. The VGAC units shall be operated and maintained in accordance with the requirements of the O&M Plan most recently approved in writing by the Control Officer.

[County Rule 210 §302.1b]

iii. The VGAC units shall be operated at a temperature between 50 and 145 °F and at a relative humidity between 10 and 65 percent.

[County Rule 210 §302.1b]

iv. Changeout of the first VGAC unit in series shall be initiated when the benzene concentration between the two VGAC units is determined to exceed 3.2 µg/L, or when the first VGAC unit's outlet VOC mass flow rate is equal to the VOC pound-per-hour permit limit in Table 34-1, whichever is earlier. The testing required by this permit, VOC monitoring

required in 34.I.2.b.i. of this permit and other relevant factors, including the working capacity of the VGAC unit, shall be used to calculate the time the VGAC unit can operate before the threshold is reached.

[County Rule 210 §302.1b]

v. After changing out the first VGAC unit, the second VGAC unit shall become the first VGAC unit, the third VGAC unit shall become the second VGAC unit, and the changed out VGAC unit shall become the third VGAC unit in the treatment train. During changeout activities, the BSVE system shall continue to operate and soil vapor may be temporarily treated in two VGAC units (the second and third VGAC units). Treatment with two VGAC units shall not occur for more than 8 hours in a 60-day period, and shall only occur during VGAC changeout activities.

[County Rule 210 §302.1b]

vi. The exhaust from the VGAC units shall pass through two PPA units connected in series without bypass.

[County Rule 210 §302.1b]

vii. The Permittee shall store spent carbon removed from the system in closed containers prior to removal offsite.

[County Rule 210 §302.1c]

b. Monitoring and Recordkeeping Requirements

i. Inlet and outlet VOC concentrations of each VGAC unit, as propane, shall be measured daily in the field using a PID or FID. The outlet concentration from the first VGAC unit in series shall be used to calculate the outlet mass flow rate (pounds per hour). This calculation shall be documented and used, in part, to determine changeout.

[County Rule 210 §302.1c]

ii. The temperature and relative humidity of the inlet gas to the first VGAC unit shall be recorded daily.

[County Rule 210 §302.1c]

iii. The outlet of the first VGAC unit shall be tested for benzene using EPA Method TO-15 in accordance with the following schedule:

a. Once per week for the first 3 months of operation;

b. Once every two weeks for the 4th through 6th months of operation;

c. Once per month for every month thereafter.

[County Rule 210 §302.1c]

iv. The Permittee shall log all temperature readings, including the date when the reading was taken, the identity of each VGAC unit, the name and

initials of the person who took the reading and any other related information.

[County Rule 210 §302.1c]

v. The Permittee shall log all relative humidity readings, including the date when the reading was taken, the identity of each VGAC unit, the name and initials of the person who took the reading and any other related information.

[County Rule 210 §302.1c]

vi. The Permittee shall log all VOC readings and calculations, including the date when the reading was taken, the identity of each VGAC unit, the name and initials of the person who took the reading and any other related information.

[County Rule 210 §302.1c]

vii. The Permittee shall record all monitoring results and calculations and shall document each changeout event, including the anticipated and actual changeout date

[County Rule 210 §302.1c]

viii. The permittee shall maintain calibration records for the PID or FID used to monitor VOC concentrations.

[County Rule 210 §302.1c]

viii. The Permittee shall comply with all conditions of Section 34.K. Operation Outside Control Device Operating Parameter Limits or Ranges.

3) Potassium Permanganate

a. Operational Limitations and Standards

i. The Permittee shall maintain a minimum of two (2) PPA units connected in series.

[County Rule 210 §302.1b]

ii. The PPA units shall be operated and maintained in accordance with the requirements of the O&M Plan most recently approved in writing by the Control Officer.

[County Rule 210 §302.1b]

iii. Changeout of the first PPA unit in series shall be initiated when the vinyl chloride concentration between the two PPA units is determined to exceed 0.33 µg/L, or when the first PPA unit's outlet vinyl chloride mass flow rate is equal to the vinyl chloride pound-per-hour permit limit in Table 34-1, whichever is earlier. The testing required by this permit, including the vinyl chloride monitoring required in 34.I.3.b.i. of this permit and other relevant factors, including the working capacity of the PPA unit, shall be

used to calculate the time the PPA unit can operate before the threshold is reached.

[County Rule 210 §302.1b]

iv. After changing out the first PPA unit, the second PPA unit shall become the first PPA unit and the new PPA unit shall become the second PPA unit in the treatment train. During changeout activities, the BSVE system shall continue to operate and soil vapor may be temporarily treated in a single PPA unit (the second PPA unit). Treatment with a single PPA unit shall not occur for more than 8 hours in a 60-day period, and shall only occur during PPA changeout activities.

[County Rule 210 §302.1b]

v. The exhaust from the PPA units shall be vented through a single 44-foot high, 2-foot inside diameter exhaust stack. If the BSVE system is operating under AOS-1 conditions (i.e. 3,300 scfm), then the stack shall have a conical insert to reduce the diameter to 18 inches.

[County Rule 210 §302.1b]

vi. The Permittee shall store spent potassium permanganate removed from the system in closed containers prior to removal offsite.

[County Rule 210 §302.1c]

b. Monitoring and Recordkeeping Requirements

i. The outlet of the first PPA unit shall be tested for vinyl chloride using EPA Method TO-15 in accordance with the following schedule:

a. Once per week for the first 3 months of operation;

b. Once every two weeks for the 4th through 6th months of operation;

c. Once per month for every month thereafter.

[County Rule 210 §302.1c]

ii. The outlet concentration of vinyl chloride from the first PPA unit in series, as determined in Condition 34.I.3.b.i of this permit, shall be used to calculate the outlet mass flow rate (pound per hour). This calculation shall be documented and used, in part, to determine changeout.

[County Rule 210 §302.1c]

iii. The Permittee shall record all monitoring results and calculations and shall document each changeout event, including the anticipated and actual changeout date.

[County Rule 210 §302.1c]

J. Alternate Operating Scenario 5 (AOS-5)

1) General Operational Limitations

a. AOS-5 is the operation of AOS-1 or AOS-2 without the thermal oxidizer, caustic scrubber and with either one (1) PPA unit or the removal of both PPA units. All other equipment described in Appendix B under "AOS-5" is required and the Permittee shall not deviate from this equipment process setup. All equipment shall be installed, maintained, and operated in accordance with manufacturer's specifications and this permit.

[County Rule 210 §302.1b]

b. AOS-5 may be implemented only when the monitoring results of all extraction wells indicate all of the following:

i. Prior to implementing AOS-5, the average soil vapor concentration of non-methane and non-ethane TPH for all of the wells within the influence of the extraction system, based on at least three (3) monitoring events over a period of at least six (6) months and including all monitoring events within the last six (6) months, shall be less than 4,200 µg/L.

ii. Prior to implementing AOS-5, the average soil vapor concentration of benzene for all of the wells within the influence of the extraction system, based on at least three (3) monitoring events over a period of at least six (6) months and including all monitoring events within the last six (6) months, shall be less than 9.7 µg/L.

iii. Prior to implementing AOS-5, the BSVE system influent vinyl chloride concentration shall be below the method reporting level for at least three (3) monitoring events over a period of at least six (6) months and including all monitoring events within the last six (6) months.

iv. AOS-5 may continue to be implemented as long as the average concentrations of TPH, benzene, and vinyl chloride remain less than 4,200 µg/L, 9.7 µg/L, and the method report limit, respectively, for all monitoring events in the most recent past twelve (12) month period. When AOS-5 is first implemented, the six months immediately prior to implementing AOS-5 shall be used to start the twelve (12) month period.

[County Rule 210 §302.1k]

c. All permitted equipment listed in Appendix B under "AOS-5" shall be interlocked so that if one of the listed pieces of equipment shuts down (except the vapor injection blower), the entire BSVE system shuts down.

[County Rule 210 §302.1b]

d. The vapor injection blower shall be interlocked with the vapor extraction blowers so that if any one of the extraction blowers shuts down, the vapor injection blower shall be immediately shut down.

[County Rule 210 §302.1b]

e. The BSVE system extracted soil vapor airflow shall be limited to a maximum of 5,300 scfm.

[County Rule 210 §302.1b]

f. The BSVE system shall operate at an overall VOC removal efficiency of at least 90% or an exhaust VOC concentration of 10ppmv or less measured as methane.

[County Rule 200 §302.1b] [Rule 330 §306]

2) Granular Activated Carbon

a. Operational Limitations

i. The Permittee shall maintain a minimum of three (3) VGAC units connected in series (total of three (3) VGAC units for operation under AOS-1 and 6 VGAC units for operation under AOS-2).

[County Rule 210 §302.1b]

ii. The VGAC units shall be operated and maintained in accordance with the requirements of the O&M Plan most recently approved in writing by the Control Officer.

[County Rule 210 §302.1b]

iii. The VGAC units shall be operated at a temperature between 50 and 145 °F and at a relative humidity between 10 and 65 percent.

[County Rule 210, §302.1b]

iv. Changeout of the first VGAC unit in series shall be initiated when the benzene concentration between the two VGAC units is determined to exceed 3.2 µg/L or when the first VGAC unit's outlet VOC mass flow rate is equal to the VOC pound-per-hour permit limit in Table 34-1, whichever is earlier. The testing required by this permit, VOC monitoring required in 34.J.2.b.i. of this permit and other relevant factors, including the working capacity of the VGAC unit, shall be used to calculate the time the VGAC unit can operate before the threshold is reached.

[County Rule 210 §302.1b]

v. After changing out the first VGAC unit, the second VGAC unit shall become the first VGAC unit, the third VGAC unit shall become the second VGAC unit, and the changed out VGAC unit shall become the third VGAC unit in the treatment train. During changeout activities, the BSVE system shall continue to operate and soil vapor may be temporarily treated in two VGAC units (the second and third VGAC units). Treatment with two VGAC units shall not occur for more than 8 hours in a 60-day period, and shall only occur during VGAC changeout activities.

[County Rule 210 §302.1b]

vi. The exhaust from the VGAC units shall be vented through a single 44-foot high, 2-foot inside diameter exhaust stack. If the BSVE system is operating under AOS-1 conditions (i.e. 3,300 scfm), then the stack shall have a conical insert to reduce the diameter to 18 inches.

[County Rule 210 §302.1b]

vii. The Permittee shall store spent carbon removed from the system in closed containers prior to removal offsite.

[County Rule 210 §302.1c]

b. Monitoring and Recordkeeping Requirements

i. Inlet and outlet VOC concentrations of each VGAC unit, as propane, shall be measured daily in the field using a PID or FID. The outlet concentration from the first VGAC unit in series shall be used to calculate the outlet mass flow rate (pound per hour). This calculation shall be documented and used, in part, to determine changeout.

[County Rule 210 §302.1c]

ii. The temperature and relative humidity of the inlet gas to the first VGAC unit shall be recorded daily.

[County Rule 210 §302.1c]

iii. The outlet of the first VGAC unit shall be tested for benzene using EPA Method TO-15 in accordance with the following schedule:

a. Once per week for the first 3 months of operation;

b. Once every two weeks for the 4th through 6th months of operation;

c. Once per month for every month thereafter.

iv. The Permittee shall log all temperature readings, including the date when the reading was taken, the identity of each VGAC unit, the name and initials of the person who took the reading and any other related information.

[County Rule 210 §302.1c]

v. The Permittee shall log all relative humidity readings, including the date when the reading was taken, the identity of each VGAC unit, the name and initials of the person who took the reading and any other related information.

[County Rule 210 §302.1c]

vi. The Permittee shall log all VOC readings and calculations, including the date when the reading was taken, the identity of each VGAC unit, the name and initials of the person who took the reading and any other related information.

[County Rule 210 §302.1c]

vii. The Permittee shall record all monitoring results and calculations and shall document each changeout event, including the anticipated and actual changeout date.

[County Rule 210 §302.1c]

viii. The permittee shall maintain calibration records for the PID or FID used to monitor VOC concentrations.

[County Rule 210 §302.1c]

viii. The Permittee shall comply with all conditions of Section 34.K. Operation Outside Control Device Operating Parameter Limits or Ranges.

K. Operation Outside Control Device Operating Parameter Limits or Ranges

1) The Permittee shall investigate the cause of any measurement outside a control device operating parameter limit or range specified in these conditions or the O & M Plan and shall restore operation of the control device to its normal and usual manner of operation within the operating parameter range as expeditiously as practicable in accordance with good air pollution control practices for minimizing emissions.

Deviations shall be reported in accordance with the deviation reporting section of the general conditions of this permit.

If the information from the investigation indicates the deviation in reading is due to instrumentation error, the deviation report shall include the date and time of the faulty reading, faulty instrumentation and maintenance and/or repair to be performed.

2) If the duration of operation outside an operating limit or range exceeds 5 percent of a unit's total operating time during the reporting period specified in 34.D.3, the Control Officer may require the Permittee to submit a Quality Improvement Plan that meets the requirements of 40 CFR 64.8.

3) If the Permittee or the Control Officer determines that a control device operating parameter limit or range specified in this permit is not representative of normal and usual operation, the Permittee shall submit a significant permit revision to revise the operating parameter range. At the time of submittal of the permit revision, the Permittee shall submit a revision to the associated O&M Plan if appropriate. The O&M Plan revision and the permit revision application shall include a demonstration (e.g., engineering calculations with the basis of such calculations, approved performance test data, other testing/sampling data, etc.) that the associated emission limit(s) and/or control efficiency can be met at the proposed operating range.

4) Operation outside the parametric limits in this permit may be evidence of excess emissions, poor maintenance, instrumentation error or improper operation of the equipment as indicated in the findings of the above investigation.

APPENDIX A-1
EQUIPMENT LISTS

Permitted Equipment List

Honeywell Engines - 111 S 34th St Phoenix Permit #V97-008 (reformatted 8/23/06 by R.Roberts, Permit Engr.)

LEGEND:Honeywell 10/30/06 update

Requirements: Type, Name, Make, Model, Serial #, Size/Capacity, Manuf.date, Install Date, Location

Sect.22: Abrasive Blasting

Name, Make, Model, Serial #	*Manuf. Date*	*Date Installed*	*Building*	*Maintenance #*	*Inside Volume*
Blastwork Shot Peen	Unknown	02/15/1996	105	94008028	275
Peenamatic Shot Peening machine	Unknown	02/01/1962	105	94008002	76
Guysan Blast System	Unknown	04/01/1990	105	94008016	30
Peenamatic Shot Peening machine	Unknown	09/01/1966	105	94008004	40
Pauli & Griffen Pram System	Unknown	02/01/1989	110	94008013	32
Ruemelin Blaster	Unknown	03/01/1980	110	92403003	30
Empire glass bead blaster	Unknown	02/01/1990	117	94008015	47
Pauli & Griffen Pram System	Unknown	10/01/1985	117	92414017	60
DFH Sand Blaster	Unknown	11/01/1979	202	92403012	64
DFH Glass bead Blaster	Unknown	02/01/1979	202	92403001	28
DFH Sand Blaster	Unknown	08/01/1983	202	92403018	23
~~*Kelco Sand Blaster*~~	Unknown	05/01/1977	~~*404*~~	~~*92403013*~~	~~*75*~~
Uniblast Blaster	Unknown	01/01/2001	404	94008038	42
ICM Glass bead blaster	Unknown	Unknown	422	92403056	48
ICM Bead blaster	Unknown	Unknown	422	92403055	48
ICM sand blaster	Unknown	Unknown	422	92403054	48
Panghorn Sand Blaster	Unknown	Unknown	422	92403011	38
Panghorn Sand Blaster	Unknown	08/01/1981	422	92403033	38
Panghorn Sand Blaster	Unknown	Unknown	429	94203038	40
ICM Superhone	Unknown	10/01/1970	429	92403027	48
Zero Blaster	Unknown	Unknown	429	92403075	42
EMPIRE GRIT BLAST	Unknown	Unknown	***114***	92403052	*23*
PANGBORN GRIT BLAST	Unknown	04/01/1985	***114***	92403045	*38*
Wet Sand Blast	Unknown	Unknown	***422***	92403084	***24***

Abrasive Blasting--Rotoclones,Cyclones, Dust Collectors

Name, Make, Model, Serial #	*Manuf. Date*	*Date Installed*	*Building*	*Maintenance #*	*Gas Air Flow (cfm)*
Blastworks Dust Collecter	Unknown	Unknown	105	92401649	376

Permitted Equipment List

Hammond Dust Collecter	Unknown	Unknown	105	92401066	1703
Tenkay Dust Collecter	Unknown	Unknown	202	92401472	1514
Hammond Dust Collecter	Unknown	Unknown	404	92401352	1124
Pauli & Griffin Dust Collecter	Unknown	Unknown	110	92401360	500
ICM Dust Collecter	Unknown	Unknown	422	92401428	1460
Pramblast Dust Collecter	Unknown	10/01/1985	117	92414017	600
Empire Dust Collecter	Unknown	Unknown	117	92401398	2600
Ruemelin Dust Collecter	Unknown	Unknown	110	92401448	2886
Pangborn Dust Collecter	Unknown	Unknown	429	92401357	1679
~~Hammond Dust Collecter~~	Unknown	07/01/1997	~~105~~	92401499	~~1100~~
Pangborn Dust Collecter	Unknown	Unknown	422	92401436	3120
Pangborn Dust Collecter	Unknown	Unknown	422	92401435	2700
~~Hammond Cyclone~~	Unknown	Unknown	~~***105***~~	92401066	Out of Service
MAC Dust Collector	Unknown	08/14/2005	***105***	92401739	3500
AAF Rotoclone	Unknown	09/01/1970	404	92401180	1100
AAF Rotoclone	Unknown	04/01/1982	111	92401300	13000
AAF Rotoclone	Unknown	05/01/1985	102	92401301	13000

Sect.23: Solvent (Dip) Cleaning

Degreasing Operations/Tanks

Name, Make, Model, Serial #	*Manuf. Date*	*Date Installed*	***Building***	***Maintenance #***	***Tank Size (L*W*D)***
STODDARD SOLVENT TANK	Unknown	Unknown	102	94701108	
JUSTRITE STODDARD TANK # 136	Unknown	Unknown	102	94701278	
JUSTRITE STODDARD TANK	Unknown	Unknown	102	94701412	
JUSTRITE STODDARD TANK # 129	Unknown	Unknown	102	94701274	
JUSTRITE STODDARD TANK # 122	Unknown	Unknown	102	94701270	
JUSTRITE STODDARD TANK # 125	Unknown	Unknown	102	94701272	
JUSTRITE STODDARD TANK # 186	Unknown	Unknown	102	94701288	
DIP TANK STODDARD TANK # 55	Unknown	Unknown	103	94701337	
DIP TANK STODDARD TANK # 56	Unknown	Unknown	103	94701338	
DIP TANK STODDARD TANK # 196	Unknown	Unknown	103	94701348	
PROTECTOSEAL STODDARD TANK # 45	Unknown	Unknown	103	94701392	
JUSTRITE STODDARD TANK # 34	Unknown	Unknown	103	94701363	
PROTECTOSEAL STODDARD TANK # 35	Unknown	Unknown	103	94701387	
PROTECTOSEAL STODDARD TANK # 155	Unknown	Unknown	103	94701405	
JUSTRITE STODDARD TANK # 144	Unknown	Unknown	112	94701284	

Permitted Equipment List

JUSTRITE STODDARD TANK	Unknown	Unknown	403	94701378
JUSTRITE STODDARD TANK # 80	Unknown	Unknown	403	94701373
JUSTRITE STODDARD TANK	Unknown	Unknown	403	94701379
DIP TANK STODDARD TANK	Unknown	Unknown	403	94701350
JUSTRITE STODDARD TANK # 16	Unknown	Unknown	422	94701357
DIP TANK STODDARD TANK # 60	Unknown	Unknown	422	94701339

Sect.24: Solvent Use Other Than Dip Cleaning

Cold Stoddard Solvent Flush Booths

Name, Make, Model, Serial #	*Manuf. Date*	*Date Installed*	*Building*	Maintenance #	*Capacity (gal)*
Cold	Unknown	Unknown	110		110
JUSTRITE STODDARD TANK # 144	Unknown	Unknown	112	94701284	55
ACTREL SOLVENT TANK	Unknown	Unknown	117	94701107	55
BINKS SPRAY BOOTH	Unknown	Unknown	129	*92414016*	30
Safety Kleen Model #81 Tag #164	Unknown	Unknown	202	*B0000377*	74
Safety Kleen Model #81 Tag #163 w/Agit	Unknown	Unknown	202	*B0000435*	74
Safety Kleen Model #81 w/Agitation	Unknown	Unknown	206	*Unknown*	74
DEVILBISS SPRAY BOOTH	Unknown	05/01/1988	301	*93501023*	30
DEVILBISS SPRAY BOOTH	Unknown	05/01/1988	301	*93501024*	30
STODDARD SOLVENT TANK	Unknown	Unknown	301	*94701419*	30
ZEP PARTS WASHER	Unknown	Unknown	301	*92406066*	30
ZEP PARTS WASHER	Unknown	Unknown	301	*92406065*	30
ZEP PARTS WASHER	Unknown	Unknown	301	*92406067*	30
PARTS WASHING SYSTEM	Unknown	Unknown	301	*92406071*	36
STODDARD SOLVENT TANK	Unknown	Unknown	301	*94701418*	30
BINKS SPRAY BOOTH	Unknown	10/01/1970	422	*92414007*	30
SOLVENT BOOTH	Unknown	Unknown	110	*92414036*	**110**

Sect.25: Spray Coating (non-thermal)

Paint Booths

Name, Make, Model, Serial #	*Manuf. Date*	*Date Installed*	***Building***	Maintenance #	Max (gal/hr)
Model XCF-407	Unknown	05/01/1986	***110***	93501017	1.41

Sect.26: Hard Chrome Electroplating

Name, Make, Model, Serial #	*Manuf. Date*	*Date Installed*	*Building*	*Maintenance #*	*Amp-hr/hr / cfm*
Chrome Tank	Unknown	Unknown	422	94903197	60

Permitted Equipment List

Scrubber #HPV773D	Unknown	09/01/1984	422	92415005	25000 cfm

Sect.27: VOL Storage Tanks

Name, Make, Model, Serial #	*Manuf. Date*	*Date Installed*	*Ground*	*Maintenance #*	*Capacity (gal)*
Tank 201N (JP-4)	Unknown	04/01/1986	below	N/A	20,000
Tank 202N (Jet-A)	Unknown	04/01/1986	below	N/A	20,000
Tank 203N (JP-4)	Unknown	04/01/1986	below	N/A	20,000
Tank 204N (Jet-A)	Unknown	04/01/1986	below	N/A	20,000
Tank 205N (JP-8)	Unknown	04/01/1986	below	N/A	20,000
Tank 206N (Jet-A)	Unknown	04/01/1986	below	N/A	20,000
Tank 207N (Jet-A)	Unknown	04/01/1986	below	N/A	20,000
Tank 208N (JP-8)	Unknown	04/01/1986	below	N/A	20,000
Tank 209N (Jet-A)	Unknown	04/01/1986	below	N/A	20,000
Tank 210N (JP-5)	Unknown	04/01/1986	below	N/A	20,000
Tank 211N (DF-2)	Unknown	04/01/1986	below	N/A	20,000
Tank 212N (mixed fuel)	Unknown	04/01/1986	below	N/A	20,000
Methanol Tank	Unknown	May, 2002	above	N/A	6,000
Ammonia Tank	Unknown	Unknown	above	Vendor Equipment	1,000

Sect.28: Thermal Spray Coating

Name, Make, Model, Serial #	*Manuf. Date*	*Date Installed*	*Building*	*Maintenance #*	*Inside Volume*
Thermal Spray-Robot	Unknown	09/01/1997	404	92915065	1341 cu ft
Metal Spray -Robot	Unknown	Unknown	114	92915079	1148 cu ft
Thermal Spray Robot	Unknown	09/01/1997	404	92915067	1227 cu ft
Thermal Spray-Robot	Unknown	04/15/1994	114	92915046	1233 cu ft
Thermal Spray Manual Gun	Unknown	Unknown	404	92915086	**783 cu ft**
Thermal Spray-Robot	Unknown	Unknown	404	92915066	501 cu ft
Thermal Spray Manual Gun	Unknown	Unknown	114	92915034	1207 cu ft
Thermal Spray-High Vel	Unknown	11/01/1981	114	92915059	1318 cu ft
					Gas Air Flow(cfm)
AAF Rotoclone	Unknown	Unknown	404	92401615	13000
AAF Rotoclone	Unknown	01/01/2003	114	92401299	13000
AAF Rotoclone	Unknown	Unknown	114	92401344	20000
AAF Rotoclone	Unknown	Unknown	404	92401219	13000

Sect.30: Plating Operations Other Than Chrome plating

Permitted Equipment List

Process Tanks

Name, Make, Model, Serial #	*Manuf. Date*	*Date Installed*	***Building***	Maintenance #	***Tank Size (L*W*D)***
Chromic Sulfuric Acid Copper Strip	Unknown	Unknown	422	94903133	***3x3x3***
Hot DI Rinse	Unknown	Unknown	422	94903190	***3x3x3***
Caustic Cleaner	Unknown	Unknown	422	94903191	***3x3x3***
Sulfuric Acid Pickle	Unknown	Unknown	422	94903193	***3x3x3***
Chrome Etch NOT IN SERVICE	Unknown	Unknown	422	94903195	***4x4x4***
Chromium Plate NOT IN SERVICE	Unknown	Unknown	422	94903196	***6x4x4***
Chromium Plate	Unknown	Unknown	422	94903197	***6x4x4***
Silver Plate	Unknown	Unknown	422	94903165	***3X3X3***
Silver Plate	Unknown	Unknown	422	94903164	***3X3X3***
Silver Plate	Unknown	Unknown	422	94903166	***3x3x3***
Silver Strike	Unknown	Unknown	422	94903167	***4x3x3***
Copper Strike	Unknown	Unknown	422	94903176	***5x3x3***
Copper Plate	Unknown	Unknown	422	94903178	***6x3x3***
Cyanide Copper Plate Hi-Efficiency	Unknown	Unknown	422	94903179	***6x3x3***
Hot DI Rinse	Unknown	Unknown	422	94903417	***3x3x3***
Sodium Cyanide	Unknown	Unknown	422	94903183	***2x3x3***
Copper Strike (Copper Filters)	Unknown	Unknown	422	94903184	***5x3x3***
Copper Plate	Unknown	Unknown	422	94903186	***6x3x3***
Copper Plate	Unknown	Unknown	422	94903187	***6x3x3***
Nitric Acid	Unknown	Unknown	422	94903414	***3x3x3***
Electroless Nickel Plate	Unknown	Unknown	422	94903149	***3x3x3***
Lead Anode Cleaner	Unknown	Unknown	422	94903202	***3x3x3***
Oakite Ruststripper	Unknown	Unknown	422	94903204	***3x3x3***
Black Oxide	Unknown	Unknown	422	94903206	***3x3x3***
Hot Water Rinse	Unknown	Unknown	422	94903207	***3x3x3***
Hot Acidified Rinse	Unknown	Unknown	422	94903203	***3x3x3***
CHROMIC ACID PICKLE	Unknown	Unknown	105	94903262	***4x4x4***
HF ACID ETCH	Unknown	***03/01/1990***	105	94903260	***4x4x4***
H.A.E. ANODIZE KMNO4	Unknown	Unknown	105	94903253	***8x8x6***
MAGNESIUM IMMERSION Treatment	Unknown	Unknown	105	94903255	***4x4x4***
CHROME MANGANESE	Unknown	Unknown	105	94903256	***4x4x4***
~~***HCL ETCH***~~	Unknown	Unknown	105	~~94903272~~	***3x3x3***
HCL ETCH	Unknown	Unknown	105	94903471	***3x3x3***
~~***C 5041 NITRIC ACID***~~	Unknown	Unknown	105	~~94903274~~	***3x3x3***

Permitted Equipment List

C-5041 NITRIC ACID	Unknown	Unknown	105	94903473	***3x3x3***
~~***HF HNO3 ETCH***~~	Unknown	***03/01/1990***	105	~~94903275~~	***3x3x3***
HF - HNO3 ETCH	Unknown	Unknown	105	94903478	***3x3x3***
~~***FERRIC CHLORIDE***~~	Unknown	Unknown	105	~~94903292~~	***3x3x3***
FERRIC CHLORIDE	Unknown	Unknown	105	94903476	***3x3x3***
~~***FERRIC CHLORIDE***~~	Unknown	Unknown	105	~~94903270~~	***3x3x3***
FERRIC CHLORIDE	Unknown	Unknown	105	94903475	***3x3x3***
~~***Back Bleach Etch***~~	Unknown	Unknown	105	~~94903285~~	***3x3x3***
Back Bleach Etch	Unknown	Unknown	105	94903462	***3x3x3***
~~***Titanium Activator***~~	Unknown	Unknown	105	~~94903288~~	***3x3x3***
Titanium Activator	Unknown	Unknown	105	94903468	***3x3x3***
DOUBLE CASCADE RINSE	Unknown	Unknown	105	94903465	***4x3x3***
Nitric Acid Desmut	Unknown	Unknown	105	94903466	***3x3x3***
ISOPREP 188	Unknown	Unknown	105	94903213	***2.5x4x3***
~~***ALUMIUM ETCH, HF NITRIC ACID***~~	Unknown	Unknown	105	~~94903218~~	***2.5x4x3***
ALUMIUM ETCH, HF - NITRIC ACID	Unknown	Unknown	105	94903455	***2.5x4x3***
Ti-ETCH HNO3-HF	Unknown	Unknown	105	94903231	***2x3x3***
AL. SPRAY METAL STRIP (EMPTY)	Unknown	Unknown	105	94903228	***3x3x3***
NITRIC ACID	Unknown	Unknown	105	94903226	***3x3x3***
SULFURIC ANODIZE TYPE II	Unknown	***01/01/2002***	105	94903236	***4x6x5***
SULFURIC ANODIZE TYPE II	Unknown	***07/01/2001***	105	94903239	***4x6x5***
CHROMATE SEAL	Unknown	***08/01/1999***	105	94903241	***4x6x5***
SANFORD HARD ANODIZE	Unknown	***11/01/1985***	105	94903251	***10x4x4***
POTASSIUM DICHROMATE SEAL	Unknown	Unknown	105	94903351	***2.5x4x3***
BLUE DYE	Unknown	Unknown	105	94903350	***2.5x4x3***
BLACK DYE	Unknown	Unknown	105	94903244	***2.5x4x3***
NICKEL ACETATE SEAL	Unknown	Unknown	105	94903242	***2.5x4x3***
~~***Manganese***~~	Unknown	Unknown	105	~~94903287~~	
~~***Hydrofluoric Acid***~~	Unknown	Unknown	105	~~94903280~~	
~~***Hydrofluoric Acid***~~	Unknown	Unknown	105	~~94903275~~	
~~***Chromium***~~	Unknown	Unknown	105	~~94903238~~	
Nitric Acid	Unknown	Unknown	422	94701172	***2x2x2***
HCl-Methanol	Unknown	Unknown	422	94701174	***2x2x2***
Hydrochloric Acid	Unknown	Unknown	422	94903145	***3x3x3***
Muriatic Acid Pickle	Unknown	Unknown	422	94903172	***4x3x3***
Alkaline Copper Strip	Unknown	Unknown	422	94903135	***3x3x3***

Permitted Equipment List

Alkaline Copper Strip	Unknown	Unknown	422	94903139	***3x3x3***
Nitric Acid Strip	Unknown	Unknown	422	94903141	***3x3x3***
Hydrochloric Acid	Unknown	Unknown	422	94903138	***3x3x3***
Nickel Chloride Strike (NICl2)	Unknown	Unknown	422	94903174	***4x3x3***
Batch Treatment Tank	Unknown	Unknown	422	94709049	
Muriatic Acid Pickle	Unknown	***11/01/1999***	102	94701226	***36x42x30***
Nitric Acid	Unknown	Unknown	429	94903375	***4x4x4***
Nitric Acid / Hydrofluoric Acid	Unknown	Unknown	429	94903390	***4x4x4***
Muriatic Acid	Unknown	Unknown	429	94903380	***4x4x4***
Alkaline Cleaner for Al/Ti	Unknown	Unknown	429	94903383	***4x4x4***
HF-HNO3 for Titanium Etch	Unknown	Unknown	429	94903385	***4x4x4***
Nitric Acid Strip	Unknown	Unknown	429	94903396	***4x4x4***
Electropolish Power Kleen 500	Unknown	Unknown	429	94903403	***4x4x4***

Secondary Process Tanks

Name, Make, Model, Serial #	*Manuf. Date*	*Date Installed*	***Building***	Maintenance #	***Tank Size (L*W*D)***
Actrel 4493Tank # 91	Unknown	Unknown	422	94903431	***4x4x4***
Brulin 815 GD Tank # 13	Unknown	Unknown	422	92406038	***4x4x3***
Actrel 4493 Tank # 92	Unknown	Unknown	422	94903421	***3.5x5x4***
Brulin 815GD Tank # 93	Unknown	Unknown	422	92406039	***3x5x3.5***
Brulin 815GD Tank # 94	Unknown	Unknown	422	92406040	***3x5x3.5***

Packed Bed Scrubbers

Name, Make, Model, Serial #	*Manuf. Date*	*Date Installed*	*Building*	*Maintenance #*	*Gas Air Flow(cfm)*
HPV-77-2D	Unknown	09/01/1984	422	92415006	20000
HPV673D	Unknown	09/01/1984	422	92415007	175000
ECH 89	Unknown	Unknown	105	92415008	34000
ECH 910	Unknown	Unknown	105	92415009	42000
ECH 33	Unknown	Unknown	422	92415013	4000
ECH 33	Unknown	Unknown	102	**92415014**	4000
ECH56.5-5LB	Unknown	Unknown	422	92415019	16000
ECH 5 6.5-5LB	Unknown	Unknown	422	92415020	16000
ECH2 351B	Unknown	11/01/1999	102	92415021	2500
ECH 889-LB	Unknown	01/01/2003	429	92415022	34500
HARRINGTON BATCH SCRUBBER	Unknown	09/01/2005	***422***	***92415025***	***11000***

Permitted Equipment List

F/WR-1/4	Unknown	09/01/2005	422	92415026	750

Electric Heat Treating Furnaces

Name, Make, Model, Serial #	*Manuf. Date*	*Date Installed*	*Building*	*Maintenance #*	
Rotary Furnace	Unknown	#N/A	422		
Nitriding Furnace	Unknown	Unknown	422	93007040	Unknown
Nitriding Furnace	Unknown	Unknown	422	93007041	Unknown
Special Nitriding Furnace N1A	Unknown	Unknown	422	93007014	Unknown
Upton Salt Bath Furnace	Unknown	Unknown	422	93012009	Unknown
Upton Marquench Furnace T-7	Unknown	Unknown	422	93012007	Unknown

Grinding Operations

Name, Make, Model, Serial #	*Manuf. Date*	*Date Installed*	*Building*	Maintenance #	*Gas Air Flow(cfm)*
BUTLER CNC BLADE TIP GRINDER	Unknown	04/01/1991	301	90426001	***n/a***
BUTLER CNC BLADE TIP GRINDER	Unknown	02/01/1998	301	90426005	***n/a***
Rotoclone	Unknown	Unknown	301	92401443	***1000***
Rotoclone	Unknown	Unknown	301	92401636	***3000***

Air Heaters (natural gas fired)

Name, Make, Model, Serial #	*Manuf. Date*	*Date Installed*	*Building*	*Maintenance #*	*Max Cap'y (MM Btu/hr)*
Air Heater	Unknown	Unknown	204	93021027	0.44
Air Heater	Unknown	Unknown	202	93021015	6.57
Air heater AH1-A	Unknown	Unknown	204	93021001	3.19
Air heater AH1-B	Unknown	09/01/1962	203	93021002	5.12
Air heater AH1-C	Unknown	09/01/1962	203	93021003	2.96
In line heater for C-100	Unknown	Unknown	203	Unknown	2.945
Air heater (Test Cell C-100)	Unknown	07/01/1973	204	93021007	10.98
Air heater (Test C116)	Unknown	06/01/1992	204	93021008	10.98
Air heater (Raypack)	Unknown	Unknown	222	93100019	

Fuel Nozzle Test Stand

Name, Make, Model, Serial #	*Manuf. Date*	*Date Installed*	*Building*	*Maintenance #*	*Max Material Flowrate*
Fuel Nozzle Test Stand	Unknown	March, 1983	208	92602377	0.05 gal/hr
Fuel Nozzle Test Stand #855	Unknown	02/01/1980	211	92602067	0.05 gal/hr
Fuel Nozzle Test Stand #608	Unknown	02/01/1980	211	92602067	0.05 gal/hr

Permitted Equipment List

Fuel Nozzle Test Stand	Unknown	March, 1983	211	92602376	0.05 gal/hr
Fuel Nozzle Test Stand	Unknown	Unknown	211	92602258	0.05 gal/hr
Laser Sheeting Test Stand #622	Unknown	Unknown	211		

Boilers

Name, Make, Model, Serial #	*Manuf. Date*	*Date Installed*	*Building*	*Maintenance #*	*Max Cap'y (MM Btu/hr)*
Natural Gas-fired	Unknown	03/15/1995	429	93010029	8.24
Natural Gas-fired	Unknown	06/15/1994	104	93010028	4.10
Natural Gas-fired	Unknown	Unknown	503	93010027	0.35
Natural Gas-fired	Unknown	Unknown	212	93010020	0.71
Natural Gas-fired	Unknown	Unknown	403	93020001	0.50
Natural Gas-fired	Unknown	10/01/1982	102	93010001	4.10
Natural Gas-fired	Unknown	09/01/1962	202	93010007	35.69
Natural Gas-fired	Unknown	09/01/1962	202	93010006	35.69
Natural Gas-fired	Unknown	03/26/2001	102	93010040	4.18
Natural Gas-fired	Unknown	01/01/2004	404	93020113	4.10
Natural Gas-fired	Unknown	01/01/2004	404	93020114	4.10
Natural Gas-fired	Unknown	08/01/1981	302	93010015	3.28
Natural Gas-fired	Unknown	01/01/2001	422	93010039	4.11
Natural Gas-fired	Unknown	10/01/1999	422	93010038	4.11
~~Natural Gas~~	Unknown	Unknown	~~114~~	~~93010021~~	~~0.71~~
Natural Gas-fired	Unknown	03/01/2003	422	93010041	4.11
Natural Gas-fired	Unknown	06/01/1994	503	93010026	0.35

Test Cells

Name, Make, Model, Serial #	*Manuf. Date*	*Date Installed*	*Building*	*Max Thruput (gal/hr)*
#666 C-100	Unknown	1956	203	224
#667 C-113	Unknown	1956	203	0.02 (MMBtu)
#668 C-114	Unknown	1956	203	0.028 (MMBtu)
#669 C-116 Turbine Cell	Unknown	1956	203	224
#671 Compressor Cell	Unknown	1956	226	224.3
#691 LACC I	Unknown	1964	202	76.9
#692 LACC II	Unknown	1955	202	76.9
#694 CA 2	Unknown	1955	202	36.5
#801(D-101) APU Cell	Unknown	1956	204	76.9

Permitted Equipment List

#802 (S-102) APU Cell	Unknown	1956	204	76.9
#803 (D-103) APU Cell	Unknown	1956	204	76.9
#804 APU Test Cell	Unknown	Unknown	204	76.9
#805 (D-105) APU Cell	Unknown	1956	204	76.9
#806 (D-106) APU Cell	Unknown	1956	204	76.9
#807 (D-107) APU Cell	Unknown	1956	204	76.9
#808 (D-107E) APU Cell	Unknown	1956	204	76.9
#809 (D-109) APU Cell	Unknown	1956	204	76.9
#810 (D-110) APU Cell	Unknown	1956	204	76.9
#811 (D-111) APU Cell	Unknown	1956	204	76.9
#812 (D-112) APU Cell	Unknown	1956	204	76.9
#813 (D-113) APU Cell	Unknown	1956	204	76.9
#814 (D-114) APU Cell	Unknown	1956	204	76.9
#815 (D-115) APU Cell	Unknown	1956	204	76.9
#819 (124) APU Cell	Unknown	Unknown	124	108.3
#821 (71) APU Cell	Unknown	1952	115	108.3
#822 (72) APU Cell	Unknown	1952	115	108.3
#823 (73) APU Cell	Unknown	1952	115	108.3
#824 (74) APU Cell	Unknown	1952	115	76.9
#825 (75) APU Cell	Unknown	1952	115	76.9
#826 (76 A) APU Cell	Unknown	1952	115	76.9
#827 (76B) APU Cell	Unknown	1952	115	108.3
#828 Gearbox Cell	Unknown	08/01/1982	228	36.5
#831 (C-101) APU Cell	Unknown	1956	203	36.5
#832 (C-102) APU Cell	Unknown	1956	203	36.5
#837 (C-107) APU Cell	Unknown	1956	203	76.9
#837 (C-109) APU Cell	Unknown	1956	203	76.9
C-903 TPE Dyno Cell	Unknown	1956	203	77
C-904 TPE Dyno Cell	Unknown	1956	203	76.9
C-905 TPE Dyno Cell	Unknown	1956	203	76.9
C-917 T800 Dyno Cell	Unknown	June, 1987	234	108.3
#918 (118E) APU Cell	Unknown	1959	118	76.9
#920 TPE Prop Cell	Unknown	1965	214	224
#921 TPE Prop Cell	Unknown	1965	214	224
#930 TPE Dyno Cell	Unknown	Nov. 1980	225	108
#931 TPE Dyno Cell	Unknown	Nov. 1980	225	117

Permitted Equipment List

#941 Turboshaft Engines	Unknown	Sept. 1985	230		116.5
#942 Turboshaft Engines	Unknown	Sept. 1985	230		116.5
#943 Lycomine Engines	Unknown	July, 1987	230		117
#944 Lycomine Engines	Unknown	July, 1987	230		117
#953 Turbofan Testing	Unknown	1964	223		224
#954 Turbofan Testing	Unknown	1964	223		224
#955 Turbofan Testing	Unknown	1964	222		224
#956 Turbofan Testing	Unknown	1964	222		224
HOT CORROSION TEST STAND	Unknown	***09/15/1996***	***116***	***94510005***	***0.56***

Test Rigs

Name, Make, Model, Serial #	*Manuf. Date*	*Date Installed*	*Building*		*Heat Input (MM Btu/hr)*
Corrosion Test Rigs	Unknown	Unknown	116	N/A	0.56
NASA Test Rigs	Unknown		116	N/A	0.44
Ceramic Test Rig	Unknown	Unknown	116	N/A	3.82
Corrosion Test Rigs	Unknown	Unknown	116	N/A	0.56
Corrosion Test Rigs	Unknown	Unknown	116	N/A	0.56
Corrosion Test Rigs	Unknown	Unknown	116	N/A	0.56
Corrosion Test Rigs	Unknown	Unknown	116	N/A	0.56
Corrosion Test Rigs	Unknown	Unknown	116	N/A	0.56
Corrosion Test Rigs	Unknown	Unknown	116	N/A	0.56
NASA Test Rigs	Unknown	Unknown	116	N/A	0.44
NASA Test Rigs	Unknown	Unknown	116	N/A	0.44
NASA Test Rigs	Unknown	Unknown	116	N/A	0.44

Heat Treating Furnaces

Name, Make, Model, Serial #	*Manuf. Date*	*Date Installed*	*Building*	*Maintenance #*	
Automatic Carburizing Furnace C-3	Unknown	01/01/1991	422	93007045	Unknown
Carburizing furnace	Unknown	before 1984	422	93007051	Unknown
Holocroft Rotary Furnace H-4	Unknown	04/15/1994	422	93007050	Unknown
FLAME SPRAY BOOTH	Unknown	Unknown	202	92915013	
POWDER SPRAY BOOTH	Unknown	Unknown	202	92915014	
STRESS COAT BOOTH	Unknown	Unknown	202	93501043	
METHANOL BRINE TANK	Unknown	Unknown	208	94713005	

Permitted Equipment List

METHANOL BRINE TANK	Unknown	Unknown	208	94713006

Insignificant Equipment List

Honeywell Engines - 111 S 34th St Phoenix Permit #V97-008 (reformatted 8/23/06 by R.Roberts, Permit Engr.)

LEGEND:Honeywell 10/30/06 update

Requirements: Type, Name, Make, Model, Serial #, Size/Capacity, Manuf.date, Install Date, Location

Sect.22: Abrasive Blasting

Name, Make, Model, Serial #	*Manuf. Date*	*Date Installed*	*Building*	*Maintenance #*	*Insig Source*	*Inside Volume*
TRINCO DRY BLAST	Unknown	Unknown	***202***	92403085	X	***4***
COMCO SAND BLAST	Unknown	Unknown	***202***	92403047	X	***2***

Sect.23: Solvent (Dip) Cleaning

Degreasing Operations/Tanks

Name, Make, Model, Serial #	*Manuf. Date*	*Date Installed*	***Building***	***Maintenance #***		***Tank Size (L*W*D)***
STODDARD SOLVENT PARTS WASHER #200	Unknown	Unknown	103	92414047	X	***17x26x16***
STODDARD SOLVENT TANK	Unknown	Unknown	402	94701049	X	***20x40x17***
STODDARD SOLVENT TANK	Unknown	Unknown	402	94701050	X	24x74x24
JUSTRITE STODDARD TANK # 132	Unknown	Unknown	102	94701276	X	***16.5 x 35 x 12***
JUSTRITE STODDARD TANK # 128	Unknown	Unknown	102	94701273	X	***15 x 15.5 x 15***
JUSTRITE STODDARD TANK # 131	Unknown	Unknown	102	94701275	X	***15 x 15.5 x 15***
DIP TANK STODDARD TANK # 113	Unknown	Unknown	102	94701298	X	***30 x 42 x 25***
DIP TANK STODDARD TANK # 116	Unknown	Unknown	102	94701300	X	***30 x 42 x 25***
JUSTRITE STODDARD TANK # 203	Unknown	Unknown	102	94701295	X	***16.5 x 35 x 12***
JUSTRITE STODDARD TANK # 195	Unknown	Unknown	102	94701291	X	***16.5 x 35 x 12***
JUSTRITE STODDARD TANK # 139	Unknown	Unknown	102	94701281	X	***16.5 x 35 x 12***
JUSTRITE STODDARD TANK # 140	Unknown	Unknown	102	94701282	X	***16.5 x 35 x 12***
DIP TANK STODDARD TANK # 115	Unknown	Unknown	102	94701299	X	***30 x 42 x 25***
JUSTRITE STODDARD TANK # 133	Unknown	Unknown	102	94701277	X	***16.5 x 35 x 12***
JUSTRITE STODDARD TANK # 194	Unknown	Unknown	102	94701290	X	***15 x 15.5 x 15***
JUSTRITE STODDARD TANK # 201	Unknown	Unknown	102	94701294	X	***15 x 15.5 x 15***
JUSTRITE STODDARD TANK # 189	Unknown	Unknown	102	94701289	X	***16.5 x 35 x 12***
DIP TANK STODDARD TANK # 117	Unknown	Unknown	102	94701301	X	***30 x 42 x 25***
JUSTRITE STODDARD TANK # 137	Unknown	Unknown	102	94701279	X	***16.5 x 35 x 12***
JUSTRITE STODDARD TANK # 144	Unknown	Unknown	102	94701283	X	***16.5 x 35 x 12***
JUSTRITE STODDARD TANK # 146	Unknown	Unknown	102	94701285	X	***16.5 x 35 x 12***
JUSTRITE STODDARD TANK # 138	Unknown	Unknown	102	94701280	X	***15 x 15.5 x 15***
JUSTRITE STODDARD TANK # 198	Unknown	Unknown	102	94701292	X	***16.5 x 35 x 12***

Insignificant Equipment List

DIP TANK STODDARD TANK # 118	Unknown	Unknown	102	94701302	X	***30 x 42 x 25***
JUSTRITE STODDARD TANK # 123	Unknown	Unknown	102	94701271	X	***15 x 15.5 x 15***
JUSTRITE STODDARD TANK # 185	Unknown	Unknown	102	94701287	X	***15 x 15.5 x 15***
JUSTRITE STODDARD TANK # 121	Unknown	Unknown	102	94701269	X	***24 x 16 x 9***
JUSTRITE STODDARD TANK # 215	Unknown	Unknown	102	94701297	X	***15 x 15.5 x 15***
JUSTRITE STODDARD TANK # 114	Unknown	Unknown	102	94701268	X	***16x24x9***
JUSTRITE STODDARD TANK # 214	Unknown	Unknown	102	94701296	X	***15 x 15.5 x 15***
PROTECTOSEAL STODDARD TANK # 53	Unknown	Unknown	103	94701396	X	***15 x 15.5 x 15***
JUSTRITE STODDARD TANK # 23	Unknown	Unknown	103	94701358	X	***15 x 15.5 x 15***
JUSTRITE STODDARD TANK	Unknown	Unknown	103	94701380	X	***15.5 x 16.5 x 8.5***
PROTECTOSEAL STODDARD TANK # 58	Unknown	Unknown	103	94701399	X	***15 x 15.5 x 15***
JUSTRITE STODDARD TANK # 191	Unknown	Unknown	103	94701376	X	***16.5 x 35 x 12***
PROTECTOSEAL STODDARD TANK # 148	Unknown	Unknown	103	94701404	X	***15 x 15.5 x 15***
JUSTRITE STODDARD TANK # 34	Unknown	Unknown	103	94701363		
PROTECTOSEAL STODDARD TANK # 52	Unknown	Unknown	103	94701395	X	***15 x 15.5 x 15***
PROTECTOSEAL STODDARD TANK # 159	Unknown	Unknown	103	94701407	X	***16.5 x 24 x 8.5***
DIP TANK STODDARD TANK # 47	Unknown	Unknown	103	94701336	X	***16.5 x 35 x 12***
JUSTRITE STODDARD TANK # 4	Unknown	Unknown	103	94701352	X	***16.5 x 24 x 8.5***
PROTECTOSEAL STODDARD TANK # 75	Unknown	Unknown	103	94701403	X	***15 x 15.5 x 15***
JUSTRITE STODDARD TANK # 78	Unknown	Unknown	103	94701371	X	***16.5 x 35 x 12***
JUSTRITE STODDARD TANK # 8	Unknown	Unknown	103	94701354	X	***15 x 15.5 x 15***
PROTECTOSEAL STODDARD TANK # 35	Unknown	Unknown	103	94701387		
PROTECTOSEAL STODDARD TANK # 157	Unknown	Unknown	103	94701406	X	***16.5 x 35 x 12***
PROTECTOSEAL STODDARD TANK # 20	Unknown	Unknown	103	94701385	X	***16.5 x 24 x 8.5***
PROTECTOSEAL STODDARD TANK # 43	Unknown	Unknown	103	94701391	X	***15 x 15.5 x 15***
PROTECTOSEAL STODDARD TANK # 67	Unknown	Unknown	103	94701402	X	***15 x 15.5 x 15***
JUSTRITE STODDARD TANK # 40	Unknown	Unknown	103	94701364	X	***15 x 15.5 x 15***
JUSTRITE STODDARD TANK # 12	Unknown	Unknown	103	94701355	X	***16.5 x 35 x 12***
PROTECTOSEAL STODDARD TANK # 36	Unknown	Unknown	103	94701388	X	***16.5 x 35 x 12***
PROTECTOSEAL STODDARD TANK # 39	Unknown	Unknown	103	94701389	X	***15 x 15.5 x 15***
DIP TANK STODDARD TANK # 44	Unknown	Unknown	103	94701335	X	***15 x 15.5 x 15***
JUSTRITE STODDARD TANK # 28	Unknown	Unknown	103	94701360	X	***15 x 15.5 x 15***
PROTECTOSEAL STODDARD TANK # 54	Unknown	Unknown	103	94701397	X	***15 x 15.5 x 15***
PROTECTOSEAL STODDARD TANK # 9	Unknown	Unknown	103	94701382	X	***15 x 15.5 x 15***
JUSTRITE STODDARD TANK # 62	Unknown	Unknown	103	94701367	X	***15 x 15.5 x 15***
PROTECTOSEAL STODDARD TANK # 41	Unknown	Unknown	103	94701390	X	***16.5 x 35 x 12***

Insignificant Equipment List

PROTECTOSEAL STODDARD TANK	Unknown	Unknown	103	94701409	X	***15" round x 12"deep***
JUSTRITE STODDARD TANK # 15	Unknown	Unknown	103	94701356	X	***15 x 15.5 x 15***
DIP TANK STODDARD TANK # 37	Unknown	Unknown	103	94701334	X	***16.5 x 35 x 12***
JUSTRITE STODDARD TANK # 5	Unknown	Unknown	103	94701353	X	***15 x 15.5 x 15***
PROTECTOSEAL STODDARD TANK # 49	Unknown	Unknown	103	94701393	X	***16.5 x 35 x 12***
PROTECTOSEAL STODDARD TANK # 59	Unknown	Unknown	103	94701400	X	***15 x 15.5 x 15***
DIP TANK STODDARD TANK # 152	Unknown	Unknown	103	94701346	X	***16.5 x35 x 12***
PROTECTOSEAL STODDARD TANK # 65	Unknown	Unknown	103	94701401	X	***15 x 15.5 x 15***
JUSTRITE STODDARD TANK # 151	Unknown	Unknown	103	94701374	X	***13 x 25 x 9***
PROTECTOSEAL STODDARD TANK # 27	Unknown	Unknown	103	94701386	X	***16x36x12***
JUSTRITE STODDARD TANK # 194	Unknown	Unknown	103	94701377	X	***16.5 x 24 x 16.5***
DIP TANK STODDARD TANK # 69	Unknown	Unknown	103	94701340	X	***16.5 x 35 x 12***
PROTECTOSEAL STODDARD TANK # 10	Unknown	Unknown	103	94701383	X	***16.5 x 24 x 8.5***
DIP TANK STODDARD TANK # 198	Unknown	Unknown	103	94701349	X	***16.5 x 35 x 12***
JUSTRITE STODDARD TANK # 2	Unknown	Unknown	103	94701351	X	***16.5 x 35 x 12***
JUSTRITE STODDARD TANK # 158	Unknown	Unknown	103	94701375	X	***15 x 15.5 x 15***
PROTECTOSEAL STODDARD TANK # 197	Unknown	Unknown	103	94701408	X	***15 x 15.5 x 15***
DIP TANK STODDARD TANK # 70	Unknown	Unknown	103	94701341	X	***16.5 x 35 x 12***
DIP TANK STODDARD TANK # 153	Unknown	Unknown	103	94701347	X	***16.5 x 35 x 12***
DIP TANK STODDARD TANK # 33	Unknown	Unknown	103	94701333	X	***16.5 x 35 x 12***
PROTECTOSEAL STODDARD TANK # 19	Unknown	Unknown	103	94701384	X	***16.5 x 35 x 12***
PROTECTOSEAL STODDARD TANK # 51	Unknown	Unknown	103	94701394	X	***16.5 x 35 x 12***
DIP TANK STODDARD TANK # 77	Unknown	Unknown	103	94701344	X	***16.5 x 35 x 12***
PROTECTOSEAL STODDARD TANK # 57	Unknown	Unknown	103	94701398	X	***15 x 15.5 x 15***
PROTECTOSEAL STODDARD TANK # 6	Unknown	Unknown	103	94701381	X	***15 x 15.5 x 15***
JUSTRITE STODDARD TANK # 71	Unknown	Unknown	103	94701370	X	***16.5 x 24 x 8.5***
DIP TANK STODDARD TANK # 26	Unknown	Unknown	103	94701332	X	***16.5 x 35 x 12***
DIP TANK STODDARD TANK # 13	Unknown	Unknown	103	94701328	X	***16.5 x 35 x 12***
JUSTRITE STODDARD TANK # 24	Unknown	Unknown	103	94701359	X	***16.5 x 35 x 12***
DIP TANK STODDARD TANK # 7	Unknown	Unknown	103	94701326	X	***16.5 x 35 x 12***
DIP TANK STODDARD TANK # 74	Unknown	Unknown	103	94701343	X	***16.5 x 35 x 12***
DIP TANK STODDARD TANK # 14	Unknown	Unknown	103	94701329	X	***16.5 x 35 x 12***
DIP TANK STODDARD TANK # 17	Unknown	Unknown	103	94701330	X	***16.5 x 35 x 12***
JUSTRITE STODDARD TANK # 68	Unknown	Unknown	103	94701369	X	***15 x 15.5 x 15***
DIP TANK STODDARD TANK # 82	Unknown	Unknown	103	94701345	X	***16.5 x 35 x 12***
JUSTRITE STODDARD TANK # 61	Unknown	Unknown	103	94701366	X	***16.5 x 24 x 8.5***

Insignificant Equipment List

JUSTRITE STODDARD TANK # 29	Unknown	Unknown	103	94701361	X	***15 x 15.5 x 15***
ZEP PARTS WASHER STODDARD #220	Unknown	Unknown	301	92406073	X	***16.5 x 35 x 12***
STODDARD SOLVENT TANK	Unknown	Unknown	301	94701035	X	
STODDARD SOLVENT TANK	Unknown	Unknown	301	94701418	X	***16.5 x 35 x 12***
STODDARD SOLVENT TANK	Unknown	Unknown	301	94701419	X	***16.5 x 35 x 12***
JUSTRITE STODDARD TANK # 168	Unknown	Unknown	301	94701286	X	***16.5 x 35 x 12***
GREYMILLS STODDARD TANK # 167	Unknown	Unknown	301	94701304	X	***16.5 x 35 x 12***
DIP TANK STODDARD TANK # 72	Unknown	Unknown	403	94701342	X	***16.5 x 35 x 12***
JUSTRITE STODDARD TANK # 32	Unknown	Unknown	403	94701362	X	***16.5 x 35 x 12***
JUSTRITE STODDARD TANK # 64	Unknown	Unknown	403	94701368	X	***16.5 x 35 x 12***
JUSTRITE STODDARD TANK # 79	Unknown	Unknown	403	94701372	X	***16.5 x 35 x 12***
DIP TANK STODDARD TANK # 18	Unknown	Unknown	403	94701331	X	***16.5 x 35 x 12***
JUSTRITE STODDARD TANK # 42	Unknown	Unknown	403	94701365	X	***16.5 x 24 x 8.5***
DIP TANK STODDARD TANK # 86	Unknown	Unknown	404	94701306	X	***30 x 42 x 25***
JUSTRITE STODDARD TANK # 173	Unknown	Unknown	404	94701322	X	***16.5 x 35 x 12***
JUSTRITE STODDARD TANK # 110	Unknown	Unknown	404	94701320	X	***16.5 x 35 x 12***
JUSTRITE STODDARD TANK # 174	Unknown	Unknown	404	94701323	X	***16.5 x 35 x 12***
DIP TANK STODDARD TANK # 100	Unknown	Unknown	404	94701310	X	***18 x 38 x 17***
JUSTRITE STODDARD TANK # 179	Unknown	Unknown	404	94701325	X	***16.5 x 35 x 12***
DIP TANK STODDARD TANK # 111	Unknown	Unknown	404	94701313	X	***30 x 42 x 25***
JUSTRITE STODDARD TANK # 178	Unknown	Unknown	404	94701324	X	***16.5 x 35 x 12***
BUILD ALL BAC STODDARD TANK # 94	Unknown	Unknown	404	94701410	X	***22x32x17***
DIP TANK STODDARD TANK # 108	Unknown	Unknown	404	94701312	X	***30 x 42 x 25***
JUSTRITE STODDARD TANK # 82	Unknown	Unknown	404	94701315	X	***16.5 x 35 x 12***
JUSTRITE STODDARD TANK # 81	Unknown	Unknown	404	94701314	X	***16.5 x 35 x 12***
JUSTRITE STODDARD TANK # 106	Unknown	Unknown	404	94701319	X	***16.5 x 35 x 12***
DIP TANK STODDARD TANK # 92	Unknown	Unknown	404	94701307	X	***24.5 x 30 x 23***
JUSTRITE STODDARD TANK # 103	Unknown	Unknown	404	94701317	X	***16.5 x 35 x 12***
JUSTRITE STODDARD TANK # 96	Unknown	Unknown	404	94701316	X	***16.5 x 24 x 8.5***
DIP TANK STODDARD TANK # 104	Unknown	Unknown	404	94701311	X	***15 x 15.5 x 15***
DIP TANK STODDARD TANK # 93	Unknown	Unknown	404	94701308	X	***15 x 15.5 x 15***
JUSTRITE STODDARD TANK # 105	Unknown	Unknown	404	94701318	X	16.5 x 35 x 12
JUSTRITE STODDARD TANK # 134	Unknown	Unknown	429	94701321	X	16.5 x 35 x 12
DIP TANK STODDARD TANK # 85	Unknown	Unknown	429	94701305	X	***15 x 15.5 x 15***
DIP TANK STODDARD TANK # 98	Unknown	Unknown	429	94701309	X	***15 x 15.5 x 15***

Insignificant Equipment List

Sect.25: Spray Coating (non-thermal)

Paint Booths

Name, Make, Model, Serial #	*Manuf. Date*	*Date Installed*	***Building***	Maintenance #		Max (gal/hr)
BINKS PAINT BOOTH	Unknown	08/01/1988	103	93501028	X	
PAINT SPRAY BOOTH	Unknown	Unknown	110	93501039	X	***1.41***

Sect.30: Plating Operations Other Than Chrome plating

Process Tanks

Name, Make, Model, Serial #	*Manuf. Date*	*Date Installed*	***Building***	Maintenance #		***Tank Size (L*W*D)***
Chemical Film Iridite	Unknown	Unknown	105	94903215	X	***2.5x4x3***
Chemical Film Iridite	Unknown	Unknown	105	94903216	X	***2.5x4x3***
ALKALINE CLEANER	Unknown	Unknown	105	94903264	X	***4x4x4***
HOT D.I. WATER RINSE	Unknown	Unknown	105	94903258	X	***3x4x4***
~~***HOT DI WATER RINSE***~~	Unknown	Unknown	105	~~94903277~~	X	***3x3x3***
HOT DI WATER RINSE	Unknown	Unknown	105	94903469	X	***3x3x3***
~~***ALKALINE CLEANER***~~	Unknown	Unknown	105	~~94903278~~	X	***2.5x3x3***
ALKALINE CLEANER	Unknown	Unknown	105	94903480	X	***2.5x3x3***
~~***Alkaline Cleaner 61B***~~	Unknown	***03/01/1990***	105	~~94903280~~	X	***2.5x3x3***
Alkaline Cleaner 61B	Unknown	Unknown	105	94903458	X	***2.5x3x3***
~~***Degrease***~~	Unknown	Unknown	105	~~94903282~~	X	***3x3x3***
Degrease	Unknown	Unknown	105	94903456	X	***3x3x3***
~~***OAKITE RUSTRIPPER***~~	Unknown	Unknown	105	~~94903290~~	X	***4x3x3***
OAKITE RUSTRIPPER	Unknown	Unknown	105	94903482	X	***4x3x3***
~~***HOT RINSE***~~	Unknown	Unknown	105	~~94903283~~	X	***3x3x3***
HOT RINSE	Unknown	Unknown	105	94903460	X	***3x3x3***
~~***Blue Etch Anodize***~~	Unknown	Unknown	105	~~94903295~~	X	***3x3x3***
Blue Etch Anodize	Unknown	Unknown	105	94903464	X	***3x3x3***
TALLY TANK (EAST SIDE)	Unknown	***01/15/1996***	105	92406021	X	***60"x50"x62"***
TALLY TANK (WEST SIDE)	Unknown	Unknown	105	92406032	X	***60"x50"x62"***
HOT DI WATER RINSE(West Side)	Unknown	Unknown	105	94903447	X	***3x4x4***
HOT OIL TANK	Unknown	Unknown	105	94701213	X	***4x3x3***
DEWAX TANK	Unknown	Unknown	105	94903209	X	***4x3x3***
ALKALINE CLEANER	Unknown	Unknown	105	94903211	X	***2.5x4x3***
HOT DI WATER RINSE	Unknown	Unknown	105	94903220	X	***2.5x4x3***
Titanium Anodize (Empty)	Unknown	Unknown	105	94903222	X	***2.5x4x3***

Insignificant Equipment List

ALUMINUM OXIDE STRIP	Unknown	Unknown	105	94903224	X	***2.5x4x3***
ALKALINE CLEANER	Unknown	Unknown	105	94903233	X	***3x3x3***
DI HOT WATER RINSE	Unknown	Unknown	105	94903229	X	***3x3x3***
HOT DI WATER SEAL	Unknown	Unknown	105	94903238	X	***4x6x5***
DI HOT WATER RINSE	Unknown	Unknown	105	94903234	X	***6x4x5***
WATER RINSE	Unknown	Unknown	105	94903245	X	***2.5x4x3***
Soda Ash	Unknown	Unknown	422	94701176	X	***2x2x2***
Hot DI Rinse	Unknown	Unknown	422	94701177	X	***2x2x2***
Hot DI Rinse	Unknown	Unknown	422	94903419	X	***3x3x3***
Electro-Alkaline Cleaner	Unknown	Unknown	422	94903142	X	***3x3x3***
Hot DI Rinse	Unknown	Unknown	422	94903420	X	***3x3x3***
Electroless Nickel Plate	Unknown	Unknown	422	94903424	X	***4x3x3***
Alkaline Cleaner	Unknown	Unknown	422	94903169	X	***4x3x3***
Oakite Rustripper	Unknown	Unknown	422	94903170	X	***4x3x3***
Hot DI Rinse	Unknown	Unknown	422	94903416	X	***3x2.5x3***
Dewax Tank	Unknown	Unknown	422	94903168	X	***4x3x3***
Alkaline Cleaner	Unknown	Unknown	429	94903373	X	***4x4x4***
Hot DI Rinse	Unknown	Unknown	429	94903382	X	***4x4x4***
Hot DI Rinse	Unknown	Unknown	429	94903387	X	***4x4x4***
Hot DI Rinse	Unknown	Unknown	429	94903389	X	***4x4x4***
Alkaline Cleaner	Unknown	Unknown	429	94903399	X	***4x4x4***
Alkaline Cleaner	Unknown	Unknown	429	94903398	X	***4x4x4***
Alkaline Cleaner	Unknown	Unknown	429	94903394	X	***4x4x4***
Hot DI Rinse	Unknown	Unknown	429	94903401	X	***4x4x4***

Secondary Process Tanks

Name, Make, Model, Serial #	*Manuf. Date*	*Date Installed*	***Building***	Maintenance #		***Tank Size (L*W*D)***
Double Cascade Tank # 8	Unknown	Unknown	422	94701171	X	***6x3x2***
D.I. Water - Triple cascade Rinse Tank # 6	Unknown	Unknown	422	94903148	X	***9x3x2***
Triple Cascade Rinse Tank # 10	Unknown	Unknown	422	94903140	X	***9x3x2***
Cold Water Rinse - Room Temp Tank # 87	Unknown	Unknown	422	94701175	X	***2x2x2***
Cold Water Rinse - Room Temp Tank # 85	Unknown	Unknown	422	94701173	X	***2x2x2***
Double Rinse Tank # 25	Unknown	Unknown	422	94903155	X	***3*4.5*3***
Triple Cascade Rinse Tank # 14	Unknown	Unknown	422	94903144	X	***3.5x6.5x3***
Triple Cascade Rinse Tank	Unknown	Unknown	422	94903146	X	***3.5x6.5x3***
Industrial Water Spray Tank # 95	Unknown	Unknown	422	94903425	X	***3.5x3.5x3.5***

Insignificant Equipment List

Cold Industrial Water Rinse Tank # 96	Unknown	Unknown	422	94903426	X	***6.5x3.5x3.5***
D.I. Water Tank # 97	Unknown	Unknown	422	94903422	X	***3.5x3.5x3.5***
Single cascade RinseTank # 30	Unknown	Unknown	422	94903160	X	***3x2.5x3***
Single cascade RinseTank # 23	Unknown	Unknown	422	94903153	X	***3x2.5x3***
Drag Out Rinse Tank # 20	Unknown	Unknown	422	94903150	X	***3x2.5x3***
Double Rinse Tank # 31	Unknown	Unknown	422	94903161	X	***3x4.5x3***
NOT IN USE - Tank # 17	Unknown	Unknown	422	94903147	X	***3.5x3.5x3***
NOT IN USE - Tank # 33	Unknown	Unknown	422	94903162	X	***3x3x3***
Single cascade Rinse Tank # 34	Unknown	Unknown	422	94903163	X	***3x4x3***
Triple Cascade Rinse Tank # 45	Unknown	Unknown	422	94903175	X	***6.5x3.5x3***
Triple Cascade Rinse Tank # 43	Unknown	Unknown	422	94903173	X	***6.5x3.5x3***
Triple Cascade Rinse Tank # 41	Unknown	Unknown	422	94903171	X	***6.5x3.5x3***
Cold Water Rinse Tank # 79	Unknown	Unknown	422	94903208	X	***3x3x3***
Cold Water Rinse Tank # 76	Unknown	Unknown	422	94903205	X	***3x3x3***
Double Rinse Tank # 72	Unknown	Unknown	422	94903430	X	***3x4.5x3***
Triple Cascade Rinse Tank # 70	Unknown	Unknown	422	94903199	X	***3x4.5x3***
Drag Out Tank # 69	Unknown	Unknown	422	94903198	X	***3x2.5x3***
Triple Rinse Tank # 65	Unknown	Unknown	422	94903194	X	***3x6.5x3***
Triple Cascade Rinse Tank # 63	Unknown	Unknown	422	94903192	X	***3x6.5x3***
Triple Rinse Tank # 60	Unknown	Unknown	422	94903189	X	***3x6.5x3***
Rinse Tank # 59A	Unknown	Unknown	422	94903428	X	***3x2.5x3***
Drag Out Tank # 59	Unknown	Unknown	422	94903188	X	***3x2.5x3***
Single Cascade Rinse Tank # 56	Unknown	Unknown	422	94903429	X	***3x2.5x3***
Single Cascade Rinse Tank # 47	Unknown	Unknown	422	94903427	X	***3x2.5x3***
Drag Out Tank # 50	Unknown	Unknown	422	94903180	X	***3x2.5x3***
Triple Cascade Rinse Tank # 181	Unknown	Unknown	105	94903457	X	***3.5x6.5x3***
Double Cascade Rinse Tank # 168	Unknown	Unknown	105	94903459	X	***3.5x4.5x3***
Double Cascade Rinse Tank # 186	Unknown	Unknown	105	94903461	X	***3.5x4.5x3***
Double Cascade Rinse Tank # 188	Unknown	Unknown	105	94903463	X	***3.5x4.5x3***
Double Cascade Rinse Tank # 190	Unknown	Unknown	105	94903467	X	***3.5x4.5x3***
Double Cascade Rinse Tank # 166	Unknown	Unknown	105	94903470	X	***3.5x4.5x3***
Double Cascade Rinse Tank # 163	Unknown	Unknown	105	94903472	X	***3.5x4.5x3***
Triple Cascade Rinse Tank # 184	Unknown	Unknown	105	94903474	X	***3.5x6.5x3***
Double Cascade Rinse Tank # 160	Unknown	Unknown	105	94903477	X	***3.5x4.5x3***
Double Cascade Rinse Tank # 158	Unknown	Unknown	105	94903479	X	***3.5x4.5x3***
Double Cascade Rinse Tank # 192	Unknown	Unknown	105	94903481	X	***3.5x4.5x3***

Insignificant Equipment List

Industrial Water Spray Tank	Unknown	Unknown	105	NO M#	X	***4.5x3.5x4***
Cold Water Rinse Tank	Unknown	Unknown	105	94903443	X	***4.5x6.5x3***
Hot D.I. Water Tank	Unknown	Unknown	105	94903444	X	***3.5x4.5x3***
Double Cascade Rinse Tank # 146	Unknown	Unknown	105	94903263	X	***4.5x6.5x3***
Double Cascade Rinse Tank # 148	Unknown	Unknown	105	94903261	X	***4.5x6.5x3***
Double Cascade Rinse Tank # 150	Unknown	Unknown	105	94903259	X	***4.5x6.5x3***
Triple Cascade Rinse Tank # 152	Unknown	Unknown	105	94903254	X	***4.5x9x3***
Triple Cascade Rinse Tank # 155	Unknown	Unknown	105	94903257	X	***4.5x9x3***
Triple Cascade Rinse Tank # 119	Unknown	Unknown	105	94903232	X	***6.5x3.5x3***
Triple Cascade Rinse Tank	Unknown	Unknown	105	94903230	X	***6.5x3.5x3***
Double Cascade Rinse Tank # 124	Unknown	Unknown	105	94903227	X	***4.5x3.5x3***
Double Cascade Rinse Tank # 126	Unknown	Unknown	105	94903225	X	***4.5x3.5x3***
Double Cascade Rinse Tank # 143	Unknown	Unknown	105	NO M#	X	***4.5x3.5x3***
Cold Water Rinse Tank # 138	Unknown	Unknown	105	94903248	X	***4.5x3x3***
Double Cascade Rinse Tank # 136	Unknown	Unknown	105	94903250	X	***4.5x5.5x3***
Triple Cascade Rinse Tank # 115	Unknown	Unknown	105	94903223	X	***4.5x5.5x3***
Double Cascade Rinse Tank # 113	Unknown	Unknown	105	94903221	X	***4.5x4.5x3***
Double Cascade Rinse Tank # 111	Unknown	Unknown	105	94903219	X	***4.5x4.5x3***
Triple Cascade Rinse Tank # 109	Unknown	Unknown	105	94903217	X	***4.5x5.5x3***
Triple Cascade Rinse Tank # 106	Unknown	Unknown	105	94903214	X	***4.5x5.5x3***
Double Cascade Rinse Tank # 104	Unknown	Unknown	105	94903212	X	***4.5x4.5x3***
Industrial Water Spray Tank - Line 2	Unknown	Unknown	105	94903445	X	***4.5x4.5x3.5***
Cold Water Rinse Tank - Line 2	Unknown	Unknown	105	94903446	X	***4.5x6x3.5***
Double Cascade Rinse Tank # 128	Unknown	Unknown	105	94903235	X	***6x8.5x3.5***
Triple Cascade Rinse Tank # 131	Unknown	Unknown	105	94903240	X	***6x10x3.5***
Double Cascade Rinse Tank # 133	Unknown	Unknown	105	94903237	X	***6x8.5x3.5***
Cold Water Rinse/Industrial Water Tank # 17	Unknown	Unknown	429	94903391	X	***4x4x4***
Cold Water Rinse Tank # 15	Unknown	Unknown	429	94903388	X	***4x4x4***
Chemical CleanTank # 4	Unknown	Unknown	429	94903376	X	***4x4x4***
Chemical CleanTank # 2	Unknown	Unknown	429	94903374	X	***4x4x8***
Cold Water Rinse Tank # 8	Unknown	Unknown	429	94903381	X	***4x4x4***
Chemical CleanTank # 6	Unknown	Unknown	429	94903379	X	***4x4x4***
Chemical CleanTank # 11	Unknown	Unknown	429	94903384	X	***4x4x8***
Chemical CleanTank # 22	Unknown	Unknown	429	94903397	X	***4x4x4***
Chemical CleanTank # 20	Unknown	Unknown	429	94903395	X	***4x4x8***
Chemical CleanTank # 13	Unknown	Unknown	429	94903386	X	***4x4x4***

Insignificant Equipment List

Chemical Clean/Cold Water RinseTank # 26	Unknown	Unknown	429	94903402	X	***4x4x8***

Electric Heat Treating Furnaces

Name, Make, Model, Serial #	*Manuf. Date*	*Date Installed*	*Building*	*Maintenance #*		
Quench Oil Tank	Unknown	Unknown	422	93024000	X	Unknown
Abar Vacuum Furnace V-2	Unknown	Unknown	422	93003010	X	Unknown
Ipsen Vacuum Furnace	Unknown	Unknown	422	93003029	X	Unknown
Lindberg Electric Furnace T-5	Unknown	Unknown	422	93007019	X	Unknown
Lindberg Furnace H-3	Unknown	Unknown	422	93007003	X	Unknown
Lindberg Electric Furnace T-8	Unknown	Unknown	422	93007013	X	Unknown
Leeds&Northrup Furnace T-1	Unknown	Unknown	422	93013001	X	Unknown
Leeds&Northrup Furnace T-3	Unknown	Unknown	422	93013006	X	Unknown
Lindberg Heavy-Duty Furnace H-2	Unknown	Unknown	422	93007012	X	Unknown
Upton Tempering Furnace T-2	Unknown	Unknown	422	93007042	X	Unknown
Upton Tempering Furnace	Unknown	Unknown	422	93007043	X	Unknown

Test Cells

Name, Make, Model, Serial #	*Manuf. Date*	*Date Installed*	*Building*			*Max Thruput (gal/hr)*
HOT CORROSION TEST STAND	Unknown	***09/15/1996***	***116***	***94510002***	X	***0.56***
Test cell C-106/806	Unknown	1956	***203***		X	***Do Not Use Fuel***
Test cell C-110	Unknown	Unknown	***203***		X	***Do Not Use Fuel***
Test cell C-111	Unknown	Unknown	***203***		X	***Do Not Use Fuel***
Test cell C-112	Unknown	Unknown	***203***		X	***Do Not Use Fuel***
Test cell D-116	Unknown	Unknown	***204***		X	***Do Not Use Fuel***
Test cell #830	Unknown	Unknown	***217***		X	***Do Not Use Fuel***

Other Equipment

Honeywell Engines - 111 S 34th St Phoenix Permit #V97-008 (reformatted 8/23/06 by R.Roberts, Permit Engr.)

LEGEND:Honeywell 10/30/06 update

Requirements: Type, Name, Make, Model, Serial #, Size/Capacity, Manuf.date, Install Date, Location

Emergency Generators	*Manuf. Date*	*Date Installed*	*Building*	*Maintenance #*	Horsepower
ONAN ELECTRIC GENERATOR SET S/N F760138091	Unknown	03/04/1994	0503-1 F20	93202053	56
GENERAC DIESEL GENERATOR S/N 697372	Unknown	03/04/1994	0102-1 DD25	93202017	134
KOHLER GENERATOR SET S/N 137512A5-29-51-53	Unknown	03/04/1994	0301-1 TT30	93202059	201
GENERAC GENERATOR S/N 2037195	Unknown	12/01/1997	0404-1 A178	93202077	107
GENERAC GENERATOR S/N 2061439	Unknown	03/04/1994	0103-1 AA92	93202082	107
GENERAC GENERATOR S/N 2056666	Unknown	10/18/2000	0302-1 BB38	93202081	80
CUMMINS GENERATOR S/N J020432126	Unknown	12/16/2002	0422-1 DD116	93202083	201
CUMMINS GENERATOR S/N A030459905	Unknown	02/20/2003	0109-1 Q36	93202084	134

Fire Pumps					Horsepower
Harrison Fire Pump	Unknown	Unknown	119	93801034	400
Harrison Fire Pump	Unknown	Unknown	233	93801052	550

Other Equipment				
SVE Unit	Unknown	Unknown	108 Parking Lot	N/A

APPENDIX A-2
BSVE SYSTEM EQUIPMENT LISTS

Permitted Equipment List for BSVE System – AOS-1[a]

Honeywell 34th Street BSVE Application, Phoenix, Arizona

Process Train	Name, Make, Model, Serial #	Manufacture Date[b]	Installation Date[c]	Building	Maint. #	Rated Capacity[d,e]
SVT-1	Air/Liquid Separator	August-07	September-07	BSVE	ALS-200	3,300 scfm
	Vapor Injection Blower	August-07	September-07	BSVE	BL-900A	1,650 scfm
	Vapor Extraction Blower	August-07	September-07	BSVE	BL-300	3,300 scfm
	Extraction Air Filter	August-07	September-07	BSVE	TBD	3,300 scfm
	Thermal Oxidizer Unit	August-07	September-07	BSVE	TO-400	min. 3,300 scfm
	Caustic Scrubber	August-07	September-07	BSVE	CS-500	3,300 scfm
	Caustic Feed Pump	August-07	September-07	BSVE	P-502	TBD
	Demister	August-07	September-07	BSVE	TBD	3,300 scfm
	Heat Exchanger	August-07	September-07	BSVE	HX-600	TBD
	Cooling Tower	August-07	September-07	BSVE	CT-601	TBD
	Chiller	August-07	September-07	BSVE	C7-601	TBD
	Booster Blower	August-07	September-07	BSVE	BL-800	3,560 scfm
	Carbon Units (2 in series)	August-07	September-07	BSVE	VGAC-1, VGAC-2	3,300 scfm
	Potassium Permanganate Units (2 in series)	August-07	September-07	BSVE	PPA-1, PPA-2	3,300 scfm

Notes:

[a] AOS-1 consists of SVT-1 only, operating with all control devices (e.g., thermal oxidizer, caustic scrubber, carbon units, and potassium permanganate units) on the treatment train.

[b] Manufacture date estimated based on anticipated approval of air permit (May 2007) and planned installation date (September 2007). Actual manufacture dates for some "off-the-shelf" items may actually be earlier.

[c] Installation date estimated based on anticipated approval of air permit (May 2007)

[d] TBD – to be determined

[e] Some rated capacities may change once vendors are selected and pieces of equipment are ordered.

Permitted Equipment List for BSVE System – AOS-2[a]

Honeywell 34th Street BSVE Application, Phoenix, Arizona

Process Train	Name, Make, Model, Serial #	Manufacture Date[b]	Installation Date[c]	Building	Maint. #	Rated Capacity[d,e]
SVT-1	Air/Liquid Separator	August-07	September-07	BSVE	ALS-200	3,300 scfm
	Vapor Injection Blower	August-07	September-07	BSVE	BL-900A	1,650 scfm
	Vapor Extraction Blower	August-07	September-07	BSVE	BL-300	3,300 scfm
	Extraction Air Filter	August-07	September-07	BSVE	TBD	3,300 scfm
	Thermal Oxidizer Unit	August-07	September-07	BSVE	TO-400	min. 3,300 scfm
	Caustic Scrubber	August-07	September-07	BSVE	CS-500	3,300 scfm
	Caustic Feed Pump	August-07	September-07	BSVE	P-502	TBD
	Demister	August-07	September-07	BSVE	TBD	3,300 scfm
	Heat Exchanger	August-07	September-07	BSVE	HX-600	TBD
	Cooling Tower	August-07	September-07	BSVE	CT-601	TBD
	Chiller	August-07	September-07	BSVE	C7-601	TBD
	Booster Blower	August-07	September-07	BSVE	BL-800	3,560 scfm
	Carbon Units (2 in series)	August-07	September-07	BSVE	VGAC-1, VGAC-2	3,300 scfm
	Potassium Permanganate Units (2 in series)	August-07	September-07	BSVE	PPA-1, PPA-2	3,300 scfm
SVT-2	Air/Liquid Separator	TBD	TBD	BSVE	TBD	2,000 scfm
	Vapor Injection Blower	TBD	TBD	BSVE	BL-900B	1,000 scfm
	Vapor Extraction Blower	TBD	TBD	BSVE	TBD	2,000 scfm
	Extraction Air Filter	TBD	TBD	BSVE	TBD	2,000 scfm
	Thermal Oxidizer Unit	TBD	TBD	BSVE	TO-401	min. 2,000 scfm
	Caustic Scrubber	TBD	TBD	BSVE	CS-501	2,000 scfm
	Caustic Feed Pump	TBD	TBD	BSVE	TBD	TBD
	Demister	TBD	TBD	BSVE	TBD	2,000 scfm
	Cooling Tower	TBD	TBD	BSVE	CT-602	TBD
	Heat Exchanger	TBD	TBD	BSVE	TBD	TBD
	Chiller	TBD	TBD	BSVE	TBD	TBD
	Booster Blower	TBD	TBD	BSVE	TBD	TBD
	Carbon Units (2 in series)	TBD	TBD	BSVE	VGACA-1, VGACA-2	TBD
	Potassium Permanganate Units (2 in series)	TBD	TBD	BSVE	PPA-A1, PPA-A2	TBD

Notes:

[a]AOS-2 consists of SVT1 and SVT2 operating with all control devices (e.g., thermal oxidizer, caustic scrubber, carbon units, and potassium permanganate units) on each treatment train.

[b] Manufacture date estimated based on anticipated approval of air permit (May 2007) and planned installation date (September 2007). Actual manufacture dates for some "off-the-shelf" items may actually be earlier.

[c] Installation date estimated based on anticipated approval of air permit (May 2007)

[d] TBD – to be determined

[e] Some rated capacities may change once vendors are selected and pieces of equipment are ordered.

Permitted Equipment List for BSVE System – AOS-3[a]

Honeywell 34th Street BSVE Application, Phoenix, Arizona

Process Train	Name, Make, Model, Serial #	Manuf. Date[b]	Date Installed[c]	Building	Maint. #	Rated Capacity[d,e]
SVT-1	Air/Liquid Separator	August-07	September-07	BSVE	ALS-200	3,300 scfm
	Vapor Injection Blower	August-07	September-07	BSVE	BL-900A	1,650 scfm
	Vapor Extraction Blower	August-07	September-07	BSVE	BL-300	3,300 scfm
	Extraction Air Filter	August-07	September-07	BSVE	TBD	3,300 scfm
	Thermal Oxidizer Unit	August-07	September-07	BSVE	TO-400	min. 3,300 scfm
	Caustic Scrubber	August-07	September-07	BSVE	CS-500	3,300 scfm
	Caustic Feed Pump	August-07	September-07	BSVE	P-502	TBD
	Demister	August-07	September-07	BSVE	TBD	3,300 scfm
	Heat Exchanger	August-07	September-07	BSVE	HX-600	TBD
	Cooling Tower	August-07	September-07	BSVE	CT-601	TBD
	Chiller	August-07	September-07	BSVE	C7-601	TBD
	Booster Blower	August-07	September-07	BSVE	BL-800	3,560 scfm
	Carbon Units (2 in series)	August-07	September-07	BSVE	VGAC-1, VGAC-2	3,300 scfm
SVT-2	Air/Liquid Separator	TBD	TBD	BSVE	ALS-200	2,000 scfm
	Vapor Injection Blower	TBD	TBD	BSVE	BL-900B	1,000 scfm
	Vapor Extraction Blower	TBD	TBD	BSVE	TBD	2,000 scfm
	Extraction Air Filter	TBD	TBD	BSVE	TBD	2,000 scfm
	Thermal Oxidizer Unit	TBD	TBD	BSVE	TO-401	min. 2,000 scfm
	Caustic Scrubber	TBD	TBD	BSVE	CS-501	2,000 scfm
	Caustic Feed Pump	TBD	TBD	BSVE	TBD	TBD
	Demister	TBD	TBD	BSVE	TBD	2,000 scfm
	Cooling Tower	TBD	TBD	BSVE	CT-602	TBD
	Heat Exchanger	TBD	TBD	BSVE	TBD	TBD
	Chiller	TBD	TBD	BSVE	TBD	TBD
	Booster Blower	TBD	TBD	BSVE	TBD	TBD
	Carbon Units (2 in series)	TBD	TBD	BSVE	VGACA-1, VGACA-2	TBD

Notes:

[a]AOS-3 consists of treatment without potassium permanganate units. This scenario may include SVT1 only or SVT1 and SVT2 both operating.

[b] Manufacture date estimated based on anticipated approval of air permit (May 2007) and planned installation date (September 2007). Actual manufacture dates for some "off-the-shelf" items may actually be earlier.

[c] Installation date estimated based on anticipated approval of air permit (May 2007)

[d] TBD – to be determined

[e] Some rated capacities may change once vendors are selected and pieces of equipment are ordered.

Permitted Equipment List for BSVE System – AOS-4[a]

Honeywell 34th Street BSVE Application, Phoenix, Arizona

Process Train	Name, Make, Model, Serial #	Manufacture Date[b]	Installation Date[c]	Building	Maint. #	Rated Capacity[d,e]
SVT-1	Air/Liquid Separator	August-07	September-07	BSVE	ALS-200	3,300 scfm
	Vapor Injection Blower	August-07	September-07	BSVE	BL-900A	1,650 scfm
	Vapor Extraction Blower	August-07	September-07	BSVE	BL-300	3,300 scfm
	Extraction Air Filter	August-07	September-07	BSVE	TBD	3,300 scfm
	Carbon Units (3 in series)	August-07	September-07	BSVE	VGAC-1, VGAC-2, VGAC-3	TBD
	Potassium Permanganate Units (2 in series)	August-07	September-07	BSVE	PPA-1, PPA-2	TBD
SVT-2	Air/Liquid Separator	TBD	TBD	BSVE	ALS-200	2,000 scfm
	Vapor Injection Blower	TBD	TBD	BSVE	BL-900B	1,000 scfm
	Vapor Extraction Blower	TBD	TBD	BSVE	TBD	2,000 scfm
	Extraction Air Filter	TBD	TBD	BSVE	TBD	2,000 scfm
	Carbon Units (3 in series)	August-07	September-07	BSVE	VGAC-1, VGAC-2, VGAC-3	TBD
	Potassium Permanganate Units (2 in series)	TBD	TBD	BSVE	PPA-A1, PPA-A2	TBD

Notes:

[a]AOS-4 consists of treatment with carbon and potassium permanganate units only, e.g., no thermal oxidizer and associated equipment. This scenario may include SVT1 only or SVT1 and SVT2 both operating.

[b] Manufacture date estimated based on anticipated approval of air permit (May 2007) and planned installation date (September 2007). Additionally, manufacture dates for some "off-the-shelf" items may actually be earlier.

[c] Installation date estimated based on anticipated approval of air permit (May 2007)

[d] TBD – to be determined

[e] Some rated capacities may change once vendors are selected and pieces of equipment are ordered.

Permitted Equipment List for BSVE System – AOS-5[a]

Honeywell 34th Street BSVE Application, Phoenix, Arizona

Process Train	Name, Make, Model, Serial #	Manuf. Date[b]	Date Installed[c]	Building	Maint. #	Rated Capacity[d,e]
SVT-1	Air/Liquid Separator	August-07	September-07	BSVE	ALS-200	3,300 scfm
	Vapor Injection Blower	August-07	September-07	BSVE	BL-900A	1,650 scfm
	Vapor Extraction Blower	August-07	September-07	BSVE	BL-300	3,300 scfm
	Extraction Air Filter	August-07	September-07	BSVE	TBD	3,300 scfm
	Carbon Units (3 in series)	August-07	September-07	BSVE	VGAC-1, VGAC-2, VGAC-3	TBD
SVT-2	Air/Liquid Separator	TBD	TBD	BSVE	ALS-200	2,000 scfm
	Vapor Injection Blower	TBD	TBD	BSVE	BL-900B	1,000 scfm
	Vapor Extraction Blower	TBD	TBD	BSVE	TBD	2,000 scfm
	Extraction Air Filter	TBD	TBD	BSVE	TBD	2,000 scfm
	Carbon Units (3 in series)	August-07	September-07	BSVE	VGAC-1, VGAC-2, VGAC-3	TBD

Notes:

[a]AOS-5 consists of treatment with carbon units only, e.g., no thermal oxidizer and associated equipment. This scenario may include SVT1 only or SVT1 and SVT2 both operating.

[b] Manufacture date estimated based on anticipated approval of air permit (May 2007) and planned installation date (September 2007). Additionally, manufacture dates for some "off-the-shelf" items may actually be earlier.

[c] Installation date estimated based on anticipated approval of air permit (May 2007)

[d] TBD – to be determined

[e] Some rated capacities may change once vendors are selected and pieces of equipment are ordered.

APPENDIX B-1
TECHNICAL SUPPORT DOCUMENT

1. APPLICANT

Honeywell Engines, Systems and Services
111 South 34th Street
Phoenix, AZ 85034

2. PROJECT LOCATION

The Honeywell facility is located at 111 South 34th Street, Phoenix, AZ, which lies within Maricopa County.

With respect to the National Ambient Air Quality Standards (NAAQS), this location is designated as moderate nonattainment for ozone and serious nonattainment for PM_{10}. The project site is under the jurisdiction of the Maricopa County Air Quality Department (MCAQD).

3. PROJECT/PROCESS DESCRIPTION

Honeywell Engines, Systems and Services (Honeywell) filed an application for a significant permit revision for the following pieces of equipment:

Building 422

- Replacement of the nitriding furnace ammonia scrubber
- Installation of a new scrubber for the batch wastewater treatment tank
- Addition of the in-ground vaulted methanol tank to the equipment list

Building 105

- Replacement of the East and West scrubbers
- Replacement of two Rotoclone dust collectors with a cartridge dust collector

3.1 Nitriding Furnace Ammonia Scrubber (92415026)

The nitriding process permit revision consists of replacing an existing packed-bed ammonia scrubber with a similar scrubber. The original scrubber is a model F/WR-1/4 rated at 150 cubic feet per minute (cfm). The replacement scrubber is a Harrington model ECH 1 2-5 lb horizontal wet packed-bed scrubber rated at 750 cfm.

3.2 Batch Wastewater Treatment Tank Scrubber (92415025)

The batch wastewater treatment tank scrubber permit revision consists of installing a packed-bed scrubber to control chlorine and hydrogen sulfide emissions that are generated as a result of batch-treating wastewater in a 3,000-gallon tank. The batch wastewater treatment tank treats smaller volumes of specific types of waste streams that cannot be handled by the facility flow through system, for example, wastewater that has become commingled and cannot be treated easily in the flow-through system and electroless nickel wastewater. The wastewater is treated in a batch process, and the characteristics of the waste may vary from batch to batch. Honeywell primarily treats wastewater from four processes in the batch wastewater tank, which contain three types of waste streams - cyanide, metal-bearing, and electroless nickel.

Cyanide-Bearing Wastewater – Cyanide-bearing wastewater is adjusted to a pH between 10.8 and 11.2, and a stoichiometric amount (ideally) of sodium hypochlorite (NaOCl) is added. The contents of the tank are then mixed until the oxidation-reduction potential (ORP) reaches approximately 500 mV and an excess of chlorine is detected. (Honeywell monitors the wastewater for free chlorine by a wet chemical test.) The pH is then lowered to a range from 7.5 to 9.0 and again NaOCl is added in the same stoichiometric volume until the ORP electrode indicates 800mV and again an excess of chlorine is detected. Some chlorine off-gassing occurs during these treatment steps in the range of 0 to 15 ppm by volume. (Honeywell has measured the chlorine concentration above the tank and the maximum measured amount is 15 ppm).

Metal-Bearing Wastewater - Metal-bearing wastewater with chromium, cadmium or lead is adjusted to a pH of approximately 5. Sludge from the clarifier of the flow-through wastewater treatment system (pH of approximately 9) is added to treat any hexavalent chromium in the batch according to testing performed prior to each batch treatment. The tank is then mixed for at least 2 hours. Samples are taken and tested for discharge parameters prior to completion of each batch treatment. During the phase when the sludge from the clarifier is added to the wastewater in the batch tank, the sludge will emit up to 5 ppm by volume of hydrogen sulfide. (Honeywell has measured the hydrogen sulfide concentration above the tank and the maximum measured amount is 5 ppm).

Electroless Nickel Wastewater - Electroless nickel wastewater is adjusted to a pH of about 6.5. A chemical precipitating product called ChemPrep M-1120, which is a carbamate material, is then added. The nickel metal exchanges anions with the additive and precipitates out. No emissions occur during this process.

3.3 Methanol Tank

The methanol tank is a 6,000-gallon capacity, fixed-roof tank located in an in-ground concrete vault. The tank is vented to the atmosphere and is blanketed with nitrogen. The methanol in the tank is pumped to furnaces used to carburize turbine engine parts. The methanol disassociates inside the furnace and drives carbon into the surface of the part. Emissions from the furnaces have been characterized in the original Title V permit application. This significant permit revision characterizes the emissions and requirements associated with the methanol tank and associated piping only.

3.4 Building 105 East Scrubber (92415028) and West Scrubber (92415027)

The Building 105 scrubber permit revision consists of replacing two existing packed-bed scrubbers (East and West) with similar scrubbers. The existing East scrubber is a Harrington model ECH 89 rated at 34,000 cfm (92415008), which will be replaced with the same model scrubber rated at the same flowrate (92415028). The existing West scrubber is a Harrington model ECH 910 rated at 42,000 cfm (92415009), which will be replaced with a Harrington model ECH 89 rated at 34,000 cfm (92415027).

The scrubbers on the east and west side of Building 105 control emissions from anodizing, etching, machining/inspecting, cleaning, and stripping processes. The East scrubber controls chromium, hydrofluoric, hydrochloric, and nitric acid gas and magnesium and particulate matter (PM) emissions. The West scrubber controls chromium and hydrofluoric acid gas, PM, nickel, and glycol ether emissions.

3.5 Shot Peening Cartridge Dust Collector (92401739)

The shot peening cartridge dust collector permit revision consists of replacing two Rotoclones (92401499 and 92401066) with a MAC Equipment model number 2M2F8 cartridge dust collector

(92401739). The cartridge dust collector controls PM emissions from the shot peening process. During the shot peening process, parts are loaded on a fixture and placed inside the machine on a rotating spindle. A stream of shot is then directed at the part surface at high velocity under controlled conditions. This process induces compressive stresses in the exposed surface layers of metallic parts thus increasing part life. The objective is not to remove any material from the surface of the part. Emissions are generated from the breakage of the steel shot. Honeywell uses only hardened cast steel for all shot peening applications. The steel shot is loaded from 50 pound bags into the shot peen feed hopper.

4. EMISSIONS FROM PROJECT

The emissions from each piece of equipment were calculated using AP-42 emission factors, previous material usage, and/or assumptions from facility process engineers. A summary of the emissions for the equipment covered in this permit revision is included in Table 4.1.

Table 4-1
Summary of Annual Emissions (tons/year)

Compound	Ammonia Scrubber	Batch Scrubber	Methanol Tank	East Scrubber	West Scrubber	Dust Collector
PM / PM_{10}	- - -	- - -	- - -	5.50E-04	5.49E-03	0.69
Ammonia	0.14	- - -	- - -	- - -	- - -	- - -
Chlorine	- - -	1.02	- - -	- - -	- - -	- - -
Hydrogen Sulfide	- - -	0.10	- - -	- - -	- - -	- - -
Methanol	- - -	- - -	0.11	- - -	- - -	- - -
Hydrofluoric Acid	- - -	- - -	- - -	1.91E-03	1.07E-03	- - -
Chromium	- - -	- - -	- - -	4.68E-04	5.40E-03	- - -
Hydrochloric Acid	- - -	- - -	- - -	1.72E-03	- - -	- - -
Manganese	- - -	- - -	- - -	8.22E-05	- - -	- - -
Nickel	- - -	- - -	- - -	- - -	9.13E-05	- - -
Glycol Ethers	- - -	- - -	- - -	- - -	5.48E-05	- - -
Total HAPs[1]	**0.14**	**1.12**	**0.11**	**4.18E-03**	**6.62E-03**	**- - -**

PM/PM_{10} = Particulate matter and particulate matter <10µm
HAPs = Hazardous Air Pollutants
1 = Total HAPs includes federal HAPs hydrochloric acid, hydrofluoric acid, manganese, chromium, chlorine, nickel, glycol ethers and methanol (ammonia and Hydrogen Sulfide are AAAQG HAPs)

4.1 Nitriding Furnace Ammonia Scrubber

Ammonia is used in three locations at the facility: the two nitriding furnaces, the copper strip tank, and the used copper strip solution tank. This significant permit revision applies only to the nitriding furnace process. There are two nitriding furnaces and one ammonia scrubber serving both furnaces.

The 1-hour, 24-hour, and annual emissions from the nitriding furnace ammonia scrubber are summarized in Table 4-2.

TABLE 4-2
Emissions from Ammonia Scrubber

Compound	1-Hour (lbs/hr)	24-Hour (lbs/24hr)	Annual(tons/yr)
Ammonia	0.041	0.98	0.14

Annual Emission Rate

The annual emission rate of ammonia from the ammonia scrubber is based on ammonia usage data provided by Honeywell. According to the data supplied by Honeywell in their permit revision application, 90% of the ammonia used at the facility is used in the nitriding process (the other 10% is used in the copper strip tank and the used copper strip solution tank). Of the ammonia used in the nitriding furnaces, 80% is dissociated intro nitrogen and hydrogen prior to entering the furnaces and 20% of the ammonia is fed directly into the nitriding furnaces. Of the ammonia entering the furnaces, 50% reacts with the part and the other 50% remains unreacted and is vented to the scrubber. The scrubber has an ammonia removal efficiency of 99%. The density of ammonia is approximately 20.78 lb/ft^3 at the temperature (1750 degrees Fahrenheit) and pressure (5 to 7 pounds per square inch) it is supplied from the ammonia tank to the nitriding furnaces.

The maximum ammonia emission rate is based on the facility ammonia usage from 2005 (92,724 pounds) scaled to a full year of 8,760 hours. In 2005, the annual ammonia usage data showed that of the 92,724 pounds of ammonia used at the facility, 90% or 83,452 pounds were used in the nitriding furnaces. The two nitriding furnaces operated for a total of 5,400 hours in calendar year 2005. This equates to 15.45 pounds ammonia per hour of furnace operation. The 15.45 pounds per hour was scaled up to a total of 8,760 hours per year operation per furnace, so the maximum ammonia usage in the nitriding process will be 270,684 pounds per year (15.45 lb/hr x 8760 hr/yr x 2 furnaces = 270,684 lb/yr). Since 90% of the total facility ammonia usage is at the nitriding furnaces, the total facility-wide ammonia usage will be limited to 300,760 pounds per year (270,684 x 1/0.90 = 300,760).

The annual emission rate of ammonia from the ammonia scrubber was

calculated based on the following equations:

$$UR_{05} = \frac{MU_{05} \times PU}{HO_{05}}$$

$$UR_{05} = \frac{92{,}724 \times 0.90}{5{,}400} = 15.45\ lb/hr$$

where: UR_{05} = Ammonia used per hour of furnace operation (lb/furnace-hr)
MU_{05} = Facility ammonia usage in 2005 (92,724 lbs)
PU = Percent of ammonia used in nitriding process (90%)
HO_{05} = Combined hours of operation for nitriding furnaces in 2005 (5,400 hr)

$$ER_{YR} = UR_{05} \times HO_{YR} \times N_F \times A_F \times A_{UR} \times (1 - RE_{AS})$$

$$ER_{YR} = 15.45 \times 8{,}760 \times 2 \times 0.20 \times 0.50 \times (1 - 0.99) = 271\ lb/yr$$

where: ER_{YR} = Annual ammonia emissions from ammonia scrubber (lb/yr)
HO_{YR} = Annual hours of operation per nitriding furnace (8760 hrs)
N_F = Number of nitriding furnaces (2)
A_F = Percentage of total ammonia sent directly to the nitriding furnace (20%)
A_{UR} = Percentage of un-reacted ammonia vented out of the furnace (50%)
RE_{AS} = Removal efficiency of ammonia scrubber (99%)

Based on the above equations, **271 pounds** of ammonia are emitted from the ammonia scrubber on an annual basis.

1-Hour Emission Rate

- The nitriding process consists of supplying 85% ammonia at 100 ft^3/hr for 4 hours and 20% ammonia at 100 ft^3/hr for 30 hours to one furnace. The maximum hourly ammonia emissions were based on the maximum supply of ammonia (100 ft^3/hr), the density at which the ammonia is supplied (0.0481 lb/ft^3), the maximum concentration of the ammonia supplied (85%), the percentage of ammonia that does not react with the part surface (50%), and the efficiency of the ammonia scrubber (99%). The maximum hourly ammonia emissions were based on the following equation:

$$ER_{1HR} = Q \times \rho \times C_{max} \times A_{UR} \times N_F \times (1 - RE_{AS})$$

$$ER_{1HR} = 100 \times 0.0481 \times 0.85 \times 0.50 \times 2 \times (1 - 0.99) = 0.041\ lb/hr$$

Where: ER_{1HR} = Ammonia 1-Hour emission rate (lb/hr)
Q = Ammonia supply flowrate (100 ft^3/hr)
ρ = Density of supplied ammonia (0.0481 lb/ft^3)
C_{max} = Maximum concentration of supplied ammonia (85%)

A_{UR} = Percentage of un-reacted ammonia vented out of the furnace (50%)
N_F = Number of nitriding furnaces (2)
• RE_{AS} = Removal efficiency of scrubber (99%)
•

Based on the above equation, the maximum 1-hour ammonia emission rate is **0.041 pounds per hour**.

- **24-hour Emission Rate**
  •

The 24-hour ammonia emission rate was calculated assuming that both furnaces are operating at the maximum 1-hour rate simultaneously for 24 hours. The 24-hour emission rate is **0.98 pounds per day** (0.041 x 24 = 0.98) for both furnaces combined.

4.2 Batch Waste Water Treatment Tank Scrubber

Due to the unique nature of the batch wastewater treatment tank process, published emission factors could not be used to determine potential emissions to the scrubber. Two gases were assumed to be released from the batch wastewater treatment process – chlorine (Cl_2) and hydrogen sulfide (H_2S). Chlorine gas is emitted as the result of the addition of sodium hypochlorite (NaOCl) to treat cyanide-bearing wastewater. Hydrogen sulfide gas is emitted as the result of the addition of clarifier sludge to treat metal-bearing wastewater. The emission estimates of Cl_2 from the batch wastewater tank were calculated using a maximum concentration of Cl_2 in the air above the tank of 15 parts per million by volume (ppmv). The emission estimates of H_2S from the batch wastewater tank were calculated using a maximum concentration of H_2S in the air above the tank of 5 ppmv. Honeywell provided the CL_2 and H_2S concentrations, which were obtained from direct-reading monitoring equipment that was placed above the batch wastewater treatment tank during the batch treatment of wastewater.

The Cl_2 and H_2S emissions from the batch scrubber were calculated using a scrubber flowrate of 11,000 cfm, an ambient temperature of 25 degrees Celsius (^oC), a standard pressure of 760 millimeters of Mercury (mm Hg), and a manufacturer-guaranteed Cl_2 and H_2S scrubber removal efficiency of 87% and 92%, respectively. To determine worst-case emission levels, both the Cl_2 and H_2S emissions from the wastewater treatment tank were assumed to be generated 8,760 hours per year, even though both compounds cannot be generated simultaneously. The capture efficiency was assumed to be 100 percent.

A summary of the emissions of chlorine and hydrogen sulfide from the batch scrubber is presented in Table 4-3.

TABLE 4-3
Emissions from Batch Scrubber

Compound	1-Hour (lbs/hr)	24-Hour (lbs/24hr)	Annual (tons/yr)
Chlorine	0.23	5.52	1.02
Hydrogen Sulfide	0.023	0.552	0.10

The CL_2 and H_2S emissions from the scrubber were calculated using the following equations:

$$C_{X2} = C_{X1} \times \left(\frac{p}{R \times T} \right) \times MW_X \times \frac{1\ lb}{454\ x10^6\ \mu g}$$

$$C_{X2} = 15 \times \left(\frac{1}{8.2\ x10^{-5} \times 298.15} \right) \times 70.9 \times 0.000454 = 9.58\ x10^{-5}\ lb/m^3$$

$$ER_X = Q \times \frac{1\ m^3}{35.31\ ft^3} \times \frac{60\ min}{1\ hr} \times C_{X2} \times (1 - RE_X)$$

$$ER_X = \frac{11{,}000 \times 60 \times 9.58\ x10^{-5} \times (1 - 0.87)}{35.31} = 0.23\ lb/hr$$

- Where: C_{X1} = Maximum concentration of X compound (15 ppmv Cl_2, 5 ppmv H_2S)

C_{X2} = Maximum concentration of X compound (lb/m^3)
X = Compound - hydrogen sulfide or chlorine
p = Standard pressure (1 atm)
R = Universal gas constant (8.2E-5 $atm*m^3/mol*K$)
T = Temperature ($25^oC = 298.15^oK$)
MWx = Molecular weight of X compound (g/mol)
ER_X = Emission rate of X compound (lb/hr)
Q = Flowrate of scrubber (11,000 cfm)
RE_X = Removal efficiency of scrubber for X compound (87% Cl_2, 92% H_2S)

The hourly emissions of each compound generated by the above equation are assumed to be the maximum hourly rate (1-hour), because the maximum anticipated concentrations were used. The 24-hour and annual emissions are based on the 1-hour rate multiplied by 24 and 8,760 hours, respectively.

4.3 Methanol Tank

Honeywell determined that methanol emissions originated from two sources:

1. Fugitive emissions from the methanol storage tank
2. Fugitive emissions from the delivery of methanol to three types of furnaces
   - Caburizing Furnaces
   - Rotary Furnace
   - Box Furnaces

• Fugitive losses from the methanol tank were calculated using EPA TANKS 4.0. Fugitive losses from pump seal leaks were calculated using the emission factor in the EPA's *Protocol for Equipment Leak Emission Estimates*, 1995. Based on the information presented in the EPA document, methanol is a light liquid. The emission factor used to estimate losses of light liquids from pump seals (0.0199 kg/hr/pump = 0.0090 lb/hr/pump) was obtained from Table 2.1 - SOCMI Average Emission Factors in the EPA document. A summary of the 1-hour, 24-hour, and annual methanol emissions due to losses from the tank and delivery equipment are summarized in Table 4-4.

TABLE 4-3
Summary of Methanol Emissions

Methanol Emission Source	1-Hour (lbs/hr)	24-Hour (lbs/24hr)	Annual (tons/yr)
Tank	0.016	0.38	0.070
Supply to Furnaces (pump)	0.0090	0.22	0.040

Methanol Storage

•

• Methanol is supplied to three types of furnaces, and each type of furnace has a different methanol usage rate. The annual methanol usage was based on the usage of methanol between May 1 and July 31, 2006 (9,202 gallons), distribution of methanol among the three furnace types (carburizing furnaces – 60%; rotary furnace – 30%; box furnaces – 10%), and the collective hours of operation for each type of furnace (carburizing furnaces – 1992 hours; rotary furnace – 2711 hours; box furnaces – 524 hours).

•

The 1-hour, 24-hour, and annual methanol emissions from the storage tank were based on the annual usage of methanol, calculated from the following equations:

$$AMU_{F1} = \frac{(PMU \times MUF_{F1})}{PHO_{F1}} \times \frac{8{,}760\ hrs}{1\ yr} \times N_{F1}$$

$$AMU_{F1} = \frac{(9{,}202 \times 0.60)}{1{,}992} \times 8{,}760 \times 2 = 48{,}530.4\ gal.$$

$$AMU_T = \sum AMU_{F1,F2,F3...}$$

$$AMU_T = 48{,}530.4 + 8{,}935.2 + 30{,}835.2 = 88{,}301 \text{ gal.}$$

- where: AMU_{F1} = Annual methanol usage for furnace type 1 (gal)
  AMU_T = Total annual methanol usage for the facility (gal)
  PMU = Period methanol usage (9,202 gal)
  MUF_{F1} = Percentage of total period methanol usage for furnace type 1 (60%)
  PHO_{F1} = Period hours of operation for furnace type 1 (1992 hrs)
  N_{F1} = Number of type 1 (carburizing) furnaces (2)

Based on the above equations, the facility's maximum potential for methanol usage is 88,301 gallons. Because the methanol emissions from the tank are based on the annual usage of methanol (and are independent of the type of equipment that uses the methanol), Honeywell accepts a limitation on the annual methanol usage (maximum of 88,301 gal/yr).

In addition to the maximum annual usage of methanol, the following assumptions were made and inputted into the TANKS program:

Assumptions – the TANKS modeling assessment for this application was conducted using conservative parameters (5,100 gallon tank with 88,301 gallons/year throughput), which resulted in higher emissions than with the given parameters (6,000 gallon tank and 88,301 gallons/year throughput). The TANKS assessment with a 6,000-gallon tank and 88,301 gallons/year throughput resulted in emissions of 49.05 pounds per year.

Based on the TANKS program, the annual methanol emissions from the storage tanks are **140.4 pounds per year**. The hourly emission rate is 140.4 lbs divided by 8,760 hours (0.016 lb/hr), and the 24-hour emission rate is 140.4 lbs divided by 365 days (0.38 lb/day)

Methanol Supply to Equipment

Methanol is supplied to each of the three furnace types by a single pump located near the methanol tank. The 1-hour, 24-hour, and annual emissions are based on the emission factor from Table 2.1 in the EPA's *Protocol for Equipment Leak Emission Estimates* (0.0090 lb/hr/pump) and on the period of operation (1-hour, 24-hours, and 8,760 hours). The following equation was used to calculate the methanol emissions from the delivery process:

$$ER_P = EF_P \times HO_P \times N_P$$

$$ER_P = 0.0090 \times 8{,}760 \times 1 = 79.2 \text{ lb/yr}$$

- where: ER_P = Emissions due to losses from equipment "P" (lb/hr, lb/24-

hr, lb/yr)

EF_P = Emission factor for equipment "P" (lb/hr/source)
HO_P = Hours of operation for equipment "P" (1-hour, 24-hr, 8760 hrs)
N_P = Number of equipment "P" (sources)

Based on the above equation, the maximum potential annual emission of methanol due to pump seal losses is **79.2 lbs per year**. The 1-hour emission rate of methanol is equal to the emission factor (0.0090 lb/hr), and the 24-hour emission rate is 0.22 pounds per day.

4.4 Building 105 East and West Scrubbers

The compound mass inlets for each scrubber were quantified in the original Title V permit and were based on process emissions. Therefore, the scrubber mass inlets and removal efficiencies are independent of the flowrate, and the replacement scrubbers will have the same mass inlet. In addition, the scrubber manufacturer has guaranteed 90 percent removal efficiency. Because the emissions from the east and west scrubbers are based on the removal efficiency, Honeywell accepts a permit condition of a minimum scrubber removal efficiency of 90 percent.

The scrubber emissions were calculated from the following equation:

$$ER_C = IML_C \times (1 - RE_S)$$

$$ER_{PM} = 0.00550 \times (1 - 0.90) = 0.000550 \ tons/yr$$

•

where: ER_C = Compound "C" emission rate from East or West scrubber (lb/hr, lb/yr)

IML_C = Scrubber inlet mass loading of compound "C" (lb/hr, lb/yr)
RE_S = Removal efficiency of scrubber (decimal %)

The East and West scrubber mass inlets are presented in Table 4-4, and the East and West scrubber emissions are presented in Table 4-5. The 24-Hour uncontrolled emission rates were based on the 1-Hour rate occurring over 24 hours.

Table 4-4
Building 105 East and West Scrubber Mass Inlets

Compound	Uncontrolled Emissions (Scrubber Mass Inlets)					
	East Scrubber			West Scrubber		
	1-Hour[1] (lbs/hr)	24-Hour (lbs/24hr)	Annual[1] (ton/yr)	1-Hour[1] (lbs/hr)	24-Hour (lbs/24hr)	Annual[1] (ton/yr)
PM / PM_{10}	1.26E-03	3.02E-02	5.50E-03	1.26E-02	3.02E-01	5.49E-02
HF	4.38E-03	1.05E-01	1.91E-02	2.44E-03	5.86E-02	1.07E-02

Chromium	1.07E-03	2.57E-02	4.68E-03	1.23E-02	2.95E-01	5.40E-02
HCl	3.94E-03	9.46E-02	1.72E-02	- - -	- - -	- - -
Manganese	1.87E-04	4.49E-03	8.22E-04	- - -	- - -	- - -
Nickel	- - -	- - -	- - -	2.09E-04	4.90E-03	9.13E-04
Glycol Ethers	- - -	- - -	- - -	1.25E-04	3.00E-03	5.48E-04

- - - = Not Applicable
1 = From original Title V permit

Table 4-5
Building 105 East and West Scrubber Emissions

Compound	Scrubber Emissions						
	East Scrubber			West Scrubber			Total Annual (ton/yr)
	1-Hour (lbs/hr)	24-Hour (lbs/24hr)	Annual (ton/yr)	1-Hour (lbs/hr)	24-Hour (lbs/24hr)	Annual (ton/yr)	
PM / PM_{10}	1.26E-04	3.02E-03	5.50E-04	1.26E-03	3.02E-02	5.49E-03	6.04E-03
HF	4.38E-04	1.05E-02	1.91E-03	2.44E-04	5.86E-03	1.07E-03	2.98E-03
Chromium	1.07E-04	2.57E-03	4.68E-04	1.23E-03	2.95E-02	5.40E-03	5.88E-03
HCl	3.94E-04	9.46E-03	1.72E-03	- - -	- - -	- - -	1.72E-03
Manganese	1.87E-05	4.49E-04	8.22E-05	- - -	- - -	- - -	8.22E-05
Nickel	- - -	- - -	- - -	2.09E-05	4.90E-04	9.13E-05	9.13E-05
Glycol Ethers	- - -	- - -	- - -	1.25E-05	3.00E-04	5.48E-05	5.48E-05
Total HAPs[1]	- - -	- - -	4.18E-03	- - -	- - -	6.62E-03	**0.011**

- - - = Not Applicable; HF = hydrofluoric acid, HCl = hydrochloric acid; HAP = Hazardous Air Pollutant
1 = Total HAPs include HF, Chromium, HCl, Nickel, Manganese and Glycol Ethers

4.5 Shot Peen Dust Collector

Three shot peen blasters are vented to a single dust collector. A summary of the PM/PM_{10} emissions from the cartridge dust collector for the shot peening process is provided in Table 4-6.

TABLE 4-6
Summary of Shot Peen Dust Collector Emissions

Criteria Pollutant	1-Hour (lbs/hr)	24-Hour (lbs/24hr)	Annual (tons/yr)
PM/PM_{10}	0.54	3.8	0.69

The PM/PM_{10} emission calculations from the shot peen dust collector were based on the EPA AP-42 Section 13.2.6 emission factor for enclosed abrasive blasting equipped with a fabric filter (0.69 pounds of PM/PM_{10} generated per pound of abrasive used). The PM/PM_{10} emissions were also based on the shot peen usage rate as measured during source testing conducted between July 18 and July 21, 2006 (765 lbs/hr for all three shot peen blasters combined).

The 1-hour dust collector emissions were based on the following equation:

$$ER_{1HR} = EF_{SP} \times UR_{SP}$$

$$ER_{1HR} = \frac{0.69}{1000} \times 765 = 0.53\ lb/hr$$

- Where: ER_{1HR} = 1-Hour PM/PM_{10} emissions from dust collector (lb/hr)
  EF_{SP} = AP-42 emission factor for shot peen (0.69 $lb_{PM/PM10}$/1000 $lb_{Abrasive\ used}$)
  UR_{SP} = Total usage rate of shot peen (765 lb/hr)

Based on the above equation, the maximum 1-Hour PM/PM_{10} emissions from the dust collector are **0.53 pounds per hour**.

The shot peen process takes approximately 109 minutes (including setup and cleaning), and the actual use of shot peen occurs for approximately 32 minutes (29 percent of the process). Assuming the shot peen process occurred in back-to-back situations for 24 hours, the 24-Hour PM/PM_{10} emissions were calculated using the following equation:

$$ER_{24HR} = ER_{1HR} \times \frac{24\ hr}{1\ day} \times \frac{T_{SP}}{T_T}$$

$$ER_{24HR} = 0.53 \times \frac{24}{1} \times \frac{32}{109} = 3.8\ lb/day$$

- Where: ER_{24HR} = 24-hr PM/PM_{10} emissions from dust collector (lb/day)
  ER_{1HR} = 1-Hour PM/PM_{10} emissions from dust collector (lb/hr)
  T_{SP} = Actual shot peen usage time during shot peen process (32 minutes)
  T_T = Total time of shot peen process (109 minutes)

Based on the above equation, the maximum 24-Hour PM/PM_{10} emissions from the dust collector are **3.8 pounds per day**.

Assuming the shot peen process occurred in back-to-back situations for an entire year, the annual PM/PM_{10} emissions were calculated using the following equation:

$$ER_{YR} = ER_{1HR} \times \frac{8{,}760\ hr}{1\ yr} \times \frac{T_{SP}}{T_T}$$

$$ER_{24HR} = 0.53 \times \frac{8{,}760}{1} \times \frac{32}{109} = 1{,}363\ lb/yr = 0.69\ tons/yr$$

- Where: ER_{YR} = Annual PM/PM_{10} emissions from dust collector (lb/yr)
  ER_{1HR} = 1-Hour PM/PM_{10} emissions from dust collector (lb/hr)
  T_{SP} = Actual shot peen usage time during shot peen process (32 minutes)
  T_T = Total time of shot peen process (109 minutes)

Based on the above equation, the annual PM/PM_{10} emissions from the cartridge dust collector are **0.69 tons per year**.

5. REGULATORY APPLICABILITY

5.1 Applicable Requirements

The Honeywell Engines, Systems and Services facility is a Title V major stationary source of air emissions, as defined in Maricopa County Air Pollution Control Regulations (MCAPCR) Rule 100, Section 200.60c, because it has the potential to emit (PTE) greater than the Title V major source thresholds for carbon monoxide (CO), Volatile Organic Compounds (VOCs) and oxides of nitrogen (NO_x) of 100 tons per year (tpy).

The proposed project is a significant permit revision to the Title V permit, as the changes involve, among other items, changes in recordkeeping and reporting. The proposed project is not a major modification, as there are no significant increases in emissions associated with the changes.

5.1.1 Federal Regulatory Review

The federal regulatory programs reviewed include the New Source Performance Standards (NSPSs) (40 CFR 60) and the National Emission Standards for Hazardous Air Pollutants (NESHAPs) (40 CFR 63). Federal authority for NSPS requirements (delineated in 40 CFR Part 60) has been delegated to Maricopa County; therefore Rule 360 is the effective NSPS regulation. None of the proposed changes are subject to NSPSs.

The NESHAPs contain emissions standards related to HAPs for specific new and existing sources. The associated MCAQD Rule is 370. None of the proposed changes are subject to NESHAPs.

5.1.2 State Regulatory Review

Table 5-1 shows the applicable Maricopa County / State Implementation Plan (SIP) rules and associated compliance:

Table 5-1
Applicable Maricopa County / State Implementation Plan (SIP) Rules

SIP Rule Citation	Description	Discussion
Regulation I	General Provisions	Conditions related to this regulation already included in Title V Permit V97-008.
Regulation II	Permits	Conditions related to this regulation already included in Title V Permit V97-008.
Regulation III Section 030	Visible Emissions	Facility-wide provision included as Title V Permit V97-008 condition 18.
Regulation III Section 031	Emissions of particulate matter	Point source particulate emissions from process industries. Conditions related to this regulation already included in Title V Permit V97-008.

Regulation III Section 311	Particulate Matter from Process Industries	Point source particulate emissions from process industries Conditions related to this regulation already included in Title V Permit V97-008.
Regulation III Section 032	Odors and Gaseous Emissions	Ambient air quality impact assessment and the original Title V permit ensure compliance with this requirement.
Regulation III Section 140	Excess Emissions	Provision included as Title V Permit V97-008 condition 10.
Regulation III Section 100	Emission Statements Required	Provision included as Title V Permit V97-008 condition 16.
Regulation IV	Production of Records, Monitoring, Testing, and Sampling Facilities	Conditions related to this regulation already included in Title V Permit V97-008.
Regulation VI	Violations	Provision included as Title V Permit V97-008 condition 8.
Regulation VII	Ambient Air Quality Standards	Ambient air quality impact assessment and the original Title V permit ensure compliance with this requirement.
Regulation VIII	Validity and Operation	Conditions related to this regulation already included in Title V Permit V97-008.

5.1.3 Maricopa County Regulatory Review

Table 5-2 lists the Maricopa County Rules that are applicable to this project. Most rules are applicable to all of the equipment. Rules referencing PM_{10} emissions and abrasive blasting are applicable only to the dust collector for the Building 105 abrasive blaster. Rules referencing H_2S emissions are applicable only to the installation of the Building 422 batch waste treatment tank wet scrubber. Compliance with the applicable requirements is ensured by the existing Title V permit conditions and through the few additional requirements noted in Section 8 of this document.

Table 5-2
Applicable Maricopa County Rules

Rule	Description
Rule 100 §301	**AIR POLLUTION PROHIBITED:** No person shall discharge from any source whatever into the atmosphere regulated air pollutants which exceed in quantity or concentration that specified and allowed in these rules, the Arizona Administrative Code or ARS, or which cause damage to property, or unreasonably interfere with the comfortable enjoyment of life or property of a substantial part of a community, or obscure visibility, or which in any way degrade the quality of the ambient air below the standards established by the Board of Supervisors or the Director.
Rule 200 §302	**TITLE V PERMIT:** A Title V permit or, in the case of an existing permitted source, a permit revision shall be required for a person to commence construction of, to operate, or to modify any of the following: **302.1** Any major source as defined in Rule 100 of these rules.
Rule 210	**TITLE V PERMIT:** A Title V permit or, in the case of an existing permitted source, a permit revision shall be required for a person to commence

	construction of, to operate, or to modify any of the following: **302.1** Any major source as defined in Rule 100 of these rules.
Rule 210 §302.1	The Permittee shall operate the ECSs at a parametric range of 1.0 to 6.0 inches of water.
Rule 241 §302	**REASONABLY AVAILABLE CONTROL TECHNOLOGY (RACT) REQUIRED:** An applicant for a permit or permit revision for a new or modified stationary source which emits or causes an increase in emissions of up to 150 lbs/day or 25 tons/yr of volatile organic compounds, or particulate matter; up to 85 lbs/day or 15 tons/yr of PM10; or up to 550 lbs/day or 100 tons/yr of carbon monoxide shall apply RACT for each pollutant emitted from said new or modified stationary source.
Rule 300 §301	LIMITATIONS - OPACITY/GENERAL: No person shall discharge into the ambient air from any single source of emissions any air contaminant, other than uncombined water, in excess of 20% opacity.
Rule 312 §303	**REQUIREMENTS FOR CONFINED BLASTING:** Dry abrasive blasting in a confined enclosure with a forced air exhaust shall be conducted by implementing either of the following: **a.** Using a certified abrasive, or **b.** Venting to an ECS.
Rule 311 §301.1	**LIMITATIONS - PROCESS INDUSTRIES:** No person shall discharge or cause or allow the discharge of particulate matter emissions into the ambient air from any affected operation in excess of the allowable hourly emission rate determined by the following equations: **301.1 Process Weight Rates Less Than or Equal to 60,000 Pounds Per Hour:** Determination of the allowable hourly emission rates (E) for process weight rates up to 60,000 lbs/hr shall be accomplished by use of the equation: E = 3.59 P0.62 (P = less than or equal to 30 tons/hr) where: E = Emissions in pounds per hour, and P = Process weight rate in tons per hour.
305	**OPACITY LIMITATION:** No owner or operator shall discharge into the atmosphere from any abrasive blasting operation any air contaminant for an observation period or periods aggregating more than three minutes in any sixty minute period an opacity equal to or greater than 20 percent. An indicated excess will be considered to have occurred if any cumulative period of 15-second increments totaling more than three minutes within any sixty-minute period was in excess of the opacity standard.
Rule 312 §304	**REQUIREMENTS FOR ECS AND MONITORING DEVICES:** The following requirements apply to blasting equipment that vents through a required ECS and requires a Maricopa County permit under Rule 200 of these rules. Buildings and/or enclosures are not considered control equipment. Equipment that meets the following two criteria and is operated and maintained in accordance with manufacturer's specifications, is exempt from the requirements of this section: **a.** Is self-contained and the total internal volume of the blast section is 50 cubic feet or less, and **b.** Is vented to an ECS. **304.1 Operation and Maintenance (O&M) Plan Required for Emission Control System (ECS)** **a.** An owner or operator shall provide and maintain, readily available at all times, an O&M Plan for any ECS, other emission processing equipment, and

	ECS monitoring devices that are used pursuant to this rule or to an air pollution control permit. **b.** The owner or operator shall submit to the Control Officer for approval the O&M Plans of each ECS and each ECS monitoring device that is used pursuant to this rule. If the O&M plan has not been filed, any owner or operator employing an approved existing ECS on the effective date of this rule shall by December 18, 2003 have an O&M plan filed with the Control Officer. **c.** The owner or operator shall comply with all the identified actions and schedules provided in each O&M Plan. **304.2 Installing And Maintaining ECS Monitoring Devices –** An owner or operator operating an ECS pursuant to this rule shall properly install and maintain in calibration, in good working order and in operation, devices described in the facility's O&M Plan that indicate temperatures, pressures, 312.6 rates of flow, or other operating conditions necessary to determine if air pollution control equipment is functioning properly.
Rule 300 Rule 210 §302	The Permittee shall observe for visible emissions weekly from each of the ECS exhaust streams during normal operation.
Rule 312 §301	The Permittee shall not discharge into the atmosphere from any abrasive blasting any air contaminant for a period or periods aggregating more than three minutes in any one-hour period which is a shade or density darker than 20 percent opacity.
Rule 312 §505	**OPACITY OBSERVATIONS:** Opacity shall be determined by observations of visible emissions conducted in accordance with EPA Reference Method 9 and with the following provisions: **505.1** Emissions from unconfined blasting shall be observed at the densest point of the emission from the closest point of discharge, after a major portion of the spent abrasives has fallen out. **505.2** Emissions from unconfined blasting employing multiple nozzles shall be considered a single source unless it can be demonstrated by the owner or operator that each nozzle, evaluated separately, meets the emission standards of this rule. **505.3** Emissions from confined blasting shall be observed at the densest point after the air contaminant leaves the enclosure or associated ECS.
Rule 312 §308	**308.1 Unconfined Blasting:** The owner or operator shall clean up spent abrasive material with a potential to be transported during a wind event and, until removal occurs, shall, at a minimum, meet the provisions of Rule 310 of these rules regarding work practices. **308.2 Confined Blasting**: At the end of the work shift the owner or operator shall clean up spillage, carry-out, and/or trackout of any spent abrasive material with a potential to be transported during a wind event.
Rule 312 §501	**RECORDKEEPING AND REPORTING:** At a minimum, an owner or operator subject to this rule shall keep the following records onsite, that are applicable to all abrasive blasting operations. Additional reporting may be required by an air quality permit: **501.1** If blasting operations occur daily or are a part of a facility's primary work activity, then the following shall be kept as a record: 312.7 **a.** A list of the blasting equipment, **b.** The description of the type of blasting as confined, unconfined, sand, wet, or other, **c.** The locations of the blasting equipment or specify if the equipment is portable,

	d. A description of the ECS associated with the blasting operations, **e.** The days of the week blasting occurs, and **f.** The normal hours of operation. **501.2** If blasting operations occur periodically, then the following shall be kept as a record: **a.** The date the blasting occurs, **b.** The blasting equipment that is operating, **c.** A description of the type of blasting, and **d.** A description of the ECS associated with the blasting operations. **501.3** The type and amount of solid abrasive material consumed on a monthly basis. Include name of certified abrasive used, as applicable. **501.4** Material Safety Data Sheets (MSDS) or results of any lead testing that was performed on paint that is to be removed via unconfined blasting, as applicable.
Rule 320 §304	LIMITATION - HYDROGEN SULFIDE: No person shall emit hydrogen sulfide from any location in such a manner or amount that the concentration of such emissions into the ambient air at any occupied place beyond the premises on which the source is located exceeds 0.03 parts per million by volume for any averaging period of 30 minutes or more.
Rule 510 §302.5	The maximum allowable concentration of any air pollutant in any area to which subsection 302.1 of this rule applies shall not exceed a concentration for each pollutant equal to the concentration permitted under the Maricopa County Ambient Air Quality Standards contained in Rule 510 of these rules.

5.2 Non-Applicable Requirements

5.2.1 Federal Non-Applicable Requirements

As discussed previously, none of the proposed changes are subject to NSPS or NESHAP requirements. The Honeywell facility is not a major Federal HAPs source. The total HAPs emissions are less than 25 tons per year (14.82 tons per year), and individual HAPs are less than 10 tons per year. Therefore case-by-case MACT does not apply to the proposed changes.

5.2.2 State Hazardous Air Pollutant Program

The State of Arizona has adopted a State HAPs program under A.R.S. Section 429.06. The applicability thresholds for the State HAPs program are 2.5 TPY or more of any combination of HAPs or 1.0 TPY or more of a single HAP. Maricopa County is required to adopt and implement regulations for a Maricopa County HAPs program. However, Maricopa County has not yet adopted or implemented regulations for a County HAPs program, therefore the State/County HAPs program does not apply

In absence of HAPs program, Maricopa County requests that facilities model HAP emissions to show compliance with a set of Arizona Ambient Air Quality Guidelines (AAAQG). As part of the significant permit revision application, an ambient air quality impact assessment for AAAQGs was submitted for the nitriding furnace scrubber replacement (ammonia) and the Building 422 batch waste treatment tank wet scrubber (H_2S and Cl_2). Potential emissions associated with the methanol tank, Building 105 scrubbers, and the shot peen blasting dust collectors were already assessed as part of the original Title V permit application.

6. AMBIENT AIR QUALITY IMPACTS

6.1 Criteria Pollutants

The sources of criteria pollutants covered by the significant permit revisions include VOCs from the methanol tank and PM-10 from shot peening and the Building 105 East and West replacement scrubbers. The east and west scrubbers are replacements of existing control devices with equivalent emission control resulting in no change in the emissions from these sources. Therefore, no additional modeling is required. The methanol tank emissions are very small (less than 220 pounds per year), and would not contribute to a change in ambient ozone concentrations from total VOC emissions at the facility. In addition, source-specific modeling of VOC emissions is not conducted pursuant to the *USEPA Guidelines for Air Quality Modeling*, which states that simulation of ozone formation and transport is a highly complex and resource intensive exercise and is not typically applied to assess the impact of an individual source on regional ozone concentrations. There are no standard USEPA approaches for an individual source ozone modeling analysis. These two facts indicate that ozone modeling for the very small amount of methanol emissions is not necessary.

6.2 AAAQG Pollutants

In accordance with the Maricopa County Air Quality Division (MCAQD) air toxics policy, an air quality impact assessment is required for AAAQG compounds listed in the 1992 Arizona Ambient Air Quality Guidelines (AAAQGs) if emissions from a source exceed 0.25 ton (500 pounds) per year. Table 6-1 lists the AAAQG compounds potentially emitted from the proposed changes (including all sources of ammonia at the facility). In addition to the ammonia source covered by this permit revision (nitriding furnace ammonia scrubber), five other ammonia sources were identified and quantified to determine if an air quality impact assessment for ammonia was required. The breakdown of the six ammonia sources is also shown in Table 6-1.

Table 6-1
Potential AAAQG Compound Emissions

Compound	Pounds/Year	Tons/Year
Ammonia	5,760	2.88
Ammonia scrubber (from nitriding furnaces)	271	0.14
Fugitive from nitriding process	- - -	- - -
Fugitive from ammonia tank (per transfer)	< 3.0E-3[A]	< 1.5E-6[A]
Fugitive from delivery to copper strip process	- - -	- - -
Copper strip tank scrubber 92415020	5,420	2.71
Fugitive from copper strip tank	67.9	0.034
Hydrogen Sulfide	200	0.10
Chlorine	2,015	1.02
Methanol	220	0.11
Hydrofluoric Acid	5.96	2.98E-03
Chromium	11.8	5.88E-03
Hydrochloric Acid	3.44	1.72E-03
Manganese	0.16	8.22E-05
Nickel	0.18	9.13E-05
Glycol Ethers	0.11	5.48E-05
Total HAPs[1]	**2,527**	**1.26**

HAPs = Hazardous Air Pollutants
1 = Total HAPs includes federal HAPs hydrochloric acid, hydrofluoric acid, manganese, chromium, chlorine, nickel, glycol ethers, and methanol
A = Filling the ammonia tank occurs less than once per year

As shown in Table 6-1, two compounds were identified as potentially exceeding the AAAQG assessment threshold of 500 pounds per year: ammonia and chlorine. Therefore, an analysis was conducted to address potential off-site impacts for these two compounds. The analysis was conducted in accordance with guidance and procedures published by MCAQD for Air Toxics/Hazardous Air Pollutant Permitting Procedures, as well as USEPA guidelines for air dispersion modeling.

Table 6-2 shows the 1-Hour and 24-Hour emission rates for the six ammonia sources that were used in the off-site impact analysis.

Table 6-2
Ammonia Emission Source Values Used in Analysis

Potential Sources of Ammonia Emissions	1-Hour (lbs/hr)	24-Hour (lbs/24hr)	Annual (ton/yr)
Ammonia scrubber (from nitriding furnaces)	0.041	0.98	0.14
Fugitive from nitriding process	- - -	- - -	- - -
Fugitive from ammonia tank (per transfer)	0.003	< 0.003[A]	< 1.5E-6[A]
Fugitive from delivery to copper strip process	- - -	- - -	- - -
Copper strip tank scrubber 92415020	1.5	14.4	2.71
Fugitive from copper strip tank	0.0078	0.19	0.034
Total	**1.55**	**15.6**	**2.88**

- - - = Negligible
A = Filling the ammonia tank occurs less than once per year. 24-hr emissions are therefore considered negligible.

The modelling analysis was conducted using the Windows based BEE-LINE Software (BEEST Version 9.41) to employ the EPA approved ISC3 PRIME modelling program (version 04269). The applicant used urban coefficients with one year (1991) of Phoenix Sky Harbor Airport meteorological data provided by ADEQ to model the ambient impacts. In addition to the one-year analysis conducted by the applicant, the most recent five years of pre-processed ISC-ready meteorological data (1994-1998) were also used to evaluate potential ambient air quality impacts.

The PRIME algorithm was used to account for building downwash effects since the scrubber stacks are below Good Engineering Practice (GEP) formula heights with respect to nearby structures. Receptors were established in appropriate grids and included fenceline receptors at 25 meter spacing, a fine grid out to 250 meters from the fenceline with 50 meter spacing, a medium grid out to 500 meters with 100 meter spacing and a coarse grid out to 1,000 meters with 250 meter spacing. Receptors were also included along a roadway that intersects the facility since that area is accessible to the public and therefore considered ambient air for purposes of this assessment. Because the terrain is relatively flat, the ISC model was run in "flat" terrain mode.

Table 6-3 provides the results of the analysis compared to the AAAQG values. The maximum modelled concentrations from the 1991 meteorological data year are shown in parentheses and the maximum from the five-year meteorological data set are shown without parentheses.

Table 6-3
ISC results compared with AAAQG's

AAAQG Compound/Source	1-Hour AAAQG ($\mu g/m^3$)	Maxaximum 1-Hour Impacts ($\mu g/m^3$)*	24-Hour AAAQG ($\mu g/m^3$)	Maximum 24-Hour Impacts ($\mu g/m^3$)*

Ammonia				
Nitriding Furnaces Ammonia Scrubber	NA	NA	140	2.93 (1.78)
Copper strip tank through scrubber 92415020	NA	NA	140	18.78 (8.64)
Fugitive from copper strip waste tank	NA	NA	140	1.83 (1.04)
All Sources of Ammonia	**NA**	**NA**	**140**	**21.75 (10.42)**
Chlorine				
Batch Waste Tank Treatment Scrubber	69	21.46 (20.76)	23	6.51 (5.60)
All Sources of Chlorine	**69**	**21.46 (20.76)**	**23**	**6.51 (5.60)**

* The maximum impact location of individual sources may differ; therefore the maximum impact for all sources is not necessarily the addition of each individual source maximum concentration shown.

Table 6-3 shows that the maximum potential ambient impact of the emissions of ammonia and chlorine are below the AAAQG concentrations by a factor of three (3), at a minimum. Based on these results, the assessed off-site impacts are less than concentrations considered to pose a threat to the public.

6.3 Odorous and Gaseous Air Contaminants

The Batch waste treatment tank will emit the odorous compound H_2S. Pursuant to Maricopa County rule 320, *Odors and Gaseous Air Contaminants*, "No person shall emit hydrogen sulfide from any location in such a manner or amount that the concentration of such emissions into the ambient air at any occupied place beyond the premises on which the source is located exceeds 0.03 parts per million by volume for any averaging period of 30 minutes or more". To assess this requirement, the H_2S emission rate of 0.10 tons/yr (0.023 lb/hr) was modeled in the same fashion as described in Section 6.2 above. The results indicate the maximum potential fenceline concentration over a 30-minute duration will be 0.0016 ppm. This was derived using the modeled 1-hour concentration of 2.01 ug/m^3 (equivalent to 0.0014 ppm) and applying a peaking factor of 1.122 (0.0014 x 1.122 = 0.0016). This peaking factor was derived using a variable power-law equation based on a 30-minute peak time period and an atmospheric stability class dependant power law exponent (using stability class 6 or F when the maximum 1-hr concentration occurred). The power-law exponent for stability class F is 1/6 or 0.16667[(1)], which when applied to the 30-minute averaging period yields a peaking factor of 1.122. Based on this assessment, the source meets the requirements of Rule 320.

7. ADDITIONAL IMPACT ANALYSIS

The significant permit modification is for replacement of existing equipment and will not cause an increase in emissions. Therefore, the proposed permit revisions are not anticipated to affect the impacts with respect to growth, visibility, soils, vegetation, and endangered species for which approval and issuance of the previous Title V permit was based.

[(1)] Wang, Jei and Kenneth Skipka, Dispersion Modeling of Odorous Sources, Air and Waste Management Association, Annual Conference 1993.

8. REGULATORY STREAMLINING

The existing Title V permit contains numerous monitoring, record keeping, and operational requirements that affect the proposed changes that are the subject of this significant permit revision. The requirements in the existing Title V permit are sufficient for the proposed changes; however, there are a few additional requirements that have been added in order to ensure that the emissions upon which the changes were evaluated will not be exceeded. Specifically, for each device, the following was added:

a. Nitriding furnace ammonia scrubber replacement: An annual ammonia usage limit was added to the permit, along with addition of a limit on pH necessary to ensure proper scrubber operation with a 99% removal rate. Requirements for pH monitoring and record keeping and a requirement for scrubber performance testing were also added to the permit. Other parameters in the existing permit (i.e., recirculation flow rate, blowdown rate, and visible emissions) were adjusted for the specific new scrubber.
b. Batch wastewater treatment scrubber: Limits on the operational parameters necessary to ensure proper scrubber operation with 87% and 92% removal rates for chlorine and hydrogen sulfide were added. The scrubber must be operated and the operational limits met only when treating cyanide bearing waste, metal-bearing waste, and/or lead anode waste. This is due to the fact that one of the operational parameters is a very high pH, which is difficult to maintain simply due to the presence of carbon dioxide in the air. Requirements for pH monitoring and record keeping and a requirement for scrubber performance testing were also added to the permit. As is the case for the other packed bed scrubbers, limits on other parameters in the existing permit (i.e., recirculation flow rate, blowdown rate, and visible emissions) are also specified.
c. Methanol tank: An annual methanol usage rate limit and record keeping requirement was added to the permit. There is no additional control technology that reduces methanol emissions.
d. Replacement of Building 105 East and West scrubbers: An operational limit on pH necessary to ensure proper scrubber operation with a 90% removal rate was added. Requirements for pH monitoring and record keeping for the west scrubber (92415027) and requirements for the east and west scrubber performance testing were also added to the permit. The pH requirement was added to the permit for the west scrubber and not the east scrubber due to the presence of ammonium hydroxide in the tanks that vent to the west scrubber. Other parameters in the existing permit (i.e., recirculation flow rate, blowdown rate, and visible emissions) were adjusted for the specific new scrubber.
e. Performance testing requirements for the nitriding furnace, batch wastewater treatment, Building 105 East, and Building 105 West scrubbers were based on current MCAQD policy regarding testing of scrubbers with relatively low inlet concentrations of constituents. If the inlet concentration is less than 10 ppmv, then 90% removal is assumed to occur if the outlet concentration is less than 1 ppmv. However, if this is the case, the permittee must re-test annually until the inlet concentrations are greater than 10 ppmv and the 90% is actually demonstrated (rather than assumed). The 1 ppmv threshold is based on practical detection limits in scrubber outlet exhaust.
f. Replacement cartridge dust collector: A device specific limit on maximum differential pressure was added, since the replacement dust collector requires cartridge replacement when the differential pressure reaches 5.0 inches of water rather than 6.0 inches specified for the other dust collectors at the facility. No limit on shot peen usage was established as the emissions were based on shot peen equipment capacity and continuous operation, which cannot occur.

9. CONCLUSION

Based on the information supplied by Honeywell, and on the analyses conducted by the Maricopa County Air Quality Department, MCAQD has concluded that the requested permit changes, specifically replacement of two Bldg 105 packed bed scrubbers, one Bldg 422 ammonia scrubber, and two rotoclones with a single cartridge dust collector in Bldg 105 and addition of a below ground methanol storage tank in Bldg 422 is consistent with Federal, State, and County regulations and rules and will not cause or contribute to a violation of any federal ambient air quality standard, will not cause any AAAQG to be exceeded, and will not cause additional adverse air quality impacts.

Therefore, MCAQD proposes to issue the significant permit revision subject to the proposed permit conditions.

APPENDIX B-2
TECHNICAL SUPPORT DOCUMENT – BSVE

1. APPLICANT

Honeywell Engines, Systems and Services
111 South 34th Street
Phoenix, AZ 85034

2. PROJECT LOCATION

The Honeywell facility is located at 111 South 34th Street, Phoenix, AZ, which lies within Maricopa County.

With respect to the National Ambient Air Quality Standards (NAAQS), this location is designated as moderate nonattainment for ozone and serious nonattainment for PM_{10}. The project site is under the jurisdiction of the Maricopa County Air Quality Department (MCAQD).

3. PROJECT/PROCESS DESCRIPTION

Honeywell Engines, Systems and Services (Honeywell or Facility) filed an application for a significant permit revision for the installation of a bio-enhanced soil vapor extraction (BSVE) system to remediate soil beneath the site that has been impacted by jet fuel and low concentrations of halogenated solvents.

The Facility manufactures and tests jet engines. The Facility consists of a north area (Area 2) and a south area (Area 1). These two areas are separated by a road, East Air Lane, and railroad tracks belonging to Union Pacific Railroad. Chlorinated solvents and jet fuels have been used at the Facility since the early 1950s. The groundwater table, located 70 to 95 feet beneath the ground surface of the Facility, contains a floating free-product plume consisting of a mixture of Jet A and JP-4 jet fuels. Chlorinated solvents are also present in the free product and groundwater. The free-product plume is an irregularly-shaped area. The target treatment area for the BSVE system extends beyond the free-product plume to encompass an elliptical area of roughly 2,700 feet by 2,300 feet. The free-product plume and the BSVE target treatment area extend south from the Honeywell Facility onto the Phoenix Sky Harbor International Airport (PSHIA)-North Airfield.

Approximately 53 wells will be associated with the BSVE process, pending final investigation on the PSHIA-North Airfield. The wells will have the capability to function as both injection and extraction wells and will be located on both Honeywell property and PSHIA-North Airfield. Initially, a 3,300-standard cubic feet per minute (scfm) capacity vapor treatment system (SVT-1) will be installed and will be connected only to wells located on Honeywell property using a blower and piping system. SVT-1 will consist of the following equipment:

- Air injection blower (1);
- Air/liquid separator (1);
- Vapor extraction air filter (1);
- Vapor extraction blowers (2);
- Thermal oxidizer (1);
- Caustic scrubber (1);
- Caustic feed pump (1);
- Heat exchanger (1);

- Demister (1);
- Cooling tower (1);
- Chiller (1) (contingency, may not be installed);
- Booster blower (1);
- Granulated Activated Carbon (GAC) vessels (2); and
- Potassium Permanganate Adsorber (PPA) vessels (2).

After start-up, injection/extraction wells from the Honeywell property and PSHIA-North Airfield will be brought online in phases. If necessary, an additional 2,000-scfm extraction and treatment system (SVT-2) may be added to the project to achieve higher flow rates and mass throughput. SVT-2 will consist of the following equipment:

- Air injection blower (1);
- Air/liquid separator (1);
- Vapor extraction air filter (1);
- Vapor extraction blowers (2);
- Thermal oxidizer (1);
- Caustic scrubber (1);
- Caustic feed pump (1);
- Heat exchanger (1);
- Demister (1);
- Cooling tower (1);
- Chiller (1) (contingency, may not be installed);
- Booster blower (1);
- GAC vessels (2); and
- PPA vessels (2).

The decision to install the 2,000-scfm unit will be based on progress of remedial activities and how rapidly methane and Total Petroleum Hydrocarbon (TPH) concentrations decline within the target treatment area.

Prior to entering the soil vapor treatment systems, soil vapor will be filtered to capture any particulate matter (PM). If necessary, the vapor will then be blended with ambient air to below 25 percent of the lower explosive limit to meet fire code and process safety requirements. The vapors will be treated in the thermal oxidizer unit (SCC# 10300603) to destroy methane, jet fuel components, and chlorinated volatile organic compounds (CVOCs). During start-up, and as needed to maintain the minimum operating temperature, natural gas will be added as a supplemental fuel. The goal will be to achieve greater than 99 percent destruction efficiency for VOCs. During combustion, the chlorinated and fluorinated VOCs present can be chemically converted to form hydrochloric acid (HCl) and hydrofluoric acid (HF), respectively. Acid gases (if present) will be removed in the caustic scrubber system.

There will be a final GAC/PPA step to remove the low concentration levels of petroleum hydrocarbon and chlorinated VOCs that may remain after combustion. Spent GAC units will not be regenerated onsite but will be replaced as necessary. Prior to entering the GAC units, the temperature of the effluent stream at the discharge to the scrubber is cooled. The effluent is then reheated in a booster blower to lower the relative humidity of the effluent stream to allow more efficient activated carbon utilization. The final portion of the vapor treatment process will be the discharge stack after the GAC and PPA units.

The exhaust gases from both vapor treatment systems will be exhausted through a single 2-foot-diameter stack. However, when only SVT-1 is operating, the stack will be modified using a conical restriction or similar device to achieve an 18-inch diameter, in order to accommodate the

lower flow rate of a single unit. The stack height will be approximately 44 feet above ground. The exhaust flow rate of gases from the stack will be approximately 3,618 actual cubic feet per minute (acfm) for SVT-1 operating alone and 5,916 acfm for both SVT-1 and SVT-2 operating simultaneously.

The current design also includes provisions to recover free product from three wells located on the Facility and wells located on the PSHIA-North Airfield, if necessary. Long-term free-product recovery is expected to be less than 1 gallon per day, per well. Free product will be recovered using pneumatic submersible skimmer pumps installed in the wells. On the Honeywell Facility, the free product will be stored in 55-gallon drums. The recovered product will be properly classified and shipped offsite for waste disposal. On the PSHIA-North Airfield, free product will be piped back to a central collection container located away from the North Airfield.

3.1 Equipment

Vendors and manufacturers for the various components of the treatment systems have not yet been selected. Therefore, model numbers and serial numbers are not yet available for the pollution control components of the treatment systems.

Air/Liquid Separator – The air/liquid separator will remove entrained moisture from the vapor stream. The air/liquid separator is not a control device, and will discharge to the particulate filter.

Particulate Filter – The vapor extraction particulate filter will remove particulate matter (PM) in the inlet air stream, and will discharge to the thermal oxidizer via the extraction blowers.

Vapor Extraction Blowers – The vapor extraction blowers will be used to extract the volatile organic compounds (VOCs) and methane from the subsurface, via the extraction wells, and to push the vapors through the thermal oxidizer and caustic scrubber for treatment. The extraction blowers are not a control device, and will discharge to the thermal oxidizer.

Thermal Oxidizer – The thermal oxidizer uses high temperatures (1,400 to 1,800 degrees Fahrenheit), to combust organic constituents in the waste gas stream. The primary pollutants from a thermal oxidizer are acid gases, NO_x, CO, and organics. Additionally, thermal oxidizers can also generate PM, sulfur dioxide (SO2), low molecular weight hydrocarbons (for example, methane or ethane), and high-molecular-weight compounds (for example, polychlorinated dibenzo-p-dioxins and dibenzofurans [PCDD/PCDF]). The thermal oxidizer also uses supplemental fuel (natural gas) and a combustion air blower during initial startup and to maintain the operating temperature of the oxidizer. The thermal oxidizers for SVT-1 and SVT-2 will have maximum inlet flow rates of 3,300 scfm and 2,000 scfm, respectively, (not including combustion air and supplemental fuel) and will discharge to the caustic scrubbers. The minimum residence time at the maximum flowrate will be 0.75 seconds.

Based on vendor information, the thermal oxidizer has a minimum guaranteed VOC removal efficiency of 99 percent. In the permit application, Honeywell has assumed a 99 percent VOC removal efficiency for the oxidizer, and, therefore, accepts a permit limitation for a minimum of 99 percent VOC removal efficiency for the oxidizer.

Caustic Scrubber – Emission control of acid gases will be provided by a caustic scrubber. The liquid is sprayed down the tower as the exhaust gases pass through the column. Acid gases are absorbed/neutralized by the scrubbing liquid. Addition of an alkaline reagent to the scrubber liquor for acid neutralization has been shown to result in removal efficiencies greater than 99 percent. The caustic scrubber will discharge to the GAC vessels via the heat exchanger, demister, and booster blower.

Based on vendor information, the scrubber has a minimum guaranteed acid gas removal efficiency of 99 percent. In the permit application, Honeywell has assumed a 99 percent acid gas removal efficiency for the scrubber.

An excursion from a parametric limit, under particular circumstances, is evidence of an exceedance of the underlying emission limitation and can be an indication of poor maintenance or improper operation of the caustic scrubber. It is also a deviation and should be treated as such. If the applicable Operation and Maintenance Plan requires investigation and prompt correction of the condition that caused the excursion, failure to take the actions required by that plan may constitute a separate basis for noncompliance with the permit.

Caustic Feed Pump – The caustic feed pump will supply the scrubber with the caustic solution necessary to maintain the pH is the scrubber for proper operation. The caustic feed pump is not a control device, and does not directly interact with the vapor stream.

Heat Exchanger – The heat exchanger will remove additional heat and lower the water vapor-bearing capacity of the vapor stream. The heat exchanger is not a control device, and will discharge to the demister.

Demister – The demister will remove condensed water in the vapor stream as a result of the heat exchanger. The demister is not a control device, and will discharge to the booster blower if a chiller is not installed. If a chiller is installed, the demister will discharge to the chiller.

Chiller – The chiller will lower the temperature of the vapor stream, causing additional water vapor to condense and be removed from the vapor stream. The chiller is not a control device, and will discharge to the booster blower. The chiller is listed as a contingency device and may not be installed.

Booster Blower – The booster blower will decrease the relative humidity of the vapor stream and will help push the vapor stream through the GAC and PPA vessels. The booster blower is not a control device and does not add or remove air from the vapor stream. The booster blower will discharge to the GAC vessels.

Carbon Vessels – The GAC vessels are designed to remove trace amounts of VOCs, excluding vinyl chloride, that are not combusted in the thermal oxidizer. Information from vendors and manufacturers suggests a range from 80 percent to more than 99 percent efficiency for VOC removal (except for vinyl chloride) in a single carbon adsorption unit. The GAC vessels will discharge to the PPA vessels.

To be conservative, Honeywell assumed a 70 percent cumulative VOC removal efficiency for the GAC vessels (except for vinyl chloride) in the permit application.

Potassium Permanganate Vessels – The PPA vessels are designed to remove trace amounts of vinyl chloride that may remain after the thermal oxidizer. Information from vendors and manufacturers suggests 99 percent efficiency for vinyl chloride removal in a single PPA unit. The PPA vessels from both the SVT-1 and SVT-2 treatment trains will discharge to a common stack.

To be conservative, Honeywell assumed a 70 percent cumulative vinyl chloride removal efficiency for the PPA vessels in the permit application.

Air Injection Blower – The air injection blower is not part of the vapor abatement equipment trains (SVT-1 and SVT-2), but is the "bioenhanced" portion of the overall BSVE process. The air injection blower will be used to supply oxygen, via injection wells, to the subsurface for aerobic biodegradation. The injection blower is rated at 1,650 standard cubic feet per minute (scfm),

which is half of the flowrate of the extraction blowers for SVT-1. In accordance with MCAQD Rule 200 §308.1c the air injection blowers are determined to be insignificant.

Cooling Tower – The cooling tower provides cooling water for the heat exchanger and is used to cool the process vapor stream. The cooling water does not come into contact with the vapor stream in the heat exchanger, and is not a control device for SVT-1 or SVT-2. The cooling tower is an insignificant activity.

3.2 Alternate Operating Scenarios

Honeywell has proposed four alternate operating scenarios (AOS) for the BSVE process. Initially, only AOS-1 will be implemented. If additional treatment capacity is necessary, AOS-2 will be implemented. As inlet concentrations decline, AOS-3 and AOS-4 may be implemented. After the initial review, MCAQD determined an additional AOS (AOS-5) was necessary to account for the different combinations of equipment requested by Honeywell.

Alternate Operating Scenario 1 – AOS-1 will consist of only the 3,300-scfm vapor treatment system (SVT-1), which will initially be connected only to wells located on the Honeywell facility. Over time, wells located on PSHIA property will be phased-in to SVT-1 after start-up. SVT-1 will discharge to ambient air via a 24-inch diameter stack fitted with a reducer to decrease the diameter to 18 inches.

Alternate Operating Scenario 2 – AOS-2 will consist of SVT-1 and the 2,000 scfm vapor treatment system (SVT-2), which will be installed, if necessary, to achieve higher flow rates and mass throughput as wells are added to the BSVE system. SVT-1 and SVT-2 will both be located on the Honeywell facility, and will have a maximum combined inlet flow rate of 5,300 scfm. Both SVT-1 and SVT-2 will utilize the same treatment processes, and will discharge through a common stack. The stack reducer used for AOS-1 will be removed to increase the stack diameter to 24 inches to accommodate the additional flowrate.

Alternate Operating Scenario 3 – AOS-3 is the operation of AOS-1 or AOS-2 with either one (1) PPA vessel per thermal oxidizer or the removal of both PPA vessels per thermal oxidizer. Therefore, at a minimum, the following equipment is required for AOS-3:

- When operating with one treatment train (SVT-1):
  - Air injection blower (1);
  - Air/liquid separator (1);
  - Vapor extraction air filter (1);
  - Vapor extraction blowers (2);
  - Thermal oxidizer (1);
  - Caustic scrubber (1);
  - Caustic feed pump (1);
  - Demister (1);
  - Heat exchanger (1);
  - Cooling tower (1);
  - Chiller (1) (contingency, may not be installed);
  - Booster blower (1); and
  - GAC vessels (2)

- When operating with both treatment trains (SVT-1 & SVT-2):
  - Air injection blower (2);
  - Air/liquid separator (2);
  - Vapor extraction air filter (2);
  - Vapor extraction blowers (4);

- Thermal oxidizer (2);
- Caustic scrubber (2);
- Caustic feed pump (2);
- Demister (2);
- Heat exchanger (2);
- Cooling tower (2);
- Chiller (2) (contingency, may not be installed);
- Booster blower (2); and
- GAC vessels (4)

Maximum inlet flow rates for AOS-3 range from 3,300 to 5,300 scfm.

Alternate Operating Scenario 4 – AOS-4 is the operation of AOS-1 or AOS-2 without the thermal oxidizer(s), caustic scrubber(s) and associated equipment (caustic feed pump, demister, heat exchanger, cooling tower, chiller, and booster blower) and with the addition of one GAC vessel per treatment train (three GAC vessels in series per treatment train). Therefore, at a minimum, the following equipment is required for AOS-4:

- When operating with one treatment train (SVT-1):
  - Air injection blower (1);
  - Air/liquid separator (1);
  - Vapor extraction air filter (1);
  - Vapor extraction blowers (2);
  - GAC vessels (3); and
  - PPA vessels (2)

- When operating with both treatment trains (SVT-1 & SVT-2):
  - Air injection blower (2);
  - Air/liquid separator (2);
  - Vapor extraction air filter (2);
  - Vapor extraction blowers (4);
  - GAC vessels (6); and
  - PPA vessels (4)

The maximum inlet flowrate for AOS-4 is 5,300 scfm.

Alternate Operating Scenario 5 – AOS-5 is the operation of AOS-1 or AOS-2 without the thermal oxidizer(s), caustic scrubber(s), associated equipment (caustic feed pump, demister, heat exchanger, cooling tower, chiller, and booster blower) and one or more of the PPA vessels removed, and with the addition of one GAC vessel per treatment train (three GAC vessels in series per treatment train). Therefore, at a minimum, the following equipment is required for AOS-5:

- When operating with one treatment train (SVT-1):
  - Air injection blower (1);
  - Air/liquid separator (1);
  - Vapor extraction air filter (1);
  - Vapor extraction blowers (2);
  - GAC vessels (3); and
  - PPA vessels (1 or none)

- When operating with both treatment trains (SVT-1 & SVT-2):
  - Air injection blower (2);
  - Air/liquid separator (2);

- Vapor extraction air filter (2);
- Vapor extraction blowers (4);
- GAC vessels (6); and
- PPA vessels (2 or none)

The maximum inlet flow rates for AOS-5 is 5,300 scfm.

4. EMISSIONS FROM PROJECT

The stack emissions for each of the five alternate operating scenarios were calculated using AP-42 emission factors, individual well vapor sample results, and assumptions and manufacturer guarantees on equipment destruction efficiencies. (Note that since the trigger for implementing AOS-4 and AOS-5 are similar, the emissions are the same for those two scenarios.) Maximum potential to emit (PTE) would occur if SVT-1 and SVT-2 were operating simultaneously. However, because the units will discharge through a single stack, the worst-case emissions from an air dispersion modeling standpoint would occur when only SVT-1 is operating. This is due to the lower concentrations expected when wells located on PSHIA are added to the system and the increased air flowrate when SVT-2 is added. Therefore, the PTE was calculated for both SVT-1 operating alone and for both SVT-1 and SVT-2 operating together.

A summary of the criteria pollutant emissions for AOS-1 and AOS-2 is presented in Table 4-1.

TABLE 4-1
Summary of Annual Criteria Pollutant Emissions (tons/year)

Compound	AOS-1 (SVT-1)	AOS-2 (SVT-1 & SVT-2)
NO_X	2.40	3.86
CO	2.02	3.24
SO_2	1.09	1.75
PM	0.18	0.29
PM_{10}	0.18	0.29
VOCs	4.06	6.52
Total HAPs	3.74	3.86

AOS-1 = Alternate Operating Scenario 1
AOS-2 = Alternate Operating Scenario 2
NO_X = oxides of nitrogen
CO = carbon monoxide
SO2 = sulfur dioxide
PM = particulate matter
PM10 = particulate matter less than 10µ in diameter
VOCs = volatile organic compounds
HAPs = hazardous air pollutants

4.1 Alternate Operating Scenarios 1 (SVT-1) and 2 (SVT-1 and SVT-2)

SVT-1 and SVT-2 will be operated 24 hours per day, 365 days per year, except for maintenance downtimes. Therefore, PTE calculations are based on 8,760 hours per year of operation.

4.1.1 Thermal Oxidizer

Emissions generated in the thermal oxidizer are primarily criteria pollutants from the combustion of methane and total petroleum hydrocarbons and from VOCs present in the soil vapor that do not get treated in the thermal oxidizer. Based on vendor information, the thermal oxidizer has a minimum guaranteed removal efficiency of 99 percent. In the permit application, Honeywell has assumed a 99 percent VOC removal efficiency for the oxidizer, and, therefore, accepts a permit limitation of 99 percent VOC removal efficiency for the oxidizer.

Criteria Pollutants – Criteria pollutant PTE, including VOCs, was based on the design capacities of the thermal oxidizer units. The units are designed to operate within specific temperature parameters. Each unit has a maximum allowable heat input above which it will exceed the maximum temperature set point and either ambient air will be added or the oxidizer will shut down. Criteria pollutant emissions will result from the combustion of jet fuel and methane in the thermal oxidizer and from the VOCs that are present in the soil vapor but do not get combusted in the thermal oxidizer. The thermal oxidizer uses natural gas as supplementary fuel.

The primary contributor to heat input in the thermal oxidizer is expected to be methane in the soil vapor, although total petroleum hydrocarbons in the soil vapor are also expected. Therefore, emissions of criteria pollutants from combustion were calculated assuming that all of the heat input to the thermal oxidizers was from the combustion of methane. The design capacities of SVT-1 and SVT-2 (5.6 million British thermal units per hour [MMBtu/hr] and 3.39 MMBTU/hr, respectively), the average heating value of natural gas (1,020 BTU/scf), and the emission factors for external combustion of natural gas presented in AP-42, Tables 1.4-1 (small boilers <100 MMBTU/hr) and 1.4-2 (July, 1998) were used to calculate the PTE of NO_X, CO, SO_2, PM, and VOCs from combustion as presented in the following equation:

$$PTE_X = \frac{EF_X \times DC}{HV_{NG}}$$

$$PTE_{NOx} = \frac{100 \times 5.6}{1020} = 0.55\ lb/hr$$

where: PTE_X = Potential to emit compound "X" (lb/hr)
EF_X = Emission factor of compound "X" from AP-42 External Combustion for small boilers <100 MMBTU/hr (lb/10^6 scf)
DC = Design capacity of the oxidizer (5.6 MMBTU/hr)
HV_{NG} = Heating value of natural gas (1,020 BTU/scf)

If the 3,300-scfm oxidizer for SVT-1 operates for 8,760 hours per year, then the annual NO_X emissions would be 4,809 lbs/yr (0.55 x 8,760) or 2.40 tons/yr.

The emission factors used to calculate criteria pollutant emissions from the thermal oxidizers were (in terms of pounds per million standard cubic feet of natural gas burned):

- NO_X 100
- CO 84
- SO2 0.6
- PM_{10} 7.6
- VOCs 5.5

With the exception of VOCs, Honeywell does not anticipate the control devices downstream of the oxidizer to reduce the criteria pollutants generated from the fuel combustion in the oxidizer. Consequently, the criteria pollutants generated from the oxidizer will be emitted through the stack at the end of the treatment train without treatment.

Additional VOCs – The maximum quantity of VOCs that could enter the thermal oxidizer and be treated is based on the design capacity of the units, as described for combustion emissions. However, although combustion emissions were calculated assuming that all heat input to the unit was from methane in the soil vapor, the maximum potential emissions of VOCs would occur if all of the heat input to the unit was from total petroleum hydrocarbons in the soil vapor. Honeywell assumed the total petroleum hydrocarbons were from JP-4 jet fuel. The calculation of VOC emissions from the oxidizer from the combustion of JP-4 was based on the heating value of JP-4 (18,732 BTU/lb) obtained from the military publication *Fuel Users Guide 2000*, the design capacity of the oxidizers (5.6 MMBTU/hr and 3.39 MMBTU/hr), and the destruction efficiency of the oxidizers (99 percent). The maximum VOC mass inlet loading to the oxidizers from JP-4 combustion was calculated using the following equation:

$$LR_{OX\text{-}VOC} = \frac{DC}{HV_{JP\text{-}4}}$$

$$LR_{OX\text{-}VOC} = \frac{5{,}600{,}000}{18{,}732} = 298.95\ lb/hr$$

where: $LR_{OX\text{-}VOC}$ = mass inlet loading rate of VOCs to oxidizer from JP-4 combustion (lb/hr)
DC = Design capacity of the oxidizer (5,600,000 BTU/hr for the 3,300 scfm oxidizer and 3,390,000 BTU/hr for the 2,000 scfm oxidizer)
HV_{NG} = Heating value of JP-4 (18,732 BTU/lb)

Additional Sulfur Dioxide – Additional sulfur dioxide (SO_2) emissions from jet fuel (JP-4) combustion were calculated based on the AP-42 emission factor for the combustion of distillate oil from Table 1.3-1 in AP-42, the percent by mass sulfur content in jet fuel and a jet fuel density as stated in the *Fuel Users Guide 2000*, and the VOC loading capacity of the oxidizer according to the following equation:

$$PTE_{SO2} = \frac{\left(\frac{EF_{JP\text{-}4}}{1000}\right) \times LR_{OX\text{-}VOC}}{\rho_{JP\text{-}4}}$$

$$PTE_{SO2} = \frac{\left(\frac{142 \times 0.037}{1000}\right) \times 298.95}{6.3} = 0.249\ lb/hr$$

where: PTE_{SO2} = Potential to emit SO_2 (lb/hr)
$EF_{JP\text{-}4}$ = AP-42 emission factor for SO_2, in lb/10^3 gallons burned, from combustion of distillate fuel (142*S, where S is the sulfur content of the fuel [0.037%])
$LR_{OX\text{-}VOC}$ = mass inlet loading rate of VOCs to oxidizer from JP-4 combustion (298.95 lb/hr)
$\rho_{JP\text{-}4}$ = density of JP-4 (6.3 lb/gal)

Hazardous Air Pollutants – The BSVE system will emit federally listed Hazardous Air Pollutants (HAPs) and chemicals listed on the Arizona Ambient Air Quality Guidelines (AAAQGs) as

components of VOCs contained in the exhaust from the thermal oxidizer. Estimates of these HAPs were based on the maximum flowrate capable of entering the thermal oxidizer and concentrations of individual chemicals observed in monitoring wells at the site.

Inlet flowrates of the various HAPs, coupled with soil vapor analytical data from 2002 through 2006 for wells on the Honeywell property and from 2004 through 2006 for wells on the PSHIA property, were used to identify maximum inlet concentrations in the soil vapor. Concentrations of individual compounds in the soil vapor on Honeywell property vary significantly throughout the site based on the soil vapor sampling results. Because multiple injection/extraction wells will be operated at any given time and makeup air will be added to the inlet soil vapor stream, the inlet concentration for each compound will vary significantly. Due to the variability in inlet concentrations of soil vapor, the methodology for calculating annual and short-term (hourly and daily) emissions from SVT-1 was different. Each methodology is presented below:

Annual Potential to Emit (SVT-1) – To estimate annual emissions from SVT-1 operating alone, each injection/extraction well was assumed to have approximately a 500-foot soil vapor capture radius. This is a conservative estimate as pilot testing activities in 2003 and 2006 have indicated that the radius of capture may actually be closer to 200 feet.

The **maximum** concentration of each compound observed within 500 feet of a given injection/extraction well, based on the initial extraction well layout, and was then assigned to that well. A specific maximum concentration may be assigned to multiple extraction wells, due to the overlap of the extraction radius, which also yields a conservative estimate. In reality, the specific maximum concentration will only migrate toward one extraction well.

These maximum concentrations were then averaged across all extraction wells in the BSVE system to arrive at a maximum inlet concentration for individual compounds into SVT-1 on an annual basis (annual maximum inlet rate). This is a conservative estimate because it assumes 3,300 scfm of soil vapor (no makeup air) entering the unit at all times and that each process well is extracting the maximum observed concentration of each compound in its radius of capture for an entire year. Moreover, it does not take credit for the biodegradation of compounds, which is the reason for injecting air in the subsurface.

A compound concentration was assumed to be zero if it was not reported above laboratory reporting limits in any of the samples collected from the wells.

Short-Term Potential to Emit (SVT-1) – Since wells that are being extracted at any one time can vary, the potential exists for the maximum concentration that would enter the system on a short-term basis to be higher than average inlet concentration expected to enter the system over the course of a year. Therefore, to ensure that a conservative estimate of short-term emissions has been performed, the short-term PTE was calculated based on the maximum concentration of each compound observed anywhere on the Honeywell site since 2002. This concentration was assumed to enter the system at a flow rate of 3,300 cfm for an entire hour and an entire day (24 hours).

Annual and Short-Term Potential to Emit (SVT-2) – SVT-2 will be added only if it is deemed necessary after phasing in process wells within the target treatment area. Concentrations of HAPs in the soil vapor from PSHIA wells have generally been lower than those observed on Honeywell property. Because proposed injection/extraction well locations for the PSHIA property have not yet been finalized, a slightly different approach was used to estimate PTE for HAPs associated with the installation of SVT-2 and the incorporation of soil vapor from the PSHIA property. To be conservative, the maximum concentration of each compound observed anywhere on PSHIA property was assumed

to be the concentration that will be treated if SVT-2 is installed. These same concentrations were used for both annual and short-term PTE estimates.

The annual and short-term HAP mass inlets for each oxidizer were then calculated using the flowrate of each oxidizer according to the following equation:

$$LR_{OX\text{-}HAP} = C_{HAP} \times Q_{OX} \times \frac{1\ g}{10^6\ \mu g} \times \frac{1\ lb}{454\ g} \times \frac{60\ min}{1\ hr} \times \frac{28.3\ L}{1\ ft^3}$$

$$LR_{OX\text{-}Benzene} = \frac{2441.87 \times 3{,}300 \times 60 \times 28.3}{10^6 \times 454} = 30.16\ lb/hr$$

where: $LR_{OX\text{-}HAP}$ = HAP mass inlet loading rate to oxidizer (lb/hr)
C_{HAP} = Annual or short-term HAP concentration (annual benzene = 2441.87 µg/L)
Q_{OX} = Oxidizer design flowrate (SVT-1 = 3,300 scfm)

A summary of the annual and short-term (1-hour and 24-hour) oxidizer HAP inlet concentrations and mass loading rates is presented in Table 4-2.

TABLE 4-2
Annual and Short-Term Inlet Concentrations and Mass Loading Rates for SVT-1 and SVT-2

Analyte	Oxidizer Inlet Concentration (µg/L)			Oxidizer Inlet Mass Loading (lb/hr)		
	SVT-1		SVT-2	SVT-1		SVT-2
	Annual	Short-term	Annual & Short-term	Annual	Short-term	Annual & Short-term
Total VOCs[1]	N/A	N/A	N/A	298.95	298.95	181.18
1,1,1-Trichloroethane	260.20	530.00	0.72	3.21	6.55	5.39E-03
1,1,2,2-Tetrachloroethane	0.00E+00	0.00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1,1,2-Trichloroethane	1.44E-04	0.43	0.00E+00	1.78E-06	5.31E-03	0.00E+00
1,1,2-Trichlorotrifluoroethane	452.60	1200.00	1.3	5.59	14.82	9.73E-03
1,1-Dichloroethane	318.80	1100.00	11	3.94	13.58	8.23E-02
1,1-Dichloroethene	57.49	200.00	4	0.71	2.47	2.99E-02
1,2,4-Trichlorobenzene	1.31E-02	2.70E-02	0.00E+00	1.62E-04	3.33E-04	0.00E+00
1,2,4-Trimethylbenzene	297.70	600.00	32	3.68	7.41	0.24
1,2-Dibromoethane	9.39E-05	5.40E-04	0.00E+00	1.16E-06	6.67E-06	0.00E+00
1,2-Dichlorobenzene	2.87E-02	0.10	0.00E+00	3.54E-04	1.23E-03	0.00E+00
1,2-Dichloroethane	5.28E-02	3.00	0.00E+00	6.52E-04	3.70E-02	0.00E+00
1,2-Dichloropropane	8.52E-05	4.90E-04	0.00E+00	1.05E-06	6.05E-06	0.00E+00
1,2-Dichlorotetrafluoroethane	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1,3,5-Trimethylbenzene	105.46	320.00	11	1.30	3.95	8.23E-02
1,3-Butadiene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1,3-Dichlorobenzene	2.49E-02	8.40E-02	0.00E+00	3.08E-04	1.04E-03	0.00E+00
1,4-Dichlorobenzene	1.49E-01	0.36	0.00E+00	1.84E-03	4.45E-03	0.00E+00
1,4-Dioxane	0.00E+00	0.00E+00	NA	0.00E+00	0.00E+00	NA
2,2,4-Trimethylpentane	839.35	1800.00	390	10.37	22.23	2.92
2-Butanone	4.62	15.00	0.013	5.71E-02	0.19	9.73E-05
2-Hexanone	2.03E-03	0.67	0.00E+00	2.51E-05	8.27E-03	0.00E+00
4-Ethyltoluene	55.80	170.00	2.00	0.69	2.10	1.50E-02

TABLE 4-2
Annual and Short-Term Inlet Concentrations and Mass Loading Rates for SVT-1 and SVT-2

	Oxidizer Inlet Concentration (µg/L)			Oxidizer Inlet Mass Loading (lb/hr)		
	SVT-1		SVT-2	SVT-1		SVT-2
Analyte	Annual	Short-term	Annual & Short-term	Annual	Short-term	Annual & Short-term
4-Methyl-2-Pentanone	7.95E-03	8.30E-02	0.00E+00	9.82E-05	1.03E-03	0.00E+00
Acetone	6.21	20.00	13	7.67E-02	0.25	9.73E-02
Allyl Chloride	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Benzene	2441.87	6200.00	58	30.16	76.57	4.34E-01
Benzene, (Chloromethyl)-	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Bromodichloromethane	8.66E-03	5.20E-02	0.00E+00	1.07E-04	6.42E-04	0.00E+00
Bromoethene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Bromoform	6.00E-04	2.30E-03	0.00E+00	7.41E-06	2.84E-05	0.00E+00
Bromomethane	0.00E+00	1.90E-03	0.00E+00	0.00E+00	2.35E-05	0.00E+00
Carbon Disulfide	1.95	44.00	1.1	2.41E-02	0.54	8.23E-03
Carbon Tetrachloride	7.00E-04	3.20E-03	0.00E+00	8.64E-06	3.95E-05	0.00E+00
Chlorobenzene	1.77	6.80	0.00E+00	2.19E-02	8.40E-02	0.00E+00
Chlorodibromomethane	2.61E-03	1.00E-02	0.00E+00	3.22E-05	1.23E-04	0.00E+00
Chloroethane	75.18	250.00	16	0.93	3.09	1.20E-01
Chloroform	0.53	0.80	0.19	6.48E-03	9.88E-03	1.42E-03
Chloromethane	1.66E-02	8.00E-02	0.0083	2.06E-04	9.88E-04	6.21E-05
Cis-1,2-Dichloroethene	1372.57	3900.00	0.29	16.95	48.16	2.17E-03
Cis-1,3-Dichloropropene	0.00E+00	8.10E-04	0.00E+00	0.00E+00	1.00E-05	0.00E+00
Cyclohexane	5326.96	10000.00	1500	65.79	123.50	11.23
Dichlorodifluoromethane	9.45	51.00	0.02	1.17E-01	0.63	1.50E-04
Ethyl Acetate	0.00E+00	4.00E-02	0.00E+00	0.00E+00	4.94E-04	0.00E+00
Ethylbenzene	373.64	790.00	53	4.61	9.76	3.97E-01
Hexachlorobutadiene	9.15E-03	1.80E-02	0.00E+00	1.13E-04	2.22E-04	0.00E+00
Isopropanol	25.43	55.00	0.17	0.31	0.68	1.27E-03
Methyl Tert-Butyl Ether	428.38	1100.00	0.54	5.29	13.58	4.04E-03
Methylene Chloride	3.02	6.00	1.1	3.73E-02	7.41E-02	8.23E-03
N-Heptane	2101.87	3500.00	320	25.96	43.22	2.40
N-Hexane	7464.74	20000.00	350	92.19	246.99	2.62
o-Xylene	222.48	750.00	1.4	2.75	9.26	1.05E-02
Propylene	0.89	6.60	1.8	1.10E-02	8.15E-02	1.35E-02
Styrene	0.71	16.00	16	8.73E-03	0.20	1.20E-01
Tetrachloroethene	27.44	61.00	1.7	0.34	0.75	1.27E-02
Tetrahydrofuran	0.43	2.50	0.00E+00	5.37E-03	3.09E-02	0.00E+00
Toluene	572.80	2100.00	4.6	7.07	25.93	3.44E-02
Trans-1,2-Dichloroethene	4.49E-02	0.10	0.00E+00	5.55E-04	1.23E-03	0.00E+00
Trans-1,3-Dichloropropene	0.00E+00	6.60E-04	0.00E+00	0.00E+00	8.15E-06	0.00E+00
Trichloroethene	280.07	770.00	2.6	3.46	9.51	1.95E-02
Trichlorofluoromethane	188.87	540.00	1.7	2.33	6.67	1.27E-02
Vinyl Acetate	1.39E-02	2.00E-02	0.00E+00	1.72E-04	2.47E-04	0.00E+00
Vinyl Chloride	251.19	650.00	2.6	3.10	8.03	1.95E-02
Xylenes, m & p	203.37	360.00	4.4	2.51	4.45	3.29E-02
Xylenes, Total	881.79	3300.00	12	10.89	40.75	8.98E-02
Napthalene	2.20	3.20	1.6	2.71E-02	3.95E-02	1.20E-02

Additionally, HAP emissions from the combustion of methane in the thermal oxidizer were estimated. The HAP emissions due to combustion of natural gas were calculated using the natural gas emission factors from AP-42 Natural Gas Combustion Tables 1.4-3 and 1.4-4, the maximum capacity of the oxidizer (5.6 MMBTU/hr), and the equation used to calculate the criteria pollutants. A summary of the HAP emissions from natural gas combustion for SVT-1 and SVT-2 is presented in Table 4-3.

TABLE 4-3
Summary of HAP Emissions from Natural Gas Combustion

POLLUTANT	AP-42[1,2] (lb/MMCF)	Potential to Emit (SVT-1)		Potential to Emit (SVT-2)	
		(lb/hr)	(ton/yr)	(lb/hr)	(ton/yr)
Benzene	2.10E-03	1.15E-05	5.05E-05	1.15E-05	5.05E-05
Dichlorobenzene	1.20E-03	6.59E-06	2.89E-05	3.99E-06	1.75E-05
Formaldehyde	7.50E-02	4.12E-04	1.80E-03	2.50E-04	1.09E-03
Hexane	1.80E+00	9.88E-03	4.33E-02	5.99E-03	2.62E-02
Naphthalene	6.10E-04	3.35E-06	1.47E-05	2.03E-06	8.89E-06
Toluene	3.40E-03	1.87E-05	8.18E-05	1.13E-05	4.96E-05
Arsenic	2.00E-04	1.10E-06	4.81E-06	1.10E-06	4.81E-06
Beryllium	1.20E-05	6.59E-08	2.89E-07	6.59E-08	2.89E-07
Cadmium	1.10E-03	6.04E-06	2.65E-05	6.04E-06	2.65E-05
Chromium	1.40E-03	7.69E-06	3.37E-05	7.69E-06	3.37E-05
Cobalt	8.40E-05	4.61E-07	2.02E-06	4.61E-07	2.02E-06
Lead	0.0005	2.75E-06	1.20E-05	1.66E-06	7.29E-06
Manganese	3.80E-04	2.09E-06	9.14E-06	1.26E-06	5.54E-06
Mercury	2.60E-04	1.43E-06	6.25E-06	8.65E-07	3.79E-06
Selenium	2.40E-05	1.32E-07	5.77E-07	7.99E-08	3.50E-07
Total POM	2.19E-03	4.84E-07	2.12E-06	2.93E-07	1.29E-06

POM = Polycyclic Organic Matter
1 = Fuel being burned was assumed to be entirely methane, therefore, U.S. EPA, "Compilation of Air Pollutant Emission Factors", EPA Document AP-42 and Supplements, Section 1.4.3 (speciated organic compounds), 7/98 for natural gas combustion were used.
2 = Emission factor for POM is a sum of the emission factors of all individual POMs

Acid Gases – HCl and HF may be formed in the thermal oxidizers during the combustion of chlorinated and fluorinated hydrocarbons. The inlet concentrations used to calculate short-term and annual PTE of each HAP, as described above, were used to estimate the production of HCl and HF. Based on these maximum potential inlet concentrations, the number of chlorine and fluorine ions potentially entering the thermal oxidizer was calculated using the following equation:

$$Cl_{X\text{-}in} = LR_{OX\text{-}X} \times N_{X\text{-}Cl} \times \frac{MW_{Cl}}{MW_X}$$

$$Cl_{VC\text{-}in} = 3.10 \times 1 \times \frac{35.5}{62.5} = 1.76\ lb/hr$$

where: $Cl_{X\text{-}in}$ = Chlorine ion mass inlet from chlorinated compound "X" (lb/hr)
$LR_{OX\text{-}X}$ = Chlorinated compound "X" mass inlet loading rate to oxidizer (vinyl chloride = 3.10 lb/hr)
$N_{X\text{-}Cl}$ = Number of chlorine ions in chlorinated compound "X" (vinyl chloride = 1)
MW_{Cl} = Molecular weight of chlorine (35.5 g/mol)
MW_X = Molecular weight of chlorinated compound "X" (vinyl chloride = 62.5 g/mol)

During the combustion process, the chlorine and fluorine ions can bond with hydrogen to form HCl and HF acid gases. It was then assumed that all of these ions would be converted to HCl and HF in the thermal oxidizer. The HCl and HF acid gas emissions from the oxidizer were calculated using the following equation:

$$HCl_{X\text{-}out} = CL_{X\text{-}in} \times \frac{MW_{HCl}}{MW_{Cl}}$$

$$HCl_{VC\text{-}out} = 1.76 \times \frac{36.5}{35.5} = 1.81\ lb/hr$$

where: $HCl_{X\text{-}out}$ = HCl acid gas oxidizer emission from chlorinated compound "X" (lb/hr)
$Cl_{X\text{-}in}$ = Chlorine ion mass inlet from chlorinated compound "X" (vinyl chloride = 1.76 lb/hr)
MW_{HCl} = Molecular weight of HCl (36.5 g/mol)
MW_{Cl} = Molecular weight of chlorine (35.5 g/mol)

A summary of the annual and short-term chlorine ion oxidizer mass inlets and the HCl acid gas oxidizer emissions is presented in Table 4-4, and a summary of the annual and short-term fluorine ion oxidizer mass inlets and the HF acid gas oxidizer emissions is presented in Table 4-5.

TABLE 4-4
Summary of Annual and Short-Term Chlorine Ion Oxidizer Mass Inlets and HCl Acid Gas Oxidizer Emissions for SVT-1 and SVT-2

Analyte	No. of Cl Ions	Chlorine Ion Mass Inlet (lb/hr)			Oxidizer HCl Emissions (lb/hr)		
		SVT-1		SVT-2	SVT-1		SVT-2
		Annual	Short-term	Annual & Short-term	Annual	Short-term	Annual & Short-term
1,1,1-Trichloroethane	3	2.56	5.22	4.30E-03	2.64	5.37	4.42E-03
1,1,2-Trichloroethane	3	1.42E-06	4.24E-03	0.00	1.46E-06	4.36E-03	0.00
1,1,2-Trichlorotrifluoroethane	3	3.18	8.42	5.53E-03	3.27	8.66	5.69E-03
1,1-Dichloroethane	2	2.83	9.76	5.91E-02	2.91	10.03	6.08E-02
1,1-Dichloroethene	2	0.52	1.81	2.19E-02	0.53	1.86	2.25E-02
1,2,4-Trichlorobenzene	3	9.48E-05	1.96E-04	0.00E+00	9.75E-05	2.01E-04	0.00E+00
1,2-Dichlorobenzene	2	1.71E-04	5.96E-04	0.00E+00	1.76E-04	6.13E-04	0.00E+00
1,2-Dichloroethane	2	4.68E-04	2.66E-02	0.00E+00	4.81E-04	2.73E-02	0.00E+00
1,2-Dichloropropane	2	6.61E-07	3.80E-06	0.00E+00	6.80E-07	3.91E-06	0.00E+00
1,3-Dichlorobenzene	2	1.49E-04	5.01E-04	0.00E+00	1.53E-04	5.15E-04	0.00E+00
1,4-Dichlorobenzene	2	8.90E-04	2.15E-03	0.00E+00	9.15E-04	2.21E-03	0.00E+00
Bromodichloromethane	2	4.64E-05	2.78E-04	0.00E+00	4.77E-05	2.86E-04	0.00E+00

TABLE 4-4
Summary of Annual and Short-Term Chlorine Ion Oxidizer Mass Inlets and HCl Acid Gas Oxidizer Emissions for SVT-1 and SVT-2

Analyte	No. of Cl Ions	Chlorine Ion Mass Inlet (lb/hr)			Oxidizer HCl Emissions (lb/hr)		
		SVT-1		SVT-2	SVT-1		SVT-2
		Annual	Short-term	Annual & Short-term	Annual	Short-term	Annual & Short-term
Carbon Tetrachloride	4	7.98E-06	3.65E-05	0.00E+00	8.21E-06	3.75E-05	0.00E+00
Chlorobenzene	1	6.91E-03	2.65E-02	0.00E+00	7.10E-03	2.72E-02	0.00E+00
Chlorodibromomethane	1	5.49E-06	2.10E-05	0.00E+00	5.65E-06	2.16E-05	0.00E+00
Chloroethane	1	0.51	1.70	6.59E-02	0.53	1.75	6.77E-02
Chloroform	3	5.78E-03	8.81E-03	1.27E-03	5.95E-03	9.06E-03	1.30E-03
Chloromethane	1	1.45E-04	6.95E-04	4.37E-05	1.49E-04	7.14E-04	4.49E-05
Cis-1,2-Dichloroethene	2	12.41	35.28	1.59E-03	12.76	36.27	1.63E-03
Cis-1,3-Dichloropropene	2	0.00E+00	6.40E-06	0.00E+00	0.00E+00	6.58E-06	0.00E+00
Dichlorodifluoromethane	2	6.86E-02	0.37	8.79E-05	7.05E-02	0.38	9.04E-05
Hexachlorobutadiene	6	9.23E-05	1.82E-04	0.00E+00	9.49E-05	1.87E-04	0.00E+00
Methylene Chloride	2	0.03	0.06	3.38E-03	3.21E-02	6.37E-02	3.47E-03
Tetrachloroethene	4	0.29	0.65	1.09E-02	0.30	0.66	1.12E-02
Trans-1,2-Dichloroethene	2	4.06E-04	9.05E-04	0.00E+00	4.18E-04	9.30E-04	0.00E+00
Trans-1,3-Dichloropropene	2	0.00E+00	5.21E-06	0.00E+00	0.00E+00	5.36E-06	0.00E+00
Trichloroethene	3	2.80	7.71	1.58E-02	2.88	7.92	1.62E-02
Trichlorofluoromethane	3	1.81	5.17	9.86E-03	1.86	5.32	1.01E-02
Vinyl Chloride	1	1.76	4.56	1.11E-02	1.81	4.69	1.14E-02
TOTAL		**28.79**	**80.77**	**0.21**	**29.60**	**83.05**	**0.22**

TABLE 4-5
Summary of Annual and Short-Term Fluorine Ion Oxidizer Mass Inlets and HF Acid Gas Oxidizer Emissions for SVT-1 and SVT-2

Analyte	No. of F Ions	Fluorine Ion Mass Inlet (lb/hr)			Oxidizer HF Emissions (lb/hr)		
		SVT-1		SVT-2	SVT-1		SVT-2
		Annual	Short-term	Annual & Short-term	Annual	Short-term	Annual & Short-term
1,1,2-Trichlorotrifluoroethane	3	1.70	4.51	2.96E-03	1.79	4.75	3.12E-03
Dichlorodifluoromethane	2	3.67E-02	1.98E-01	4.70E-05	3.86E-02	2.08E-01	4.95E-05
Trichlorofluoromethane	1	0.32	0.92	1.76E-03	0.34	0.97	1.85E-03
TOTAL		**2.06**	**5.63**	**4.77E-03**	**2.17**	**5.92**	**5.02E-03**

4.1.2 Alternate Operating Scenario 1 Emissions

Because the system is closed, ambient/dilution air does not enter the treatment train after the thermal oxidizer. Therefore, the outlet pollutant mass flowrates from the thermal oxidizer are equal to the inlet pollutant mass flowrates of the caustic scrubber; the outlet pollutant mass flowrates from the caustic scrubber are equal to the inlet pollutant mass flowrates of the GAC vessels, and so on until the vapor stream is discharged to ambient air after the PPA vessels.

For example, the worst-case inlet mass loading of VOCs to the oxidizer (from JP-4 combustion) was determined previously to be 298.95 lbs/hr. Based on a manufacturer guaranteed VOC destruction efficiency of 99 percent, the VOC emissions from the oxidizer from total petroleum hydrocarbon combustion were calculated using the following equation:

$$ER_{CE\text{-}X} = LR_{CE\text{-}X} \times (1 - DE_{CE})$$

$$ER_{OX\text{-}VOC} = 298.95 \times (1 - 0.99) = 2.99\ lb/hr$$

where: $ER_{CE\text{-}X}$ = Emission rate of compound "X" from control equipment "CE" (lb/hr)
$LR_{CE\text{-}X}$ = Inlet mass loading rate of compound "X" into control equipment "CE" (VOCs from JP-4 combustion = 298.95 lb/hr)
DE_{CE} = Destruction efficiency of the control equipment "CE" (oxidizer = 99 percent)

Because VOCs are not anticipated to be removed by the caustic scrubber, the oxidizer effluent VOCs mass flowrate would then be equal to the GAC vessel inlet mass flowrate. The estimated VOC removal efficiency of the GAC vessels (70 percent) would then be applied using the above equation using 2.99 lb/hr as the inlet mass loading rate and a 70 percent removal efficiency. The GAC vessel effluent VOC mass flowrate would then be 0.897 lbs/hr. Because removal of VOCs in the PPA vessels was not calculated, the VOC emissions were assumed to be equal to the GAC vessel effluent mass flowrate (0.897 lbs/hr) plus the VOCs generated from natural gas combustion (0.03 lbs/hr). (To be conservative, Honeywell assumed the VOCs and individual HAPs [benzene, toluene, hexane, and naphthalene] generated from the combustion of natural gas, as determined from AP-42 emission factors, would not be removed by the GAC vessels.) Therefore, the total VOC emissions for AOS-1 would be 0.93 lbs/hr, and on an annual basis would be **4.06 tons/yr**.

The same process was repeated for the HAPs and acid gases for both annual and short-term emissions. To be conservative, Honeywell assumed the HAPs generated from the combustion of natural gas, as determined from AP-42 emission factors, would not be removed by the GAC vessels. Tables 4-6 and 4-7 show the hourly pollutant emissions after each piece of equipment for the annual and short-term concentrations, respectively. Compounds that were analyzed for and were not reported above the laboratory detection limit were assumed to be absent in the extracted soil vapor. Consequently, those compounds were assumed to have zero emissions and are not shown in the table.

TABLE 4-6
Breakdown of Annual VOC and HAP Emissions per Control Equipment for SVT-1 (AOS-1)

Analyte	Oxidizer Inlet (lb/hr)	Oxidizer Outlet[2] (lb/hr)	Scrubber Outlet[3] (lb/hr)	GAC Outlet[4] (lb/hr)	PPA Outlet[5] (Stack) (lb/hr)	PPA Outlet[5] (Stack) (tons/yr)
Total VOCs	298.95	3.02	3.02	0.93	0.93	4.06
1,1,1-Trichloroethane	3.21	3.21E-02	3.21E-02	9.64E-03	9.64E-03	4.22E-02
1,1,2-Trichloroethane	1.78E-06	1.78E-08	1.78E-08	5.35E-09	5.35E-09	2.34E-08
1,1,2-Trichlorotrifluoroethane	5.59	5.59E-02	5.59E-02	1.68E-02	1.68E-02	7.34E-02
1,1-Dichloroethane	3.94	3.94E-02	3.94E-02	1.18E-02	1.18E-02	5.17E-02
1,1-Dichloroethene	0.71	7.10E-03	7.10E-03	2.13E-03	2.13E-03	9.33E-03
1,2,4-Trichlorobenzene	1.62E-04	1.62E-06	1.62E-06	4.85E-07	4.85E-07	2.12E-06
1,2,4-Trimethylbenzene	3.68	3.68E-02	3.68E-02	1.10E-02	1.10E-02	4.83E-02
1,2-Dibromoethane	1.16E-06	1.16E-08	1.16E-08	3.48E-09	3.48E-09	1.52E-08
1,2-Dichlorobenzene	3.54E-04	3.54E-06	3.54E-06	1.06E-06	1.06E-06	4.65E-06
1,2-Dichloroethane	6.52E-04	6.52E-06	6.52E-06	1.95E-06	1.95E-06	8.56E-06
1,2-Dichloropropane	1.05E-06	1.05E-08	1.05E-08	3.16E-09	3.16E-09	1.38E-08
1,3,5-Trimethylbenzene	1.30	1.30E-02	1.30E-02	3.91E-03	3.91E-03	1.71E-02
1,3-Dichlorobenzene	3.08E-04	3.08E-06	3.08E-06	9.23E-07	9.23E-07	4.04E-06
1,4-Dichlorobenzene	1.84E-03	1.84E-05	1.84E-05	5.53E-06	5.53E-06	2.42E-05
2,2,4-Trimethylpentane	10.37	1.04E-01	1.04E-01	3.11E-02	3.11E-02	1.36E-01
2-Butanone	5.71E-02	5.71E-04	5.71E-04	1.71E-04	1.71E-04	7.50E-04
2-Hexanone	2.51E-05	2.51E-07	2.51E-07	7.54E-08	7.54E-08	3.30E-07
4-Ethyltoluene	0.69	6.89E-03	6.89E-03	2.07E-03	2.07E-03	9.05E-03
4-Methyl-2-Pentanone	9.82E-05	9.82E-07	9.82E-07	2.95E-07	2.95E-07	1.29E-06
Acetone	7.67E-02	7.67E-04	7.67E-04	2.30E-04	2.30E-04	1.01E-03
Benzene[1]	30.16	0.30	0.30	9.05E-02	9.05E-02	3.96E-01
Bromodichloromethane	1.07E-04	1.07E-06	1.07E-06	3.21E-07	3.21E-07	1.41E-06
Bromoform	7.41E-06	7.41E-08	7.41E-08	2.22E-08	2.22E-08	9.74E-08
Carbon Disulfide	2.41E-02	2.41E-04	2.41E-04	7.24E-05	7.24E-05	3.17E-04
Carbon Tetrachloride	8.64E-06	8.64E-08	8.64E-08	2.59E-08	2.59E-08	1.14E-07
Chlorobenzene	2.19E-02	2.19E-04	2.19E-04	6.57E-05	6.57E-05	2.88E-04
Chlorodibromomethane	3.22E-05	3.22E-07	3.22E-07	9.66E-08	9.66E-08	4.23E-07
Chloroethane	0.93	9.28E-03	9.28E-03	2.79E-03	2.79E-03	1.22E-02
Chloroform	6.48E-03	6.48E-05	6.48E-05	1.95E-05	1.95E-05	8.52E-05
Chloromethane	2.06E-04	2.06E-06	2.06E-06	6.17E-07	6.17E-07	2.70E-06
Cis-1,2-Dichloroethene	16.95	0.17	0.17	5.09E-02	5.09E-02	2.23E-01
Cyclohexane	65.79	0.66	0.66	0.20	0.20	8.64E-01
Dichlorodifluoromethane	1.17E-01	1.17E-03	1.17E-03	3.50E-04	3.50E-04	1.53E-03
Ethylbenzene	4.61	4.61E-02	4.61E-02	1.38E-02	1.38E-02	6.06E-02
Hexachlorobutadiene	1.13E-04	1.13E-06	1.13E-06	3.39E-07	3.39E-07	1.48E-06
Isopropanol	0.31	3.14E-03	3.14E-03	9.42E-04	9.42E-04	4.13E-03
Methyl Tert-Butyl Ether	5.29	5.29E-02	5.29E-02	1.59E-02	1.59E-02	6.95E-02
Methylene Chloride	3.73E-02	3.73E-04	3.73E-04	1.12E-04	1.12E-04	4.90E-04
N-Heptane	25.96	0.26	0.26	7.79E-02	7.79E-02	3.41E-01
N-Hexane[1]	92.19	0.93	0.93	0.29	0.29	1.25
o-Xylene	2.75	2.75E-02	2.75E-02	8.24E-03	8.24E-03	3.61E-02
Propylene	1.10E-02	1.10E-04	1.10E-04	3.31E-05	3.31E-05	1.45E-04
Styrene	8.73E-03	8.73E-05	8.73E-05	2.62E-05	2.62E-05	1.15E-04
Tetrachloroethene	0.34	3.39E-03	3.39E-03	1.02E-03	1.02E-03	4.45E-03
Tetrahydrofuran	5.37E-03	5.37E-05	5.37E-05	1.61E-05	1.61E-05	7.06E-05
Toluene[1]	7.07	7.08E-02	7.08E-02	2.12E-02	2.12E-02	9.30E-02

TABLE 4-6
Breakdown of Annual VOC and HAP Emissions per Control Equipment for SVT-1 (AOS-1)

Analyte	Oxidizer Inlet (lb/hr)	Oxidizer Outlet[2] (lb/hr)	Scrubber Outlet[3] (lb/hr)	GAC Outlet[4] (lb/hr)	PPA Outlet[5] (Stack) (lb/hr)	PPA Outlet[5] (Stack) (tons/yr)
Trans-1,2-Dichloroethene	5.55E-04	5.55E-06	5.55E-06	1.66E-06	1.66E-06	7.29E-06
Trichloroethene	3.46	3.46E-02	3.46E-02	1.04E-02	1.04E-02	4.54E-02
Trichlorofluoromethane	2.33	2.33E-02	2.33E-02	7.00E-03	7.00E-03	3.06E-02
Vinyl Acetate	1.72E-04	1.72E-06	1.72E-06	5.15E-07	5.15E-07	2.26E-06
Vinyl Chloride	3.10	3.10E-02	3.10E-02	3.10E-02	9.31E-03	4.08E-02
Xylenes, m & p	2.51	2.51E-02	2.51E-02	7.53E-03	7.53E-03	3.30E-02
Xylenes, Total	10.89	0.11	0.11	3.27E-02	3.27E-02	1.43E-01
Naphthalene[1]	2.71E-02	2.75E-04	2.75E-04	8.47E-05	8.47E-05	3.71E-04
Dichlorobenzene	- - -	6.59E-06	6.59E-06	6.59E-06	6.59E-06	2.89E-05
Formaldehyde	- - -	4.12E-04	4.12E-04	4.12E-04	4.12E-04	1.80E-03
Arsenic	- - -	1.10E-06	1.10E-06	1.10E-06	1.10E-06	4.81E-06
Beryllium	- - -	6.59E-08	6.59E-08	6.59E-08	6.59E-08	2.89E-07
Cadmium	- - -	6.04E-06	6.04E-06	6.04E-06	6.04E-06	2.65E-05
Chromium	- - -	7.69E-06	7.69E-06	7.69E-06	7.69E-06	3.37E-05
Cobalt	- - -	4.61E-07	4.61E-07	4.61E-07	4.61E-07	2.02E-06
Lead	- - -	2.75E-06	2.75E-06	2.75E-06	2.75E-06	1.20E-05
Manganese	- - -	2.09E-06	2.09E-06	2.09E-06	2.09E-06	9.14E-06
Mercury	- - -	1.43E-06	1.43E-06	1.43E-06	1.43E-06	6.25E-06
Selenium	- - -	1.32E-07	1.32E-07	1.32E-07	1.32E-07	5.77E-07
Total POM	- - -	4.84E-07	4.84E-07	4.84E-07	4.84E-07	2.12E-06
Hydrofluoric Acid	- - -	2.17	2.17E-02	2.17E-02	2.17E-02	9.50E-02
Hydrochloric Acid	- - -	29.60	2.96E-01	2.96E-01	2.96E-01	1.30

VOC = volatile organic compound
HAP = hazardous air pollutant
AOS-1 = Alternate Operating Scenario 1 (SVT-1)
GAC = granular activated carbon
PPA = potassium permanganate adsorber
- - - = not applicable
[1] = Oxidizer outlet emission rate includes emission contributions from natural gas combustion. Emission contributions from natural gas combustion were not assumed to be removed by GAC.
[2] = Oxidizer assumed to have a 99% VOC destruction efficiency. Oxidizer outlet is the scrubber inlet.
[3] = Scrubber assumed to have a 99% acid gas removal efficiency. Scrubber outlet is the GAC inlet.
[4] = GAC assumed to have a 70% VOC removal efficiency (except vinyl chloride). GAC outlet is the PPA inlet.
[5] = PPA assumed to have a 70% vinyl chloride removal efficiency. PPA outlet is the treatment train stack.
Compounds that were analyzed for and were not reported above the laboratory detection limit were assumed to be absent in the extracted soil vapor and consequently had zero emissions (1,1,2,2-Tetrachloroethane; 1,2-Dichlorotetrafluoroethane; 1,3-Butadiene; 1,4-Dioxane; Allyl Chloride; Benzene [Chloromethyl-]; Bromoethene; Bromomethane; Cis-1,3-Dichloropropene; Ethyl Acetate; Trans-1,3-Dichloropropene)

TABLE 4-7
Breakdown of Short-Term VOC and HAP Emissions per Control Equipment for SVT-1 (AOS-1)

Analyte	Oxidizer Inlet (lb/hr)	Oxidizer Outlet[2] (lb/hr)	Scrubber Outlet[3] (lb/hr)	GAC Outlet[4] (lb/hr)	PPA Outlet[5] (Stack) (lb/hr)	PPA Outlet[5] (Stack) (lb/24hr)
Total VOCs	298.95	3.02	3.02	0.93	0.93	22.2
1,1,1-Trichloroethane	6.55	6.55E-02	6.55E-02	1.96E-02	1.96E-02	4.71E-01
1,1,2-Trichloroethane	5.31E-03	5.31E-05	5.31E-05	1.59E-05	1.59E-05	3.82E-04
1,1,2-Trichlorotrifluoroethane	14.82	1.48E-01	1.48E-01	4.45E-02	4.45E-02	1.07
1,1-Dichloroethane	13.58	1.36E-01	1.36E-01	4.08E-02	4.08E-02	9.78E-01
1,1-Dichloroethene	2.47	2.47E-02	2.47E-02	7.41E-03	7.41E-03	1.78E-01
1,2,4-Trichlorobenzene	3.33E-04	3.33E-06	3.33E-06	1.00E-06	1.00E-06	2.40E-05
1,2,4-Trimethylbenzene	7.41	7.41E-02	7.41E-02	2.22E-02	2.22E-02	5.34E-01
1,2-Dibromoethane	6.67E-06	6.67E-08	6.67E-08	2.00E-08	2.00E-08	4.80E-07
1,2-Dichlorobenzene	1.23E-03	1.23E-05	1.23E-05	3.70E-06	3.70E-06	8.89E-05
1,2-Dichloroethane	3.70E-02	3.70E-04	3.70E-04	1.11E-04	1.11E-04	2.67E-03
1,2-Dichloropropane	6.05E-06	6.05E-08	6.05E-08	1.82E-08	1.82E-08	4.36E-07
1,3,5-Trimethylbenzene	3.95	3.95E-02	3.95E-02	1.19E-02	1.19E-02	2.85E-01
1,3-Dichlorobenzene	1.04E-03	1.04E-05	1.04E-05	3.11E-06	3.11E-06	7.47E-05
1,4-Dichlorobenzene	4.45E-03	4.45E-05	4.45E-05	1.33E-05	1.33E-05	3.20E-04
2,2,4-Trimethylpentane	22.23	0.22	0.22	6.67E-02	6.67E-02	1.60
2-Butanone	1.85E-01	1.85E-03	1.85E-03	5.56E-04	5.56E-04	1.33E-02
2-Hexanone	8.27E-03	8.27E-05	8.27E-05	2.48E-05	2.48E-05	5.96E-04
4-Ethyltoluene	2.10	2.10E-02	2.10E-02	6.30E-03	6.30E-03	1.51E-01
4-Methyl-2-Pentanone	1.03E-03	1.03E-05	1.03E-05	3.08E-06	3.08E-06	7.38E-05
Acetone	2.47E-01	2.47E-03	2.47E-03	7.41E-04	7.41E-04	1.78E-02
Benzene[1]	76.57	0.77	0.77	2.30E-01	2.30E-01	5.51
Bromodichloromethane	6.42E-04	6.42E-06	6.42E-06	1.93E-06	1.93E-06	4.62E-05
Bromoform	2.84E-05	2.84E-07	2.84E-07	8.52E-08	8.52E-08	2.05E-06
Bromomethane	2.35E-05	2.35E-07	2.35E-07	7.04E-08	7.04E-08	1.69E-06
Carbon Disulfide	5.43E-01	5.43E-03	5.43E-03	1.63E-03	1.63E-03	3.91E-02
Carbon Tetrachloride	3.95E-05	3.95E-07	3.95E-07	1.19E-07	1.19E-07	2.85E-06
Chlorobenzene	8.40E-02	8.40E-04	8.40E-04	2.52E-04	2.52E-04	6.05E-03
Chlorodibromomethane	1.23E-04	1.23E-06	1.23E-06	3.70E-07	3.70E-07	8.89E-06
Chloroethane	3.09	3.09E-02	3.09E-02	9.26E-03	9.26E-03	2.22E-01
Chloroform	9.88E-03	9.88E-05	9.88E-05	2.96E-05	2.96E-05	7.11E-04
Chloromethane	9.88E-04	9.88E-06	9.88E-06	2.96E-06	2.96E-06	7.11E-05
Cis-1,2-Dichloroethene	48.16	0.48	0.48	1.44E-01	1.44E-01	3.47
Cis-1,3-Dichloropropene	1.00E-05	1.00E-07	1.00E-07	3.00E-08	3.00E-08	7.20E-07
Cyclohexane	123.50	1.23	1.23	0.37	3.70E-01	8.89
Dichlorodifluoromethane	6.30E-01	6.30E-03	6.30E-03	1.89E-03	1.89E-03	4.53E-02
Ethyl Acetate	4.94E-04	4.94E-06	4.94E-06	1.48E-06	1.48E-06	3.56E-05
Ethylbenzene	9.76	9.76E-02	9.76E-02	2.93E-02	2.93E-02	7.02E-01
Hexachlorobutadiene	2.22E-04	2.22E-06	2.22E-06	6.67E-07	6.67E-07	1.60E-05
Isopropanol	0.68	6.79E-03	6.79E-03	2.04E-03	2.04E-03	4.89E-02
Methyl Tert-Butyl Ether	13.58	1.36E-01	1.36E-01	4.08E-02	4.08E-02	9.78E-01
Methylene Chloride	7.41E-02	7.41E-04	7.41E-04	2.22E-04	2.22E-04	5.34E-03
N-Heptane	43.22	4.32E-01	0.43	1.30E-01	1.30E-01	3.11
N-Hexane[1]	246.99	2.47E+00	2.47	0.74	7.51E-01	18.0
o-Xylene	9.26	9.26E-02	9.26E-02	2.78E-02	2.78E-02	6.67E-01
Propylene	8.15E-02	8.15E-04	8.15E-04	2.45E-04	2.45E-04	5.87E-03
Styrene	1.98E-01	1.98E-03	1.98E-03	5.93E-04	5.93E-04	1.42E-02

TABLE 4-7
Breakdown of Short-Term VOC and HAP Emissions per Control Equipment for SVT-1 (AOS-1)

Analyte	Oxidizer Inlet (lb/hr)	Oxidizer Outlet[2] (lb/hr)	Scrubber Outlet[3] (lb/hr)	GAC Outlet[4] (lb/hr)	PPA Outlet[5] (Stack) (lb/hr)	PPA Outlet[5] (Stack) (lb/24hr)
Tetrachloroethene	0.75	7.53E-03	7.53E-03	2.26E-03	2.26E-03	5.42E-02
Tetrahydrofuran	3.09E-02	3.09E-04	3.09E-04	9.26E-05	9.26E-05	2.22E-03
Toluene[1]	25.93	2.59E-01	2.59E-01	7.78E-02	7.78E-02	1.87
Trans-1,2-Dichloroethene	1.23E-03	1.23E-05	1.23E-05	3.70E-06	3.70E-06	8.89E-05
Trans-1,3-Dichloropropene	8.15E-06	8.15E-08	8.15E-08	2.45E-08	2.45E-08	5.87E-07
Trichloroethene	9.51	9.51E-02	9.51E-02	2.85E-02	2.85E-02	6.85E-01
Trichlorofluoromethane	6.67	6.67E-02	6.67E-02	2.00E-02	2.00E-02	4.80E-01
Vinyl Acetate	2.47E-04	2.47E-06	2.47E-06	7.41E-07	7.41E-07	1.78E-05
Vinyl Chloride	8.03	8.03E-02	8.03E-02	8.03E-02	2.41E-02	5.78E-01
Xylenes, m & p	4.45	4.45E-02	4.45E-02	1.33E-02	1.33E-02	3.20E-01
Xylenes, Total	40.75	0.41	0.41	1.22E-01	1.22E-01	2.93
Naphthalene[1]	3.95E-02	3.95E-04	3.95E-04	1.19E-04	1.22E-04	2.93E-03
Dichlorobenzene	- - -	6.59E-06	6.59E-06	6.59E-06	6.59E-06	1.58E-04
Formaldehyde	- - -	4.12E-04	4.12E-04	4.12E-04	4.12E-04	9.88E-03
Arsenic	- - -	1.10E-06	1.10E-06	1.10E-06	1.10E-06	2.64E-05
Beryllium	- - -	6.59E-08	6.59E-08	6.59E-08	6.59E-08	1.58E-06
Cadmium	- - -	6.04E-06	6.04E-06	6.04E-06	6.04E-06	1.45E-04
Chromium	- - -	7.69E-06	7.69E-06	7.69E-06	7.69E-06	1.84E-04
Cobalt	- - -	4.61E-07	4.61E-07	4.61E-07	4.61E-07	1.11E-05
Lead	- - -	2.75E-06	2.75E-06	2.75E-06	2.75E-06	6.59E-05
Manganese	- - -	2.09E-06	2.09E-06	2.09E-06	2.09E-06	5.01E-05
Mercury	- - -	1.43E-06	1.43E-06	1.43E-06	1.43E-06	3.43E-05
Selenium	- - -	1.32E-07	1.32E-07	1.32E-07	1.32E-07	3.16E-06
Total POM	- - -	4.84E-07	4.84E-07	4.84E-07	4.84E-07	1.16E-05
Hydrofluoric Acid	- - -	5.92	5.92E-02	5.92E-02	5.92E-02	1.42
Hydrochloric Acid	- - -	83.05	8.30E-01	8.30E-01	8.30E-01	19.9

VOC = volatile organic compound
HAP = hazardous air pollutant
AOS-1 = Alternate Operating Scenario 1 (SVT-1)
GAC = granular activated carbon
PPA = potassium permanganate adsorber
- - - = not applicable
[1] = Oxidizer outlet emission rate includes emission contributions from natural gas combustion. Emission contributions from natural gas combustion were not assumed to be removed by GAC.
[2] = Oxidizer assumed to have a 99% VOC destruction efficiency. Oxidizer outlet is the scrubber inlet.
[3] = Scrubber assumed to have a 99% acid gas removal efficiency. Scrubber outlet is the GAC inlet.
[4] = GAC assumed to have a 70% VOC removal efficiency (except vinyl chloride). GAC outlet is the PPA inlet.
[5] = PPA assumed to have a 70% vinyl chloride removal efficiency. PPA outlet is the treatment train stack.
Compounds that were analyzed for and were not reported above the laboratory detection limit were assumed to be absent in the extracted soil vapor and consequently had zero emissions (1,1,2,2-Tetrachloroethane; 1,2-Dichlorotetrafluoroethane; 1,3-Butadiene; 1,4-Dioxane; Allyl Chloride; Benzene [Chloromethyl-]; and Bromoethene)

4.1.3 Alternate Operating Scenario 2 Emissions

AOS-2 will consist of two separate treatment trains (SVT-1 and SVT-2) that will discharge through a single stack. The destruction/removal efficiencies for the pollution control equipment for SVT-2 were assumed to be the same as the control efficiencies for SVT-1. The control efficiencies were then applied to the VOC and HAP oxidizer inlet mass loading values (Tables 4-2 through 4-5) using the same equations/methods as for SVT-1. The resulting emissions from each piece of control equipment for SVT-2 are shown in Table 4-8. Compounds that were analyzed for and

were not reported above the laboratory detection limit were assumed to be absent in the extracted soil vapor. Consequently, those compounds were assumed to have zero emissions and are not shown in the table.

TABLE 4-8
Breakdown of Short-Term VOC and HAP Emissions per Control Equipment for SVT-2

Analyte	Oxidizer Inlet (lb/hr)	Oxidizer Outlet[2] (lb/hr)	Scrubber Outlet[3] (lb/hr)	GAC Outlet[4] (lb/hr)	PPA Outlet[5] (Stack) (lb/1-hr)	PPA Outlet[5] (Stack) (lb/24-hr)
Total VOCs	181.18	1.83	1.83	0.56	5.62E-01	13.48
1,1,1-Trichloroethane	5.39E-03	5.39E-05	5.39E-05	1.62E-05	1.62E-05	3.88E-04
1,1,2-Trichlorotrifluoroethane	9.73E-03	9.73E-05	9.73E-05	2.92E-05	2.92E-05	7.01E-04
1,1-Dichloroethane	8.23E-02	8.23E-04	8.23E-04	2.47E-04	2.47E-04	5.93E-03
1,1-Dichloroethene	2.99E-02	2.99E-04	2.99E-04	8.98E-05	8.98E-05	2.16E-03
1,2,4-Trimethylbenzene	0.24	2.40E-03	2.40E-03	7.19E-04	7.19E-04	1.72E-02
1,3,5-Trimethylbenzene	8.23E-02	8.23E-04	8.23E-04	2.47E-04	2.47E-04	5.93E-03
2,2,4-Trimethylpentane	2.92	2.92E-02	2.92E-02	8.76E-03	8.76E-03	2.10E-01
2-Butanone	9.73E-05	9.73E-07	9.73E-07	2.92E-07	2.92E-07	7.01E-06
4-Ethyltoluene	1.50E-02	1.50E-04	1.50E-04	4.49E-05	4.49E-05	1.08E-03
Acetone	9.73E-02	9.73E-04	9.73E-04	2.92E-04	2.92E-04	7.01E-03
Benzene[1]	0.43	4.35E-03	4.35E-03	1.31E-03	1.31E-03	3.15E-02
Carbon Disulfide	8.23E-03	8.23E-05	8.23E-05	2.47E-05	2.47E-05	5.93E-04
Chloroethane	0.12	1.20E-03	1.20E-03	3.59E-04	3.59E-04	8.62E-03
Chloroform	1.42E-03	1.42E-05	1.42E-05	4.27E-06	4.27E-06	1.02E-04
Chloromethane	6.21E-05	6.21E-07	6.21E-07	1.86E-07	1.86E-07	4.47E-06
Cis-1,2-Dichloroethene	2.17E-03	2.17E-05	2.17E-05	6.51E-06	6.51E-06	1.56E-04
Cyclohexane	11.23	0.11	0.11	3.37E-02	3.37E-02	8.08E-01
Dichlorodifluoromethane	1.50E-04	1.50E-06	1.50E-06	4.49E-07	4.49E-07	1.08E-05
Ethylbenzene	0.40	3.97E-03	3.97E-03	1.19E-03	1.19E-03	2.86E-02
Isopropanol	1.27E-03	1.27E-05	1.27E-05	3.82E-06	3.82E-06	9.16E-05
Methyl Tert-Butyl Ether	4.04E-03	4.04E-05	4.04E-05	1.21E-05	1.21E-05	2.91E-04
Methylene Chloride	8.23E-03	8.23E-05	8.23E-05	2.47E-05	2.47E-05	5.93E-04
N-Heptane	2.40E+00	2.40E-02	2.40E-02	7.19E-03	7.19E-03	1.72E-01
N-Hexane[1]	2.62E+00	3.22E-02	3.22E-02	7.86E-03	7.86E-03	1.89E-01
o-Xylene	1.05E-02	1.05E-04	1.05E-04	3.14E-05	3.14E-05	7.54E-04
Propylene	1.35E-02	1.35E-04	1.35E-04	4.04E-05	4.04E-05	9.70E-04
Styrene	0.12	1.20E-03	1.20E-03	3.59E-04	3.59E-04	8.62E-03
Tetrachloroethene	1.27E-02	1.27E-04	1.27E-04	3.82E-05	3.82E-05	9.16E-04
Toluene[1]	3.44E-02	3.56E-04	3.56E-04	1.15E-04	1.15E-04	2.75E-03
Trichloroethene	1.95E-02	1.95E-04	1.95E-04	5.84E-05	5.84E-05	1.40E-03
Trichlorofluoromethane	1.27E-02	1.27E-04	1.27E-04	3.82E-05	3.82E-05	9.16E-04
Vinyl Chloride	1.95E-02	1.95E-04	1.95E-04	5.84E-05	1.75E-05	4.20E-04
Xylenes, m & p	3.29E-02	3.29E-04	3.29E-04	9.88E-05	9.88E-05	2.37E-03
Xylenes, Total	8.98E-02	8.98E-04	8.98E-04	2.69E-04	2.69E-04	6.47E-03
Naphthalene[1]	1.20E-02	1.22E-04	1.22E-04	3.80E-05	3.80E-05	9.11E-04
Dichlorobenzene	- - -	3.99E-06	3.99E-06	3.99E-06	3.99E-06	9.58E-05
Formaldehyde	- - -	2.50E-04	2.50E-04	2.50E-04	2.50E-04	5.99E-03
Arsenic	- - -	1.10E-06	1.10E-06	1.10E-06	1.10E-06	2.64E-05
Beryllium	- - -	6.59E-08	6.59E-08	6.59E-08	6.59E-08	1.58E-06
Cadmium	- - -	6.04E-06	6.04E-06	6.04E-06	6.04E-06	1.45E-04
Chromium	- - -	7.69E-06	7.69E-06	7.69E-06	7.69E-06	1.84E-04
Cobalt	- - -	4.61E-07	4.61E-07	4.61E-07	4.61E-07	1.11E-05
Lead	- - -	1.66E-06	1.66E-06	1.66E-06	1.66E-06	3.99E-05

TABLE 4-8
Breakdown of Short-Term VOC and HAP Emissions per Control Equipment for SVT-2

Analyte	Oxidizer Inlet (lb/hr)	Oxidizer Outlet[2] (lb/hr)	Scrubber Outlet[3] (lb/hr)	GAC Outlet[4] (lb/hr)	PPA Outlet[5] (Stack) (lb/1-hr)	PPA Outlet[5] (Stack) (lb/24-hr)
Manganese	- - -	1.26E-06	1.26E-06	1.26E-06	1.26E-06	3.03E-05
Mercury	- - -	8.65E-07	8.65E-07	8.65E-07	8.65E-07	2.08E-05
Selenium	- - -	7.99E-08	7.99E-08	7.99E-08	7.99E-08	1.92E-06
Total POM	- - -	2.93E-07	2.93E-07	2.93E-07	2.93E-07	7.04E-06
Hydrofluoric Acid	- - -	5.20E-03	5.02E-05	5.02E-05	5.02E-05	1.20E-03
Hydrochloric Acid	- - -	0.22	2.20E-03	2.20E-03	2.20E-03	5.29E-02

VOC = volatile organic compound
HAP = hazardous air pollutant
GAC = granular activated carbon
PPA = potassium permanganate adsorber
- - - = not applicable
[1] = Oxidizer outlet emission rate includes emission contributions from natural gas combustion. Emission contributions from natural gas combustion were not assumed to be removed by GAC.
[2] = Oxidizer assumed to have a 99% VOC destruction efficiency. Oxidizer outlet is the scrubber inlet.
[3] = Scrubber assumed to have a 99% acid gas removal efficiency. Scrubber outlet is the GAC inlet.
[4] = GAC assumed to have a 70% VOC removal efficiency (except vinyl chloride). GAC outlet is the PPA inlet.
[5] = PPA assumed to have a 70% vinyl chloride removal efficiency. PPA outlet is the treatment train stack.
Compounds that were analyzed for and were not reported above the laboratory detection limit were assumed to be absent in the extracted soil vapor and consequently had zero emissions (1,1,2,2-Tetrachloroethane; 1,1,2-Trichloroethane; 1,2,4-Trichlorobenzene; 1,2-Dibromoethane; 1,2-Dichlorobenzene; 1,2-Dichloroethane; 1,2-Dichloropropane; 1,2-Dichlorotetrafluoroethane; 1,3-Butadiene; 1,3-Dichlorobenzene; 1,4-Dichlorobenzene; 1,4-Dioxane; 2-Hexanone; 4-Methyl-2-Pentanone; Allyl Chloride; Benzene, (Chloromethyl)-; Bromodichloromethane; Bromoethene; Bromoform; Bromomethane; Carbon Tetrachloride; Chlorobenzene; Chlorodibromomethane; Cis-1,3-Dichloropropene; Ethyl Acetate; Hexachlorobutadiene; Tetrahydrofuran; Trans-1,2-Dichloroethene; Trans-1,3-Dichloropropene; Vinyl Acetate)

The annual and short-term VOC and HAP potential to emit for AOS-2 is a sum of the annual and short-term VOC and HAP stack emissions for SVT-1 (Tables 4-6 and 4-7) and the VOC and HAP stack emissions for SVT-2 (Table 4-8). The resulting annual and short-term VOC and HAP emissions for AOS-2 are presented in Table 4-9.

TABLE 4-9
Annual and Short-Term VOC and HAP Emissions for AOS-2 (SVT-1 & SVT-2)

Analyte	Annual			Short-Term	
	(lb/hr)	(lb/yr)	(tons/yr)	1-Hour (lb/hr)	24-Hour (lb/24hr)
Total VOCs	1.45E+00	1.27E+04	6.33	1.46E+00	3.50E+01
1,1,1-Trichloroethane	9.66E-03	8.46E+01	4.23E-02	1.97E-02	4.72E-01
1,1,2-Trichloroethane	5.35E-09	4.68E-05	2.34E-08	1.59E-05	3.82E-04
1,1,2-Trichlorotrifluoroethane	1.68E-02	1.47E+02	7.36E-02	4.45E-02	1.07E+00
1,1-Dichloroethane	1.21E-02	1.06E+02	5.28E-02	4.10E-02	9.84E-01
1,1-Dichloroethene	2.22E-03	1.94E+01	9.72E-03	7.50E-03	1.80E-01
1,2,4-Trichlorobenzene	4.85E-07	4.24E-03	2.12E-06	1.00E-06	2.40E-05
1,2,4-Trimethylbenzene	1.17E-02	1.03E+02	5.15E-02	2.29E-02	5.51E-01
1,2-Dibromoethane	3.48E-09	3.05E-05	1.52E-08	2.00E-08	4.80E-07
1,2-Dichlorobenzene	1.06E-06	9.31E-03	4.65E-06	3.70E-06	8.89E-05
1,2-Dichloroethane	1.95E-06	1.71E-02	8.56E-06	1.11E-04	2.67E-03
1,2-Dichloropropane	3.16E-09	2.77E-05	1.38E-08	1.82E-08	4.36E-07
1,3,5-Trimethylbenzene	4.15E-03	3.64E+01	1.82E-02	1.21E-02	2.90E-01
1,3-Dichlorobenzene	9.23E-07	8.09E-03	4.04E-06	3.11E-06	7.47E-05

TABLE 4-9
Annual and Short-Term VOC and HAP Emissions for AOS-2 (SVT-1 & SVT-2)

Analyte	Annual			Short-Term	
	(lb/hr)	(lb/yr)	(tons/yr)	1-Hour (lb/hr)	24-Hour (lb/24hr)
1,4-Dichlorobenzene	5.53E-06	4.84E-02	2.42E-05	1.33E-05	3.20E-04
2,2,4-Trimethylpentane	3.99E-02	3.49E+02	1.75E-01	7.54E-02	1.81E+00
2-Butanone	1.72E-04	1.50E+00	7.52E-04	5.56E-04	1.33E-02
2-Hexanone	7.54E-08	6.60E-04	3.30E-07	2.48E-05	5.96E-04
4-Ethyltoluene	2.11E-03	1.85E+01	9.25E-03	6.34E-03	1.52E-01
4-Methyl-2-Pentanone	2.95E-07	2.58E-03	1.29E-06	3.08E-06	7.38E-05
Acetone	5.22E-04	4.57E+00	2.29E-03	1.03E-03	2.48E-02
Benzene[1]	9.05E-02	7.93E+02	3.96E-01	2.31E-01	5.54E+00
Bromodichloromethane	3.21E-07	2.81E-03	1.41E-06	1.93E-06	4.62E-05
Bromoform	2.22E-08	1.95E-04	9.74E-08	8.52E-08	2.05E-06
Bromomethane	0.00E+00	0.00E+00	0.00E+00	7.04E-08	1.69E-06
Carbon Disulfide	9.71E-05	8.51E-01	4.25E-04	1.65E-03	3.97E-02
Carbon Tetrachloride	2.59E-08	2.27E-04	1.14E-07	1.19E-07	2.85E-06
Chlorobenzene	6.57E-05	5.76E-01	2.88E-04	2.52E-04	6.05E-03
Chlorodibromomethane	9.66E-08	8.47E-04	4.23E-07	3.70E-07	8.89E-06
Chloroethane	3.14E-03	2.75E+01	1.38E-02	9.62E-03	2.31E-01
Chloroform	2.37E-05	2.08E-01	1.04E-04	3.39E-05	8.14E-04
Chloromethane	8.03E-07	7.03E-03	3.52E-06	3.15E-06	7.56E-05
Cis-1,2-Dichloroethene	5.09E-02	4.46E+02	2.23E-01	1.44E-01	3.47E+00
Cis-1,3-Dichloropropene	0.00E+00	0.00E+00	0.00E+00	3.00E-08	7.20E-07
Cyclohexane	2.31E-01	2.02E+03	1.01	4.04E-01	9.70E+00
Dichlorodifluoromethane	3.51E-04	3.07E+00	1.54E-03	1.89E-03	4.54E-02
Ethyl Acetate	0.00E+00	0.00E+00	0.00E+00	1.48E-06	3.56E-05
Ethylbenzene	1.50E-02	1.32E+02	6.58E-02	3.05E-02	7.31E-01
Hexachlorobutadiene	3.39E-07	2.97E-03	1.48E-06	6.67E-07	1.60E-05
Isopropanol	9.46E-04	8.29E+00	4.14E-03	2.04E-03	4.90E-02
Methyl Tert-Butyl Ether	1.59E-02	1.39E+02	6.96E-02	4.08E-02	9.78E-01
Methylene Chloride	1.37E-04	1.20E+00	5.99E-04	2.47E-04	5.93E-03
N-Heptane	8.51E-02	7.45E+02	3.73E-01	1.37E-01	3.28E+00
N-Hexane[1]	3.00E-01	2.63E+03	1.32E+00	7.59E-01	1.82E+01
o-Xylene	8.27E-03	7.25E+01	3.62E-02	2.78E-02	6.68E-01
Propylene	7.35E-05	6.44E-01	3.22E-04	2.85E-04	6.84E-03
Styrene	3.85E-04	3.38E+00	1.69E-03	9.52E-04	2.28E-02
Tetrachloroethene	1.05E-03	9.24E+00	4.62E-03	2.30E-03	5.52E-02
Tetrahydrofuran	1.61E-05	1.41E-01	7.06E-05	9.26E-05	2.22E-03
Toluene[1]	2.14E-02	1.87E+02	9.35E-02	7.79E-02	1.87E+00
Trans-1,2-Dichloroethene	1.66E-06	1.46E-02	7.29E-06	3.70E-06	8.89E-05
Trans-1,3-Dichloropropene	0.00E+00	0.00E+00	0.00E+00	2.45E-08	5.87E-07
Trichloroethene	1.04E-02	9.14E+01	4.57E-02	2.86E-02	6.86E-01
Trichlorofluoromethane	7.04E-03	6.16E+01	3.08E-02	2.00E-02	4.81E-01
Vinyl Acetate	5.15E-07	4.52E-03	2.26E-06	7.41E-07	1.78E-05
Vinyl Chloride	9.36E-03	8.20E+01	4.10E-02	2.41E-02	5.78E-01
Xylenes, m & p	7.63E-03	6.69E+01	3.34E-02	1.34E-02	3.22E-01
Xylenes, Total	3.29E-02	2.89E+02	1.44E-01	1.23E-01	2.94E+00
Naphthalene[1]	1.23E-04	1.07E+00	5.37E-04	1.60E-04	3.84E-03
Dichlorobenzene	1.06E-05	9.27E-02	4.63E-05	1.06E-05	2.54E-04
Formaldehyde	6.61E-04	5.79E+00	2.90E-03	6.61E-04	1.59E-02

TABLE 4-9
Annual and Short-Term VOC and HAP Emissions for AOS-2
(SVT-1 & SVT-2)

Analyte	Annual			Short-Term	
	(lb/hr)	(lb/yr)	(tons/yr)	1-Hour (lb/hr)	24-Hour (lb/24hr)
Arsenic	2.20E-06	1.92E-02	9.62E-06	2.20E-06	5.27E-05
Beryllium	1.32E-07	1.15E-03	5.77E-07	1.32E-07	3.16E-06
Cadmium	1.21E-05	1.06E-01	5.29E-05	1.21E-05	2.90E-04
Chromium	1.54E-05	1.35E-01	6.73E-05	1.54E-05	3.69E-04
Cobalt	9.22E-07	8.08E-03	4.04E-06	9.22E-07	2.21E-05
Lead	4.41E-06	3.86E-02	1.93E-05	4.41E-06	1.06E-04
Manganese	3.35E-06	2.94E-02	1.47E-05	3.35E-06	8.04E-05
Mercury	2.29E-06	2.01E-02	1.00E-05	2.29E-06	5.50E-05
Selenium	2.12E-07	1.85E-03	9.27E-07	2.12E-07	5.08E-06
Total POM	7.78E-07	6.81E-03	3.41E-06	7.78E-07	1.87E-05
Hydrofluoric Acid	2.17E-02	1.90E+02	9.52E-02	5.93E-02	1.42E+00
Hydrochloric Acid	2.98E-01	2.61E+03	1.31	8.33E-01	2.00E+01

VOC = volatile organic compound; HAP = hazardous air pollutant
AOS-2 = Alternate Operating Scenario 2 (SVT-1 & SVT-2)
- - - = not applicable
Compounds that were analyzed for and were not reported above the laboratory detection limit were assumed to be absent in the extracted soil vapor and consequently had zero emissions (1,1,2,2-Tetrachloroethane; 1,2-Dichlorotetrafluoroethane; 1,3-Butadiene; 1,4-Dioxane; Allyl Chloride; Benzene, [Chloromethyl]-; Bromoethene)

4.1.4 Alternate Operating Scenario 3 Emissions

AOS-3 is the operation of AOS-1 or AOS-2 with either one (1) PPA vessel per thermal oxidizer or the removal of both PPA vessels per thermal oxidizer. AOS-3 will be implemented when the BSVE system inlet vinyl chloride concentrations are less than the method reporting limit, which is less than 30 ug/L (less than assumed for AOS-1 and AOS-2), The vinyl chloride concentration of 30 ug/L is 90% of what the modeled inlet concentration would be at 85% of the AAAQG (33 ug/L). Accordingly, the emission rates are not repeated herein, but are considerably less than the emissions shown in the preceding tables.

4.1.5 Alternate Operating Scenario 4 Emissions

AOS-4 is the operation of AOS-1 or AOS-2 without the thermal oxidizer(s), caustic scrubber(s) and associated equipment (caustic feed pump, demister, heat exchanger, cooling tower, chiller, and booster blower), and with the addition of one GAC vessel per treatment train (three GAC vessels in series per treatment train). AOS-4 will be implemented when the TPH and benzene concentrations of all the wells within the influence of the extraction system are less than or equal to 4,200 ug/L and 9.7 ug/L, respectively (less than assumed for AOS-1 and AOS-2). The benzene concentration of 9.7 ug/L is 90% of what the modeled inlet concentration would be at 85% of the AAAQG (10.6 ug/L) Accordingly, the emission rates are not repeated herein, but are considerably less than the emissions shown in the preceding tables.

4.1.6 Alternate Operating Scenario 5 Emissions

AOS-5 is the operation of AOS-1 or AOS-2 without the thermal oxidizer(s), caustic scrubber(s), associated equipment (caustic feed pump, demister, heat exchanger, cooling tower, chiller, and booster blower) and removal of one or more PPA vessels, and with the addition of one GAC vessel per treatment train (three GAC vessels in series per treatment train). AOS-5 will be implemented when the TPH and benzene concentrations of all the wells within the influence of the extraction system are less than or equal to 4,200 ug/L and 9.7 ug/L, respectively, and the BSVE system inlet vinyl chloride concentrations are less than the method reporting limit, which is less than 0.3 ug/L (less than assumed for AOS-1 and AOS-2). Accordingly, the emission rates are not repeated herein, but are considerably less than the emissions shown in the preceding tables.

4.1.7 Potential Dioxin/Furan Emissions

The BSVE system is designed to minimize, if not eliminate the potential for dibenzo-p-dioxin and dibenzofuran (PCDD/PCDF) emissions. Design considerations include limiting the potential for carbon monoxide formation in the thermal oxidizer, minimizing the residence time in high temperature exhaust (exhaust quenching), and filtering particulates out of the inlet air.

An impact assessment has been conducted to evaluate the maximum PCDD/PCDF emissions that could occur and the Arizona Ambient Air Quality Guidelines (AAAQGs) still be protected. This emission rate is 0.857 TEQ ng/dscm, or 0.068 grams per year for AOS-2 and 0.0026 grams per year for AOS-1. These PCDD/PCDF emission rates are established as maximum allowable emissions in the permit. The source is required to perform an emission source test to verify that the dioxin and furan emissions will not exceed the Arizona Ambient Air Quality Guidelines.

4.2 Insignificant Activities

Cooling Tower – The cooling tower is a relatively small tower. According to manufacturer data for the proposed cooling tower (Marley Cooling Technologies Model AV61031), the cooling tower has a water circulation rate of 231 gallons per minute and a drift rate of 0.005%. Appendix D of the MCAQD rules includes a list of insignificant activities, and states that a cooling tower is insignificant if it meets the following two conditions: (1) the circulation rate is less than 10,000 gpm and (2) the cooling tower is not used to cool process water, water from barometric jets, or water from barometric condensers. While the exact proposed cooling tower may not be used, the water circulation rate is at least one order of magnitude lower than the maximum allowable circulation rate as defined in Appendix D. Therefore, in accordance with MCAQD Rule 200 § 308.1c, the cooling tower has been determined to be insignificant and emission tracking is not required.

Air Injection – The air injection blowers bring oxygen into the subsurface to enhance the natural biodegradation of contaminants in the subsurface. The air injected into the subsurface is located within the estimated radius of influence of the extraction wells, and will have a minimum extraction to injection flowrate of approximately 1:1. Consequently, the air injection system will not cause emissions, and is an insignificant activity.

Fuel Storage – The current design also includes provisions to recover free product from three wells located on the Facility and wells located on the PSHIA-North Airfield, if necessary. Long-term free-product recovery is expected to be less than 1 gallon per day, per well. Free product will be recovered using pneumatic submersible skimmer pumps installed in the wells. On the Honeywell Facility, the free product will be stored in 55-gallon drums. On the PSHIA-North Airfield, free product will be piped back to a central collection container located away from the North Airfield. Although free product storage is included in this application due to storage of fuel products elsewhere at the facility, emissions were not calculated for this activity, because the

vapor pressure of jet fuel is <1.5 pounds per square inch absolute (psia). Therefore the emissions will be negligible.

5. REGULATORY APPLICABILITY

The following paragraphs discuss some of the applicable and non-applicable Federal, State and Maricopa County air quality regulations. There are numerous administrative regulations that may also apply to the Honeywell BSVE project (e.g., permit posting, fees, etc.), but these are not summarized herein.

The Honeywell Engines, Systems and Services facility is a Title V major stationary source of air emissions, as defined in MCAPCR Rule 100, Section 200.60 c, because it has the potential to emit (PTE) greater than the Title V major source thresholds for carbon monoxide (CO), volatile organic compounds (VOCs) and oxides of nitrogen (NOx).

The proposed project changes record keeping and reporting requirements and, therefore, per Rule 210, Section 406, permitting the proposed project requires a significant revision to the Title V permit. Per Rule 200, Section 302, the significant revision to the Title V also serves as an Authority to Construct permit under the MCAQD's "unitary permit" program. The proposed project is not a major modification, as there are no significant increases in emissions associated with the changes.

5.1 Federal Regulatory Review

The federal regulatory programs reviewed include New Source Performance Standards (NSPS) (40 CFR 60) and National Emission Standards for Hazardous Air Pollutants (NESHAPs) (40 CFR 63).

5.1.1 New Source Performance Standards

Federal authority for NSPS requirements (delineated in 40 CFR Part 60) has been delegated to Maricopa County; therefore Rule 360 is the effective NSPS regulation. County Rule 360 lists the affected facilities that are subject to NSPS requirements if construction, reconstruction, or modification of the facility is made after the date of the publication of any applicable standard. The equipment covered under this permit is not specifically listed in County Rule 360, and, therefore, NSPS requirements do not apply to this project. In addition, the NSPS requirements of 40 CFR Part 60 that have not been incorporated into Rule 360 were reviewed. This project is not subject to any NSPS in 40 CFR Part 60.

5.1.2 NESHAP for Source Categories (40 CFR Part 63)

Part 63 regulations apply to sources with HAP emissions greater than 10 tons per year individually or 25 tons per year aggregate. The NESHAPs contain emissions standards related to HAPs for both new and existing sources. The associated MCAQD Rule is 370. The NESHAP for Site Remediation contained in 40 CFR 63 Subpart GGGGG was reviewed for applicability. Since the total PTE for HAPs at the Honeywell site (including the emissions from the proposed BSVE system) will be less than the major source threshold for total HAPs, and the maximum individual HAP emissions at the Honeywell site (including the

emissions from the proposed BSVE system) will be less than the major source threshold for an individual HAP, this rule does not apply.

5.2 State Regulatory Review

Table 5-1 shows the applicable Maricopa County / State Implementation Plan (SIP) rules and associated compliance:

Table 5-1
Applicable Maricopa County / State Implementation Plan (SIP) Rules

SIP Rule Citation	Description	Discussion
Regulation I	General Provisions	Conditions related to this regulation already included in Title V Permit V97-008.
Regulation II	Permits	Conditions related to this regulation already included in Title V Permit V97-008.
Regulation III Section 030	Visible Emissions	Facility-wide provision included as Title V Permit V97-008 condition 18.
Regulation III Section 031	Emissions of particulate matter	Point source particulate emissions from process industries. Conditions related to this regulation already included in Title V Permit V97-008.
Regulation III Section 311	Particulate Matter from Process Industries	Point source particulate emissions from process industries Conditions related to this regulation already included in Title V Permit V97-008.
Regulation III Section 032	Odors and Gaseous Emissions	Ambient air quality impact assessment and the original Title V permit ensure compliance with this requirement.
Regulation III Section 140	Excess Emissions	Provision included as Title V Permit V97-008 condition 10.
Regulation III Section 100	Emission Statements Required	Provision included as Title V Permit V97-008 condition 16.
Regulation IV	Production of Records, Monitoring, Testing, and Sampling Facilities	Conditions related to this regulation already included in Title V Permit V97-008.
Regulation VI	Violations	Provision included as Title V Permit V97-008 condition 8.
Regulation VII	Ambient Air Quality Standards	Ambient air quality impact assessment and the original Title V permit ensure compliance with this requirement.
Regulation VIII	Validity and Operation	Conditions related to this regulation already included in Title V Permit V97-008.

5.3 Maricopa County Air Quality Department Rules and Regulations

5.3.1 Rule 240 – Permit Requirements for New Major Sources and Modifications of Existing Sources

The projected emission increases associated with the BSVE system were evaluated with respect to New Source Review (NSR) and Prevention of Significant Deterioration (PSD) significant emission rates. The net emission increases for each regulated pollutant will be less than the significant threshold established in MCAPCR Rule 100, Section 200.98; therefore, the requirements of Rule 240 do not apply to this project.

1.1.1. 5.3.2 Rule 241 – Best Available Control Technology and Reasonably Available Control Technology Requirements

Rule 241, Section 301 requires installation of BACT on sources with annual emissions greater than 25 tons per year or 150 pounds per day of VOCs, NOx, SO2 or PM. The facility emissions will be less than the BACT thresholds; therefore, this section does not apply.

Rule 241, Section 302 requires installation of RACT on sources with annual emissions greater than 25 tons per year (tpy) or 150 pounds per day of VOCs or PM; greater than 15 tpy or 85 lb/day of PM10; greater than 100 tpy or 550 lb/day of CO. The existing facility emissions are greater than the RACT thresholds; therefore, the BSVE project will be subject to these requirements.

5.3.3 Rule 270 – Performance Tests

Rule 270, Section 400 requires a source test within 60 days after a source has achieved its maximum capacity to operate on a sustained basis, but no longer than 180 days after initial start up. The BSVE project will be subject to these requirements.

5.3.4 Rule 320 – Odors and Gaseous Air Contaminants

Rule 320, Section 302 requires storage of solvents and other volatile organic compounds in a manner that will reduce evaporation or leakage. The containers of free product recovered during this project will need to be stored to meet the requirements of this rule.

5.3.5 Rule 330 – Volatile Organic Compounds

Rule 330 establishes limits on the emissions of VOCs. This rule will apply to the BSVE project. Specific sections that apply are as follows:

- 301 – limitations for VOC emissions for operations involving heat
- 304.1 – reduction required for incineration devices

- 304.2 – reduction required for adsorption devices
- 304.5 – O&M plan
- 501 – providing and maintaining monitoring devices
- 503 – record keeping and reporting
- 504 – test methods

5.3.6 Rule 510 – Air Quality Standards

This rule establishes maximum limiting levels for pollutants existing in the ambient air that are necessary to protect human health and public welfare. This rule applies to ambient air monitoring and standards, and does not apply to the BSVE project.

5.3.7 Arizona Ambient Air Quality Guidelines

Maricopa County requests that facilities model hazardous air pollutant (HAPs) emissions to show compliance with a set of Arizona Ambient Air Quality Guidelines (AAAQG). As part of the significant permit revision application, an ambient air quality impact assessment for AAAQGs was submitted for the BSVE project.

6. AMBIENT AIR QUALITY IMPACTS

The following sections discuss the air quality impact modeling analysis for the criteria pollutants and toxic compounds potentially emitted from the BSVE system. To evaluate the air quality impacts of the emissions from BSVE system, the emissions associated with the two treatment systems (SVT-1 and SVT-2) were evaluated for five different operating scenarios and compared to applicable federal, state, and county ambient air quality standards and guidelines.

The ISCST3, USEPA model Version 02035, was used for the dispersion analysis using regulatory default settings and the urban modeling coefficient. Direction-specific building-downwash parameters were calculated for each source using the USEPA Building Input Program, Version 04112. Five years of meteorological data (1994 through 1998) were used with surface observations from the PSHIA in combination with the Tucson, Arizona, upper air data. Note, the annual concentrations were modeled using the "period" option, which essentially calculates the average concentration over the five years of met data. If the "annual" option were chosen and the model were run for the worst year, the results increase by approximately 10% but are still below the applicable NAAQS or AAAQG values discussed below.

The receptor grid network included the following:

- Tight receptors – 25-meter spacing along Honeywell fence line
- Fine receptors – 100-meter spacing extending 1 kilometer (km) from the fence line
- Medium receptors – 200-meter spacing extending from 1 to 5 km from the fence line
- Coarse receptors – 500-meter spacing extending from 5 to 10 km from the fence line

Digitized terrain data were used to determine the elevations for each ISCST3 receptor grid. It was assumed that the area inside the Facility boundary was graded to an average elevation of 1,119 feet.

Table 6-1 shows the source model parameters that were utilized.

Table 6-1
Source Model Parameters

Equipment Number	UTM Coordinate (meters)	Stack Diameter (meters)	Stack Height (meters)	Stack Exit Velocity (m/s)	Exhaust Temperature (°K)
SVT-1	(406,368.5; 3,700,665.8)	0.481	13.41	9.4	327.6
SVT-1 and SVT-2	(406,363.5; 3,700,665.8)	0.610	13.41	9.4	327.6

6.1 Criteria Pollutants

The BSVE system covered by the significant permit revisions will be a source of criteria pollutants. Because the system is intended to treat organic vapors extracted from the subsurface, the system will utilize a thermal oxidization process to abate the organic vapors. The criteria pollutants potentially emitted will include uncombusted VOCs and combustion by-products from the associated thermal oxidizers resulting in particulate matter less than 10 microns in diameter (PM-10), oxides of nitrogen (NOx), Carbon Monoxide (CO) and Sulfur Dioxide (SO2).

Criteria pollutant emissions will occur under AOS-1 and AOS-2 with thermal oxidization, but at different exhaust flowrates. AOS-3 would occur when the BSVE system inlet vinyl chloride concentrations are less than the method reporting limit for at least three (3) monitoring events over a period of at least six (6) months to allow removal of the PPA vessels. The removal of the PPA vessels would have no effect to the potential criteria pollutant emission rates or exhaust flow parameters assessed under AOS-1 and AOS-2. AOS-4 is proposed to exclude the thermal oxidation when average concentrations of Total Petroleum Hydrocarbons (TPH) and benzene concentrations are below 4,200 µg/L and 9.7,µg/L, respectively, for all the wells within the influence of the extraction system for at least three (3) monitoring events over a period of at least six (6) months, at which point the thermal oxidization system is no longer feasible. This scenario would result in reduced criteria pollutants since no combustion by-products would be created. Therefore, maximum potential impacts of PM-10, NOx, CO and SO2 were assessed for AOS-1 and AOS-2.

Table 6-2 summarizes the modeling analysis results for these two scenarios. As shown in Table 6-2, the impacts are all below the NAAQS except for 24-hr PM-10. The 24-hr PM-10 concentrations with background concentrations added is 184 $\mu g/m^3$, which is greater than the NAAQS. The facility contribution to this total is approximately 1 $\mu g/m^3$, less than one percent of the total concentration and less than the Modeling Significance Level of 5 $\mu g/m^3$, indicating the facility is not causing or significantly contributing to a 24-hr PM-10 exceedance.

VOCs were not modeled since source-specific modeling of VOC emissions is not conducted pursuant to the *USEPA Guidelines for Air Quality Modeling*, which states that simulation of ozone formation and transport is a highly complex and resource intensive exercise and is not typically applied to assess the impact of an individual source on regional ozone concentrations. There are no standard USEPA approaches for an individual source ozone modeling analysis.

Table 6-2

1.1.1.1. Modeled Criteria Pollutant Results for Alternate Operating Scenarios 1 and 2

Alternate Operating Scenario	Analyte	Max. 1-Hr Emissions		Annual Average Emissions		Facility Ground Level Concentration (ug/m^3)					Background Concentration (ug/m3)					Facility Ground Level Concentration Plus Background (ug/m^3)					NAAQS Standard (ug/m^3)					% of NAAQS Standard				
		lb/hr	g/s	ton/yr	g/s	1-Hr	3-Hr	8-Hr	24-Hr	Annual	1-Hr	3-Hr	8-Hr	24-Hr	Annual	1-Hr	3-Hr	8-Hr	24-Hr	Annual	1-Hr	3-Hr	8-Hr	24-Hr	Annual	1-Hr	3-Hr	8-Hr	24-Hr	Annual
1	PM-10	0.0417	5.26E-03	0.18	5.26E-03	-	-	-	0.40	0.05	-	-	-	183	43	-	-	-	183	43	-	-	-	150	50	-	-	-	122%	86%
	NOx	0.55	6.92E-02	2.40	6.92E-02	-	-	-	-	0.70	-	-	-	-	55	-	-	-	-	56	-	-	-	-	100	-	-	-	-	55%
	CO	0.46	5.81E-02	2.02	5.81E-02	20	-	9.5	-	-	6869	-	5267	-	-	6889	-	5276	-	-	40000	-	10000	-	-	17%	-	53%	-	-
	SO2	0.00329	4.15E-04	0.014	4.15E-04	-	0.102	-	0.032	0.0042	-	50	-	37	7.9	-	50	-	37	7.9	-	1300	-	365	80	-	4%	-	10%	10%
2	PM-10	0.0670	8.44E-03	0.29	8.44E-03	-	-	-	0.52	0.08	-	-	-	183	43	-	-	-	184	43	-	-	-	150	50	-	-	-	122%	86%
	NOx	0.88	1.11E-01	3.86	1.11E-01	-	-	-	-	1.02	-	-	-	-	55	-	-	-	-	56	-	-	-	-	100	-	-	-	-	55%
	CO	0.74	9.33E-02	3.24	9.33E-02	23	-	13	-	-	6869	-	5267	-	-	6892	-	5280	-	-	40000	-	10000	-	-	17%	-	53%	-	-
	SO2	0.00529	6.67E-04	0.02	6.67E-04	-	0.13	-	0.041	0.0061	-	50	-	37	7.9	-	50	-	37	7.9	-	1300	-	365	80	-	4%	-	10%	10%

6.2 AAAQG Pollutants

In accordance with the MCAQD air toxics policy, an air quality impact assessment is required for compounds listed in the 1992 AAAQGs if emissions from a source exceed 0.25 ton (500 pounds) per year. As a conservative approach, the applicant assessed off-site concentrations for all the identified AAAQG compounds potentially emitted from the BSVE system, regardless of emission rate.

The five alternate operating scenarios were assessed as discussed below:

Alternate Operating Scenario 1:

AOS-1 would consist of a single soil vapor treatment system (SVT-1) using thermal oxidation with an exhaust flow rate of 3,620 acfm through an 18-inch diameter stack. The modeled emission rates and the resulting ambient ground level concentrations of the AAAQG compounds for AOS-1 are presented in Table 6-3. Note, AOS-1 was modeled assuming that the conical insert was not in-place (discharge through a 24-inch diameter stack), which provides a worst-case scenario (lower stack velocity).

As shown in Table 6-3, the highest modeled concentrations are due to benzene (82.1% of the annual AAAQG) and vinyl chloride (98.6% of the annual AAAQG). The modeled ground level concentrations of the remaining compounds and averaging periods are shown to be significantly lower ranging from a fraction of a percent to less than 18% of the corresponding AAAQG.

Alternate Operating Scenario 2:

AOS-2 would consist of two soil vapor treatment systems (SVT-1 and SVT-2) using thermal oxidation with an exhaust flow rate of 5,815 acfm through a 24-inch diameter stack. The modeled emission rates and the resulting ambient ground level concentrations of the AAAQG compounds for AOS-2 are presented in Table 6-4.

As shown in Table 6-4, the highest modeled concentrations are due to benzene (75.8% of the annual AAAQG) and vinyl chloride (90.2% of the annual AAAQG). The modeled ground level concentrations of the remaining compounds and averaging periods are shown to be significantly lower ranging from a fraction of a percent to12.1% of the corresponding AAAQG.

Table 6-3
Modeled Hazardous Air Pollutant Results for Alternate Operating Scenario 1

AAAQG Compound	Max. 1-Hr Emissions		Annual Average Emissions		Ground Level Concentration (ug/m^3)			1992 AAAQG's (ug/m^3)			% of 1992 AAAQGs		
	lb/hr	g/s	ton/yr	g/s	1-Hr	24-Hr	Annual	1-Hr	24-Hr	Annual	1-Hr	24-Hr	Annual
1,1,1-Trichloroethane	1.96E-02	2.47E-03	4.22E-02	1.21E-03	8.68E-01	1.89E-01	1.23E-02	20000	1100		0.0%	0.0%	
1,1,2,2-Tetrachloroethane	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	33	8.8	0.024	0.0%	0.0%	0.0%
1,1,2-Trichloroethane	1.59E-05	2.01E-06	2.34E-08	6.74E-10	7.04E-04	1.53E-04	6.80E-09	750	30	0.082	0.0%	0.0%	0.0%
1,1,2-Trichlorotrifluoroethane	4.45E-02	5.60E-03	7.34E-02	2.11E-03	1.97E+00	4.28E-01	2.13E-02	79000	60000		0.0%	0.0%	
1,1-Dichloroethane	4.08E-02	5.13E-03	5.17E-02	1.49E-03	1.80E+00	3.92E-01	1.50E-02	8400	3200	8.8	0.0%	0.0%	0.2%
1,1-Dichloroethene	7.41E-03	9.34E-04	9.33E-03	2.68E-04	3.28E-01	7.13E-02	2.71E-03	420	110	3.0	0.1%	0.1%	0.1%
1,2,4-Trichlorobenzene	1.00E-06	1.26E-07	2.12E-06	6.11E-08	4.42E-05	9.63E-06	6.16E-07	1200	320		0.0%	0.0%	
1,2,4-Trimethylbenzene	2.22E-02	2.80E-03	4.83E-02	1.39E-03	9.83E-01	2.14E-01	1.40E-02		1422			0.0%	
1,2-Dibromoethane	2.00E-08	2.52E-09	1.52E-08	4.38E-10	8.85E-07	1.93E-07	4.42E-09	0.091	0.024	0.000067	0.0%	0.0%	0.0%
1,2-Dichlorobenzene	3.70E-06	4.67E-07	4.65E-06	1.34E-07	1.64E-04	3.57E-05	1.35E-06	9100	2400		0.0%	0.0%	
1,2-Dichloroethane	1.11E-04	1.40E-05	8.56E-06	2.46E-07	4.91E-03	1.07E-03	2.48E-06	53	14	0.038	0.0%	0.0%	0.0%
1,2-Dichloropropane	1.82E-08	2.29E-09	1.38E-08	3.98E-10	8.03E-07	1.75E-07	4.01E-09	4300	2800		0.0%	0.0%	
1,3,5-Trimethylbenzene	1.19E-02	1.49E-03	1.71E-02	4.92E-04	5.24E-01	1.14E-01	4.97E-03		1090			0.0%	
1,3-Butadiene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.2	1.9	0.067	0.0%	0.0%	0.0%
1,4-Dichlorobenzene	1.33E-05	1.68E-06	2.42E-05	6.97E-07	5.90E-04	1.28E-04	7.03E-06	250	66	0.18	0.0%	0.0%	0.0%
1,4-Dioxane	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3000	150	0.40	0.0%	0.0%	0.0%
2-Butanone	5.56E-04	7.00E-05	7.50E-04	2.16E-05	2.46E-02	5.35E-03	2.18E-04	7400	4700		0.0%	0.0%	
Acetone	7.41E-04	9.34E-05	1.01E-03	2.90E-05	3.28E-02	7.13E-03	2.92E-04	20000	14000		0.0%	0.0%	
Arsenic	1.10E-06	1.38E-07	4.81E-06	1.38E-07	4.85E-05	1.06E-05	1.40E-06	0.28	0.073	0.00020	0.0%	0.0%	0.7%
Benzene	2.30E-01	2.89E-02	3.96E-01	1.14E-02	1.02E+01	2.21E+00	1.15E-01	630	51	0.14	1.6%	4.3%	82.1%
Beryllium	6.59E-08	8.30E-09	2.89E-07	8.30E-09	2.91E-06	6.34E-07	8.37E-08	0.060	0.016	0.00050	0.0%	0.0%	0.0%
Bromodichloromethane	1.93E-06	2.43E-07	1.41E-06	4.04E-08	8.52E-05	1.85E-05	4.08E-07	36	9.5	0.26	0.0%	0.0%	0.0%
Bromoethene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	500	160		0.0%	0.0%	
Bromoform	8.52E-08	1.07E-08	9.74E-08	2.80E-09	3.77E-06	8.20E-07	2.83E-08	150	40		0.0%	0.0%	
Bromomethane	7.04E-08	8.87E-09	0.00E+00	0.00E+00	3.11E-06	6.77E-07	0.00E+00	500	160		0.0%	0.0%	
Cadmium	6.04E-06	7.61E-07	2.65E-05	7.61E-07	2.67E-04	5.81E-05	7.68E-06	1.7	0.11	0.00029	0.0%	0.1%	2.6%
Carbon Disulfide	1.63E-03	2.05E-04	3.17E-04	9.12E-06	7.21E-02	1.57E-02	9.20E-05	91	24		0.1%	0.1%	
Carbon Tetrachloride	1.19E-07	1.49E-08	1.14E-07	3.27E-09	5.24E-06	1.14E-06	3.30E-08	49	13	0.036	0.0%	0.0%	0.0%

Table 6-3
Modeled Hazardous Air Pollutant Results for Alternate Operating Scenario 1

AAAQG Compound	Max. 1-Hr Emissions		Annual Average Emissions		Ground Level Concentration (ug/m^3)			1992 AAAQG's (ug/m^3)			% of 1992 AAAQGs		
	lb/hr	g/s	ton/yr	g/s	1-Hr	24-Hr	Annual	1-Hr	24-Hr	Annual	1-Hr	24-Hr	Annual
Chlorobenzene	2.52E-04	3.17E-05	2.88E-04	8.28E-06	1.11E-02	2.42E-03	8.35E-05		2560			0.0%	
Chloroform	2.96E-05	3.73E-06	8.52E-05	2.45E-06	1.31E-03	2.85E-04	2.47E-05	60	16	0.043	0.0%	0.0%	0.1%
Chloromethane	2.96E-06	3.73E-07	2.70E-06	7.77E-08	1.31E-04	2.85E-05	7.84E-07	36	9.5	0.026	0.0%	0.0%	0.0%
Chromium	7.69E-06	9.68E-07	3.37E-05	9.68E-07	3.40E-04	7.40E-05	9.77E-06	11	3.8		0.0%	0.0%	
Cis-1,2-Dichloroethene	1.44E-01	1.82E-02	2.23E-01	6.41E-03	6.39E+00	1.39E+00	6.46E-02	23800	6300		0.0%	0.0%	
Dichlorobenzene	6.59E-06	8.30E-07	2.89E-05	8.30E-07	2.91E-04	6.34E-05	8.37E-06	250	66	0.18	0.0%	0.0%	0.0%
Dichlorodifluoromethane	1.89E-03	2.38E-04	1.53E-03	4.41E-05	8.35E-02	1.82E-02	4.45E-04	52000	39000		0.0%	0.0%	
Ethyl Acetate	1.48E-06	1.87E-07	0.00E+00	0.00E+00	6.55E-05	1.43E-05	0.00E+00	42000	11000		0.0%	0.0%	
Ethylbenzene	2.93E-02	3.69E-03	6.06E-02	1.74E-03	1.29E+00	2.82E-01	1.76E-02	4500	3500		0.0%	0.0%	
Formaldehyde	4.12E-04	5.19E-05	1.80E-03	5.19E-05	1.82E-02	3.96E-03	5.23E-04	20	12	0.080	0.1%	0.0%	0.7%
Hexachlorobutadiene	6.67E-07	8.40E-08	1.48E-06	4.27E-08	2.95E-05	6.42E-06	4.31E-07	7.2	1.9	0.067	0.0%	0.0%	0.0%
Hydrochloric Acid	8.30E-01	1.05E-01	1.30E+00	3.73E-02	3.67E+01	7.99E+00	3.76E-01	210	56	7.0	17.5%	14.3%	5.4%
Hydrofluoric Acid	5.92E-02	7.46E-03	9.50E-02	2.73E-03	2.62E+00	5.70E-01	2.76E-02	562.5	187.5		0.5%	0.3%	
Isopropanol	2.04E-03	2.57E-04	4.13E-03	1.19E-04	9.01E-02	1.96E-02	1.20E-03		7400			0.0%	
Lead	2.75E-06	3.46E-07	1.20E-05	3.46E-07	1.21E-04	2.64E-05	3.49E-06			1.5			0.0%
Manganese	2.09E-06	2.63E-07	9.14E-06	2.63E-07	9.22E-05	2.01E-05	2.65E-06	25	8.0		0.0%	0.0%	
Mercury	1.43E-06	1.80E-07	6.25E-06	1.80E-07	6.31E-05	1.37E-05	1.81E-06	1.5	0.4		0.0%	0.0%	
Methylene Chloride	2.22E-04	2.80E-05	4.90E-04	1.41E-05	9.83E-03	2.14E-03	1.42E-04	7600	2000	5.6	0.0%	0.0%	0.0%
Naphthalene	1.22E-04	1.54E-05	3.71E-04	1.07E-05	5.39E-03	1.17E-03	1.08E-04	630	400		0.0%	0.0%	
N-Heptane	1.30E-01	1.63E-02	3.41E-01	9.81E-03	5.73E+00	1.25E+00	9.90E-02	17000	11000		0.0%	0.0%	
N-Hexane	7.51E-01	9.46E-02	1.25E+00	3.61E-02	3.32E+01	7.23E+00	3.64E-01	5300	1400		0.6%	0.5%	
o-Xylene	2.78E-02	3.50E-03	3.61E-02	1.04E-03	1.23E+00	2.67E-01	1.05E-02	5500	3500		0.0%	0.0%	
Selenium	1.32E-07	1.66E-08	5.77E-07	1.66E-08	5.83E-06	1.27E-06	1.67E-07	6.0	1.6		0.0%	0.0%	
Styrene	5.93E-04	7.47E-05	1.15E-04	3.30E-06	2.62E-02	5.70E-03	3.33E-05	3500	1700		0.0%	0.0%	
Tetrachloroethene	2.26E-03	2.85E-04	4.45E-03	1.28E-04	9.99E-02	2.17E-02	1.29E-03	11000	770	2.1	0.0%	0.0%	0.1%
Tetrahydrofuran	9.26E-05	1.17E-05	7.06E-05	2.03E-06	4.10E-03	8.91E-04	2.05E-05						
Toluene	7.78E-02	9.81E-03	9.30E-02	2.68E-03	3.44E+00	7.49E-01	2.70E-02	4700	3000		0.1%	0.0%	
Trichloroethene	2.85E-02	3.59E-03	4.54E-02	1.31E-03	1.26E+00	2.75E-01	1.32E-02	1100	280	0.76	0.1%	0.1%	1.7%

Table 6-3
Modeled Hazardous Air Pollutant Results for Alternate Operating Scenario 1

AAAQG Compound	Max. 1-Hr Emissions		Annual Average Emissions		Ground Level Concentration (ug/m^3)			1992 AAAQG's (ug/m^3)			% of 1992 AAAQGs		
	lb/hr	g/s	ton/yr	g/s	1-Hr	24-Hr	Annual	1-Hr	24-Hr	Annual	1-Hr	24-Hr	Annual
Trichlorofluoromethane	2.00E-02	2.52E-03	3.06E-02	8.82E-04	8.85E-01	1.93E-01	8.89E-03	220000	59000		0.0%	0.0%	
Vinyl Chloride	2.41E-02	3.03E-03	4.08E-02	1.17E-03	1.06E+00	2.32E-01	1.18E-02	17	4.4	0.012	6.3%	5.3%	98.6%
Xylenes, m & p	1.33E-02	1.68E-03	3.30E-02	9.49E-04	5.90E-01	1.28E-01	9.58E-03	5500	3500		0.0%	0.0%	
Xylenes, Total	1.22E-01	1.54E-02	1.43E-01	4.12E-03	5.41E+00	1.18E+00	4.15E-02	5500	3500		0.1%	0.0%	

Table 6-4
Modeled Hazardous Air Pollutant Results for Alternate Operating Scenario 2

AAAQG Compound	Max. 1-Hr Emissions		Annual Average Emissions		Ground Level Concentration (ug/m^3)			1992 AAAQG's (ug/m^3)			% of 1992 AAAQGs		
	lb/hr	g/s	ton/yr	g/s	1-Hr	24-Hr	Annual	1-Hr	24-Hr	Annual	1-Hr	24-Hr	Annual
1,1,1-Trichloroethane	1.97E-02	2.48E-03	4.23E-02	1.22E-03	5.98E-01	1.52E-01	1.12E-02	20000	1100		0.0%	0.0%	
1,1,2,2-Tetrachloroethane	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	33	8.8	0.024	0.0%	0.0%	0.0%
1,1,2-Trichloroethane	1.59E-05	2.01E-06	2.34E-08	6.74E-10	4.85E-04	1.23E-04	6.18E-09	750	30	0.082	0.0%	0.0%	0.0%
1,1,2-Trichlorotrifluoroethane	4.45E-02	5.61E-03	7.36E-02	2.12E-03	1.35E+00	3.45E-01	1.94E-02	79000	60000		0.0%	0.0%	
1,1-Dichloroethane	4.10E-02	5.17E-03	5.28E-02	1.52E-03	1.25E+00	3.18E-01	1.39E-02	8400	3200	8.8	0.0%	0.0%	0.2%
1,1-Dichloroethene	7.50E-03	9.45E-04	9.72E-03	2.80E-04	2.28E-01	5.81E-02	2.57E-03	420	110	3.0	0.1%	0.1%	0.1%
1,2,4-Trichlorobenzene	1.00E-06	1.26E-07	2.12E-06	6.11E-08	3.04E-05	7.75E-06	5.60E-07	1200	320		0.0%	0.0%	
1,2,4-Trimethylbenzene	2.29E-02	2.89E-03	5.15E-02	1.48E-03	6.98E-01	1.78E-01	1.36E-02		1422			0.0%	
1,2-Dibromoethane	2.00E-08	2.52E-09	1.52E-08	4.38E-10	6.09E-07	1.55E-07	4.02E-09	0.091	0.024	0.000067	0.0%	0.0%	0.0%
1,2-Dichlorobenzene	3.70E-06	4.67E-07	4.65E-06	1.34E-07	1.13E-04	2.87E-05	1.23E-06	9100	2400		0.0%	0.0%	
1,2-Dichloroethane	1.11E-04	1.40E-05	8.56E-06	2.46E-07	3.38E-03	8.61E-04	2.26E-06	53	14	0.038	0.0%	0.0%	0.0%
1,2-Dichloropropane	1.82E-08	2.29E-09	1.38E-08	3.98E-10	5.52E-07	1.41E-07	3.65E-09	4300	2800		0.0%	0.0%	
1,3,5-Trimethylbenzene	1.21E-02	1.52E-03	1.82E-02	5.23E-04	3.68E-01	9.38E-02	4.80E-03		1090			0.0%	
1,3-Butadiene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.2	1.9	0.067	0.0%	0.0%	0.0%
1,4-Dichlorobenzene	1.33E-05	1.68E-06	2.42E-05	6.97E-07	4.06E-04	1.03E-04	6.40E-06	250	66	0.18	0.0%	0.0%	0.0%
1,4-Dioxane	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3000	150	0.40	0.0%	0.0%	0.0%
2-Butanone	5.56E-04	7.01E-05	7.52E-04	2.16E-05	1.69E-02	4.31E-03	1.98E-04	7400	4700		0.0%	0.0%	
Acetone	1.03E-03	1.30E-04	2.29E-03	6.58E-05	3.14E-02	8.00E-03	6.04E-04	20000	14000		0.0%	0.0%	
Arsenic	1.10E-06	1.38E-07	4.81E-06	1.38E-07	3.34E-05	8.51E-06	1.27E-06	0.28	0.073	0.00020	0.0%	0.0%	0.6%
Benzene	2.31E-01	2.91E-02	4.02E-01	1.16E-02	7.03E+00	1.79E+00	1.06E-01	630	51	0.14	1.1%	3.5%	75.8%
Beryllium	6.59E-08	8.30E-09	2.89E-07	8.30E-09	2.00E-06	5.10E-07	7.62E-08	0.060	0.016	0.00050	0.0%	0.0%	0.0%

Table 6-4
Modeled Hazardous Air Pollutant Results for Alternate Operating Scenario 2

AAAQG Compound	Max. 1-Hr Emissions		Annual Average Emissions		Ground Level Concentration (ug/m^3)			1992 AAAQG's (ug/m^3)			% of 1992 AAAQGs		
	lb/hr	g/s	ton/yr	g/s	1-Hr	24-Hr	Annual	1-Hr	24-Hr	Annual	1-Hr	24-Hr	Annual
Bromodichloromethane	1.93E-06	2.43E-07	1.41E-06	4.04E-08	5.86E-05	1.49E-05	3.71E-07	36	9.5	0.26	0.0%	0.0%	0.0%
Bromoethene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	500	160		0.0%	0.0%	
Bromoform	8.52E-08	1.07E-08	9.74E-08	2.80E-09	2.59E-06	6.60E-07	2.57E-08	150	40		0.0%	0.0%	
Bromomethane	7.04E-08	8.87E-09	0.00E+00	0.00E+00	2.14E-06	5.45E-07	0.00E+00	500	160		0.0%	0.0%	
Cadmium	6.04E-06	7.61E-07	2.65E-05	7.61E-07	1.84E-04	4.68E-05	6.98E-06	1.7	0.11	0.00029	0.0%	0.0%	2.4%
Carbon Disulfide	1.65E-03	2.09E-04	4.25E-04	1.22E-05	5.03E-02	1.28E-02	1.12E-04	91	24		0.1%	0.1%	
Carbon Tetrachloride	1.19E-07	1.49E-08	1.14E-07	3.27E-09	3.61E-06	9.18E-07	3.00E-08	49	13	0.036	0.0%	0.0%	0.0%
Chlorobenzene	2.52E-04	3.17E-05	2.88E-04	8.28E-06	7.66E-03	1.95E-03	7.60E-05		2560			0.0%	
Chloroform	3.39E-05	4.27E-06	1.04E-04	2.99E-06	1.03E-03	2.63E-04	2.74E-05	60	16	0.043	0.0%	0.0%	0.1%
Chloromethane	3.15E-06	3.97E-07	3.52E-06	1.01E-07	9.58E-05	2.44E-05	9.28E-07	36	9.5	0.026	0.0%	0.0%	0.0%
Chromium	7.69E-06	9.68E-07	3.37E-05	9.68E-07	2.34E-04	5.95E-05	8.89E-06	11	3.8		0.0%	0.0%	
Cis-1,2-Dichloroethene	1.44E-01	1.82E-02	2.23E-01	6.41E-03	4.40E+00	1.12E+00	5.88E-02	23800	6300		0.0%	0.0%	
Dichlorobenzene	1.06E-05	1.33E-06	4.63E-05	1.33E-06	3.22E-04	8.20E-05	1.22E-05	250	66	0.18	0.0%	0.0%	0.0%
Dichlorodifluoromethane	1.89E-03	2.38E-04	1.54E-03	4.42E-05	5.75E-02	1.46E-02	4.06E-04	52000	39000		0.0%	0.0%	
Ethyl Acetate	1.48E-06	1.87E-07	0.00E+00	0.00E+00	4.51E-05	1.15E-05	0.00E+00	42000	11000		0.0%	0.0%	
Ethylbenzene	3.05E-02	3.84E-03	6.58E-02	1.89E-03	9.26E-01	2.36E-01	1.74E-02	4500	3500		0.0%	0.0%	
Formaldehyde	6.61E-04	8.33E-05	2.90E-03	8.33E-05	2.01E-02	5.12E-03	7.65E-04	20	12	0.080	0.1%	0.0%	1.0%
Hexachlorobutadiene	6.67E-07	8.40E-08	1.48E-06	4.27E-08	2.03E-05	5.17E-06	3.92E-07	7.2	1.9	0.067	0.0%	0.0%	0.0%
Hydrochloric Acid	8.33E-01	1.05E-01	1.31E+00	3.76E-02	2.53E+01	6.45E+00	3.45E-01	210	56	7.0	12.1%	11.5%	4.9%
Hydrofluoric Acid	5.93E-02	7.47E-03	9.52E-02	2.74E-03	1.80E+00	4.59E-01	2.51E-02	562.5	187.5		0.3%	0.2%	
Isopropanol	2.04E-03	2.57E-04	4.14E-03	1.19E-04	6.21E-02	1.58E-02	1.09E-03		7400			0.0%	
Lead	1.66E-06	2.10E-07	7.29E-06	2.10E-07	5.06E-05	1.29E-05	1.92E-06			1.5			0.0%
Manganese	1.26E-06	1.59E-07	5.54E-06	1.59E-07	3.85E-05	9.80E-06	1.46E-06	25	8.0		0.0%	0.0%	
Mercury	8.65E-07	1.09E-07	3.79E-06	1.09E-07	2.63E-05	6.70E-06	1.00E-06	1.5	0.4		0.0%	0.0%	
Methylene Chloride	2.47E-04	3.11E-05	5.99E-04	1.72E-05	7.51E-03	1.91E-03	1.58E-04	7600	2000	5.6	0.0%	0.0%	0.0%
Naphthalene	1.60E-04	2.01E-05	5.37E-04	1.55E-05	4.86E-03	1.24E-03	1.42E-04	630	400		0.0%	0.0%	
N-Heptane	1.37E-01	1.72E-02	3.73E-01	1.07E-02	4.16E+00	1.06E+00	9.84E-02	17000	11000		0.0%	0.0%	
N-Hexane	7.65E-01	9.64E-02	1.32E+00	3.78E-02	2.33E+01	5.92E+00	3.47E-01	5300	1400		0.4%	0.4%	
o-Xylene	2.78E-02	3.51E-03	3.62E-02	1.04E-03	8.46E-01	2.16E-01	9.57E-03	5500	3500		0.0%	0.0%	
Selenium	7.99E-08	1.01E-08	3.50E-07	1.01E-08	2.43E-06	6.19E-07	9.23E-08	6.0	1.6		0.0%	0.0%	
Styrene	9.52E-04	1.20E-04	1.69E-03	4.86E-05	2.90E-02	7.38E-03	4.46E-04	3500	1700		0.0%	0.0%	
Tetrachloroethene	2.30E-03	2.90E-04	4.62E-03	1.33E-04	6.99E-02	1.78E-02	1.22E-03	11000	770	2.1	0.0%	0.0%	0.1%
Tetrahydrofuran	9.26E-05	1.17E-05	7.06E-05	2.03E-06	2.82E-03	7.18E-04	1.86E-05						

Table 6-4
Modeled Hazardous Air Pollutant Results for Alternate Operating Scenario 2

AAAQG Compound	Max. 1-Hr Emissions		Annual Average Emissions		Ground Level Concentration (ug/m^3)			1992 AAAQG's (ug/m^3)			% of 1992 AAAQGs		
	lb/hr	g/s	ton/yr	g/s	1-Hr	24-Hr	Annual	1-Hr	24-Hr	Annual	1-Hr	24-Hr	Annual
Toluene	7.79E-02	9.82E-03	9.35E-02	2.69E-03	2.37E+00	6.04E-01	2.47E-02	4700	3000		0.1%	0.0%	
Trichloroethene	2.86E-02	3.60E-03	4.57E-02	1.31E-03	8.69E-01	2.21E-01	1.21E-02	1100	280	0.76	0.1%	0.1%	1.6%
Trichlorofluoromethane	2.00E-02	2.53E-03	3.08E-02	8.86E-04	6.10E-01	1.55E-01	8.14E-03	220000	59000		0.0%	0.0%	
Vinyl Chloride	2.41E-02	3.04E-03	4.10E-02	1.18E-03	7.34E-01	1.87E-01	1.08E-02	17	4.4	0.012	4.3%	4.3%	90.2%
Xylenes, m & p	1.34E-02	1.69E-03	3.34E-02	9.62E-04	4.09E-01	1.04E-01	8.83E-03	5500	3500		0.0%	0.0%	
Xylenes, Total	1.23E-01	1.54E-02	1.44E-01	4.15E-03	3.73E+00	9.49E-01	3.81E-02	5500	3500		0.1%	0.0%	

Alternate Operating Scenarios 3 and 5:

Alternate Operating Scenarios 3 and 5 are presented with the option to operate the system without the PPA vessels and with thermal oxidization (i.e., AOS-3) or without thermal oxidization (i.e., AOS-5) such that vinyl chloride outlet concentrations will not result in modeled ground level concentrations greater than 85% of the AAAQG. This is equivalent to approximately 0.0066 lb/hr of vinyl chloride at 2,000 scfm (an outlet concentration of approximately 0.88 µg/L). At 5,300 scfm this is equivalent to approximately 0.33 µg/L (but is only approximately 65% of the AAAQG).

A concentration of 0.33 µg/L is less than 1% of the concentration of vinyl chloride that was assumed when calculating PTE for AOS-1. Therefore, the PTE for other HAPs and VOCs for AOS-3 and AOS-5 will be at or, more likely, below the PTE calculated for AOS-1, and should not result in exceedances of the AAAQGs. The modeled emission rates and the resulting ambient ground level concentrations of the AAAQG compounds at the different flowrates allowed for AOS-3 and AOS-5 are presented in Table 6-5.

Alternate Operating Scenario 4:

AOS-4 was presented as an option to operate the system without thermal oxidation. The applicant has indicated that AOS-4 would not have greater emissions than presented in AOS-1 and AOS-2 and could operate with maximum inlet flowrate of 5,300 scfm. To confirm the emission levels would not be greater than AOS-1 and AOS-2 levels, the applicant proposed to not exceed 85% of the annual AAAQG for benzene or vinyl chloride based on 70% control efficiency. Table 6-6 summarizes the calculated inlet concentrations.

Table 6-5
Modeled Ground-level Concentrations of Vinyl Chloride at Selected Emission Rates for AOS-3 and AOS-5

Time Period	No Thermal Oxidizer 2,000 scfm[a]		No Thermal Oxidizer 3,300 scfm[a]		No Thermal Oxidizer 4,000 scfm[a]		Thermal Oxidizer 5,300 scfm[b]		Thermal Oxidizer 3,300 scfm[c]		AAAQG ($\mu g/m^3$)
	Modeled Ground-level Conc. ($\mu g/m^3$)[d]	Percent of AAAQG	Modeled Ground-level Conc. ($\mu g/m^3$)	Percent of AAAQG	Modeled Ground-level Conc. ($\mu g/m^3$)	Percent of AAAQG	Modeled Ground-level Conc. ($\mu g/m^3$)	Percent of AAAQG	Modeled Ground-level Conc. ($\mu g/m^3$)	Percent of AAAQG	
Hourly	0.310	1.9%	0.290	1.8%	0.205	1.3%	0.199	1.2%	0.290	1.8%	16
Daily	0.078	1.8%	0.067	1.5%	0.061	1.4%	0.051	1.2%	0.063	1.5%	4
Annual	0.010	84.9%	0.0091	75.7%	0.0086	72%	0.0065	53.9%	0.0074	61.3%	0.012

Notes:
[a]. Temperature estimated to be approximately 95°F, stack diameter is 1.5 feet, and stack height is 44 feet.
[b]. Temperature estimated to be approximately 130°F, stack diameter is 2 feet, and stack height is 44 feet. SVT-1 and SVT-2 both operating with thermal oxidizers.
[c]. Temperature estimated to be approximately 130°F, stack diameter is 1.5 feet, and stack height is 44 feet. SVT-1 operating with thermal oxidizer.
[d]. Mass emission limit of 0.0066 lbs/hr modeled.

Table 6-6
Modeled Ground-level Concentrations of Benzene and Vinyl Chloride at Selected Emission Rates for AOS-4

Compound	Time Period	No Thermal Oxidizer 2,000 scfm[a]		No Thermal Oxidizer 3,300 scfm[a]		No Thermal Oxidizer 4,000 scfm[a]		AAAAQG ($\mu g/m^3$)
		Modeled Ground-level Concentration ($\mu g/m^3$)	Percent of AAAQG	Modeled Ground-level Concentration ($\mu g/m^3$)	Percent of AAAQG	Modeled Ground-level Concentration ($\mu g/m^3$)	Percent of AAAQG	
Vinyl Chloride	Hourly	0.310	1.9%	0.290	1.8%	0.205	1.3%	16
	Daily	0.078	1.8%	0.067	1.5%	0.061	1.4%	4
	Annual	0.010	84.9%	0.0091	75.7%	0.0086	72%	0.012
Benzene	Hourly	3.04	1.8%	2.84	1.7%	2.01	1.2%	170
	Daily	0.762	1.7%	0.652	1.5%	0.595	1.4%	44
	Annual	0.0998	83.2%	0.089	74.1%	0.085	70.5%	0.12

Notes:
[a] Temperature estimated to be approximately 95°F, stack diameter is 1.5 feet, and stack height is 44 feet.

7. ADDITIONAL IMPACT ANALYSIS

The permit revision is not a major modification under MCAPCR Rule 240, and thus the requirements for an additional air quality impact analysis pursuant to Rule 240 Section 508 do not apply. However, the significant permit revisions are for installation and operation of a remediation system that is intended to treat and significantly reduce potential emissions of extracted soil vapors. Therefore, the proposed permit revisions are not anticipated to affect the impacts with respect to growth, visibility, soils (surface), vegetation, and endangered species for which approval and issuance of the previous Title V permit was based.

8. REGULATORY STREAMLINING

Since the BSVE system is unique at the Honeywell facility, a separate set of specific permit conditions were drafted that apply to BSVE. The permit conditions specify the five alternate operating scenarios and the conditions that allow the Permittee to select different scenarios. All of the general conditions, reporting, monitoring, and recordkeeping of the original permit also apply to the BSVE, but there are additional requirements specifically for the BSVE, including emission limits.

9. COMPLIANCE

According to MCAQD records, the Honeywell facility has received approximately 40 notices of violation (NOV) since March of 2006. MCAQD is currently finalizing the enforcement action associated with these NOVs. The enforcement action will address all of the NOVs. Because MCAQD has a pending enforcement action that may result in the addition of a compliance schedule into the permit, MCAQD has decided not to include a compliance schedule in this permit revision. This approach is consistent with USEPA policy.

It is also important to note that none of the NOVs is related to this proposed clean-up. Also, the intent of the BSVE installation is to address environmental contamination and not to allow installation of production equipment.

10. CONCLUSION

Based on the information supplied by Honeywell, and on the analyses conducted by the Maricopa County Air Quality Department, MCAQD has concluded that the requested permit changes, specifically the installation of the BSVE system (including thermal oxidizers, scrubbers, GAC vessels, and PPA vessels), is consistent with Federal, State, and County regulations and rules and will not cause or contribute to a violation of any federal ambient air quality standard, will not cause any AAAQG to be exceeded, and will not cause additional adverse air quality impacts.

Therefore, MCAQD proposes to issue the significant permit revision subject to the proposed permit conditions.