# MODULE IV - GEOLOGIC REPOSITORY DISPOSAL

IV.D.3. Ongoing Disposal Room VOC Monitoring in Panel 3 Through 7

The Permittees shall continue VOC monitoring in Room 1 of Panels 3 through 7 after completion of waste emplacement until final panel closure unless the explosion isolation wall is installed in any of these panels.

IV.F.1 Geomechanical Monitoring

IV.F.4.b Reporting requirements - the Permittees shall submit to the Secretary an annual report, beginning twelve (12) months after issuance of this Permit, evaluating the geomechanical monitoring program and shall include geomechanical data collected from each Underground HWDU during the previous year, as specified in Permit Attachment M2, Section M2-5b(2), "Geomechanical Monitoring", and shall also include a map showing the current status of HWDU mining. Also submitted at that time will be an annual certification by a registered professional engineer certifying the stability of any explosion isolation walls. The Permittees will also notify the e-mail notification list within seven (7) calendar days of submittal of this certification.

IV.F.5 Hydrogen and Methane Monitoring Program

IV.F.5.a Implementation of the Hydrogen and Methane Monitoring - the Permittees shall implement the Hydrogen and Methane Monitoring Program specified in Permit Attachment N1.

IV.F.5.b Notification Requirements -
The Permittees shall notify the Secretary in writing, within seven (7) calendar days of obtaining validated analytical results, whenever the concentration of hydrogen or methane in a filled panel exceeds the Action Levels specified in Table IV.F.5.a below.

The Permittees will also notify the e-mail notification list within seven (7) calendar days of obtaining validated analytical results if the Action Levels are exceeded.

| Table IV.F.5.a - Action Levels for Hydrogen and Methane Monitoring | | |
|---|---|---|
| **Compound** | **Action Level 1** | **Action Level 2** |
| Hydrogen | 4000 ppm | 8000 ppm |
| Methane | 5000 ppm | 10000 ppm |

IV.F.5.c Remedial Action - upon receiving validated analytical results that indicate that Action Level 1 has been reached or exceeded sampling will be increased to weekly. Upon receiving validated analytical results that indicate that Action Level 2 has been reached or exceeded in two consecutive weekly samples the explosion isolation wall will be installed.

IV.F.5.d Sampling Line Loss
Any loss of sampling lines will be evaluated as described in Section N1-5b, and notifications submitted to the Secretary and to the e-mail notification list within seven (7) calendar days of the discovery of loss of sampling line(s).

# TABLE D-1
# INSPECTION SCHEDULE/PROCEDURES

| System/Equipment Name | Responsible Organization | Inspection [a] Frequency and Job Title of Personnel Normally Making Inspection | Procedure Number and Inspection Criteria |
|---|---|---|---|
| Air Intake Shaft Hoist | Underground Operations | Preoperational [c]<br>See Lists 1b and c | WP 04-HO1004<br>Inspecting for Deterioration[b], Safety Equipment, Communication Systems, and Mechanical Operability[m] in accordance with Mine Safety and Health Administration (MSHA) requirements |
| Ambulances (Surface and Underground) and related emergency supplies and equipment | Emergency Services | Weekly<br>See List 11 | PM000030<br>Inspecting for Mechanical Operability[m], Deterioration[b], and Required Equipment[n] |
| Adjustable Center of Gravity Lift Fixture | Waste Handling | Preoperational<br>See List 8 | WP 05-WH1410<br>Inspecting for Mechanical Operability[m] and Deterioration[b] |
| Backup Power Supply Diesel Generators | Facility Operations | Monthly<br>See List 3 | WP 04-ED1301<br>Inspecting for Mechanical Operability[m] and Leaks/Spills by starting and operating both generators. Results of this inspection are logged in accordance with WP 04-AD3008. |
| Facility Inspections (Water Diversion Berms) | Facility Engineering | Annually<br>See List 4 | WP 10-WC3008<br>Inspecting for Damage, Impediments to water flow, and Deterioration[b] |
| Central Monitoring Systems (CMS) | Facility Operations | Continuous<br>See List 3 | Automatic Self-Checking |
| Contact-Handled (CH) TRU Underground Transporter | Waste Handling | Preoperational<br>See List 8 | WP 05-WH1603<br>Inspecting for Mechanical Operability[m], Deterioration[b], and area around transporter clear of obstacles |
| Facility Transfer Vehicle | Waste Handling | Preoperational<br>See List 8 | WP 05-WH1406<br>Inspecting for Mechanical Operability[m], Deterioration[b], path clear of obstacles, and guards in the proper place |
| Exhaust Shaft | Underground Operations | Quarterly<br>See List 1a | PM041099<br>Inspecting for Deterioration[b] and Leaks/Spills |
| Eye Wash and Shower Equipment | Equipment Custodian | Weekly<br>See List 5 | WP 12-IS1832<br>Inspecting for Deterioration[b] |
| | | Semi-annually<br>See List 2a | WP 12-IS1832<br>Inspecting for Deterioration[b] and Fluid Levels–Replace as Required |

## TABLE D-1
## INSPECTION SCHEDULE/PROCEDURES

| System/Equipment Name | Responsible Organization | Inspection [a] Frequency and Job Title of Personnel Normally Making Inspection | Procedure Number and Inspection Criteria |
|---|---|---|---|
| Fire Detection and Alarm System | Emergency Services | Semiannually See List 11 | PM000027 Inspecting for Deterioration[b], Operability of indicator lights and, underground fuel station dry chemical suppression system. Inspection is per NFPA 72 |
| Fire Extinguishers[j] | Emergency Services | Monthly See List 11 | PM000036 Inspecting for Deterioration[b], Leaks/Spills, Expiration, seals, fullness, and pressure |
| Fire Hoses | Emergency Services | Annually (minimum) See List 11 | PM000031 Inspecting for Deterioration[b] and Leaks/Spills |
| Fire Hydrants | Emergency Services | Semi-annual/ annually See List 11 | PM000034 Inspecting for Deterioration[b] and Leaks/Spills |
| Fire Pumps | Emergency Services | Weekly/annually See List 11 | PM000026 Inspecting for Deterioration[b], Leaks/Spills, valves, and panel lights |
| Fire Sprinkler Systems | Emergency Services | Monthly/ quarterly See List 11 | PM000025 Inspecting for Deterioration[b], Leaks/Spills, static pressures, and removable strainers |
| Fire and Emergency Response Trucks (Seagrave Fire Apparatus, Emergency One Apparatus, and Underground Rescue Truck) | Emergency Services | Weekly See List 11 | PM000033 Inspecting for Mechanical Operability[m], Deterioration[b], Leaks/Spills, and Required Equipment[n] |
| Forklifts Used for Waste Handling (Electric and Diesel forklifts, Push-Pull Attachment) | Waste Handling | Preoperational See List 8 | WP 05-WH1401, WP 05-WH1402, WP 05-WH1403, and WP 05-WH1412 Inspecting for Mechanical Operability[m], Deterioration[b], and On board fire suppression system |
| Hazardous Material Response Equipment | Emergency Services | Weekly See List 11 | PM000033 Inspecting for Mechanical Operability[m], Deterioration[b], and Required Equipment[n] |
| Miners First Aid Station | Emergency Services | Quarterly See List 11 | PM000035 Inspecting for Required Equipment[n] |
| Mine Pager Phones (between surface and underground) | Facility Operations | Monthly See List 3 | WP 04-PC3017 Testing of PA and Underground Alarms and Mine Page Phones at essential locations |

## TABLE D-1
## INSPECTION SCHEDULE/PROCEDURES

| System/Equipment Name | Responsible Organization | Inspection [a] Frequency and Job Title of Personnel Normally Making Inspection | Procedure Number and Inspection Criteria |
|---|---|---|---|
| MSHA Air Quality Monitor | Maintenance/ Underground Operations | Daily[l] See Lists 1 and 10 | WP 12-IH1828 Inspecting for Air Quality Monitoring Equipment Functional Check |
| Perimeter Fence, Gates, Signs | Security | Daily See List 6 | PF0-011 Inspecting for Deterioration[b] and Posted Warnings |
| Personal Protective Equipment (not otherwise contained in emergency vehicles or issued to individuals): —Self-Contained Breathing Apparatus | Emergency Services | Weekly See List 11 | PM000029 Inspecting for Deterioration[b] and Pressure |
| Public Address (and Intercom System) | Facility Operations | Monthly See List 3 | WP 04-PC3017 Testing of PA and Underground Alarms and Mine Page Phones at essential locations Systems operated in test mode |
| Radio Equipment | Facility Operations | Daily[j] See List 3 | Radios are operated daily and are repaired upon failure |
| Rescue Truck (Surface and Underground) | Emergency Services | Weekly See List 11 | PM000030 and PM000033 Inspecting for Mechanical Operability[m], Deterioration[b], Leaks/Spills, and Required Equipment[n] |
| Salt Handling Shaft Hoist | Underground Operations | Preoperational See List 1b and c | WP 04-HO1002 Inspecting for Deterioration[b], Safety Equipment, Communication Systems, and Mechanical Operability[m] in accordance with MSHA requirements |
| Self-Rescuers | Underground Operations | Quarterly See List 1c | WP 04-AU1026 Inspecting for Deterioration[b] and Functionality in accordance with MSHA requirements |
| Surface TRU Mixed Waste Handling Area [k] | Waste Handling | Preoperational or Weekly [e] See List 8 | WP 05-WH1101 Inspecting for Deterioration[b], Leaks/Spills, Required Aisle Space, Posted Warnings, Communication Systems, Container Condition, and Floor coating integrity |
| TRU Mixed Waste Decontamination Equipment | Waste Handling | Annually See List 8 | WP 05-WH1101 Inspecting for Required Equipment[n] |
| Underground Openings—Roof Bolts and Travelways | Underground Operations | Weekly See List 1a | WP 04-AU1007 Inspecting for Deterioration[b] |

## TABLE D-1
## INSPECTION SCHEDULE/PROCEDURES

| System/Equipment Name | Responsible Organization | Inspection [a] Frequency and Job Title of Personnel Normally Making Inspection | Procedure Number and Inspection Criteria |
|---|---|---|---|
| Underground—Geomechanical Instrumentation System (GIS) | Geotechnical Engineering | Monthly<br>See List 9 | WP 07-EU1301<br>Inspecting for Deterioration[b] |
| Underground TRU Mixed Waste Disposal Area | Waste Handling | Preoperational<br>See List 8 | WP 05-WH1810<br>Inspecting for Deterioration[b], Leaks/Spills, mine pager phones, equipment, unobstructed access, signs, debris, and ventilation |
| Uninterruptible Power Supply (Central UPS) | Facility Operations | Daily<br>See List 3 | WP 04-ED1542<br>Inspecting for Mechanical Operability[m] and Deterioration[b] with no malfunction alarms. Results of this inspection are logged in accordance with WP 04-AD3008. |
| TDOP Upender | Waste Handling | Preoperational<br>See List 8 | WP 05-WH1010<br>Inspecting for Mechanical Operability[m] and Deterioration[b] |
| Vehicle Siren | Emergency Services | Weekly<br>See List 11 | Functional Test included with inspection of the Ambulances, Fire Trucks, and Rescue Trucks |
| Ventilation Exhaust | Maintenance Operations | Quarterly<br>See List 10 | IC041098<br>Check for Deterioration[b] and Calibration of Mine Ventilation Rate Monitoring Equipment |
| Waste Handling Cranes | Waste Handling | Preoperational<br>See List 8 | WP 05-WH1407<br>Inspecting for Mechanical Operability[m], Deterioration[b], and Leaks/Spills |
| Waste Hoist | Underground Operations | Preoperational<br>See List 1b and c | WP 04-HO1003<br>Inspecting for Deterioration[b], Safety Equipment, Communication Systems, and Mechanical Operability[m], Leaks/Spills, in accordance with MSHA requirements |
| Water Tank Level | Facility Operations | Daily<br>See List 3 | SDD-WD00<br>Inspecting for Deterioration[b], and water levels. Results of this inspection are logged in accordance with WP 04-AD3008. |
| Push-Pull Attachment | Waste Handling | Preoperational<br>See List 8 | WP 05-WH1401<br>Inspecting for Damage and Deterioration[b] |
| Trailer Jockey | Waste Handling | Preoperational<br>See List 8 | WP 05-WH1405<br>Inspecting for Mechanical Operability[m] and Deterioration[b] |
| Facility Grapple | Waste Handling | Preoperational<br>See List 8 | To Be Determined (RH equipment) |

**TABLE D-1**
**INSPECTION SCHEDULE/PROCEDURES**

| System/Equipment Name | Responsible Organization | Inspection [a] Frequency and Job Title of Personnel Normally Making Inspection | Procedure Number and Inspection Criteria |
|---|---|---|---|
| 15-Ton Bridge Crane | Waste Handling | Preoperational See List 8 | To Be Determined (RH equipment) |
| Hook and Rope on 50/25-Ton Bridge Crane | Waste Handling | Preoperational See List 8 | To Be Determined (RH equipment) |
| Explosion Isolation Walls | Underground Operations | Quarterly See List 1 | Integrity and Deterioration[b] of Accessible Areas |
| Monitoring Bulkhead in Filled Panels | Underground Operations | Monthly See List 1 | Integrity and Deterioration[b] of Accessible Areas |

## TABLE I-1
## ANTICIPATED EARLIEST CLOSURE DATES FOR THE UNDERGROUND HWDUs

| HWDU | OPERATIONS START | OPERATIONS END | CLOSURE START | CLOSURE END |
|---|---|---|---|---|
| **PANEL 1** | 3/99 | 2/03 | 3/03 | 9/03 SEE NOTE 5 |
| **PANEL 2** | 3/03 | 6/05 | 7/05 | 1/06 SEE NOTE 5 |
| **PANEL 3** | 7/05 | 1/07 | 2/07 | 8/07 SEE NOTE 6 |
| **PANEL 4** | 1/07 | 1/09 | 2/09 | 8/09 SEE NOTE 6 |
| **PANEL 5** | 1/09 | 1/11 | 2/11 | 8/11 SEE NOTE 6 |
| **PANEL 6** | 1/11 | 1/13 | 2/13 | 8/13 SEE NOTE 6 |
| **PANEL 7** | 1/13 | 1/15 | 2/15 | 8/15 SEE NOTE 6 |
| **PANEL 8** | 1/15 | 1/17 | 2/17 | 8/17 |
| **PANEL 9** | 1/17 | 1/28 | 2/28 | SEE NOTE 4 |
| **PANEL 10** | 1/28 | 9/30 | 10/30 | SEE NOTE 4 |

NOTE 1: Only Panels 1 to 4 will be closed under the initial term of this permit. Closure schedules for Panels 5 through 10 are projected assuming new permits will be issued in 2009 and 2019.

NOTE 2: The point of closure start is defined as sixty (60) days following notification to the NMED of closure.

NOTE 3: The point of closure end is defined as one hundred eighty (180) days following placement of final waste in the panel.

NOTE 4: The time to close these areas may be extended depending on the nature and extent of the disturbed rock zone. The excavations that constitute these panels will have been opened for as many as forty (40) years so that the preparation for closure may take longer than the time allotted in Figure I-2. If this extension is needed, it will be requested as an amendment to the Closure Plan.

NOTE 5: The anticipated closure end date for Panels 1 and 2 is for installation of the 12-foot explosion isolation wall. Final closure of Panels 1 and 2 will be completed as specified in this Permit no later January 2016 ~~June 30, 2009~~.

NOTE 6: The anticipated closure end date for Panel 3 through 7 is for initially blocking ventilation through the closed panel. Final closure of Panel 3 through 7 will be completed as specified in this Permit no later than January 2016 ~~June 30, 2009~~.

# ATTACHMENT N

# VOLATILE ORGANIC COMPOUND MONITORING PLAN

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N-3a(3) Ongoing Disposal Room VOC Monitoring in Panels 3 through 7

The Permitees shall continue VOC monitoring in Room 1 of filled panels 3 through 7 ~~Panel 3~~ after completion of waste emplacement until final panel closure unless an explosion isolation wall is installed.

N-3c Sampling and Analysis Methods

The VOC monitoring programs include a comprehensive VOC monitoring program established at the facility; equipment, training, and documentation for VOC measurements are already in place.

The method used for VOC sampling is based on the concept of pressurized sample collection contained in the U.S. Environmental Protection Agency (**EPA**) Compendium Method TO-15 (EPA, 1999). The TO-15 sampling concept uses 6-liter SUMMA® passivated (or equivalent) stainless-steel canisters to collect integrated air samples at each sample location. This conceptual method will be used as a reference for collecting the samples at WIPP. The samples will be analyzed using gas chromatography/mass spectrometry (**GC/MS**) under an established QA/quality control (**QC**) program. Laboratory analytical procedures have been developed based on the concepts contained in both TO-15 and 8260B. Section N-5 contains additional QA/QC information for this project.

The TO-15 method is an EPA-recognized sampling concept for VOC sampling and speciation. It can be used to provide integrated samples, or grab samples, and compound quantitation for a broad range of concentrations. The sampling system can be operated unattended but requires detailed operator training. This sampling technique is viable for use while analyzing the sample using other EPA methods such as 8260B.

The field sampling systems will be operated in the pressurized mode. In this mode, air is drawn through the inlet and sampling system with a pump. The air is pumped into an initially evacuated SUMMA® passivated (or equivalent) canister by the sampler, which regulates the rate and duration of sampling. The treatment of tubing and canisters used for VOC sampling effectively seals the inner walls and prevents compounds from being retained on the surfaces of the equipment. By the end of each sampling period, the canisters will be pressurized to about two atmospheres absolute. In the event of shortened sampling periods or other sampling conditions, the final pressure in the canister may be less than two atmospheres absolute. Sampling duration will be approximately six hours, so that a complete sample can be collected during a single work shift.

The canister sampling system and GC/MS analytical method are particularly appropriate for the VOC Monitoring Programs because a relatively large sample volume is collected, and multiple

dilutions and reanalyses can occur to ensure identification and quantification of target VOCs within the working range of the method. The contract-required quantitation limits (**CRQL**) are 5 parts per billion by volume (**ppbv**) or less for the nine target compounds. Consequently, low concentrations can be measured. CRQLs are the EPA-specified levels of quantitation proposed for EPA contract laboratories that analyze canister samples by GC/MS. For the purpose of this plan, the CRQLs will be defined as the method reporting limits (**MRL**). The MRL is a function of instrument performance, sample preparation, sample dilution, and all steps involved in the sample analysis process.

Disposal room VOC monitoring system in open panels will employ the same canister sampling method as used in the repository VOC monitoring. Passivated or equivalent sampling lines will be installed in the disposal room as described in Section N-3a(2) and maintained once the room is closed until the panel associated with the room is closed. The independent lines will run from the sample inlet point to the individual sampler located in the access drift to the disposal panel. The air will pass through dual particulate filters to prevent sample and equipment contamination.

N-3d(2) Sampling Schedule for Disposal Room VOC Monitoring

The disposal room sampling in open panels will occur once every two weeks, unless the need to increase the frequency to weekly occurs in accordance with Permit Condition IV.F.3.c.

N-6 Sampling and Analysis Procedures for VOC Monitoring in Filled Panels

VOC Disposal Room monitoring in the filled panels, beginning with Panel 3, will be continued until final panel closure. The Permittees will continue monitoring VOCs in Room 1 of each filled panel monthly to assure worker safety and protection. Only VOCs in the adjacent closed room (Room 1 in a filled panel) pose a health risk to workers in the immediate vicinity.

Samples will be collected using the subatmospheric pressure grab sampling technique described in USEPA Method TO-15. This method uses an evacuated SUMMA® passivated canister (or equivalent) that is under vacuum (0.05 mm Hg) to draw the air sample from the sample lines into the canister. The sample lines will be purged prior to sampling to ensure that a representative sample is collected. The passivation of tubing and canisters used for VOC sampling effectively seals the inner walls and prevents compounds from being retained on the surfaces of the equipment. By the end of each sampling period, the canisters will be near atmospheric pressure.

The analytical procedures for VOC monitoring in filled panels will be the same as indicated in Attachment N, Section N-4e.

# ATTACHMENT N1

# HYDROGEN AND METHANE MONITORING PLAN

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## List of Figures

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## N1-1 Introduction

This Permit Attachment describes the monitoring plan for hydrogen and methane generated in filled rooms in underground disposal panels.

Monitoring for hydrogen and methane in Panels 3 through 7 until final panel closure is an effective way to gather data to establish whether generation of these gases actually occurs and if so, determine more realistic generation rates. More realistic generation rates may lead to panel closure designs that are less complex than the current design. In addition, collecting data under a monitoring program will provide data to assure worker safety during operation of the repository. This plan includes the monitoring design, a description of sampling and analysis procedures, quality assurance (**QA**) objectives, and reporting activities.

## N1-2 Parameters to be Analyzed and Monitoring Design

The Permittees will monitor for hydrogen and methane in filled Panels 3 through 7 until final panel closure.

Monitoring of filled panels will involve installing the following in each filled panel:

- a substantial barrier
- a steel bulkhead
- five additional monitoring locations.

The substantial barrier serves to protect the waste from events such as ground movement or vehicle impacts. The substantial barrier will be constructed from available non-flammable materials such as mined salt (Figure N1-1).

The bulkhead (Figure N1-2) serves to block ventilation in the filled panel and prevent personnel access. The isolation barrier is constructed as a typical WIPP bulkhead with no access doors or panels. The bulkhead will consist of a steel member frame covered with galvanized sheet metal, and will not allow personnel access. Rubber conveyor belt will be used as a gasket to seal the steel frame to the salt.. Over time it is possible that the bulkhead may be damaged by creep closure around it. If the damage is such as to indicate a possible loss of functionality then an additional bulkhead will be constructed outside of the original one.

The existing VOC monitoring lines will be used for sample collection in each disposal room for Panels 3 through 7. The sample lines and their construction are shown in Figure N1-3.
In addition to the existing VOC monitoring lines, five more sampling locations will be used to monitor for hydrogen and methane. These additional locations include:

- the inlet of room 1
- the waste side of the exhaust bulkhead,
- the accessible side of the exhaust bulkhead,
- the waste side of the intake bulkhead,
- the accessible side of the intake bulkhead.

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These additional sampling locations (Figure N1-4) will use a single inlet sampling point placed near the back. This will maximize the sampling efficiency for these lighter compounds.

N1-3 Sampling Frequency

Sampling frequency will vary depending upon the levels of hydrogen and methane that are detected.

- If monitored concentrations are below Action Level 1 as specified in Table IV.F.5.a monitoring will be conducted monthly.

- If monitored concentrations are above Action Level 1 as specified in Table IV.F.5.a monitoring will be increased to weekly.

N1-4 Sampling Methodology

Samples for hydrogen and methane will be collected using subatmospheric pressure grab sampling as described in Environmental Protection Agency (**EPA**) Compendium Method TO-15. The TO-15 sampling method uses passivated stainless-steel sample canisters to collect integrated air samples at each sample location. Flow rates and sampling duration may be modified as necessary to meet data quality objectives.

Sample lines shall be purged prior to sample collection.

N1-5 Sampling Equipment

N1-5a SUMMA® Canisters

Stainless-steel canisters with passivated or equivalent interior surfaces will be used to collect and store gas samples for hydrogen and methane analyses collected as part of the monitoring processes. These canisters will be cleaned and certified prior to their use in a manner similar to that described by Compendium Method TO-15. The vacuum of certified clean canisters will be verified upon initiation of a sample cycle. Sampling will be conducted using subatmospheric pressure grab sampling techniques as described in TO-15.

N1-5b Sample Tubing

Treated stainless steel tubing shall be used as a sample path and treatment shall prevent the inner walls from absorbing contaminants.

Any loss of the ability to obtain a sample from a sample line will be evaluated.

The criteria used for evaluation are shown in Figure N1-5.

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The Permittees will first suspect that a line is not useable when it is purged prior to sampling. If the line cannot be purged, then it will not be used for sampling unless the line is a bulkhead line that can be easily replaced. Replacement of bulkhead lines will occur before the next scheduled sample. Non-bulkhead lines will be evaluated by first determining if adjacent sampling lines are working. If the answer is no, then the previous sample from the failed line will be examined. If the previous sample was between the first and second action levels, then the explosion isolation wall will be installed since without the ability to monitor it is unknown whether the area is approaching the second action level or decreasing. If the previous sample was below the first action level then continued sampling is acceptable without the lost sample.

If an adjacent line is working, the concentrations measured in that line will be evaluated to determine if it is statistically similar to the prior measurements from the lost line. If the sampling results are statistically similar, the lines can be grouped. Statistical similarity will be determined using the Student's "t" test to evaluate differences.

The magnitude of *t* will be compared to the critical *t* value from SW-846, Table 9-2 (EPA 1996), for this statistical test.

If the lost line can be grouped with an adjacent line, no further action is necessary because the unmonitored area is considered to be represented by the adjacent areas. If the lost sample line cannot be grouped with an adjacent line, the previous concentration measurement will be compared to the Action Levels. If the concentration is below Action Level 1 monitoring will continue. If the concentration is between Action Level 1 and Action Level 2, the explosion isolation wall will be installed in the panel.

N1-6 Sample Management

Sample containers shall be sealed and uniquely marked at the time of collection of the sample. A Request-for-Analysis Form shall be completed to identify the sample canister number(s), sample type, and type of analysis requested.

N1-7 Sampler Maintenance

Periodic maintenance for samplers and associated equipment shall be performed as recommended by the manufacturer.

N1-8 Analytical Procedures

The samples will be analyzed using gas chromatography equipped with the appropriate detector under an established QA/quality control (**QC**) program. Analysis of samples shall be performed

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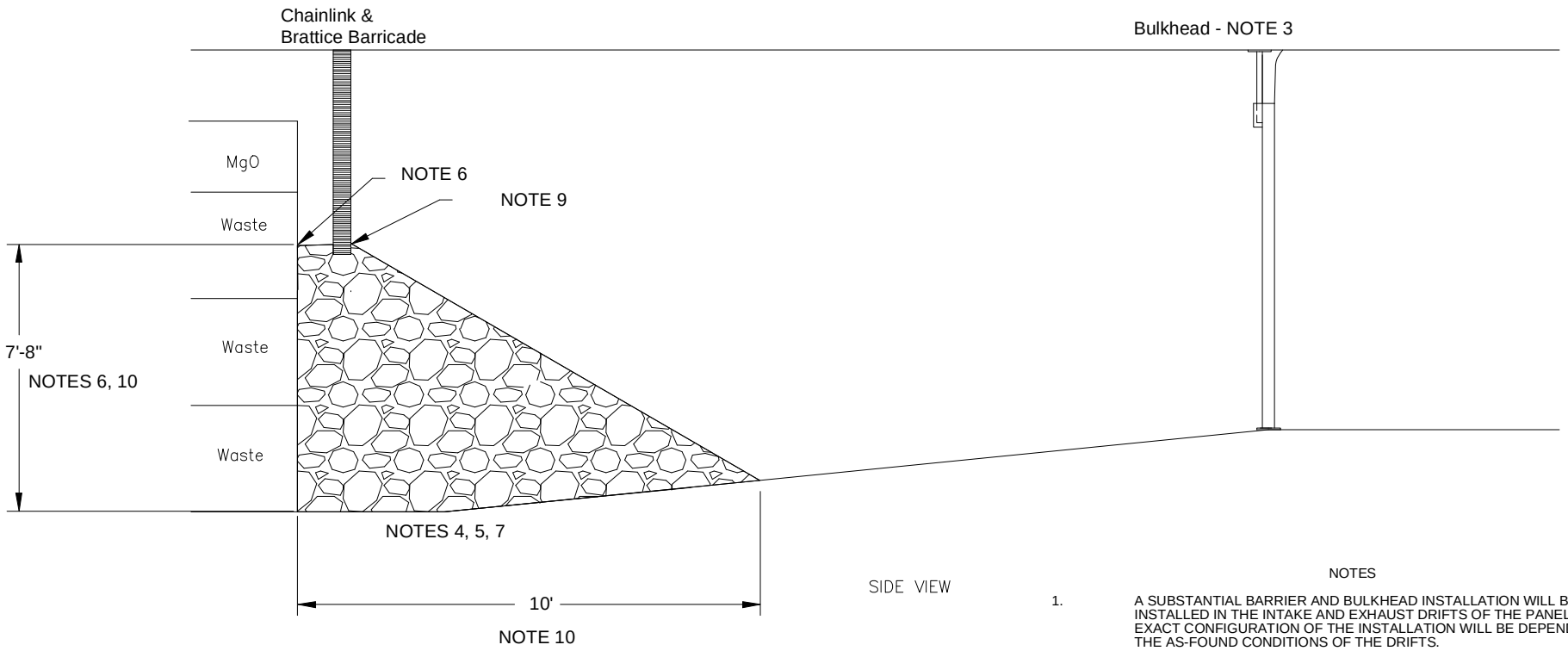
by a laboratory that the Permittees select and approve through established QA processes.

N1-9 Data Evaluation and Notifications

Analytical data from sampling events will be evaluated and, it will be determined whether the sample concentrations of flammable gases exceed the Action Levels.

If any Action Level is exceeded, notification will be made to the NMED and the notification posted to the WIPP web page and accessed through the email notification system within 7 calendar days of obtaining validated analytical data.

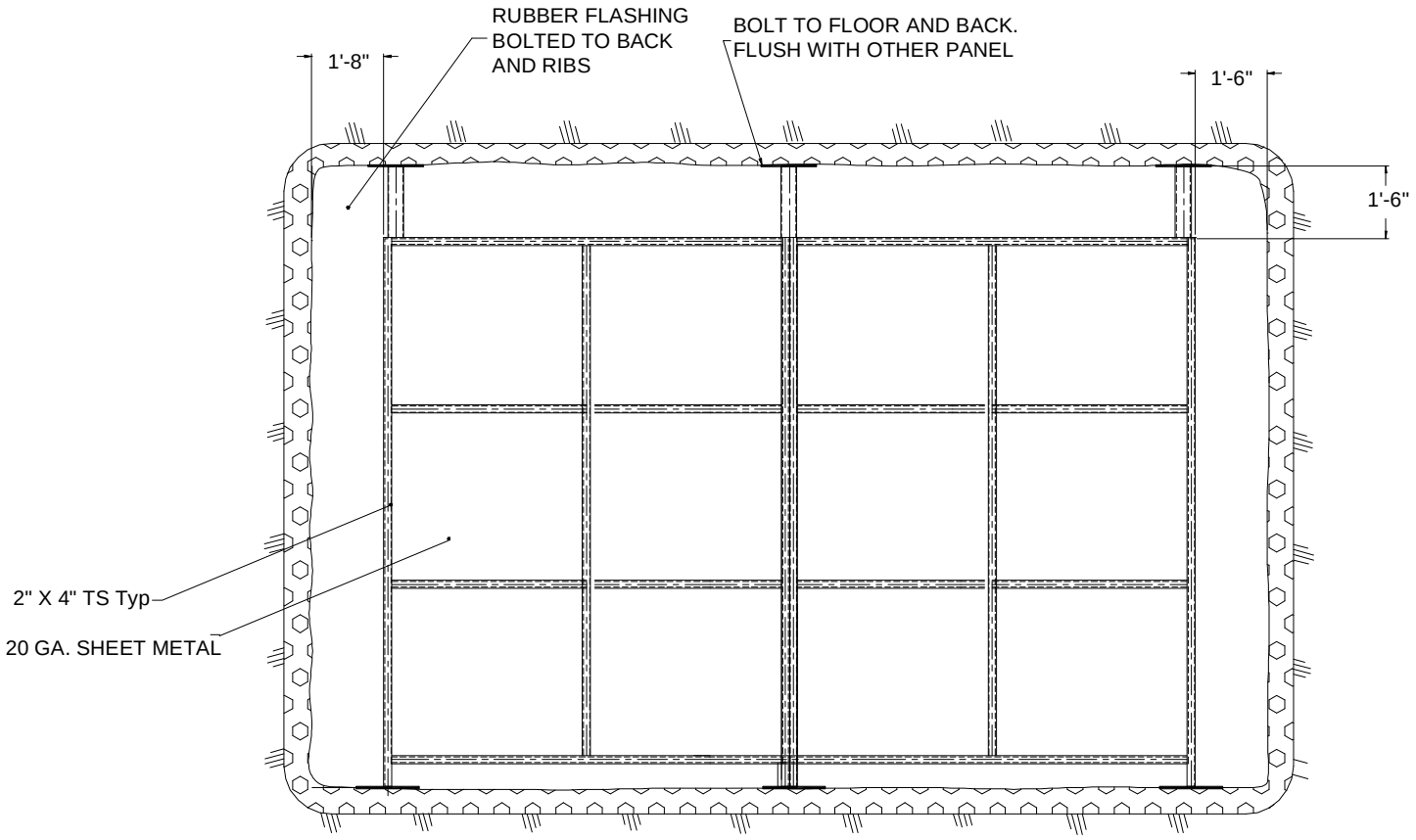
If any sampling line loss occurs, notification will be made to the NMED and the notification posted to the WIPP web page and accessed through the email notification system within 7 calendar days of learning of a sampling line loss. After the evaluation of the impact of sampling line loss as shown in Figure N1-5, notification will be made to the NMED and the notification posted to the WIPP web page and accessed through the email notification system within 7 calendar days of completing the sampling line loss evaluation.




NOTES

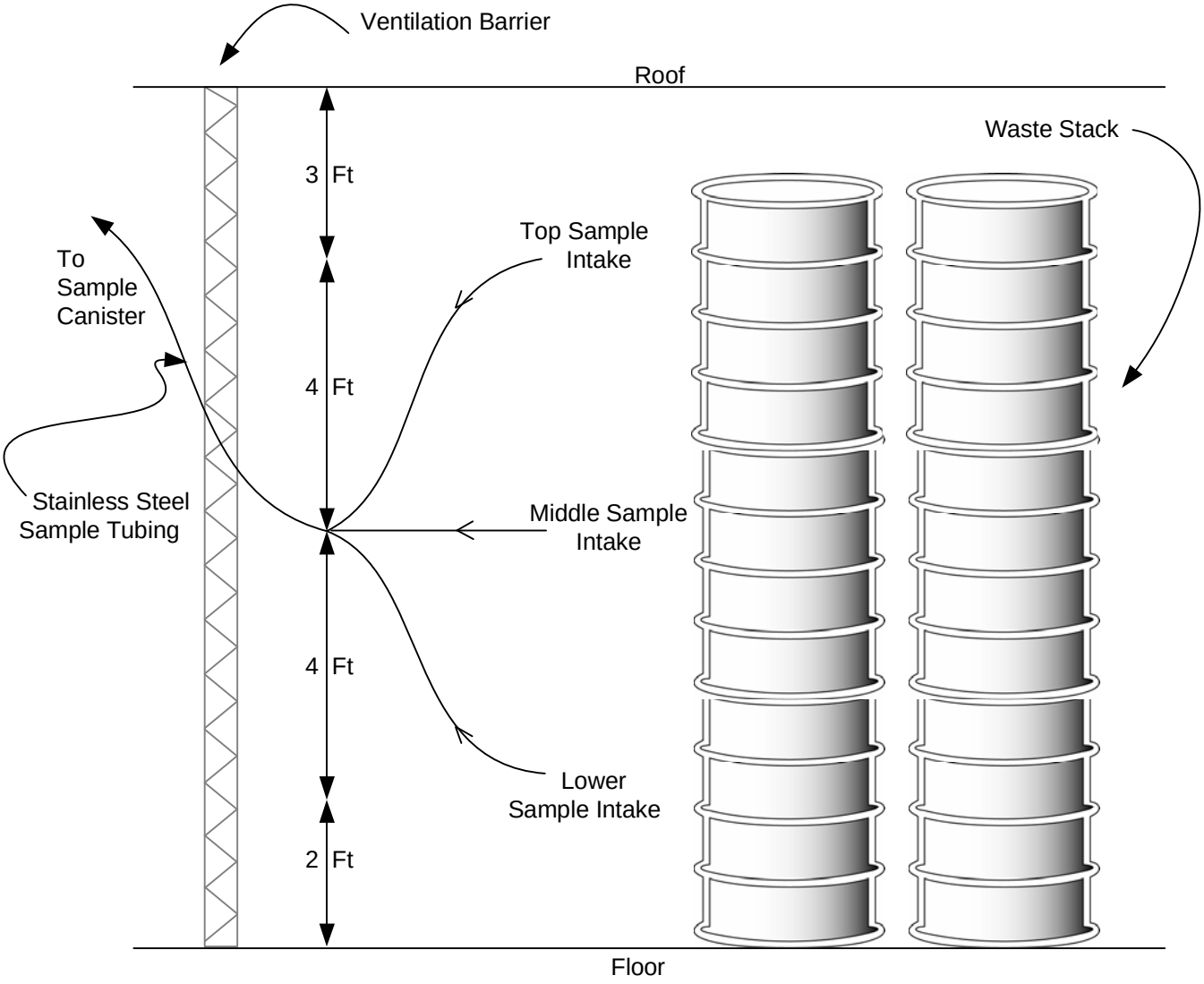
1. A SUBSTANTIAL BARRIER AND BULKHEAD INSTALLATION WILL BE INSTALLED IN THE INTAKE AND EXHAUST DRIFTS OF THE PANEL. THE EXACT CONFIGURATION OF THE INSTALLATION WILL BE DEPENDENT ON THE AS-FOUND CONDITIONS OF THE DRIFTS.
2. CONFIGURATION AND PLACEMENT OF THE SUBSTANTIAL BARRIER WILL BE DICTATED BY FIELD CONDITIONS.
3. TYPICAL BULKHEAD IS DEPICTED ON FIGURE 2.
4. AMOUNT AND HEIGHT OF THE SUBSTANTIAL BARRIER WILL BE DETERMINED BY THE COGNIZANT ENGINEER, BASED ON FIELD CONDITIONS.
5. SUBSTANTIAL BARRIER MATERIAL WILL CONSIST OF RUN-OF-MINE SALT OR OTHER SUITABLE NON-FLAMMABLE MATERIAL AS DESIGNATED BY THE COGNIZANT ENGINEER.
6. THE HEIGHT OF THE SUBSTANTIAL BARRIER NEAR THE WASTE WILL BE AT LEAST EQUAL TO THE HEIGHT OF THE BOTTOM OF THE TOP ROW OF WASTE.
7. SUBSTANTIAL BARRIER MATERIAL SHOULD BE AGAINST THE WASTE FACE.
8. ANCHOR CHAIN LINK AND BRATTICE BARRIER IN THE SUBSTANTIAL BARRIER AS DETERMINED BY THE COGNIZANT ENGINEER.
9. SLOPE TO SUIT. COMPACT AS DETERMINED BY THE COGNIZANT ENGINEER.
10. DIMENSIONS INDICATED FOR THE HEIGHT AND LENGTH OF THE SUBSTANTIAL BARRIERS ARE MINIMUMS. THE HEIGHT OF THE SUBSTANTIAL BARRIER IS MEASURED AT THE WASTE FACE. THE LENGTH OF THE SUBSTANTIAL BARRIER IS MEASURED FROM THE BOTTOM OF THE WASTE FACE TO THE TOP OF THE SUBSTANTIAL BARRIER MATERIAL.

Figure N1-1
Typical Substantial Barrier




NOTE: All dimensions are nominal

Figure N1-2
Typical Bulkhead




(not to scale, all measurements approximate)

Figure N1-3
Typical Hydrogen and Methane Monitoring System

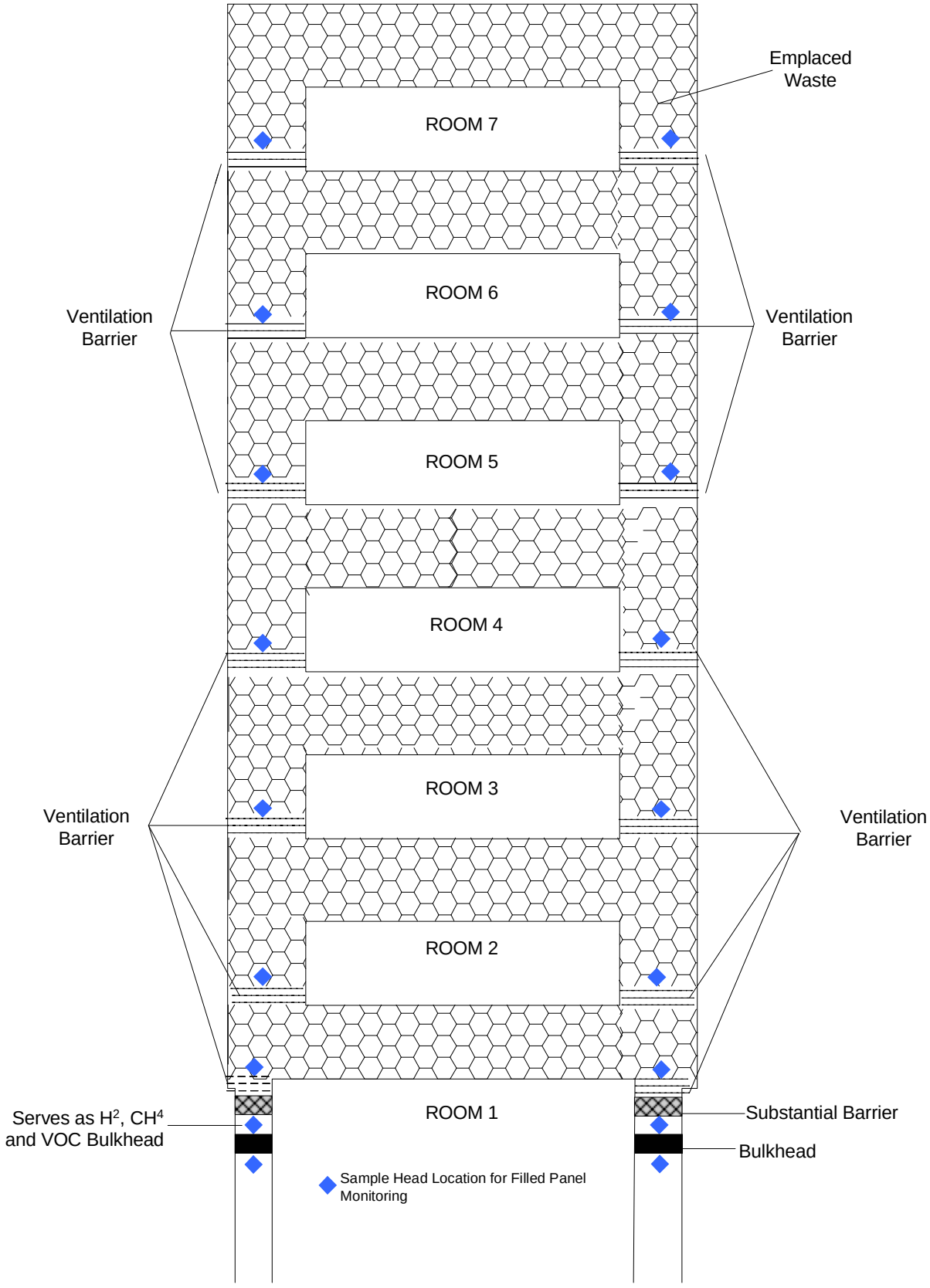
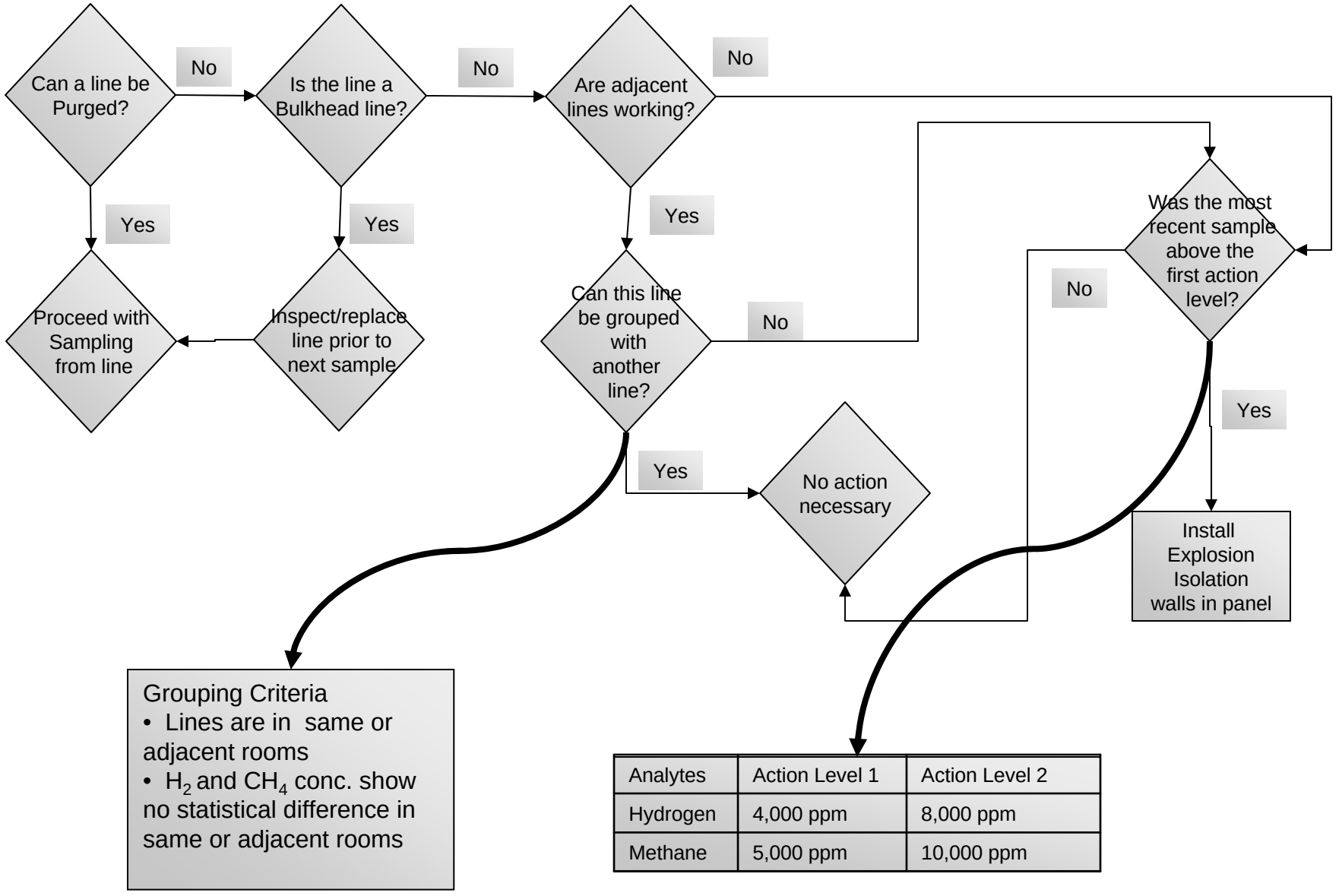



Figure N1- 4
Typical Hydrogen and Methane Sampling Locations




| Analytes | Action Level 1 | Action Level 2 |
|---|---|---|
| Hydrogen | 4,000 ppm | 8,000 ppm |
| Methane | 5,000 ppm | 10,000 ppm |

Figure N1-5
Logic Diagram for Evaluating the Inability to Purge a Sample Line