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J. P. Schmuck **Originator Name**	G. D. DiGregorio **QA Approval**	A. M. Tyson **Contractor Manager(s)**
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Document Subject:

Transmittal of Closeout Report for Ryan's Pit (IHSS 109) - AMT-079-97

KH-00003NS1A July 23, 1997

Discussion and/or Comments:

RMRS is pleased to provide copies of the Ryan's Pit Closeout Report for transmittal to DOE for their transmittal to EPA and CDPHE. The Ryan's Pit Closeout Report was prepared using the language in the Draft Implementation Guidance Document. The Ryan's Pit Closeout Report will also be used to finalize the conditional Determination of Equivalent Technology for disposal of the treated drum carcasses.

The enclosed are nine copies for distribution to Kaiser-Hill, the DOE, CDPHE, and the EPA. If you have questions please contact John Schmuck at extension 4092.

Attachment:
As Stated

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INFORMATION ONLY

Rocky Mountain Remediation Services, L.L.C.
...protecting the environment

CLOSEOUT REPORT FOR THE REMEDIATION OF INDIVIDUAL HAZARDOUS SUBSTANCE SITE 109, RYAN'S PIT

RF-ER-96-0034.UN
Revision 0

Environmental Restoration
Rocky Flats Environmental Technology Site

July 8, 1997

TABLE OF CONTENTS

1.0 INTRODUCTION 1

2.0 BACKGROUND 1

3.0 EXCAVATION OF CONTAMINATED SOIL/MATERIAL 5
3.1 Remaining Contaminant Levels 5
3.2 Characterization of Excavated Soil 9

4.0 TREATMENT OF CONTAMINATED SOILS 11

5.0 MISCELLANEOUS WASTE STREAMS 15

6.0 RETURNING SOIL TO RYAN'S PIT 17

7.0 REFERENCES 18

List of Figures

FIGURE 1. RYAN'S PIT SITE MAP 2
FIGURE 2 RYAN'S PIT EXCAVATION DIMENSIONS, COORDINATES AND SAMPLE LOCATIONS 6

List of Tables

TABLE 1 EXCAVATION BOUNDARY VOC CONFIRMATION SAMPLING RESULTS 7
TABLE 2 EXCAVATION BOUNDARY RADIOLOGICAL CONFIRMATION SAMPLING RESULTS 8
TABLE 3 TCLP METALS RESULTS FROM EXCAVATED RYAN'S PIT SOILS 9
TABLE 4 RESULTS OF THE RADIOISOTOPIC ANALYSES FROM EXCAVATED RYAN'S PIT SOILS 10
TABLE 5 SUMMARY OF POST-TREATMENT PROCESS VERIFICATION SAMPLES 12
TABLE 6 DETAILS OF SOIL TREATMENT AND ROLL-OFF STORAGE 14
TABLE 7 DISPOSITION OF MISCELLANEOUS RYAN'S PIT WASTE STREAMS 16

List of Appendices

Appendix 1 Analytical Results Supporting Ryan's Pit Project
Appendix 2 Ryan's Pit Debris Treatment Equivalency Information
Appendix 3 Radiological Data and Agreements Supporting Return of Ryan's Pit Soil to the Original Excavation

Acronyms

ALF	Action Levels & Standards Framework
CCR	Colorado Code of Regulations
CDPHE	Colorado Department of Public Health and Environment
CFR	Code of Federal Regulations
CLP	Contract Laboratory Program
CWTF	Consolidated Water Treatment Facility
EPA	Environmental Protection Agency
GAC	Granular Activated Carbon
GC	Gas Chromatograph
HEPA	High Efficiency Particulate Air
HPGe	High Purity Germanium
IDC	Item Description Code
IHSS	Individual Hazardous Substance Sites
NRWOL	Non-Routine Waste Origination Log
PAM	Proposed Action Memorandum
PCE	Tetrachloroethane
pCi/g	Pico Curies Per Gram
PPE	Personnel Protective Clothing
PPRG(s)	Programmatic Risk-Based Preliminary Remediation Goals
QA	Quality Assurance
QC	Quality Control
RCRA	Resource Conservation and Recovery Act
RFCA	Rocky Flats Cleanup Agreement
RFETS	Rocky Flats Environmental Technology Site
RMRS	Rocky Mountain Remediation Services
SAP	Sampling and Analysis Plan
TCE	Trichloroethene
TCLP	Toxicity Characteristic Leaching Procedure
TDU	Thermal Desorption Unit
1,1,1-TCA	1,1,1-Trichloroethane
VOC	Volatile Organic Compound
yd^3	Cubic yard

INFORMATION ONLY

1.0 INTRODUCTION

This closeout report summarizes the source removal action conducted at Ryan's Pit, also known as Individual hazardous Substance Site (IHSS) 109, by Rocky Mountain Remediation Services (RMRS). This action included the excavation and treatment of approximately 180 cubic yards of soil and debris contaminated with volatile organic compounds (VOCs). The project was initiated in July 1995 and completed in September 1996, with the return of the treated soil to the original site. It was the first project executed for cleanup under the IHSS risk prioritization effort approved by the Colorado Department of Public Health and Environment (CDPHE) and the U. S. Environmental Protection Agency (EPA) in September 1995.

This closeout report contains the information necessary to document closure of the project and attainment of the project objectives. This includes:

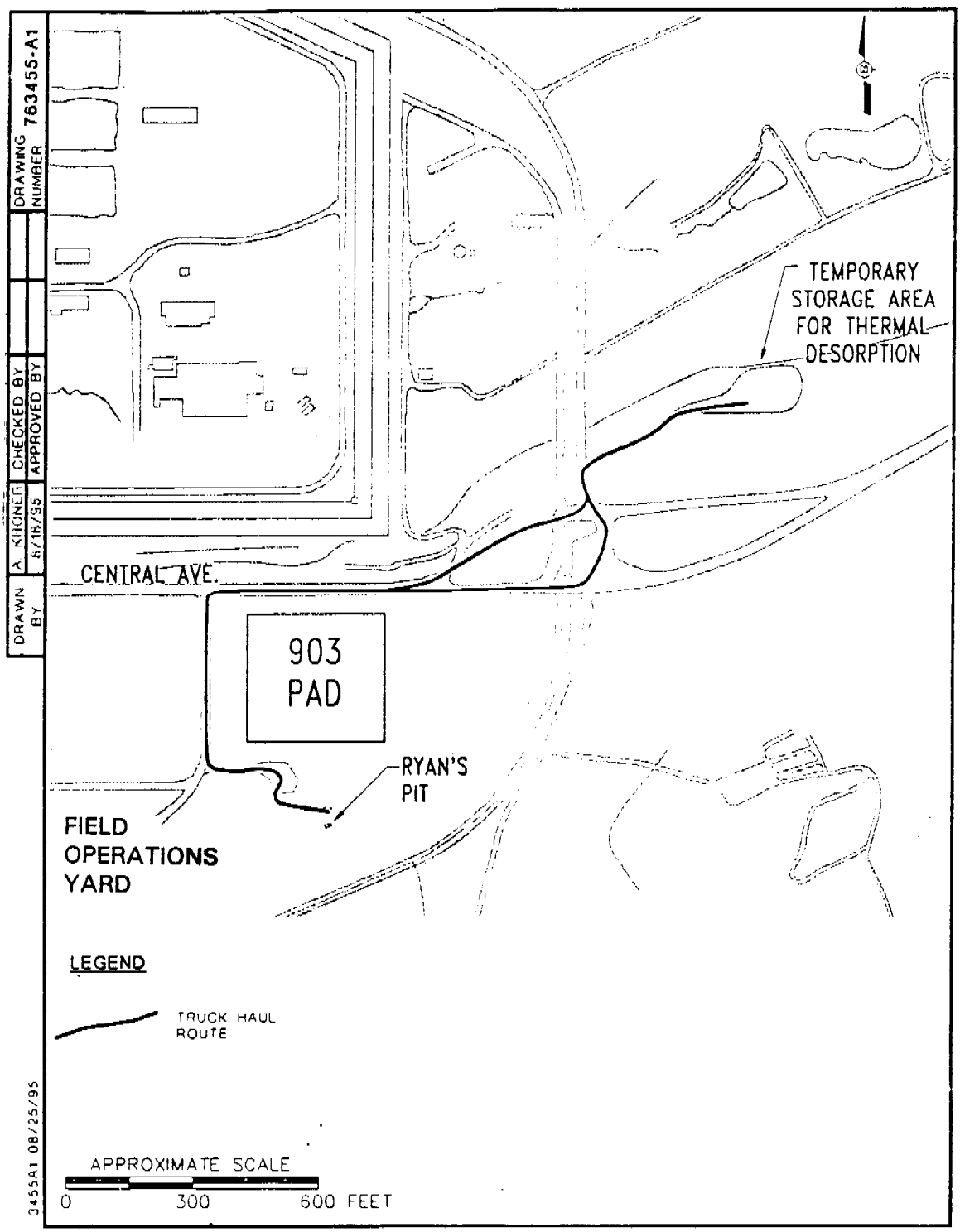
- a description of the activities performed in support of the source removal action;
- verification of the attainment of performance standards for excavation and treatment of soils;
- description of deviations from the decision documents controlling this action;
- a discussion of disposition of the miscellaneous waste streams generated during the project.

2.0 BACKGROUND

Ryan's Pit was used from approximately 1966 to 1970 for the disposal of VOCs and small quantities of debris (e.g., drum carcasses). The site is located south of the 903 Pad and was approximately 32 feet long and 18 feet wide (Figure 1). Results of environmental investigations conducted between 1992 and 1995 identified Ryan's Pit as a significant contributor to the degradation of groundwater in this area. The primary chemicals of concern at Ryan's Pit included 1,1,1-trichloroethane (1,1,1 TCA), tetrachloroethane (PCE), and trichloroethene (TCE). Information summarizing the previous environmental investigations is contained in three documents:

- *Phase II RCRA Facilities Investigation/Remedial Investigation Report, 903 Pad, Mound Area, and East Trenches, Operable Unit No. 2.* Rocky Flats Environmental Technology Site, Golden, Colorado, May 1995. (DOE, 1995).
- *Operable Unit No. 2, Subsurface Interim Measures/Interim Remedial Action Plan/Environmental Assessment Soil Vapor Survey.* Rocky Flats Plant. Golden, Colorado, June 1994. (EG&G, 1994).

FIGURE 1. RYAN'S PIT SITE MAP



- *Source Removal Action, Preliminary Investigation for Ryan's Pit (Trench T-2) Remediation*, (Internal draft), August 28, 1995. (RMRS, 1995a).

Using the results of these environmental investigations, Ryan's Pit was ranked fourth on the IHSS Ranking and Prioritization List due to high chemical concentrations in soil (e.g., VOCs), high mobility, and a high potential for further release. As a result of this evaluation, Ryan's Pit was selected for remediaton as an accelerated action source removal.

Three decision documents and two sampling and analysis plans (SAPs) were used to complete the source removal. These documents covered the excavation, treatment and return of soil to Ryan's Pit, and are described below:

- *Final Proposed Action Memorandum for the Remediation of Individual Hazardous Substance Site 109, Ryan's Pit*, RF/ER-95-0097.UN, Rev. 5, August 24, 1995. (RMRS, 1995b).

This Proposed Action Memorandum (PAM) was the initial authorizing document for the Ryan's Pit source removal. This "source removal PAM" provided the framework for the excavation, treatment and return of soils to the pit. This PAM referenced the Rocky Flats Environmental Technology Site (RFETS) Programmatic Preliminary Remedial Goals (PPRGs) as the excavation cleanup standards for the VOCs within the trench. The document stated that radiological wastes were not suspected of being disposed at Ryan's Pit, but if encountered above the PPRGs for subsurface soil, the radiologically contaminated soil would be appropriately dispositioned. During the final reviews of this PAM, the CDPHE determined that the onsite treatment of Ryan's Pit soils would require a modification to the Rocky Flats Part B Hazardous Waste Operating Permit. This permit modification is described later in this section.

- *Sampling and Analysis Plan for the Remediation of Ryan's Pit, Operable Unit 2*, Rev 5. August 28, 1995. (RMRS, 1995c).

This was the main SAP used to support the excavation and treatment of Ryan's Pit soils. This plan included field screening using a field gas chromatograph (GC) to guide excavation activities followed by the collection of ten soil samples for VOC (using EPA CLP methodology) and radiological analyses to definitively document any remaining contaminants at the boundaries of the trench excavation. After completion of the excavation, the SAP required the collection of one composite sample per roll-off container for toxic characteristic leaching procedure (TCLP) metals and radioisotopes. This data would be used to evaluate the soil with respect to the hazardous waste criteria for metals established in 6 CCR 1007-3, Section 261.24, and the PPRGs for radionuclides prior to return to the excavation. Finally, VOC soil analysis were required from every batch or "oven" (3-5 yd^3) of soil, both pre and post treatment. These samples would be used to evaluate removal efficiency from the thermal desorption unit, and to determine if the VOC performance standards were met. The SAP required that these

samples be analyzed using a field GC, and that one sample per ten would be analyzed for VOCs in a laboratory using SW846 Method 8240.

- *Proposed Action Memorandum and Draft Modification of the Corrective Action Section of the Operating Permit for Rocky Flats Environmental Technology Site*, November 11, 1995. (RMRS 1995d).

This document was prepared to meet CDPHE requirements to control the onsite storage and subsequent treatment of soils excavated from Ryan's Pit. This "permit modification" was developed to compliment the source removal PAM. The document established basic operating parameters for the processing of Ryan's Pit soils. This document also established performance standards for the treatment of VOC contaminated soils processed by the TDU. The performance standards were taken from an EPA soil screening guidance document (EPA, 1994).

- *Modification to the Proposed Action Memorandum for the Remediation of Individual Hazardous Substance Site 109, Ryan's Pit*, RF/ER-96-0022.UN, Rev. 4, April, 9, 1996. (RMRS, 1996a).

Sampling activities conducted in support of the excavation of Ryan's Pit indicated that Ryan's Pit contained radionuclide levels in excess of the PPRGs (10^{-6} risk) discussed in the original source removal PAM (RMRS, 1995b). As a result, return of treated soil to the trench was determined to be inappropriate without further radiological evaluation. Therefore, the data from Ryan's Pit soils was reevaluated and determined to be an 8.1×10^{-6} excess cancer risk from the sum of the radionuclides in Ryan's Pit soils. The PAM Modification described the risk evaluation and stated that since the risk was within EPA's acceptable range of lifetime cancer risk to an individual of 10^{-4} to 10^{-6}, return of the soil to the trench was acceptable. The PAM Modification was then placed in the public reading rooms for review and comment.

During public review, a comment was made stating the soils should not be returned to Ryan's Pit until the soil could be evaluated with respect to the Action Levels & Standards Framework (ALF) being developed by a working group in support of the Rocky Flats Cleanup Agreement (RFCA). In the subsequent Responsiveness Summary, it was agreed to delay returning the soils to Ryan's Pit until this evaluation could be performed. Subsequently, in an agreement signed by DOE, EPA and CDPHE, on May 30, 1996 (DOE, 1996), it was agreed that the working group's proposed Tier I subsurface soil action levels should be used as temporary "put back" levels for excavated soil from Ryan's Pit. This agreement is included in Appendix 3 of this report.

- *Field Sampling Plan to Support the Final Disposition of Treated Soil from the Ryan's Pit Source Removal Project*, RF/ER-96-0043.UN, Rev. 0, July 31, 1996. (RMRS, 1996b).

This plan was developed to determine if the Ryan's Pit soil met the radiological "put back" levels required by the May 30, 1996 Agency Agreement (DOE, 1996), and being developed for the RFCA. The plan required the collection of three samples per roll-off container. Each sample was a composite of four subsamples collected systematically across the roll-off container. After the results of this sampling investigation were evaluated, the soil met the "put back" criteria and was returned to the original Ryan's Pit excavation (See Section 6.0).

The following two sections of this closeout report detail the excavation and treatment activities, including the evaluation of the samples used to determine attainment of the various project objectives.

3.0 EXCAVATION OF CONTAMINATED SOIL/MATERIAL

The excavation of Ryan's Pit was conducted between September 5th and 12th, 1995, in accordance with the PAM (RMRS, 1995b). A track mounted backhoe was used to excavate approximately 180 yd^3 of contaminated soil and debris, which was placed in nine roll-off containers and covered. An additional roll-off container was filled with topsoil scraped off the surface prior to start of excavation activities. The dimensions of the excavation were 32 feet long, 18 feet wide, with depth varying from 5.5 feet to 8 feet. Figure 2 depicts the trench excavation dimensions, the approximate location of excavation perimeter samples, and lists the surveyed corner coordinates of the excavation.

3.1 Remaining Contaminant Levels

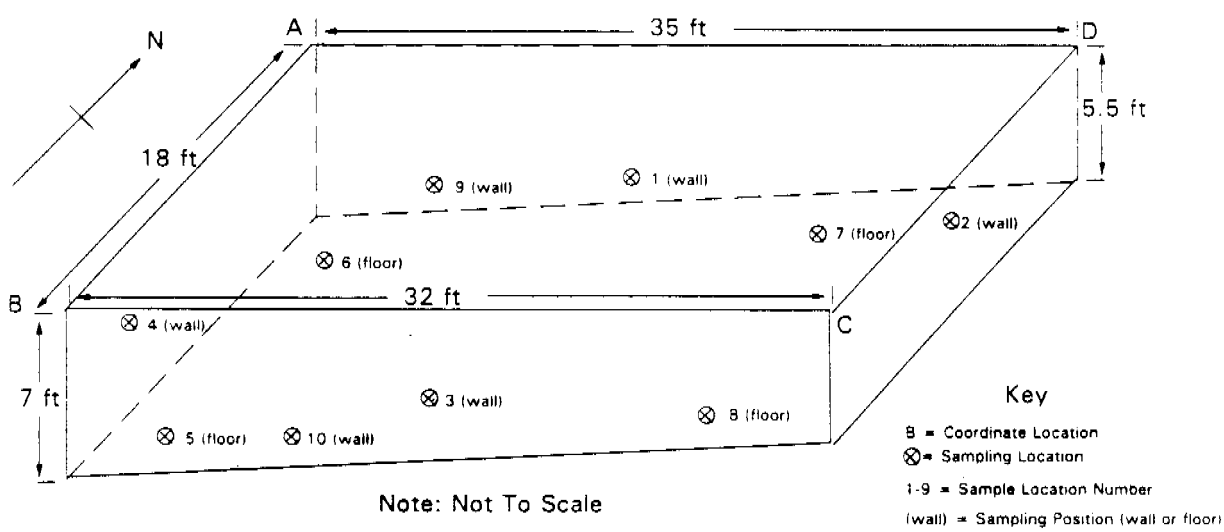
In accordance with the SAP (RMRS, 1995c), once visible contamination was removed from the excavation and the area excavated to native material on the floor and walls, VOC screening samples were collected and analyzed using a field GC. These analyses were used as a field screening tool to determine if cleanup goals had been achieved, and if confirmation sampling described below should proceed. The mobile GC analyses gave a preliminary indication that the PPRG-based cleanup levels had been achieved.

Subsequently, ten cleanup confirmation samples were collected for analyses of VOCs and radionuclides by the onsite 881 laboratory, as outlined in the SAP. The VOCs were analyzed in accordance with the EPA's Contract Laboratory Program *Statement of Work for Organics Analysis, OLM01.8Rev.* The results of VOC and radionuclide confirmation samples collected from the pit floor and walls are presented in Tables 1 and 2 respectively. Figure 2 identifies the sample locations. The SAP defines the PPRG subsurface soil construction worker scenario as the clean-up criteria for the project. As shown in Tables 1 and 2, all confirmation samples met the clean-up criteria defined for this source removal.

FIGURE 2 RYAN'S PIT EXCAVATION DIMENSIONS, COORDINATES AND SAMPLE LOCATIONS

State Plane Coordinates

Location	Northing	Easting
A	748630.9238	2085788.7205
B	748611.7765	2085792.4620
C	748619.4533	2085824.7610
D	748639.9318	2085816.1978



Note: Not To Scale

3.2 Characterization of Excavated Soil

Excavated materials from Ryan's Pit were placed in nine roll-off containers containing contaminated trench soils and one roll-off container containing topsoil. The roll-offs containing contaminated trench soils were subsequently sampled for metals and radionuclides. The SAP (RMRS, 1995c) required the samples collected for metals analysis to be analyzed according to the toxic characteristic leaching procedure (TCLP) method, so that soil could be evaluated with respect to the hazardous waste standards for metals found in 6 CCR 1007-3, Section 261.24. Samples collected for TCLP metals were first analyzed for total metals. This data was not required by the project, but can be found in the project files. The minimum and maximum results obtained from the TCLP metals analyses are given in Table 3. As the data indicates, no samples exceeded the hazardous waste thresholds cited above. The leachate recovered from the TCLP test was analyzed for additional metals, not required by 6 CCR 1007-3, Section 261.24. This data can be found on the TCLP "Form 1s" in the project files. As a result of a mis communication, the TCLP analyses were not performed until 3 months after original sample collection. This resulted in exceeding the holding time (time until extraction) for the TCLP mercury analyses by approximately 2 months. However, mercury was not detected in the samples at a detection level of two orders of magnitude below the regulatory threshold.

TABLE 3 TCLP METALS RESULTS FROM EXCAVATED RYAN'S PIT SOILS

Analyte	Minimum Concentration[1] (mg/L)	Maximum Concentration[1] (mg/L)	Regulatory Threshold (mg/L)
Arsenic	0.080 (U)	0.080 (U)	5.0
Barium	0.536	1.04	100.0
Cadmium	0.003 (U)	0.0433	1.0
Chromium	0.004 (U)	0.0152	5.0
Lead	0.035 (U)	0.035 (U)	5.0
Mercury	0.002 (U)	0.002 (U)	0.2
Selenium	0.038 (U)	0.038 (U)	1.0
Silver	0.003 (U)	0.003 (U)	5.0

[1]Data from sample numbers TR00012KH - TR00020KH

TABLE 4 RESULTS OF THE RADIOISOTOPIC ANALYSES FROM EXCAVATED RYAN'S PIT SOILS

Roll-off #	Sample #	Uranium-238 (pCi/g)	Uranium-235 (pCi/g)	Uranium-233/234 (pCi/g)	Plutonium-239/240 (pCi/g)	Americium-241 (pCi/g)
1	A643405	14.3 +/- 0.5	0.45 +/-0.05	13.8 +/- 0.5	3.2 +/- 0.02	399 +/- 22
2	A643702	16.2 +/- 0.7	0.52 +/-0.08	12.9 +/- 0.6	40 +/- 2	44 +/- 2
3	A643802	41.1 +/- 1.7	1.3 +/- 0.2	31.1 +/- 1.4	56 +/- 3	25 +/- 2
4	A643902	48.6 +/- 1.8	1.5 +/- 0.2	32.1 +/- 1.3	258 +/- 13	116 +/- 7
5	A644002	28.1 +/- 1.3	0.99 +/- 0.18	28.5 +/- 1.3	35 +/- 2	17 +/- 1
6	A644102	205 +/- 8	7.9 +/- 0.8	193 +/- 8	111+/- 6	45 +/- 3
7	A644202	588 +/- 23	26.9 +/- 2.6	553 +/- 21	1380 +/- 64	260 +/- 16
8	A644302	641 +/- 24	24.1 +/- 2.5	577 +/- 22	305 +/- 16	102 +/- 7
9	A644402	101 +/- 4	3 +/-0.4	92 +/- 4	38 +/- 2	11 +/- 1
PPRGs[1]		60.1	12.5	1550[3]	219	164
ALF[2]		586	135	1627[3]	1429	215

[1] The PPRGs are based on construction worker, subsurface soil scenario, Rev 3., August 1995.
[2] The ALF is based on the RFCA Tier 1 Subsurface Soil Action Levels for Open Space Scenario, August 30, 1996.
[3] The activity for U-234 is used because it is the more restrictive activity of the two isotopes.

TABLE 1 EXCAVATION BOUNDARY VOC CONFIRMATION SAMPLING RESULTS

Sample	Location	Sample #	Analyte	Results (mg/kg)	PPRGs[1] (mg/kg)
1	north wall	A639901	PCE 1,1,2-Trichloroethane	0.019 0.002 (J)	2210 2180
2	east wall	A640001	PCE	0.002 (J)	2210
3	south wall	A640101	4- Methyl 2-Pentanone PCE	1.7 1.2	142000 2210
4	west wall	A640201	None detected	NA	
5	southwest floor	A640301	PCE	0.014	2210
6	northwest floor	A640401	1,1-Dichloroethane TCE	0.005 (J) 0.002 (J)	53000 5120
7	northeast floor	A640501	1,1-Dichloroethane Chloroform	0.018 0.060	53000 568
8	southeast floor	A640601	PCE	0.003 (J)	2210
9	north wall (west side)	A640701	PCE	0.013	2210
10	south wall (west side)	A640801	TCE 4- Methyl 2-Pentanone PCE Toluene Ethylbenzene Xylene (total)	19 19 250 100 28 140	5120 142000 2210 116000 148000 >100%

[1] The PPRGs are based on construction worker, subsurface soil scenario, Rev 3., August 1995.

TABLE 2 EXCAVATION BOUNDARY RADIOLOGICAL CONFIRMATION SAMPLING RESULTS

Sample	Location	Sample #	Uranium-238 (pCi/g)	Uranium-235 (pCi/g)	Uranium-233/234 (pCi/g)	Plutonium-239/240 (pCi/g)	Americium-241 (pCi/g)
1	north wall	A639903	1.076 +/- .069	.045 +/- .012	1.073 +/-.069	.046 +/- .011	.035 +/- .019
2	east wall	A640003	1.422 +/- .081	.037 +/- .012	1.207 +/- .073	.315 +/- .030	.102 +/- .038
3	south wall	A640103	6.327 +/- .306	.166 +/- .030	3.304 +/- .183	.146 +/- .021	.155 +/- .033
4	west wall	A640203	1.063 +/-.804	.045 +/- .015	.942 +/- .078	.029 +/- .008	.030 +/- .012
5	southwest floor	A640303	11.149+/-.432	.228 +/- .030	4.549 +/- .202	5.857 +/- .350	1.159 +/- .429
6	northwest floor	A640403	1.155 +/- .074	.044 +/- .012	1.125 +/- .073	.015 +/- .008	-.006 +/- .011
7	northeast floor	A640503	1.764 +/- .093	.052 +/- .013	1.181+/- .071	.056 +/- .012	.008 +/- .017
8	southeast floor	A640603	2.144 +/- .122	.057 +/- .015	1.612 +/- .100	.317 +/- .035	.175 +/- .035
9	north wall (west side)	A640703	1.192+/-.077	.028+/-.010	1.074+/-.072	.860+/-.069	.050+/-.015
10	south wall (west side)	A640803	2.370+/-.117	.068+/-.015	1.266+/-.076	.255+/-.044	.464+/-.078
PPRGs[1]			60.1	12.5	1550[2]	219	164

[1] The PPRGs are based on construction worker, subsurface soil scenario, Rev 3., August 1995.
[2] The activity for U-234 is used because it is the more conservative activity of the two isotopes.

Table 4 presents the results of the radiochemical analyses performed on the first set of samples collected from the roll-off containers. As the table indicates, samples from six of the nine roll-off containers indicated radionuclide levels exceeding the PPRG criteria established by the PAM. As a result, return of the soil following processing for VOCs was delayed pending further radionuclide evaluation (See Section 6.0).

4.0 TREATMENT OF CONTAMINATED SOILS

The excavated Ryan's Pit soil was treated using a low temperature thermal desorption unit (TDU). The treatment was performed between February 4 and February 19, 1996, and was conducted in accordance with the project's PAM/Permit Modification (RMRS, 1995d). The TDU was set up using a two "oven" system to treat soil. Each oven had a processing capacity of three to five yd^3, which was also considered a "batch" for this project. The TDU used heat to raise the temperature of the contaminated media resulting in volatilization of the organic contaminants. Under vacuum, the heated airstream was pulled through a condenser unit, causing condensation of the VOCs along with water vapor. The condensate was subsequently treated at the Consolidated Water Treatment Facility (CWTF) located in Building 891 to remove the VOCs prior to discharge.

As required by the PAM/Permit Modification (RMRS, 1995d), prior to treatment soil was broken down into eight inch or smaller clumps, to ensure that all internal volumes were treated.

The soil and drums carcasses excavated from Ryan's Pit were initially stored in nine roll-off containers. To facilitate loading of the TDU, soil from the roll-off containers was first unloaded in a containment area and then transferred to ovens using a small front-end loader. Water sprays were used for dust suppression during the movement of soils. Wind speed was monitored and operations ceased when speeds exceeded 35 miles per hour. Once treated, the soil from the original roll-offs (designated 1 through 9) was placed into decontaminated roll-off containers designated with letters A-J.

Pre-treatment and post treatment samples were collected and analyzed for VOCs at the 881 laboratory in accordance with the EPA's Contract Laboratory Program Statement of Work for Organics Analysis, OLM01.8 Rev. Each sample was composite of five grab samples collected from a single batch (oven). Thirty six batches (oven loads) of soil were originally treated in the TDU. Post treatment sample results from four of these batches exceeded the performance standards specified in the PAM/Permit Modification, (RMRS, 1995d), and also given in Table 5. The highest concentration detected in these samples was PCE at 41 (E) mg/kg, which exceeded the performance standard of 11 mg/kg. The "E" is a data qualifier indicating that the specified compound was detected above the linear range of calibration for the instrument, and is therefore an estimated quantity.

TABLE 5 SUMMARY OF POST-TREATMENT PROCESS VERIFICATION SAMPLES

Compound	Performance Standard[1] (mg/kg)	Number of Samples	Number of detections	Results of Detections[2] (mg/kg)		
				Minimum	Maximum	Average
1,1-dichloroethane	980	58	1	0.001 (J)	0.005 (J)	0.005
1,1,1-trichloroethane	980	58	15	0.001 (J)	0.910 (E)	0.094
trichloroethene (TCE)	3	58	17	0.001 (J)	0.54 (J)	0.048
tetrachloroethene (PCE)	11	58	42	0.001 (J)	9.9	0.933
toluene	520	58	53	0.001 (J)	4.0 (B)	0.162
ethylbenzene	260	58	18	0.001 (J)	2.4	0.263
xylene (total)	320	58	32	0.001 (J)	16 (B)	1.289

[1] From the PAM/Permit Modification (RMRS, 1995d) and Soil Screening Guidance, EPA OSWER Directive 9355.4-14FS, 12/94 (Draft)
[2] Results of detections summarize batches met performance standards. (Batches 21,22,31, and 35 were retreated, and are therefore not included in this summary table.

J = Compound found but is below practical quantitation limit. Quantitation is estimated
E = Compound is detected, but is off scale and therefore estimated.
B = Compound detected in blank

The samples containing VOC concentrations exceeding the treatment performances standards represented batches 21, 22, 31, and 35. Following initial processing, these batches were placed into decontaminated roll-off containers with other batches of treated soil, prior to receipt of post treatment analytical results. As a result, soils meeting and exceeding the treatment performance standards were commingled. The roll-offs containing this soil were designated as roll-offs "I", "J", and "G". Since there was no way of segregating the commingled soil, all the soil within these three roll-off containers required re-treatment. The results from this re-treatment are contained in the samples representing batches 37 through 48, located in Appendix A1. All samples collected from these retreated batches met the performance standards stated in the PAM/Permit Modification (RMRS, 1995d). Results of final post-treatment samples are summarized in Table 5. More detailed information including sample numbers, corresponding batches, identification of the samples as pre- or post treatment, and the analytical results are given in Appendix 1.

Following final processing the soils were stored in eleven roll-off containers (Roll-offs A, B, C, D, E, F,H,K,L,M,N) in the field operations yard and managed as low level radiologically contaminated environmental media, until the radiological issues could be addressed and disposition determined. Table 6 summarizes the details of soil treatment and storage.

TABLE 6 DETAILS OF SOIL TREATMENT AND ROLL-OFF STORAGE

Original Roll-off	Batch	Treated Soil Roll-off	Retreatment Batch Number	Final roll-off if retreated
1	1	A		
1	2	A		
1	3	A		
7	4	B		
7	5	B		
7	6	B		
6	7	C		
6	8	C		
6	9	C		
6,8	10	C		
8	11	D		
8	12	D		
4	13	D		
4	14	D		
4,8	15	E		
4,8	16	E		
4,6,7,8	17	E		
4,6,7,8	18	E		
4,6,7,8	19	E		
4,6,7,8	20	E		
5	21	G	44,45,46,47,48	M,N[1]
5	22	G	44,45,46,47,48	M,N[1]
5	23	G	44,45,46,47,48	M,N[1]
5	24	G	44,45,46,47,48	M,N[1]
2	25	H		
5	26	E		
2	27	H		
2	28	H		
2,3	29	I	37,38,39,40,41,42,4	K,L
2,3	30	H		
2,3	31	I	37,38,39,40,41,42,4	K,L
2,3,9	32	I	37,38,39,40,41,42,4	K,L
2,3,9	33	J	39,40,41,42,43	K,L
2,3,9	34	I	37,38,39,40,41,42,4	K,L
2,3,9	35	J	39,40,41,42,43	K,L
2,3,9	36	J	39,40,41,42,43	K,L

[1]N Roll-off also contains pea gravel from in front of ovens

5.0 MISCELLANEOUS WASTE STREAMS

During the processing of soils, various secondary waste streams were generated and are described below. These waste streams were managed in a manner consistent with Rocky Flats policies and procedures and the requirements established in the PAM/Permit Modification (RMRS, 1995d).

Miscellaneous plastic items were uncovered during the excavation of Ryan's Pit. In general, the plastic was separated from soil and is being managed as low level mixed waste. Approximately twelve corroded drum carcasses were uncovered and subsequently treated in the TDU with Ryan's Pit soils. The drum carcasses were place in the ovens, beneath a layer of soil, and treated at the same temperature and for the same duration as the soil. These drums were subsequently separated from the soil and packaged in a full waste crate for storage and ultimate disposal. Because the drums were treated by thermal desorption, they were removed from regulation under the hazardous waste standards using a "determination of equivalent treatment" authorized by 40 CFR 268.42(b). The documentation supporting this determination is found in Appendix 2. As the requirements given in Appendix 2 state, some additional sampling of the drum carcasses will be required prior to ultimate disposal as low level radioactive waste.

The granulated activated carbon (GAC) generated from polishing the TDU's offgas prior to discharge was not spent at the completion of the Ryan's Pit Job. As a waste minimization opportunity, the GAC was saved for reuse on the T-3/T-4 source removal project, which started approximately 4 months after Ryan's Pit soil was treated. As a result, the portion of this wastestream used for both projects carries the RCRA hazardous waste codes associated with both projects. In addition, the high efficiency particulate air (HEPA) filters used for the job were not spent at project completion. The filters are still in place within the portable HEPA filter housing trailer located in the buffer zone, for subsequent future use. Approximately 5,000 gallons of condensate water was generated from this project and was transported to the CWTF, located in Building 891 for treatment.

During return of the treated soil to Ryan's Pit, plastic liners used to line the roll-offs were removed as practicable. These liners were packaged in two "half crates" and contained a small amount of incidental commingled soil. Table 7 summarized the disposition of the Ryan's Pit secondary waste streams.

TABLE 7 DISPOSITION OF MISCELLANEOUS RYAN'S PIT WASTE STREAMS

Type of Material	Waste Type/ Characterization	Quantity and Container Number	Disposition
Misc. Plastic Debris	Low Level Mixed, IDC 325, NRWOL T0083928-6	27- thirty gallon drums: D85274, D85293, D85610, D85756, D86036, D86056, D86100-D86105, D86107-D86110, D86297, D86794-D86802, D86834	RCRA permitted storage area 18.04
plastic roll-off container liners/with incidental commingled treated soil	Low Level Rad, IDC 326, NRWOL T0083928-9	2 half crates: H05264 H05276	Building 664
Corroded Drums	Low Level Rad, IDC 480, NRWOL T0083928-7	1 full waste crate: P02126	Building 664
Granular Activated Carbon (GAC)	F001/F002 RCRA Regulated Waste, IDC 1812, NRWOL T0083928-4	2500 pounds Full waste crates: P02176, P02243, P02245.	Package and proposed to be incinerated off-site, along with T-3/T-4 GAC.
HEPA Filter Media	F001/F002 RCRA Regulated Waste when spent, (IDC 490), NRWOL T0083928-3	3 filters	Not currently spent. Contained in portable HEPA filter housing trailer. When spent will be considered a low level mixed waste.
Condensate Water	F001/F002 RCRA Regulated Waste, IDC 1952, NRWOL T0083928-2	approx. 5000 gallons	Treated at 891 Facility
Spent PPE	Non-hazardous, Non-radioactive, IDC 1326, NRWOL T0083928-5	17 bags of PPE	RFETS Sanitary Landfill

6.0 RETURNING SOIL TO RYAN'S PIT

The Ryan's Pit soil (after excavation, placement in roll-offs, removal from roll-offs for treatment, and subsequent return to roll-offs after treatment) had been greatly mixed. The preliminary phase of radiological sampling took place prior to much of the mixing. In addition, a relatively small sample set was collected during the preliminary sampling. After the treatment, soil from various roll-offs was commingled, thus, eliminating the possibility of correlating previous sample results to individual roll-offs. Therefore, a second phase of sampling was planned. As part of the second phase, a greater sampling frequency was planned; collecting three samples per roll-off instead of one composite sample. This approach is detailed in the SAP described in Section 2.0 (RMRS, 1996b), and summarized below.

The strategy of the plan was to collect three composite samples from each of the roll-offs containing treated Ryan's Pit soil. Per the plan, the samples were collected by dividing the roll-off containers into three equal area rectangles along the lengthwise axes of the roll-off. Four subsamples were then collected from the surface soil in the roll-off, at the corners of each of the three individual rectangular cells. The samples were then thoroughly mixed (homogenized), and a single sample collected from the composited soil to represent that individual cell. Three samples were collected from each of eleven roll-offs, resulting in thirty-three total samples. This sampling activity was performed on August 8, 1996.

The thirty three samples were analyzed using a high purity germanium (HPGe) detector in accordance with Radiological Engineering Procedure 14.01, *Operation of the Nomad Portable Gamma Spectroscopy System*. The analytical results were reported in a data table provided in the Interoffice Memorandum *Report of Results from Gamma Ray Spectroscopy of Ryan's Pit Soil, RST-014-96* (K-H, 1996) which is given in Appendix 3.

As shown in the data table, these results were compared with the RFCA Tier I and Tier II Subsurface Soil Action Levels for radionuclides. The sum of the ratios of the radionuclide results were evaluated with respect to the Tier I values and was calculated at 0.11. The sum of the ratios of the radionuclides was also evaluated with respect to the Tier II values and was calculated at 0.60. Therefore, the Ryan's Pit soil met the requirements stipulated by the EPA, CDPHE, and DOE for return to the excavation.

On September 16 and September 17, 1996, the treated soil was returned to Ryan's Pit and was covered with the original, untreated topsoil removed at the beginning of the project. On September 30, 1996 the site was revegetated with native grass seed, and covered with a stabilization material, ConCover®, to hold the seed in place.

7.0 REFERENCES

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EG&G, 1994 *Operable Unit No. 2, Subsurface Interim Measures/Interim Remedial Action Plan/Environmental Assessment Soil Vapor Survey*. Rocky Flats Plant. Golden, Colorado, June.

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International Technology, 1996, *Field Activity Daily Log, Project No. 764520.* January 3, 1996-March 11, 1996.

K-H, 1996, *Report of Results from Gamma Ray Spectroscopy of Ryan's Pit Soil*, Interoffice Memorandum between R. S. Tyson and M.C. Broussard, RST-014-96, August 20.

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RMRS, 1995a, Source Removal Action, Preliminary Investigation for Ryan's Pit (Trench T-2) Remediation, (Internal draft), August 28.

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RMRS, 1995c, *Sampling and Analysis Plan for the Remediation of Ryan's Pit, Operable Unit 2*, Rev 5. August 28.

RMRS. 1995d, *Proposed Action Memorandum and Draft Modification of the Corrective Action Section of the Operating Permit for Rocky Flats Environmental Technology Site*, November 11.

RMRS, 1996a, *Modification to the Proposed Action Memorandum for the Remediation of Individual Hazardous Substance Site 109, Ryan's Pit*, RF/ER-96-0022.UN, Rev. 4, April 9.

RMRS, 1996b, *Field Sampling Plan to Support the Final Disposition of Treated Soil from the Ryan's Pit Source Removal Project*, RF/ER-96-0043.UN, Rev. 0, July 31.

APPENDIX 1

Analytical Results Supporting Ryan's Pit Project

A1 Analytical Results for Ryan's Pit Soil Treatment Process

Volatile Organic Compounds

A2 Analytical Results for Ryan's Pit Excavation

Volatile Organic Compounds
Total Metals
TCLP Metals
Radionuclides

Data validation and PARCC parameter evaluation will be reported as a separate data summary report when completed.

Appendix A1
Ryan's Pit Soil Treatment - Samples
Volatile Organic Compounds

Sample No.	Batch	P/P	QC	Oven	Source Rolloff	Dest Rolloff
PV01002IT	2	Pre	Real	North	1	
PV01003IT	1	Pre	Real	South	1	
PV01004IT	2	Post	Real	North	1	A
PV01005IT	1	Post	Real	South	1	A
PV01006IT	4	Pre	Real	North	7	
PV01007IT	3	Pre	Real	South	1	
PV01008IT	4	Post	Real	North	7	B
PV01009IT	3	Post	Real	South	1	B
PV01010IT	5	Pre	Real	South	7	
PV01011IT	5	Pre	Dup	South	7	
PV01012IT	6	Pre	Real	North	7	
PV01013IT	6	Pre	Dup	North	7	
PV01014IT	5	Post	Real	South	7	B
PV01015IT	5	Post	Dup	South	7	B
PV01016IT	6	Post	Real	North	7	B
PV01017IT	6	Post	Dup	North	7	B
PV01018IT	7	Pre	Real	South	6	
PV01019IT	8	Pre	Real	North	6	
PV01020IT	7	Post	Real	South	6	C
PV01021IT	8	Post	Real	North	6	C
PV01022IT	9	Pre	Real	South	6	
PV01023IT	10	Pre	Real	North	6,8	
PV01024IT	9	Post	Real	South	6	C
PV01025IT	10	Post	Real	North	6,8	C
PV01026IT	11	Pre	Real	South	8	
PV01027IT	12	Pre	Real	North	8	
PV01028IT	11	Post	Real	South	8	D
PV01029IT	11	Post	Dup	South	8	D
PV01030IT	12	Post	Real	North	8	D
PV01031IT	12	Post	Dup	North	8	D
PV01032IT	13	Pre	Real	South	4	
PV01033IT	13	Pre	Dup	South	4	
PV01034IT	14	Pre	Real	North	4	
PV01035IT	14	Pre	Dup	North	4	
PV01036IT	13	Post	Real	South	4	D
PV01037IT	14	Post	Real	North	4	D
PV01038IT	15	Pre	Real	South	4,8	
PV01039IT	16	Pre	Real	North	4,8	
PV01040IT	15	Post	Real	South	4,8	E
PV01041IT	16	Post	Real	North	4,8	E
PV01042IT	17	Pre	Real	South	4,6,7,8	
PV01043IT	18	Pre	Real	North	4,6,7,8	
PV01044IT	17	Post	Real	South	4,6,7,8	F
PV01045IT	18	Post	Real	North	4,6,7,8	E
PV01046IT	19	Pre	Real	South	4,6,7,8	
PV01047IT	19	Pre	Dup	South	4,6,7,8	
PV01048IT	20	Pre	Real	North	4,6,7,8	
PV01049IT	20	Pre	Dup	North	4,6,7,8	
PV01050IT	19	Post	Real	South	4,6,7,8	F
PV01051IT	19	Post	Dup	South	4,6,7,8	F
PV01052IT	20	Post	Real	North	4,6,7,8	F
PV01053IT	20	Post	Dup	North	4,6,7,8	F
PV01054IT	21	Pre	Real	South	5	
PV01055IT	22	Pre	Real	North	5	
PV01056IT	21	Re-treat	Real	South	5	G
PV01057IT	22	Re-treat	Real	North	5	G
PV01058IT	23	Pre	Real	South	5	
PV01059IT	24	Pre	Real	North	5	
PV01060IT	23	Post	Real	South	5	G
PV01061IT	24	Post	Real	North	5	G
PV01062IT	25	Pre	Real	South	2	
PV01063IT	26	Pre	Real	North	5	
PV01064IT	25	Post	Real	South	2	H
PV01065IT	25	Post	Dup	South	2	H

Appendix A1
Ryan's Pit•Soil Treatment - Samples
Volatile Organic Compounds

Sample No.	Batch	P/P	QC	Oven	Source Rolloff	Dest Rolloff
PV01066IT	26	Post	Real	North	5	F
PV01067IT	26	Post	Dup	North	5	F
PV01068IT	27	Pre	Real	South	2	
PV01069IT	27	Pre	Dup	South	2	
PV01070IT	28	Pre	Real	North	2	
PV01071IT	28	Pre	Dup	North	2	
PV01072IT	27	Post	Real	South	2	H
PV01073IT	28	Post	Real	North	2	H
PV01074IT	29	Pre	Real	South	2,3	
PV01075IT	30	Pre	Real	North	2,3	
PV01076IT	29	Post	Real	South	2,3	I
PV01077IT	30	Post	Real	North	2,3	H
PV01078IT	31	Pre	Real	South	2,3	
PV01079IT	32	Pre	Real	North	2,3,9	
PV01080IT	31	Re-treat	Real	South	2,3	I
PV01081IT	32	Post	Real	North	2,3,9	I
PV01082IT	33	Pre	Real	South	2,3,9	
PV01083IT	33	Pre	Dup	South	2,3,9	
PV01084IT	34	Pre	Real	North	2,3,9	
PV01085IT	34	Pre	Dup	North	2,3,9	
PV01086IT	33	Post	Real	South	2,3,9	J
PV01087IT	33	Post	Dup	South	2,3,9	J
PV01088IT	34	Post	Real	North	2,3,9	I
PV01089IT	34	Post	Dup	North	2,3,9	I
PV01090IT	35	Pre	Real	South	2,3,9	
PV01091IT	36	Pre	Real	North	2,3,9	
PV01092IT	35	Re-treat	Real	South	2,3,9	J
PV01093IT	36	Post	Real	North	2,3,9	J
PV01094IT	37	Pre	Real	South	I	
PV01095IT	38	Pre	Real	North	I	
PV01096IT	37	Post	Real	South	I	K
PV01097IT	38	Post	Real	North	I	K
PV01098IT	39	Pre	Real	South	I,J	
PV01099IT	40	Pre	Real	North	I,J	
PV01100IT	39	Post	Real	South	I,J	K
PV01101IT	39	Post	Dup	South	I,J	K
PV01102IT	40	Post	Real	North		K
PV01103IT	40	Post	Dup	North		K
PV01104IT	41	Pre	Real	South	I,J	
PV01105IT	41	Pre	Dup	South	I,J	
PV01106IT	42	Pre	Real	North	I,J	
PV01107IT	42	Pre	Dup	North	I,J	
PV01108IT	41	Post	Real	South		L
PV01109IT	42	Post	Real	North		L
PV01110IT	43	Pre	Real	South	I,J	
PV01111IT	44	Pre	Real	North	G	
PV01112IT	43	Post	Real	South	I,J	L
PV01113IT	44	Post	Real	North	G	M
PV01114IT	45	Pre	Real	South	G	
PV01115IT	46	Pre	Real	North	G	
PV01116IT	45	Post	Real	South	G	M
PV01117IT	46	Post	Real	North	G	M
PV01118IT	47	Pre	Real	South	G	
PV01119IT	47	Pre	Dup	South	G	
PV01120IT	48	Pre	Real	North	G	
PV01121IT	48	Pre	Dup	North	G	
PV01122IT	47	Post	Real	South		M
PV01123IT	47	Post	Dup	South		M
PV01124IT	48	Post	Real	North		M
PV01125IT	48	Post	Dup	North		M

Appendix A1
Ryan's Pit Soil Treatment - Analytical Data
Volatile Organic Compounds

Sample ID : PV01002IT Units : ug/Kg

Analyte	Result	Qual
CHLOROMETHANE	10.00	U
BROMOMETHANE	10.00	U
VINYL CHLORIDE	10.00	U
CHLOROETHANE	10.00	U
METHYLENE CHLORIDE	10.00	U
ACETONE	10.00	U
CARBON DISULFIDE	10.00	U
1,1-DICHLOROETHENE	10.00	U
1,1-DICHLOROETHANE	10.00	U
1,2-DICHLOROETHENE	10.00	U
CHLOROFORM	10.00	U
1,2-DICHLOROETHANE	10.00	U
2-BUTANONE	10.00	U
1,1,1-TRICHLOROETHANE	6.00	J
CARBON TETRACHLORIDE	10.00	U
BROMODICHLOROMETHANE	10.00	U
1,2-DICHLOROPROPANE	10.00	U
CIS-1,3-DICHLOROPROPENE	10.00	U
TRICHLOROETHENE	4.00	J
DIBROMOCHLOROMETHANE	10.00	U
1,1,2-TRICHLOROETHANE	6.00	J
BENZENE	10.00	U
TRANS-1,3-DICHLOROPROPENE	10.00	U
BROMOFORM	10.00	U
4-METHYL-2-PENTANONE	10.00	U
2-HEXANONE	10.00	U
TETRACHLOROETHENE	760.00	E
1,1,2,2-TETRACHLOROETHANE	10.00	U
TOLUENE	10.00	U
CHLOROBENZENE	10.00	U
ETHYLBENZENE	10.00	U
STYRENE	10.00	U
XYLENE	10.00	U

Sample ID : PV01003IT Units : ug/Kg

Analyte	Result	Qual
CHLOROMETHANE	10.00	U
BROMOMETHANE	10.00	U
VINYL CHLORIDE	10.00	U
CHLOROETHANE	10.00	U
METHYLENE CHLORIDE	10.00	U
ACETONE	4.00	BJ
CARBON DISULFIDE	10.00	U
1,1-DICHLOROETHENE	10.00	U
1,1-DICHLOROETHANE	10.00	U
1,2-DICHLOROETHENE	10.00	U
CHLOROFORM	10.00	U
1,2-DICHLOROETHANE	10.00	U
2-BUTANONE	10.00	U
1,1,1-TRICHLOROETHANE	2.00	J
CARBON TETRACHLORIDE	10.00	U
BROMODICHLOROMETHANE	10.00	U
1,2-DICHLOROPROPANE	10.00	U
CIS-1,3-DICHLOROPROPENE	10.00	U
TRICHLOROETHENE	10.00	U
DIBROMOCHLOROMETHANE	10.00	U
1,1,2-TRICHLOROETHANE	10.00	U
BENZENE	10.00	U
TRANS-1,3-DICHLOROPROPENE	10.00	U
BROMOFORM	10.00	U

Appendix A1
Ryan's Pit Soil Treatment Analytical Data
Volatile Organic Compounds

Sample ID : PV01003IT Units : ug/Kg

Analyte	Result	Qual
4-METHYL-2-PENTANONE	10.00	U
2-HEXANONE	10.00	U
TETRACHLOROETHENE	100.00	
1,1,2,2-TETRACHLOROETHANE	10.00	U
TOLUENE	10.00	U
CHLOROBENZENE	10.00	U
ETHYLBENZENE	10.00	U
STYRENE	10.00	U
XYLENE	10.00	U

Sample ID : PV01004IT Units : ug/Kg

Analyte	Result	Qual
CHLOROMETHANE	10.00	U
BROMOMETHANE	10.00	U
VINYL CHLORIDE	10.00	U
CHLOROETHANE	10.00	U
METHYLENE CHLORIDE	10.00	U
ACETONE	5.00	BJ
CARBON DISULFIDE	10.00	U
1,1-DICHLOROETHENE	10.00	U
1,1-DICHLOROETHANE	10.00	U
1,2-DICHLOROETHENE	10.00	U
CHLOROFORM	10.00	U
1,2-DICHLOROETHANE	10.00	U
2-BUTANONE	10.00	U
1,1,1-TRICHLOROETHANE	10.00	U
CARBON TETRACHLORIDE	10.00	U
BROMODICHLOROMETHANE	10.00	U
1,2-DICHLOROPROPANE	10.00	U
CIS-1,3-DICHLOROPROPENE	10.00	U
TRICHLOROETHENE	10.00	U
DIBROMOCHLOROMETHANE	10.00	U
1,1,2-TRICHLOROETHANE	10.00	U
BENZENE	13.00	
TRANS-1,3-DICHLOROPROPENE	10.00	U
BROMOFORM	10.00	U
4-METHYL-2-PENTANONE	10.00	U
2-HEXANONE	10.00	U
TETRACHLOROETHENE	10.00	U
1,1,2,2-TETRACHLOROETHANE	10.00	U
TOLUENE	1.00	J
CHLOROBENZENE	10.00	U
ETHYLBENZENE	10.00	U
STYRENE	10.00	U
XYLENE	10.00	U

Sample ID : PV01005IT Units : ug/Kg

Analyte	Result	Qual
CHLOROMETHANE	10.00	U
BROMOMETHANE	10.00	U
VINYL CHLORIDE	10.00	U
CHLOROETHANE	10.00	U
METHYLENE CHLORIDE	10.00	U
ACETONE	5.00	BJ
CARBON DISULFIDE	10.00	U
1,1-DICHLOROETHENE	10.00	U
1,1-DICHLOROETHANE	10.00	U
1,2-DICHLOROETHENE	10.00	U

Appendix A1
Ryan's Pit Soil Treatment - Analytical Data
Volatile Organic Compounds

Sample ID : PV01005IT Units : ug/Kg

Analyte	Result	Qual
CHLOROFORM	10.00	U
1,2-DICHLOROETHANE	10.00	U
2-BUTANONE	10.00	U
1,1,1-TRICHLOROETHANE	10.00	U
CARBON TETRACHLORIDE	10.00	U
BROMODICHLOROMETHANE	10.00	U
1,2-DICHLOROPROPANE	10.00	U
CIS-1,3-DICHLOROPROPENE	10.00	U
TRICHLOROETHENE	10.00	U
DIBROMOCHLOROMETHANE	10.00	U
1,1,2-TRICHLOROETHANE	10.00	U
BENZENE	19.00	
TRANS-1,3-DICHLOROPROPENE	10.00	U
BROMOFORM	10.00	U
4-METHYL-2-PENTANONE	10.00	U
2-HEXANONE	10.00	U
TETRACHLOROETHENE	10.00	U
1,1,2,2-TETRACHLOROETHANE	10.00	U
TOLUENE	2.00	J
CHLOROBENZENE	10.00	U
ETHYLBENZENE	10.00	U
STYRENE	10.00	U
XYLENE	10.00	U

Sample ID : PV01006IT Units : ug/Kg

Analyte	Result	Qual
CHLOROMETHANE	10.00	U
BROMOMETHANE	10.00	U
VINYL CHLORIDE	10.00	U
CHLOROETHANE	10.00	U
METHYLENE CHLORIDE	10.00	U
ACETONE	1.00	J
CARBON DISULFIDE	10.00	U
1,1-DICHLOROETHENE	10.00	U
1,1-DICHLOROETHANE	10.00	U
1,2-DICHLOROETHENE	10.00	U
CHLOROFORM	10.00	U
1,2-DICHLOROETHANE	10.00	U
2-BUTANONE	10.00	U
1,1,1-TRICHLOROETHANE	17.00	
CARBON TETRACHLORIDE	10.00	U
BROMODICHLOROMETHANE	10.00	U
1,2-DICHLOROPROPANE	10.00	U
CIS-1,3-DICHLOROPROPENE	10.00	U
TRICHLOROETHENE	13.00	
DIBROMOCHLOROMETHANE	10.00	U
1,1,2-TRICHLOROETHANE	4.00	J
BENZENE	10.00	U
TRANS-1,3-DICHLOROPROPENE	10.00	U
BROMOFORM	10.00	U
4-METHYL-2-PENTANONE	10.00	U
2-HEXANONE	10.00	U
TETRACHLOROETHENE	730.00	E
1,1,2,2-TETRACHLOROETHANE	10.00	U
TOLUENE	10.00	U
CHLOROBENZENE	10.00	U
ETHYLBENZENE	10.00	U
STYRENE	10.00	U
XYLENE	10.00	U

Appendix A1
Ryan's Pit Soil Treatment Analytical Data
Volatile Organic Compounds

Sample ID : PV01007IT Units : ug/Kg

Analyte	Result	Qual
CHLOROMETHANE	10.00	U
BROMOMETHANE	10.00	U
VINYL CHLORIDE	10.00	U
CHLOROETHANE	10.00	U
METHYLENE CHLORIDE	10.00	U
ACETONE	2.00	J
CARBON DISULFIDE	10.00	U
1,1-DICHLOROETHENE	10.00	U
1,1-DICHLOROETHANE	10.00	U
1,2-DICHLOROETHENE	10.00	U
CHLOROFORM	10.00	U
1,2-DICHLOROETHANE	10.00	U
2-BUTANONE	10.00	U
1,1,1-TRICHLOROETHANE	5.00	J
CARBON TETRACHLORIDE	10.00	U
BROMODICHLOROMETHANE	10.00	U
1,2-DICHLOROPROPANE	10.00	U
CIS-1,3-DICHLOROPROPENE	10.00	U
TRICHLOROETHENE	1.00	J
DIBROMOCHLOROMETHANE	10.00	U
1,1,2-TRICHLOROETHANE	2.00	J
BENZENE	10.00	U
TRANS-1,3-DICHLOROPROPENE	10.00	U
BROMOFORM	10.00	U
4-METHYL-2-PENTANONE	10.00	U
2-HEXANONE	10.00	U
TETRACHLOROETHENE	140.00	
1,1,2,2-TETRACHLOROETHANE	10.00	U
TOLUENE	10.00	U
CHLOROBENZENE	10.00	U
ETHYLBENZENE	10.00	U
STYRENE	10.00	U
XYLENE	10.00	U

Sample ID : PV01008IT Units : ug/Kg

Analyte	Result	Qual
CHLOROMETHANE	10.00	U
BROMOMETHANE	10.00	U
VINYL CHLORIDE	10.00	U
CHLOROETHANE	10.00	U
METHYLENE CHLORIDE	10.00	U
ACETONE	4.00	J
CARBON DISULFIDE	10.00	U
1,1-DICHLOROETHENE	10.00	U
1,1-DICHLOROETHANE	10.00	U
1,2-DICHLOROETHENE	10.00	U
CHLOROFORM	10.00	U
1,2-DICHLOROETHANE	10.00	U
2-BUTANONE	10.00	U
1,1,1-TRICHLOROETHANE	10.00	U
CARBON TETRACHLORIDE	10.00	U
BROMODICHLOROMETHANE	10.00	U
1,2-DICHLOROPROPANE	10.00	U
CIS-1,3-DICHLOROPROPENE	10.00	U
TRICHLOROETHENE	10.00	U
DIBROMOCHLOROMETHANE	10.00	U
1,1,2-TRICHLOROETHANE	10.00	U
BENZENE	7.00	J
TRANS-1,3-DICHLOROPROPENE	10.00	U
BROMOFORM	10.00	U

Appendix A1
Ryan's Pit Soil Treatment - Analytical Data
Volatile Organic Compounds

Sample ID : PV01008IT Units ug/Kg

Analyte	Result	Qual
4-METHYL-2-PENTANONE	10.00	U
2-HEXANONE	10.00	U
TETRACHLOROETHENE	10.00	U
1,1,2,2-TETRACHLOROETHANE	10.00	U
TOLUENE	1.00	J
CHLOROBENZENE	10.00	U
ETHYLBENZENE	10.00	U
STYRENE	10.00	U
XYLENE	10.00	U

Sample ID : PV01009IT Units . ug/Kg

Analyte	Result	Qual
CHLOROMETHANE	10.00	U
BROMOMETHANE	10.00	U
VINYL CHLORIDE	10.00	U
CHLOROETHANE	10.00	U
METHYLENE CHLORIDE	10.00	U
ACETONE	6.00	J
CARBON DISULFIDE	10.00	U
1,1-DICHLOROETHENE	10.00	U
1,1-DICHLOROETHANE	10.00	U
1,2-DICHLOROETHENE	10.00	U
CHLOROFORM	10.00	U
1,2-DICHLOROETHANE	10.00	U
2-BUTANONE	10.00	U
1,1,1-TRICHLOROETHANE	10.00	U
CARBON TETRACHLORIDE	10.00	U
BROMODICHLOROMETHANE	10.00	U
1,2-DICHLOROPROPANE	10.00	U
CIS-1,3-DICHLOROPROPENE	10.00	U
TRICHLOROETHENE	10.00	U
DIBROMOCHLOROMETHANE	10.00	U
1,1,2-TRICHLOROETHANE	10.00	U
BENZENE	7.00	J
TRANS-1,3-DICHLOROPROPENE	10.00	U
BROMOFORM	10.00	U
4-METHYL-2-PENTANONE	10.00	U
2-HEXANONE	10.00	U
TETRACHLOROETHENE	10.00	U
1,1,2,2-TETRACHLOROETHANE	10.00	U
TOLUENE	1.00	J
CHLOROBENZENE	10.00	U
ETHYLBENZENE	10.00	U
STYRENE	10.00	U
XYLENE	10.00	U

Sample ID : PV01014IT Units : ug/Kg

Analyte	Result	Qual
CHLOROMETHANE	10.00	U
BROMOMETHANE	10.00	U
VINYL CHLORIDE	10.00	U
CHLOROETHANE	10.00	U
METHYLENE CHLORIDE	10.00	U
ACETONE	10.00	U
CARBON DISULFIDE	10.00	U
1,1-DICHLOROETHENE	10.00	U
1,1-DICHLOROETHANE	10.00	U
1,2-DICHLOROETHENE	10.00	U

Appendix A1
Ryan's Pit Soil Treatment - Analytical Data
Volatile Organic Compounds

Sample ID : PV01014IT Units : ug/Kg

Analyte	Result	Qual
CHLOROFORM	10.00	U
1,2-DICHLOROETHANE	10.00	U
2-BUTANONE	10.00	U
1,1,1-TRICHLOROETHANE	10.00	U
CARBON TETRACHLORIDE	10.00	U
BROMODICHLOROMETHANE	10.00	U
1,2-DICHLOROPROPANE	10.00	U
CIS-1,3-DICHLOROPROPENE	10.00	U
TRICHLOROETHENE	10.00	U
DIBROMOCHLOROMETHANE	10.00	U
1,1,2-TRICHLOROETHANE	10.00	U
BENZENE	1.00	J
TRANS-1,3-DICHLOROPROPENE	10.00	U
BROMOFORM	10.00	U
4-METHYL-2-PENTANONE	10.00	U
2-HEXANONE	10.00	U
TETRACHLOROETHENE	83.00	
1,1,2,2-TETRACHLOROETHANE	10.00	U
TOLUENE	10.00	U
CHLOROBENZENE	10.00	U
ETHYLBENZENE	10.00	U
STYRENE	10.00	U
XYLENE	9.00	J

Sample ID : PV01015IT Units : ug/Kg

Analyte	Result	Qual
CHLOROMETHANE	10.00	U
BROMOMETHANE	10.00	U
VINYL CHLORIDE	10.00	U
CHLOROETHANE	10.00	U
METHYLENE CHLORIDE	10.00	U
ACETONE	59.00	B
CARBON DISULFIDE	10.00	U
1,1-DICHLOROETHENE	10.00	U
1,1-DICHLOROETHANE	10.00	U
1,2-DICHLOROETHENE	10.00	U
CHLOROFORM	10.00	U
1,2-DICHLOROETHANE	10.00	U
2-BUTANONE	3.00	J
1,1,1-TRICHLOROETHANE	10.00	U
CARBON TETRACHLORIDE	10.00	U
BROMODICHLOROMETHANE	10.00	U
1,2-DICHLOROPROPANE	10.00	U
CIS-1,3-DICHLOROPROPENE	10.00	U
TRICHLOROETHENE	10.00	U
DIBROMOCHLOROMETHANE	10.00	U
1,1,2-TRICHLOROETHANE	10.00	U
BENZENE	2.00	J
TRANS-1,3-DICHLOROPROPENE	10.00	U
BROMOFORM	10.00	U
4-METHYL-2-PENTANONE	10.00	U
2-HEXANONE	10.00	U
TETRACHLOROETHENE	84.00	
1,1,2,2-TETRACHLOROETHANE	10.00	U
TOLUENE	10.00	U
CHLOROBENZENE	10.00	U
ETHYLBENZENE	10.00	U
STYRENE	10.00	U
XYLENE	14.00	

Appendix A1
Ryan's Pit Soil Treatment - Analytical Data
Volatile Organic Compounds

Sample ID PV01016IT Units : ug/Kg

Analyte	Result	Qual
CHLOROMETHANE	10.00	U
BROMOMETHANE	10.00	U
VINYL CHLORIDE	10.00	U
CHLOROETHANE	10.00	U
METHYLENE CHLORIDE	10.00	U
ACETONE	43.00	B
CARBON DISULFIDE	10.00	U
1,1-DICHLOROETHENE	10.00	U
1,1-DICHLOROETHANE	10.00	U
1,2-DICHLOROETHENE	10.00	U
CHLOROFORM	10.00	U
1,2-DICHLOROETHANE	10.00	U
2-BUTANONE	2.00	J
1,1,1-TRICHLOROETHANE	10.00	U
CARBON TETRACHLORIDE	10.00	U
BROMODICHLOROMETHANE	10.00	U
1,2-DICHLOROPROPANE	10.00	U
CIS-1,3-DICHLOROPROPENE	10.00	U
TRICHLOROETHENE	10.00	U
DIBROMOCHLOROMETHANE	10.00	U
1,1,2-TRICHLOROETHANE	10.00	U
BENZENE	1.00	J
TRANS-1,3-DICHLOROPROPENE	10.00	U
BROMOFORM	10.00	U
4-METHYL-2-PENTANONE	10.00	U
2-HEXANONE	10.00	U
TETRACHLOROETHENE	110.00	
1,1,2,2-TETRACHLOROETHANE	10.00	U
TOLUENE	1.00	J
CHLOROBENZENE	10.00	U
ETHYLBENZENE	10.00	U
STYRENE	10.00	U
XYLENE	11.00	

Sample ID : PV01017IT Units : ug/Kg

Analyte	Result	Qual
CHLOROMETHANE	10.00	U
BROMOMETHANE	10.00	U
VINYL CHLORIDE	10.00	U
CHLOROETHANE	10.00	U
METHYLENE CHLORIDE	10.00	U
ACETONE	59.00	B
CARBON DISULFIDE	10.00	U
1,1-DICHLOROETHENE	10.00	U
1,1-DICHLOROETHANE	10.00	U
1,2-DICHLOROETHENE	10.00	U
CHLOROFORM	10.00	U
1,2-DICHLOROETHANE	10.00	U
2-BUTANONE	3.00	J
1,1,1-TRICHLOROETHANE	10.00	U
CARBON TETRACHLORIDE	10.00	U
BROMODICHLOROMETHANE	10.00	U
1,2-DICHLOROPROPANE	10.00	U
CIS-1,3-DICHLOROPROPENE	10.00	U
TRICHLOROETHENE	10.00	U
DIBROMOCHLOROMETHANE	10.00	U
1,1,2-TRICHLOROETHANE	10.00	U
BENZENE	2.00	J
TRANS-1,3-DICHLOROPROPENE	10.00	U
BROMOFORM	10.00	U

Appendix A1
Ryan's Pit'Soil Treatment - Analytical Data
Volatile Organic Compounds

Sample ID : PV01017IT Units : ug/Kg

Analyte	Result	Qual
4-METHYL-2-PENTANONE	10.00	U
2-HEXANONE	10.00	U
TETRACHLOROETHENE	120.00	
1,1,2,2-TETRACHLOROETHANE	10.00	U
TOLUENE	1.00	J
CHLOROBENZENE	10.00	U
ETHYLBENZENE	10.00	U
STYRENE	10.00	U
XYLENE	11.00	

Sample ID : PV01020IT Units : ug/Kg

Analyte	Result	Qual
CHLOROMETHANE	50.00	U
BROMOMETHANE	50.00	U
VINYL CHLORIDE	50.00	U
CHLOROETHANE	50.00	U
METHYLENE CHLORIDE	50.00	U
ACETONE	15.00	BJ
CARBON DISULFIDE	50.00	U
1,1-DICHLOROETHENE	50.00	U
1,1-DICHLOROETHANE	50.00	U
1,2-DICHLOROETHENE	50.00	U
CHLOROFORM	50.00	U
1,2-DICHLOROETHANE	50.00	U
2-BUTANONE	50.00	U
1,1,1-TRICHLOROETHANE	50.00	U
CARBON TETRACHLORIDE	50.00	U
BROMODICHLOROMETHANE	50.00	U
1,2-DICHLOROPROPANE	50.00	U
CIS-1,3-DICHLOROPROPENE	50.00	U
TRICHLOROETHENE	50.00	U
DIBROMOCHLOROMETHANE	50.00	U
1,1,2-TRICHLOROETHANE	50.00	U
BENZENE	35.00	J
TRANS-1,3-DICHLOROPROPENE	50.00	U
BROMOFORM	50.00	U
4-METHYL-2-PENTANONE	50.00	U
2-HEXANONE	50.00	U
TETRACHLOROETHENE	50.00	U
1,1,2,2-TETRACHLOROETHANE	50.00	U
TOLUENE	13.00	J
CHLOROBENZENE	50.00	U
ETHYLBENZENE	50.00	U
STYRENE	50.00	U
XYLENE	50.00	U

Sample ID : PV01021IT Units : ug/Kg

Analyte	Result	Qual
CHLOROMETHANE	50.00	U
BROMOMETHANE	50.00	U
VINYL CHLORIDE	50.00	U
CHLOROETHANE	50.00	U
METHYLENE CHLORIDE	50.00	U
ACETONE	200.00	B
CARBON DISULFIDE	50.00	U
1,1-DICHLOROETHENE	50.00	U
1,1-DICHLOROETHANE	50.00	U
1,2-DICHLOROETHENE	50.00	U

Appendix A1
Ryan's Pit Soil Treatment - Analytical Data
Volatile Organic Compounds

Sample ID : PV01021IT Units : ug/Kg

Analyte	Result	Qual
CHLOROFORM	50.00	U
1,2-DICHLOROETHANE	50.00	U
2-BUTANONE	65.00	
1,1,1-TRICHLOROETHANE	50.00	U
CARBON TETRACHLORIDE	50.00	U
BROMODICHLOROMETHANE	50.00	U
1,2-DICHLOROPROPANE	50.00	U
CIS-1,3-DICHLOROPROPENE	50.00	U
TRICHLOROETHENE	50.00	U
DIBROMOCHLOROMETHANE	50.00	U
1,1,2-TRICHLOROETHANE	50.00	U
BENZENE	26.00	J
TRANS-1,3-DICHLOROPROPENE	50.00	U
BROMOFORM	50.00	U
4-METHYL-2-PENTANONE	50.00	U
2-HEXANONE	14.00	J
TETRACHLOROETHENE	280.00	
1,1,2,2-TETRACHLOROETHANE	50.00	U
TOLUENE	50.00	U
CHLOROBENZENE	50.00	U
ETHYLBENZENE	50.00	U
STYRENE	50.00	U
XYLENE	19.00	J

Sample ID : PV01022IT Units : ug/Kg

Analyte	Result	Qual
CHLOROMETHANE	1,200.00	U
BROMOMETHANE	1,200.00	U
VINYL CHLORIDE	1,200.00	U
CHLOROETHANE	1,200.00	U
METHYLENE CHLORIDE	1,200.00	U
ACETONE	840.00	J
CARBON DISULFIDE	1,200.00	U
1,1-DICHLOROETHENE	1,200.00	U
1,1-DICHLOROETHANE	1,200.00	U
1,2-DICHLOROETHENE	1,200.00	U
CHLOROFORM	1,200.00	U
1,2-DICHLOROETHANE	1,200.00	U
2-BUTANONE	1,200.00	U
1,1,1-TRICHLOROETHANE	1,200.00	U
CARBON TETRACHLORIDE	1,200.00	U
BROMODICHLOROMETHANE	1,200.00	U
1,2-DICHLOROPROPANE	1,200.00	U
CIS-1,3-DICHLOROPROPENE	1,200.00	U
TRICHLOROETHENE	1,200.00	U
DIBROMOCHLOROMETHANE	1,200.00	U
1,1,2-TRICHLOROETHANE	1,200.00	U
BENZENE	1,200.00	U
TRANS-1,3-DICHLOROPROPENE	1,200.00	U
BROMOFORM	1,200.00	U
4-METHYL-2-PENTANONE	1,200.00	U
2-HEXANONE	1,200.00	U
TETRACHLOROETHENE	1,500.00	
1,1,2,2-TETRACHLOROETHANE	1,200.00	U
TOLUENE	1,200.00	U
CHLOROBENZENE	1,200.00	U
ETHYLBENZENE	1,200.00	U
STYRENE	1,200.00	U
XYLENE	350.00	J

Appendix A1
Ryan's Pit Soil Treatment Analytical Data
Volatile Organic Compounds

Sample ID : PV01023IT Units ug/Kg

Analyte	Result	Qual
CHLOROMETHANE	1,200.00	U
BROMOMETHANE	1,200.00	U
VINYL CHLORIDE	1,200.00	U
CHLOROETHANE	1,200.00	U
METHYLENE CHLORIDE	1,200.00	U
ACETONE	1,200.00	U
CARBON DISULFIDE	1,200.00	U
1,1-DICHLOROETHENE	1,200.00	U
1,1-DICHLOROETHANE	1,200.00	U
1,2-DICHLOROETHENE	1,200.00	U
CHLOROFORM	1,200.00	U
1,2-DICHLOROETHANE	1,200.00	U
2-BUTANONE	180.00	J
1,1,1-TRICHLOROETHANE	130.00	J
CARBON TETRACHLORIDE	1,200.00	U
BROMODICHLOROMETHANE	1,200.00	U
1,2-DICHLOROPROPANE	1,200.00	U
CIS-1,3-DICHLOROPROPENE	1,200.00	U
TRICHLOROETHENE	1,200.00	U
DIBROMOCHLOROMETHANE	1,200.00	U
1,1,2-TRICHLOROETHANE	1,200.00	U
BENZENE	1,200.00	U
TRANS-1,3-DICHLOROPROPENE	1,200.00	U
BROMOFORM	1,200.00	U
4-METHYL-2-PENTANONE	1,200.00	U
2-HEXANONE	1,200.00	U
TETRACHLOROETHENE	1,800.00	
1,1,2,2-TETRACHLOROETHANE	1,200.00	U
TOLUENE	1,200.00	U
CHLOROBENZENE	1,200.00	U
ETHYLBENZENE	1,200.00	U
STYRENE	1,200.00	U
XYLENE	1,200.00	U

Sample ID : PV01024IT Units : ug/Kg

Analyte	Result	Qual
CHLOROMETHANE	50.00	U
BROMOMETHANE	50.00	U
VINYL CHLORIDE	50.00	U
CHLOROETHANE	50.00	U
METHYLENE CHLORIDE	50.00	U
ACETONE	1,500.00	BE
CARBON DISULFIDE	50.00	U
1,1-DICHLOROETHENE	50.00	U
1,1-DICHLOROETHANE	50.00	U
1,2-DICHLOROETHENE	50.00	U
CHLOROFORM	50.00	U
1,2-DICHLOROETHANE	50.00	U
2-BUTANONE	22.00	J
1,1,1-TRICHLOROETHANE	24.00	J
CARBON TETRACHLORIDE	50.00	U
BROMODICHLOROMETHANE	50.00	U
1,2-DICHLOROPROPANE	50.00	U
CIS-1,3-DICHLOROPROPENE	50.00	U
TRICHLOROETHENE	50.00	U
DIBROMOCHLOROMETHANE	50.00	U
1,1,2-TRICHLOROETHANE	50.00	U
BENZENE	7.00	J
TRANS-1,3-DICHLOROPROPENE	50.00	U
BROMOFORM	50.00	U

Appendix A1.
Ryan's Pit Soil Treatment - Analytical Data
Volatile Organic Compounds

Sample ID : PV01024IT Units : ug/Kg

Analyte	Result	Qual
4-METHYL-2-PENTANONE	50.00	U
2-HEXANONE	50.00	U
TETRACHLOROETHENE	610.00	
1,1,2,2-TETRACHLOROETHANE	50.00	U
TOLUENE	24.00	J
CHLOROBENZENE	50.00	U
ETHYLBENZENE	18.00	J
STYRENE	50.00	U
XYLENE	210.00	

Sample ID : PV01025IT Units : ug/Kg

Analyte	Result	Qual
CHLOROMETHANE	50.00	U
BROMOMETHANE	50.00	U
VINYL CHLORIDE	50.00	U
CHLOROETHANE	50.00	U
METHYLENE CHLORIDE	50.00	U
ACETONE	1,700.00	BE
CARBON DISULFIDE	50.00	U
1,1-DICHLOROETHENE	50.00	U
1,1-DICHLOROETHANE	50.00	U
1,2-DICHLOROETHENE	50.00	U
CHLOROFORM	50.00	U
1,2-DICHLOROETHANE	50.00	U
2-BUTANONE	180.00	
1,1,1-TRICHLOROETHANE	18.00	J
CARBON TETRACHLORIDE	50.00	U
BROMODICHLOROMETHANE	50.00	U
1,2-DICHLOROPROPANE	50.00	U
CIS-1,3-DICHLOROPROPENE	50.00	U
TRICHLOROETHENE	50.00	U
DIBROMOCHLOROMETHANE	50.00	U
1,1,2-TRICHLOROETHANE	50.00	U
BENZENE	17.00	J
TRANS-1,3-DICHLOROPROPENE	50.00	U
BROMOFORM	50.00	U
4-METHYL-2-PENTANONE	50.00	U
2-HEXANONE	50.00	U
TETRACHLOROETHENE	270.00	
1,1,2,2-TETRACHLOROETHANE	50.00	U
TOLUENE	23.00	J
CHLOROBENZENE	50.00	U
ETHYLBENZENE	8.00	J
STYRENE	50.00	U
XYLENE	81.00	

Sample ID : PV01028IT Units : ug/Kg

Analyte	Result	Qual
CHLOROMETHANE	10.00	U
BROMOMETHANE	10.00	U
VINYL CHLORIDE	10.00	U
CHLOROETHANE	10.00	U
METHYLENE CHLORIDE	10.00	U
ACETONE	6.00	BJ
CARBON DISULFIDE	10.00	U
1,1-DICHLOROETHENE	10.00	U
1,1-DICHLOROETHANE	10.00	U
1,2-DICHLOROETHENE	10.00	U

Appendix A1
Ryan's Pit Soil Treatment - Analytical Data
Volatile Organic Compounds

Sample ID : PV01028IT Units : ug/Kg

Analyte	Result	Qual
CHLOROFORM	10.00	U
1,2-DICHLOROETHANE	10.00	U
2-BUTANONE	10.00	U
1,1,1-TRICHLOROETHANE	10.00	U
CARBON TETRACHLORIDE	10.00	U
BROMODICHLOROMETHANE	10.00	U
1,2-DICHLOROPROPANE	10.00	U
CIS-1,3-DICHLOROPROPENE	10.00	U
TRICHLOROETHENE	10.00	U
DIBROMOCHLOROMETHANE	10.00	U
1,1,2-TRICHLOROETHANE	10.00	U
BENZENE	6.00	J
TRANS-1,3-DICHLOROPROPENE	10.00	U
BROMOFORM	10.00	U
4-METHYL-2-PENTANONE	10.00	U
2-HEXANONE	10.00	U
TETRACHLOROETHENE	10.00	U
1,1,2,2-TETRACHLOROETHANE	10.00	U
TOLUENE	2.00	J
CHLOROBENZENE	10.00	U
ETHYLBENZENE	10.00	U
STYRENE	10.00	U
XYLENE	10.00	U

Sample ID : PV01029IT Units : ug/Kg

Analyte	Result	Qual
CHLOROMETHANE	10.00	U
BROMOMETHANE	10.00	U
VINYL CHLORIDE	10.00	U
CHLOROETHANE	10.00	U
METHYLENE CHLORIDE	10.00	U
ACETONE	14.00	B
CARBON DISULFIDE	10.00	U
1,1-DICHLOROETHENE	10.00	U
1,1-DICHLOROETHANE	10.00	U
1,2-DICHLOROETHENE	10.00	U
CHLOROFORM	10.00	U
1,2-DICHLOROETHANE	10.00	U
2-BUTANONE	4.00	BJ
1,1,1-TRICHLOROETHANE	10.00	U
CARBON TETRACHLORIDE	10.00	U
BROMODICHLOROMETHANE	10.00	U
1,2-DICHLOROPROPANE	10.00	U
CIS-1,3-DICHLOROPROPENE	10.00	U
TRICHLOROETHENE	10.00	U
DIBROMOCHLOROMETHANE	10.00	U
1,1,2-TRICHLOROETHANE	10.00	U
BENZENE	10.00	
TRANS-1,3-DICHLOROPROPENE	10.00	U
BROMOFORM	10.00	U
4-METHYL-2-PENTANONE	10.00	U
2-HEXANONE	10.00	U
TETRACHLOROETHENE	1.00	J
1,1,2,2-TETRACHLOROETHANE	10.00	U
TOLUENE	7.00	J
CHLOROBENZENE	10.00	U
ETHYLBENZENE	10.00	U
STYRENE	10.00	U
XYLENE	10.00	U

Appendix A1
Ryan's Pit Soil Treatment - Analytical Data
Volatile Organic Compounds

Sample ID : PV01030IT Units : ug/Kg

Analyte	Result	Qual
CHLOROMETHANE	10.00	U
BROMOMETHANE	10.00	U
VINYL CHLORIDE	10.00	U
CHLOROETHANE	10.00	U
METHYLENE CHLORIDE	10.00	U
ACETONE	9.00	BJ
CARBON DISULFIDE	10.00	U
1,1-DICHLOROETHENE	10.00	U
1,1-DICHLOROETHANE	10.00	U
1,2-DICHLOROETHENE	10.00	U
CHLOROFORM	10.00	U
1,2-DICHLOROETHANE	10.00	U
2-BUTANONE	10.00	U
1,1,1-TRICHLOROETHANE	10.00	U
CARBON TETRACHLORIDE	10.00	U
BROMODICHLOROMETHANE	10.00	U
1,2-DICHLOROPROPANE	10.00	U
CIS-1,3-DICHLOROPROPENE	10.00	U
TRICHLOROETHENE	10.00	U
DIBROMOCHLOROMETHANE	10.00	U
1,1,2-TRICHLOROETHANE	10.00	U
BENZENE	8.00	J
TRANS-1,3-DICHLOROPROPENE	10.00	U
BROMOFORM	10.00	U
4-METHYL-2-PENTANONE	10.00	U
2-HEXANONE	10.00	U
TETRACHLOROETHENE	10.00	U
1,1,2,2-TETRACHLOROETHANE	10.00	U
TOLUENE	3.00	J
CHLOROBENZENE	10.00	U
ETHYLBENZENE	10.00	U
STYRENE	10.00	U
XYLENE	10.00	U

Sample ID : PV01031IT Units : ug/Kg

Analyte	Result	Qual
CHLOROMETHANE	10.00	U
BROMOMETHANE	10.00	U
VINYL CHLORIDE	10.00	U
CHLOROETHANE	10.00	U
METHYLENE CHLORIDE	10.00	U
ACETONE	15.00	B
CARBON DISULFIDE	10.00	U
1,1-DICHLOROETHENE	10.00	U
1,1-DICHLOROETHANE	10.00	U
1,2-DICHLOROETHENE	10.00	U
CHLOROFORM	10.00	U
1,2-DICHLOROETHANE	10.00	U
2-BUTANONE	10.00	U
1,1,1-TRICHLOROETHANE	10.00	U
CARBON TETRACHLORIDE	10.00	U
BROMODICHLOROMETHANE	10.00	U
1,2-DICHLOROPROPANE	10.00	U
CIS-1,3-DICHLOROPROPENE	10.00	U
TRICHLOROETHENE	10.00	U
DIBROMOCHLOROMETHANE	10.00	U
1,1,2-TRICHLOROETHANE	10.00	U
BENZENE	9.00	J
TRANS-1,3-DICHLOROPROPENE	10.00	U
BROMOFORM	10.00	U

Appendix A1
Ryan's Pit Soil Treatment - Analytical Data
Volatile Organic Compounds

Sample ID PV01031IT Units ug/Kg

Analyte	Result	Qual
4-METHYL-2-PENTANONE	10.00	U
2-HEXANONE	10.00	U
TETRACHLOROETHENE	2.00	J
1,1,2,2-TETRACHLOROETHANE	10.00	U
TOLUENE	4.00	J
CHLOROBENZENE	10.00	U
ETHYLBENZENE	10.00	U
STYRENE	10.00	U
XYLENE	10.00	U

Sample ID : PV01036IT Units : ug/Kg

Analyte	Result	Qual
CHLOROMETHANE	10.00	U
BROMOMETHANE	10.00	U
VINYL CHLORIDE	10.00	U
CHLOROETHANE	10.00	U
METHYLENE CHLORIDE	10.00	U
ACETONE	3.00	BJ
CARBON DISULFIDE	10.00	U
1,1-DICHLOROETHENE	10.00	U
1,1-DICHLOROETHANE	10.00	U
1,2-DICHLOROETHENE	10.00	U
CHLOROFORM	10.00	U
1,2-DICHLOROETHANE	10.00	U
2-BUTANONE	10.00	U
1,1,1-TRICHLOROETHANE	10.00	U
CARBON TETRACHLORIDE	10.00	U
BROMODICHLOROMETHANE	10.00	U
1,2-DICHLOROPROPANE	10.00	U
CIS-1,3-DICHLOROPROPENE	10.00	U
TRICHLOROETHENE	10.00	U
DIBROMOCHLOROMETHANE	10.00	U
1,1,2-TRICHLOROETHANE	10.00	U
BENZENE	7.00	J
TRANS-1,3-DICHLOROPROPENE	10.00	U
BROMOFORM	10.00	U
4-METHYL-2-PENTANONE	10.00	U
2-HEXANONE	10.00	U
TETRACHLOROETHENE	10.00	U
1,1,2,2-TETRACHLOROETHANE	10.00	U
TOLUENE	2.00	J
CHLOROBENZENE	10.00	U
ETHYLBENZENE	10.00	U
STYRENE	10.00	U
XYLENE	10.00	U

Sample ID : PV01037IT Units : ug/Kg

Analyte	Result	Qual
CHLOROMETHANE	10.00	U
BROMOMETHANE	10.00	U
VINYL CHLORIDE	10.00	U
CHLOROETHANE	10.00	U
METHYLENE CHLORIDE	10.00	U
ACETONE	3.00	BJ
CARBON DISULFIDE	10.00	U
1,1-DICHLOROETHENE	10.00	U
1,1-DICHLOROETHANE	10.00	U
1,2-DICHLOROETHENE	10.00	U

Appendix A1
Ryan's Pit Soil Treatment - Analytical Data
Volatile Organic Compounds

Sample ID PV01037IT Units : ug/Kg

Analyte	Result	Qual
CHLOROFORM	10.00	U
1,2-DICHLOROETHANE	10.00	U
2-BUTANONE	10.00	U
1,1,1-TRICHLOROETHANE	10.00	U
CARBON TETRACHLORIDE	10.00	U
BROMODICHLOROMETHANE	10.00	U
1,2-DICHLOROPROPANE	10.00	U
CIS-1,3-DICHLOROPROPENE	10.00	U
TRICHLOROETHENE	10.00	U
DIBROMOCHLOROMETHANE	10.00	U
1,1,2-TRICHLOROETHANE	10.00	U
BENZENE	3.00	J
TRANS-1,3-DICHLOROPROPENE	10.00	U
BROMOFORM	10.00	U
4-METHYL-2-PENTANONE	10.00	U
2-HEXANONE	10.00	U
TETRACHLOROETHENE	10.00	U
1,1,2,2-TETRACHLOROETHANE	10.00	U
TOLUENE	2.00	J
CHLOROBENZENE	10.00	U
ETHYLBENZENE	10.00	U
STYRENE	10.00	U
XYLENE	10.00	U

Sample ID : PV01040IT Units : ug/Kg

Analyte	Result	Qual
CHLOROMETHANE	10.00	U
BROMOMETHANE	10.00	U
VINYL CHLORIDE	10.00	U
CHLOROETHANE	10.00	U
METHYLENE CHLORIDE	10.00	U
ACETONE	170.00	B
CARBON DISULFIDE	10.00	U
1,1-DICHLOROETHENE	10.00	U
1,1-DICHLOROETHANE	10.00	U
1,2-DICHLOROETHENE	10.00	U
CHLOROFORM	10.00	U
1,2-DICHLOROETHANE	1.00	J
2-BUTANONE	9.00	J
1,1,1-TRICHLOROETHANE	1.00	J
CARBON TETRACHLORIDE	10.00	U
BROMODICHLOROMETHANE	10.00	U
1,2-DICHLOROPROPANE	10.00	U
CIS-1,3-DICHLOROPROPENE	10.00	U
TRICHLOROETHENE	1.00	J
DIBROMOCHLOROMETHANE	10.00	U
1,1,2-TRICHLOROETHANE	10.00	U
BENZENE	31.00	
TRANS-1,3-DICHLOROPROPENE	10.00	U
BROMOFORM	10.00	U
4-METHYL-2-PENTANONE	10.00	U
2-HEXANONE	10.00	U
TETRACHLOROETHENE	99.00	
1,1,2,2-TETRACHLOROETHANE	10.00	U
TOLUENE	12.00	
CHLOROBENZENE	2.00	J
ETHYLBENZENE	2.00	J
STYRENE	10.00	U
XYLENE	7.00	J

Appendix A1
Ryan's Pit Soil Treatment - Analytical Data
Volatile Organic Compounds

Sample ID : PV01041IT Units : ug/Kg

Analyte	Result	Qual
CHLOROMETHANE	20.00	U
BROMOMETHANE	20.00	U
VINYL CHLORIDE	20.00	U
CHLOROETHANE	20.00	U
METHYLENE CHLORIDE	20.00	U
ACETONE	670.00	E
CARBON DISULFIDE	20.00	U
1,1-DICHLOROETHENE	20.00	U
1,1-DICHLOROETHANE	20.00	U
1,2-DICHLOROETHENE	20.00	U
CHLOROFORM	20.00	U
1,2-DICHLOROETHANE	20.00	U
2-BUTANONE	32.00	
1,1,1-TRICHLOROETHANE	12.00	J
CARBON TETRACHLORIDE	20.00	U
BROMODICHLOROMETHANE	20.00	U
1,2-DICHLOROPROPANE	20.00	U
CIS-1,3-DICHLOROPROPENE	20.00	U
TRICHLOROETHENE	3.00	J
DIBROMOCHLOROMETHANE	20.00	U
1,1,2-TRICHLOROETHANE	20.00	U
BENZENE	19.00	J
TRANS-1,3-DICHLOROPROPENE	20.00	U
BROMOFORM	20.00	U
4-METHYL-2-PENTANONE	20.00	U
2-HEXANONE	20.00	U
TETRACHLOROETHENE	390.00	
1,1,2,2-TETRACHLOROETHANE	20.00	U
TOLUENE	14.00	J
CHLOROBENZENE	20.00	U
ETHYLBENZENE	2.00	J
STYRENE	20.00	U
XYLENE	15.00	J

Sample ID : PV01044IT Units : ug/Kg

Analyte	Result	Qual
CHLOROMETHANE	10.00	U
BROMOMETHANE	10.00	U
VINYL CHLORIDE	10.00	U
CHLOROETHANE	10.00	U
METHYLENE CHLORIDE	10.00	U
ACETONE	3.00	BJ
CARBON DISULFIDE	10.00	U
1,1-DICHLOROETHENE	10.00	U
1,1-DICHLOROETHANE	10.00	U
1,2-DICHLOROETHENE	10.00	U
CHLOROFORM	10.00	U
1,2-DICHLOROETHANE	10.00	U
2-BUTANONE	10.00	U
1,1,1-TRICHLOROETHANE	10.00	U
CARBON TETRACHLORIDE	10.00	U
BROMODICHLOROMETHANE	10.00	U
1,2-DICHLOROPROPANE	10.00	U
CIS-1,3-DICHLOROPROPENE	10.00	U
TRICHLOROETHENE	10.00	U
DIBROMOCHLOROMETHANE	10.00	U
1,1,2-TRICHLOROETHANE	10.00	U
BENZENE	14.00	
TRANS-1,3-DICHLOROPROPENE	10.00	U
BROMOFORM	10.00	U

Appendix A1.
Ryan's Pit Soil Treatment - Analytical Data
Volatile Organic Compounds

Sample ID : PV01044IT Units ug/Kg

Analyte	Result	Qual
4-METHYL-2-PENTANONE	10.00	U
2-HEXANONE	10.00	U
TETRACHLOROETHENE	10.00	U
1,1,2,2-TETRACHLOROETHANE	10.00	U
TOLUENE	6.00	J
CHLOROBENZENE	10.00	U
ETHYLBENZENE	10.00	U
STYRENE	10.00	U
XYLENE	2.00	J

Sample ID : PV01045IT Units : ug/Kg

Analyte	Result	Qual
CHLOROMETHANE	10.00	U
BROMOMETHANE	10.00	U
VINYL CHLORIDE	10.00	U
CHLOROETHANE	10.00	U
METHYLENE CHLORIDE	10.00	U
ACETONE	19.00	B
CARBON DISULFIDE	10.00	U
1,1-DICHLOROETHENE	10.00	U
1,1-DICHLOROETHANE	10.00	U
1,2-DICHLOROETHENE	10.00	U
CHLOROFORM	10.00	U
1,2-DICHLOROETHANE	10.00	U
2-BUTANONE	3.00	J
1,1,1-TRICHLOROETHANE	10.00	U
CARBON TETRACHLORIDE	10.00	U
BROMODICHLOROMETHANE	10.00	U
1,2-DICHLOROPROPANE	10.00	U
CIS-1,3-DICHLOROPROPENE	10.00	U
TRICHLOROETHENE	10.00	U
DIBROMOCHLOROMETHANE	10.00	U
1,1,2-TRICHLOROETHANE	10.00	U
BENZENE	21.00	
TRANS-1,3-DICHLOROPROPENE	10.00	U
BROMOFORM	10.00	U
4-METHYL-2-PENTANONE	10.00	U
2-HEXANONE	10.00	U
TETRACHLOROETHENE	10.00	U
1,1,2,2-TETRACHLOROETHANE	10.00	U
TOLUENE	7.00	J
CHLOROBENZENE	10.00	U
ETHYLBENZENE	2.00	J
STYRENE	10.00	U
XYLENE	3.00	J

Sample ID : PV01050IT Units : ug/Kg

Analyte	Result	Qual
CHLOROMETHANE	10.00	U
BROMOMETHANE	10.00	U
VINYL CHLORIDE	10.00	U
CHLOROETHANE	10.00	U
METHYLENE CHLORIDE	10.00	U
ACETONE	8.00	BJ
CARBON DISULFIDE	10.00	U
1,1-DICHLOROETHENE	10.00	U
1,1-DICHLOROETHANE	10.00	U
1,2-DICHLOROETHENE	10.00	U

Appendix A1
Ryan's Pit Soil Treatment Analytical Data
Volatile Organic Compounds

Sample ID : PV01050IT Units : ug/Kg

Analyte	Result	Qual
CHLOROFORM	10.00	U
1,2-DICHLOROETHANE	10.00	U
2-BUTANONE	2.00	BJ
1,1,1-TRICHLOROETHANE	10.00	U
CARBON TETRACHLORIDE	10.00	U
BROMODICHLOROMETHANE	10.00	U
1,2-DICHLOROPROPANE	10.00	U
CIS-1,3-DICHLOROPROPENE	10.00	U
TRICHLOROETHENE	10.00	U
DIBROMOCHLOROMETHANE	10.00	U
1,1,2-TRICHLOROETHANE	10.00	U
BENZENE	4.00	J
TRANS-1,3-DICHLOROPROPENE	10.00	U
BROMOFORM	10.00	U
4-METHYL-2-PENTANONE	10.00	U
2-HEXANONE	10.00	U
TETRACHLOROETHENE	10.00	U
1,1,2,2-TETRACHLOROETHANE	10.00	U
TOLUENE	2.00	J
CHLOROBENZENE	10.00	U
ETHYLBENZENE	10.00	U
STYRENE	10.00	U
XYLENE	10.00	U

Sample ID : PV01051IT Units : ug/Kg

Analyte	Result	Qual
CHLOROMETHANE	10.00	U
BROMOMETHANE	10.00	U
VINYL CHLORIDE	10.00	U
CHLOROETHANE	10.00	U
METHYLENE CHLORIDE	10.00	U
ACETONE	45.00	B
CARBON DISULFIDE	10.00	U
1,1-DICHLOROETHENE	10.00	U
1,1-DICHLOROETHANE	10.00	U
1,2-DICHLOROETHENE	10.00	U
CHLOROFORM	10.00	U
1,2-DICHLOROETHANE	10.00	U
2-BUTANONE	4.00	BJ
1,1,1-TRICHLOROETHANE	10.00	U
CARBON TETRACHLORIDE	10.00	U
BROMODICHLOROMETHANE	10.00	U
1,2-DICHLOROPROPANE	10.00	U
CIS-1,3-DICHLOROPROPENE	10.00	U
TRICHLOROETHENE	10.00	U
DIBROMOCHLOROMETHANE	10.00	U
1,1,2-TRICHLOROETHANE	10.00	U
BENZENE	1.00	J
TRANS-1,3-DICHLOROPROPENE	10.00	U
BROMOFORM	10.00	U
4-METHYL-2-PENTANONE	10.00	U
2-HEXANONE	10.00	U
TETRACHLOROETHENE	10.00	U
1,1,2,2-TETRACHLOROETHANE	10.00	U
TOLUENE	10.00	U
CHLOROBENZENE	10.00	U
ETHYLBENZENE	10.00	U
STYRENE	10.00	U
XYLENE	10.00	U

Appendix A1
Ryan's Pit Soil Treatment Analytical Data
Volatile Organic Compounds

Sample ID : PV01052IT Units : ug/Kg

Analyte	Result	Qual
CHLOROMETHANE	10.00	U
BROMOMETHANE	10.00	U
VINYL CHLORIDE	10.00	U
CHLOROETHANE	10.00	U
METHYLENE CHLORIDE	10.00	U
ACETONE	6.00	BJ
CARBON DISULFIDE	10.00	U
1,1-DICHLOROETHENE	10.00	U
1,1-DICHLOROETHANE	10.00	U
1,2-DICHLOROETHENE	10.00	U
CHLOROFORM	10.00	U
1,2-DICHLOROETHANE	10.00	U
2-BUTANONE	10.00	U
1,1,1-TRICHLOROETHANE	10.00	U
CARBON TETRACHLORIDE	10.00	U
BROMODICHLOROMETHANE	10.00	U
1,2-DICHLOROPROPANE	10.00	U
CIS-1,3-DICHLOROPROPENE	10.00	U
TRICHLOROETHENE	10.00	U
DIBROMOCHLOROMETHANE	10.00	U
1,1,2-TRICHLOROETHANE	10.00	U
BENZENE	9.00	J
TRANS-1,3-DICHLOROPROPENE	10.00	U
BROMOFORM	10.00	U
4-METHYL-2-PENTANONE	10.00	U
2-HEXANONE	10.00	U
TETRACHLOROETHENE	10.00	U
1,1,2,2-TETRACHLOROETHANE	10.00	U
TOLUENE	2.00	J
CHLOROBENZENE	10.00	U
ETHYLBENZENE	10.00	U
STYRENE	10.00	U
XYLENE	10.00	U

Sample ID : PV01053IT Units : ug/Kg

Analyte	Result	Qual
CHLOROMETHANE	10.00	U
BROMOMETHANE	10.00	U
VINYL CHLORIDE	10.00	U
CHLOROETHANE	10.00	U
METHYLENE CHLORIDE	10.00	U
ACETONE	11.00	B
CARBON DISULFIDE	10.00	U
1,1-DICHLOROETHENE	10.00	U
1,1-DICHLOROETHANE	10.00	U
1,2-DICHLOROETHENE	10.00	U
CHLOROFORM	10.00	U
1,2-DICHLOROETHANE	10.00	U
2-BUTANONE	2.00	BJ
1,1,1-TRICHLOROETHANE	10.00	U
CARBON TETRACHLORIDE	10.00	U
BROMODICHLOROMETHANE	10.00	U
1,2-DICHLOROPROPANE	10.00	U
CIS-1,3-DICHLOROPROPENE	10.00	U
TRICHLOROETHENE	10.00	U
DIBROMOCHLOROMETHANE	10.00	U
1,1,2-TRICHLOROETHANE	10.00	U
BENZENE	11.00	
TRANS-1,3-DICHLOROPROPENE	10.00	U
BROMOFORM	10.00	U

Appendix A1
Ryan's Pit Soil Treatment - Analytical Data
Volatile Organic Compounds

Sample ID PV01053IT Units ug/Kg

Analyte	Result	Qual
4-METHYL-2 PENTANONE	10.00	U
2-HEXANONE	10.00	U
TETRACHLOROETHENE	10.00	U
1,1,2,2-TETRACHLOROETHANE	10.00	U
TOLUENE	2.00	J
CHLOROBENZENE	10.00	U
ETHYLBENZENE	10.00	U
STYRENE	10.00	U
XYLENE	10.00	U

Sample ID : PV01054IT Units : ug/Kg

Analyte	Result	Qual
CHLOROMETHANE	1,200.00	U
BROMOMETHANE	1,200.00	U
VINYL CHLORIDE	1,200.00	U
CHLOROETHANE	1,200.00	U
METHYLENE CHLORIDE	1,200.00	U
ACETONE	1,200.00	U
CARBON DISULFIDE	1,200.00	U
1,1-DICHLOROETHENE	1,200.00	U
1,1-DICHLOROETHANE	1,200.00	U
1,2-DICHLOROETHENE	1,200.00	U
CHLOROFORM	1,200.00	U
1,2-DICHLOROETHANE	1,200.00	U
2-BUTANONE	1,200.00	U
1,1,1-TRICHLOROETHANE	140.00	J
CARBON TETRACHLORIDE	1,200.00	U
BROMODICHLOROMETHANE	1,200.00	U
1,2-DICHLOROPROPANE	1,200.00	U
CIS-1,3-DICHLOROPROPENE	1,200.00	U
TRICHLOROETHENE	1,200.00	U
DIBROMOCHLOROMETHANE	1,200.00	U
1,1,2-TRICHLOROETHANE	1,200.00	U
BENZENE	1,200.00	U
TRANS-1,3-DICHLOROPROPENE	1,200.00	U
BROMOFORM	1,200.00	U
4-METHYL-2-PENTANONE	1,200.00	U
2-HEXANONE	1,200.00	U
TETRACHLOROETHENE	3,600.00	
1,1,2,2-TETRACHLOROETHANE	1,200.00	U
TOLUENE	1,200.00	U
CHLOROBENZENE	1,200.00	U
ETHYLBENZENE	1,200.00	U
STYRENE	1,200.00	U
XYLENE	1,200.00	U

Sample ID : PV01055IT Units : ug/Kg

Analyte	Result	Qual
CHLOROMETHANE	1,200.00	U
BROMOMETHANE	1,200.00	U
VINYL CHLORIDE	1,200.00	U
CHLOROETHANE	1,200.00	U
METHYLENE CHLORIDE	1,200.00	U
ACETONE	330.00	J
CARBON DISULFIDE	1,200.00	U
1,1-DICHLOROETHENE	1,200.00	U
1,1-DICHLOROETHANE	1,200.00	U
1,2-DICHLOROETHENE	1,200.00	U

Appendix A1
Ryan's Pit Soil Treatment - Analytical Data
Volatile Organic Compounds

Sample ID : PV01055IT Units ug/Kg

Analyte	Result	Qual
CHLOROFORM	1,200.00	U
1,2-DICHLOROETHANE	1,200.00	U
2-BUTANONE	1,200.00	U
1,1,1-TRICHLOROETHANE	2,600.00	
CARBON TETRACHLORIDE	1,200.00	U
BROMODICHLOROMETHANE	1,200.00	U
1,2-DICHLOROPROPANE	1,200.00	U
CIS-1,3-DICHLOROPROPENE	1,200.00	U
TRICHLOROETHENE	1,600.00	
DIBROMOCHLOROMETHANE	1,200.00	U
1,1,2-TRICHLOROETHANE	1,200.00	U
BENZENE	1,200.00	U
TRANS-1,3-DICHLOROPROPENE	1,200.00	U
BROMOFORM	1,200.00	U
4-METHYL-2-PENTANONE	1,200.00	J
2-HEXANONE	1,200.00	U
TETRACHLOROETHENE	28,000.00	E
1,1,2,2-TETRACHLOROETHANE	1,200.00	U
TOLUENE	7,700.00	
CHLOROBENZENE	1,200.00	U
ETHYLBENZENE	1,600.00	
STYRENE	1,200.00	U
XYLENE	7,900.00	

Sample ID : PV01056IT Units : ug/Kg

Analyte	Result	Qual
CHLOROMETHANE	1,200.00	U
BROMOMETHANE	1,200.00	U
VINYL CHLORIDE	1,200.00	U
CHLOROETHANE	1,200.00	U
METHYLENE CHLORIDE	1,200.00	U
ACETONE	2,600.00	
CARBON DISULFIDE	1,200.00	U
1,1-DICHLOROETHENE	1,200.00	U
1,1-DICHLOROETHANE	1,200.00	U
1,2-DICHLOROETHENE	1,200.00	U
CHLOROFORM	1,200.00	U
1,2-DICHLOROETHANE	1,200.00	U
2-BUTANONE	1,200.00	U
1,1,1-TRICHLOROETHANE	990.00	J
CARBON TETRACHLORIDE	1,200.00	U
BROMODICHLOROMETHANE	1,200.00	U
1,2-DICHLOROPROPANE	1,200.00	U
CIS-1,3-DICHLOROPROPENE	1,200.00	U
TRICHLOROETHENE	320.00	J
DIBROMOCHLOROMETHANE	1,200.00	U
1,1,2-TRICHLOROETHANE	1,200.00	U
BENZENE	1,200.00	U
TRANS-1,3-DICHLOROPROPENE	1,200.00	U
BROMOFORM	1,200.00	U
4-METHYL-2-PENTANONE	1,200.00	U
2-HEXANONE	1,200.00	U
TETRACHLOROETHENE	41,000.00	E
1,1,2,2-TETRACHLOROETHANE	1,200.00	U
TOLUENE	9,100.00	
CHLOROBENZENE	1,200.00	U
ETHYLBENZENE	2,300.00	
STYRENE	1,200.00	U
XYLENE	15,000.00	

Appendix A1
Ryan's Pit Soil Treatment - Analytical Data
Volatile Organic Compounds

Sample ID PV01057IT Units : ug/Kg

Analyte	Result	Qual
CHLOROMETHANE	1,200.00	U
BROMOMETHANE	1,200.00	U
VINYL CHLORIDE	1,200.00	U
CHLOROETHANE	1,200.00	U
METHYLENE CHLORIDE	1,200.00	U
ACETONE	4,400.00	
CARBON DISULFIDE	1,200.00	U
1,1-DICHLOROETHENE	1,200.00	U
1,1-DICHLOROETHANE	1,200.00	U
1,2-DICHLOROETHENE	1,200.00	U
CHLOROFORM	1,200.00	U
1,2-DICHLOROETHANE	1,200.00	U
2-BUTANONE	580.00	J
1,1,1-TRICHLOROETHANE	1,200.00	J
CARBON TETRACHLORIDE	1,200.00	U
BROMODICHLOROMETHANE	1,200.00	U
1,2-DICHLOROPROPANE	1,200.00	U
CIS-1,3-DICHLOROPROPENE	1,200.00	U
TRICHLOROETHENE	380.00	J
DIBROMOCHLOROMETHANE	1,200.00	U
1,1,2-TRICHLOROETHANE	1,200.00	U
BENZENE	1,200.00	U
TRANS-1,3-DICHLOROPROPENE	1,200.00	U
BROMOFORM	1,200.00	U
4-METHYL-2-PENTANONE	670.00	J
2-HEXANONE	1,200.00	U
TETRACHLOROETHENE	31,000.00	E
1,1,2,2-TETRACHLOROETHANE	1,200.00	U
TOLUENE	14,000.00	
CHLOROBENZENE	1,200.00	U
ETHYLBENZENE	6,200.00	
STYRENE	1,200.00	U
XYLENE	54,000.00	E

Sample ID : PV01058IT Units : ug/Kg

Analyte	Result	Qual
CHLOROMETHANE	12,000.00	U
BROMOMETHANE	12,000.00	U
VINYL CHLORIDE	12,000.00	U
CHLOROETHANE	12,000.00	U
METHYLENE CHLORIDE	12,000.00	U
ACETONE	12,000.00	U
CARBON DISULFIDE	12,000.00	U
1,1-DICHLOROETHENE	12,000.00	U
1,1-DICHLOROETHANE	12,000.00	U
1,2-DICHLOROETHENE	12,000.00	U
CHLOROFORM	12,000.00	U
1,2-DICHLOROETHANE	12,000.00	U
2-BUTANONE	12,000.00	U
1,1,1-TRICHLOROETHANE	1,800.00	J
CARBON TETRACHLORIDE	12,000.00	U
BROMODICHLOROMETHANE	12,000.00	U
1,2-DICHLOROPROPANE	12,000.00	U
CIS-1,3-DICHLOROPROPENE	12,000.00	U
TRICHLOROETHENE	1,300.00	J
DIBROMOCHLOROMETHANE	12,000.00	U
1,1,2-TRICHLOROETHANE	12,000.00	U
BENZENE	12,000.00	U
TRANS-1,3-DICHLOROPROPENE	12,000.00	U
BROMOFORM	12,000.00	U

Appendix A1
Ryan's Pit Soil Treatment - Analytical Data
Volatile Organic Compounds

Sample ID : PV01058IT Units : ug/Kg

Analyte	Result	Qual
4-METHYL-2-PENTANONE	12,000.00	U
2-HEXANONE	12,000.00	U
TETRACHLOROETHENE	79,000.00	
1,1,2,2-TETRACHLOROETHANE	12,000.00	U
TOLUENE	4,400.00	J
CHLOROBENZENE	12,000.00	U
ETHYLBENZENE	12,000.00	U
STYRENE	12,000.00	U
XYLENE	10,000.00	J

Sample ID : PV01059IT Units : ug/Kg

Analyte	Result	Qual
CHLOROMETHANE	12,000.00	U
BROMOMETHANE	12,000.00	U
VINYL CHLORIDE	12,000.00	U
CHLOROETHANE	12,000.00	U
METHYLENE CHLORIDE	12,000.00	U
ACETONE	12,000.00	U
CARBON DISULFIDE	12,000.00	U
1,1-DICHLOROETHENE	12,000.00	U
1,1-DICHLOROETHANE	12,000.00	U
1,2-DICHLOROETHENE	12,000.00	U
CHLOROFORM	12,000.00	U
1,2-DICHLOROETHANE	12,000.00	U
2-BUTANONE	12,000.00	U
1,1,1-TRICHLOROETHANE	4,400.00	J
CARBON TETRACHLORIDE	12,000.00	U
BROMODICHLOROMETHANE	12,000.00	U
1,2-DICHLOROPROPANE	12,000.00	U
CIS-1,3-DICHLOROPROPENE	12,000.00	U
TRICHLOROETHENE	3,600.00	J
DIBROMOCHLOROMETHANE	12,000.00	U
1,1,2-TRICHLOROETHANE	12,000.00	U
BENZENE	12,000.00	U
TRANS-1,3-DICHLOROPROPENE	12,000.00	U
BROMOFORM	12,000.00	U
4-METHYL-2-PENTANONE	12,000.00	U
2-HEXANONE	12,000.00	U
TETRACHLOROETHENE	160,000.00	
1,1,2,2-TETRACHLOROETHANE	12,000.00	U
TOLUENE	12,000.00	U
CHLOROBENZENE	12,000.00	U
ETHYLBENZENE	12,000.00	U
STYRENE	12,000.00	U
XYLENE	12,000.00	U

Sample ID : PV01060IT Units : ug/Kg

Analyte	Result	Qual
CHLOROMETHANE	10.00	U
BROMOMETHANE	10.00	U
VINYL CHLORIDE	10.00	U
CHLOROETHANE	10.00	U
METHYLENE CHLORIDE	10.00	U
ACETONE	38.00	
CARBON DISULFIDE	10.00	U
1,1-DICHLOROETHENE	9.00	J
1,1-DICHLOROETHANE	10.00	U
1,2-DICHLOROETHENE	10.00	U

Appendix A1
Ryan's Pit Soil Treatment Analytical Data
Volatile Organic Compounds

Sample ID : PV01060IT Units : ug/Kg

Analyte	Result	Qual
CHLOROFORM	10.00	U
1,2-DICHLOROETHANE	10.00	U
2-BUTANONE	13.00	
1,1,1-TRICHLOROETHANE	10.00	U
CARBON TETRACHLORIDE	10.00	U
BROMODICHLOROMETHANE	10.00	U
1,2-DICHLOROPROPANE	10.00	U
CIS-1,3-DICHLOROPROPENE	10.00	U
TRICHLOROETHENE	10.00	U
DIBROMOCHLOROMETHANE	10.00	U
1,1,2-TRICHLOROETHANE	10.00	U
BENZENE	35.00	
TRANS-1,3-DICHLOROPROPENE	10.00	U
BROMOFORM	10.00	U
4-METHYL-2-PENTANONE	10.00	U
2-HEXANONE	10.00	U
TETRACHLOROETHENE	10.00	J
1,1,2,2-TETRACHLOROETHANE	10.00	U
TOLUENE	34.00	
CHLOROBENZENE	10.00	U
ETHYLBENZENE	5.00	J
STYRENE	10.00	U
XYLENE	46.00	B

Sample ID : PV01061IT Units : ug/Kg

Analyte	Result	Qual
CHLOROMETHANE	10.00	U
BROMOMETHANE	10.00	U
VINYL CHLORIDE	10.00	U
CHLOROETHANE	10.00	U
METHYLENE CHLORIDE	10.00	U
ACETONE	15.00	
CARBON DISULFIDE	10.00	U
1,1-DICHLOROETHENE	26.00	
1,1-DICHLOROETHANE	10.00	U
1,2-DICHLOROETHENE	10.00	U
CHLOROFORM	10.00	U
1,2-DICHLOROETHANE	10.00	U
2-BUTANONE	8.00	J
1,1,1-TRICHLOROETHANE	10.00	U
CARBON TETRACHLORIDE	10.00	U
BROMODICHLOROMETHANE	10.00	U
1,2-DICHLOROPROPANE	10.00	U
CIS-1,3-DICHLOROPROPENE	10.00	U
TRICHLOROETHENE	2.00	J
DIBROMOCHLOROMETHANE	10.00	U
1,1,2-TRICHLOROETHANE	10.00	U
BENZENE	23.00	
TRANS-1,3-DICHLOROPROPENE	10.00	U
BROMOFORM	10.00	U
4-METHYL-2-PENTANONE	10.00	U
2-HEXANONE	10.00	U
TETRACHLOROETHENE	13.00	
1,1,2,2-TETRACHLOROETHANE	10.00	U
TOLUENE	18.00	
CHLOROBENZENE	10.00	U
ETHYLBENZENE	3.00	J
STYRENE	10.00	U
XYLENE	17.00	B

Sample ID : PV01064IT Units ug/Kg

Analyte	Result	Qual
CHLOROMETHANE	1,200.00	U
BROMOMETHANE	1,200.00	U
VINYL CHLORIDE	1,200.00	U
CHLOROETHANE	1,200.00	U
METHYLENE CHLORIDE	1,200.00	U
ACETONE	1,100.00	J
CARBON DISULFIDE	1,200.00	U
1,1-DICHLOROETHENE	1,200.00	U
1,1-DICHLOROETHANE	1,200.00	U
1,2-DICHLOROETHENE	1,200.00	U
CHLOROFORM	1,200.00	U
1,2-DICHLOROETHANE	1,200.00	U
2-BUTANONE	1,200.00	U
1,1,1-TRICHLOROETHANE	1,200.00	U
CARBON TETRACHLORIDE	1,200.00	U
BROMODICHLOROMETHANE	1,200.00	U
1,2-DICHLOROPROPANE	1,200.00	U
CIS-1,3-DICHLOROPROPENE	1,200.00	U
TRICHLOROETHENE	1,200.00	U
DIBROMOCHLOROMETHANE	1,200.00	U
1,1,2-TRICHLOROETHANE	1,200.00	U
BENZENE	1,200.00	U
TRANS-1,3-DICHLOROPROPENE	1,200.00	U
BROMOFORM	1,200.00	U
4-METHYL-2-PENTANONE	1,200.00	U
2-HEXANONE	1,200.00	U
TETRACHLOROETHENE	9,900.00	
1,1,2,2-TETRACHLOROETHANE	1,200.00	U
TOLUENE	300.00	BJ
CHLOROBENZENE	1,200.00	U
ETHYLBENZENE	130.00	J
STYRENE	1,200.00	U
XYLENE	1,300.00	B

Sample ID : PV01065IT Units : ug/Kg

Analyte	Result	Qual
CHLOROMETHANE	1,200.00	U
BROMOMETHANE	1,200.00	U
VINYL CHLORIDE	1,200.00	U
CHLOROETHANE	1,200.00	U
METHYLENE CHLORIDE	1,200.00	U
ACETONE	650.00	J
CARBON DISULFIDE	1,200.00	U
1,1-DICHLOROETHENE	1,200.00	U
1,1-DICHLOROETHANE	1,200.00	U
1,2-DICHLOROETHENE	1,200.00	U
CHLOROFORM	1,200.00	U
1,2-DICHLOROETHANE	1,200.00	U
2-BUTANONE	1,200.00	U
1,1,1-TRICHLOROETHANE	1,200.00	U
CARBON TETRACHLORIDE	1,200.00	U
BROMODICHLOROMETHANE	1,200.00	U
1,2-DICHLOROPROPANE	1,200.00	U
CIS-1,3-DICHLOROPROPENE	1,200.00	U
TRICHLOROETHENE	1,200.00	U
DIBROMOCHLOROMETHANE	1,200.00	U
1,1,2-TRICHLOROETHANE	1,200.00	U
BENZENE	1,200.00	U
TRANS-1,3-DICHLOROPROPENE	1,200.00	U
BROMOFORM	1,200.00	U

Appendix A1
Ryan's Pit Soil Treatment - Analytical Data
Volatile Organic Compounds

Sample ID : PV01065IT Units : ug/Kg

Analyte	Result	Qual
4-METHYL-2-PENTANONE	1,200.00	U
2-HEXANONE	1,200.00	U
TETRACHLOROETHENE	5,400.00	
1,1,2,2-TETRACHLOROETHANE	1,200.00	U
TOLUENE	300.00	BJ
CHLOROBENZENE	1,200.00	U
ETHYLBENZENE	140.00	J
STYRENE	1,200.00	U
XYLENE	1,300.00	B

Sample ID : PV01066IT Units : ug/Kg

Analyte	Result	Qual
CHLOROMETHANE	1,200.00	U
BROMOMETHANE	1,200.00	U
VINYL CHLORIDE	1,200.00	U
CHLOROETHANE	1,200.00	U
METHYLENE CHLORIDE	1,200.00	U
ACETONE	3,300.00	
CARBON DISULFIDE	1,200.00	U
1,1-DICHLOROETHENE	1,200.00	U
1,1-DICHLOROETHANE	1,200.00	U
1,2-DICHLOROETHENE	1,200.00	U
CHLOROFORM	1,200.00	U
1,2-DICHLOROETHANE	1,200.00	U
2-BUTANONE	3,000.00	
1,1,1-TRICHLOROETHANE	1,200.00	U
CARBON TETRACHLORIDE	1,200.00	U
BROMODICHLOROMETHANE	1,200.00	U
1,2-DICHLOROPROPANE	1,200.00	U
CIS-1,3-DICHLOROPROPENE	1,200.00	U
TRICHLOROETHENE	1,200.00	U
DIBROMOCHLOROMETHANE	1,200.00	U
1,1,2-TRICHLOROETHANE	1,200.00	U
BENZENE	1,200.00	U
TRANS-1,3-DICHLOROPROPENE	1,200.00	U
BROMOFORM	1,200.00	U
4-METHYL-2-PENTANONE	1,200.00	U
2-HEXANONE	1,200.00	U
TETRACHLOROETHENE	4,600.00	
1,1,2,2-TETRACHLOROETHANE	1,200.00	U
TOLUENE	1,600.00	B
CHLOROBENZENE	1,200.00	U
ETHYLBENZENE	1,000.00	J
STYRENE	1,200.00	U
XYLENE	11,000.00	B

Sample ID : PV01067IT Units : ug/Kg

Analyte	Result	Qual
CHLOROMETHANE	1,200.00	U
BROMOMETHANE	1,200.00	U
VINYL CHLORIDE	1,200.00	U
CHLOROETHANE	1,200.00	U
METHYLENE CHLORIDE	1,200.00	U
ACETONE	1,400.00	
CARBON DISULFIDE	1,200.00	U
1,1-DICHLOROETHENE	1,200.00	U
1,1-DICHLOROETHANE	1,200.00	U
1,2-DICHLOROETHENE	1,200.00	U

Appendix A1
Ryan's Pit Soil Treatment - Analytical Data
Volatile Organic Compounds

Sample ID : PV01067IT Units ug/Kg

Analyte	Result	Qual
CHLOROFORM	1,200.00	U
1,2-DICHLOROETHANE	1,200.00	U
2-BUTANONE	2,200.00	
1,1,1-TRICHLOROETHANE	1,200.00	U
CARBON TETRACHLORIDE	1,200.00	U
BROMODICHLOROMETHANE	1,200.00	U
1,2-DICHLOROPROPANE	1,200.00	U
CIS-1,3-DICHLOROPROPENE	1,200.00	U
TRICHLOROETHENE	1,200.00	U
DIBROMOCHLOROMETHANE	1,200.00	U
1,1,2-TRICHLOROETHANE	1,200.00	U
BENZENE	1,200.00	U
TRANS-1,3-DICHLOROPROPENE	1,200.00	U
BROMOFORM	1,200.00	U
4-METHYL-2-PENTANONE	1,200.00	U
2-HEXANONE	1,200.00	U
TETRACHLOROETHENE	6,900.00	
1,1,2,2-TETRACHLOROETHANE	1,200.00	U
TOLUENE	1,100.00	BJ
CHLOROBENZENE	1,200.00	U
ETHYLBENZENE	480.00	J
STYRENE	1,200.00	U
XYLENE	4,600.00	B

Sample ID : PV01072IT Units : ug/Kg

Analyte	Result	Qual
CHLOROMETHANE	10.00	U
BROMOMETHANE	10.00	U
VINYL CHLORIDE	10.00	U
CHLOROETHANE	10.00	U
METHYLENE CHLORIDE	10.00	U
ACETONE	21.00	
CARBON DISULFIDE	10.00	U
1,1-DICHLOROETHENE	3.00	J
1,1-DICHLOROETHANE	10.00	U
1,2-DICHLOROETHENE	10.00	U
CHLOROFORM	10.00	U
1,2-DICHLOROETHANE	10.00	U
2-BUTANONE	10.00	U
1,1,1-TRICHLOROETHANE	10.00	U
CARBON TETRACHLORIDE	10.00	U
BROMODICHLOROMETHANE	10.00	U
1,2-DICHLOROPROPANE	10.00	U
CIS-1,3-DICHLOROPROPENE	10.00	U
TRICHLOROETHENE	10.00	U
DIBROMOCHLOROMETHANE	10.00	U
1,1,2-TRICHLOROETHANE	10.00	U
BENZENE	8.00	J
TRANS-1,3-DICHLOROPROPENE	10.00	U
BROMOFORM	10.00	U
4-METHYL-2-PENTANONE	10.00	U
2-HEXANONE	10.00	U
TETRACHLOROETHENE	29.00	
1,1,2,2-TETRACHLOROETHANE	10.00	U
TOLUENE	10.00	J
CHLOROBENZENE	10.00	U
ETHYLBENZENE	10.00	U
STYRENE	1.00	J
XYLENE	26.00	B

Appendix A1
Ryan's Pit Soil Treatment - Analytical Data
Volatile Organic Compounds

Sample ID : PV01073IT Units : ug/Kg

Analyte	Result	Qual
CHLOROMETHANE	20.00	U
BROMOMETHANE	20.00	U
VINYL CHLORIDE	20.00	U
CHLOROETHANE	20.00	U
METHYLENE CHLORIDE	20.00	U
ACETONE	180.00	
CARBON DISULFIDE	20.00	U
1,1-DICHLOROETHENE	1,100.00	E
1,1-DICHLOROETHANE	5.00	J
1,2-DICHLOROETHENE	20.00	U
CHLOROFORM	20.00	U
1,2-DICHLOROETHANE	20.00	U
2-BUTANONE	19.00	J
1,1,1-TRICHLOROETHANE	910.00	E
CARBON TETRACHLORIDE	20.00	U
BROMODICHLOROMETHANE	20.00	U
1,2-DICHLOROPROPANE	20.00	U
CIS-1,3-DICHLOROPROPENE	20.00	U
TRICHLOROETHENE	230.00	
DIBROMOCHLOROMETHANE	20.00	U
1,1,2-TRICHLOROETHANE	20.00	U
BENZENE	13.00	J
TRANS-1,3-DICHLOROPROPENE	20.00	U
BROMOFORM	20.00	U
4-METHYL-2-PENTANONE	20.00	U
2-HEXANONE	20.00	U
TETRACHLOROETHENE	330.00	
1,1,2,2-TETRACHLOROETHANE	20.00	U
TOLUENE	57.00	
CHLOROBENZENE	20.00	U
ETHYLBENZENE	8.00	J
STYRENE	20.00	U
XYLENE	88.00	

Sample ID : PV01074IT Units : ug/Kg

Analyte	Result	Qual
CHLOROMETHANE	10.00	U
BROMOMETHANE	10.00	U
VINYL CHLORIDE	10.00	U
CHLOROETHANE	10.00	U
METHYLENE CHLORIDE	10.00	U
ACETONE	4.00	J
CARBON DISULFIDE	10.00	U
1,1-DICHLOROETHENE	10.00	U
1,1-DICHLOROETHANE	10.00	U
1,2-DICHLOROETHENE	10.00	U
CHLOROFORM	10.00	U
1,2-DICHLOROETHANE	10.00	U
2-BUTANONE	10.00	U
1,1,1-TRICHLOROETHANE	4.00	J
CARBON TETRACHLORIDE	10.00	U
BROMODICHLOROMETHANE	10.00	U
1,2-DICHLOROPROPANE	10.00	U
CIS-1,3-DICHLOROPROPENE	10.00	U
TRICHLOROETHENE	2.00	J
DIBROMOCHLOROMETHANE	10.00	U
1,1,2-TRICHLOROETHANE	10.00	U
BENZENE	10.00	U
TRANS-1,3-DICHLOROPROPENE	10.00	U
BROMOFORM	10.00	U

Appendix A1
Ryan's Pit Soil Treatment - Analytical Data
Volatile Organic Compounds

Sample ID : PV01074IT Units : ug/Kg

Analyte	Result	Qual
4-METHYL-2-PENTANONE	10.00	U
2-HEXANONE	10.00	U
TETRACHLOROETHENE	120.00	
1,1,2,2-TETRACHLOROETHANE	10.00	U
TOLUENE	3.00	J
CHLOROBENZENE	10.00	U
ETHYLBENZENE	10.00	U
STYRENE	10.00	U
XYLENE	1.00	BJ

Sample ID : PV01075IT Units : ug/Kg

Analyte	Result	Qual
CHLOROMETHANE	10.00	U
BROMOMETHANE	10.00	U
VINYL CHLORIDE	10.00	U
CHLOROETHANE	10.00	U
METHYLENE CHLORIDE	10.00	U
ACETONE	2.00	J
CARBON DISULFIDE	10.00	U
1,1-DICHLOROETHENE	10.00	U
1,1-DICHLOROETHANE	10.00	U
1,2-DICHLOROETHENE	10.00	U
CHLOROFORM	10.00	U
1,2-DICHLOROETHANE	10.00	U
2-BUTANONE	10.00	U
1,1,1-TRICHLOROETHANE	3.00	J
CARBON TETRACHLORIDE	10.00	U
BROMODICHLOROMETHANE	10.00	U
1,2-DICHLOROPROPANE	10.00	U
CIS-1,3-DICHLOROPROPENE	10.00	U
TRICHLOROETHENE	2.00	J
DIBROMOCHLOROMETHANE	10.00	U
1,1,2-TRICHLOROETHANE	10.00	U
BENZENE	10.00	U
TRANS-1,3-DICHLOROPROPENE	10.00	U
BROMOFORM	10.00	U
4-METHYL-2-PENTANONE	10.00	U
2-HEXANONE	10.00	U
TETRACHLOROETHENE	96.00	
1,1,2,2-TETRACHLOROETHANE	10.00	U
TOLUENE	4.00	J
CHLOROBENZENE	10.00	U
ETHYLBENZENE	10.00	U
STYRENE	10.00	U
XYLENE	4.00	BJ

Sample ID : PV01076IT Units : ug/Kg

Analyte	Result	Qual
CHLOROMETHANE	10.00	U
BROMOMETHANE	10.00	U
VINYL CHLORIDE	10.00	U
CHLOROETHANE	10.00	U
METHYLENE CHLORIDE	10.00	U
ACETONE	5.00	J
CARBON DISULFIDE	10.00	U
1,1-DICHLOROETHENE	10.00	U
1,1-DICHLOROETHANE	10.00	U
1,2-DICHLOROETHENE	10.00	U

Appendix A1
Ryan's Pit Soil Treatment - Analytical Data
Volatile Organic Compounds

Sample ID : PV01076IT Units : ug/Kg

Analyte	Result	Qual
CHLOROFORM	10.00	U
1,2-DICHLOROETHANE	10.00	U
2-BUTANONE	10.00	U
1,1,1-TRICHLOROETHANE	10.00	U
CARBON TETRACHLORIDE	10.00	U
BROMODICHLOROMETHANE	10.00	U
1,2-DICHLOROPROPANE	10.00	U
CIS-1,3-DICHLOROPROPENE	10.00	U
TRICHLOROETHENE	10.00	U
DIBROMOCHLOROMETHANE	10.00	U
1,1,2-TRICHLOROETHANE	10.00	U
BENZENE	11.00	
TRANS-1,3-DICHLOROPROPENE	10.00	U
BROMOFORM	10.00	U
4-METHYL-2-PENTANONE	10.00	U
2-HEXANONE	10.00	U
TETRACHLOROETHENE	10.00	U
1,1,2,2-TETRACHLOROETHANE	10.00	U
TOLUENE	2.00	J
CHLOROBENZENE	10.00	U
ETHYLBENZENE	10.00	U
STYRENE	10.00	U
XYLENE	10.00	U

Sample ID : PV01077IT Units : ug/Kg

Analyte	Result	Qual
CHLOROMETHANE	10.00	U
BROMOMETHANE	10.00	U
VINYL CHLORIDE	10.00	U
CHLOROETHANE	10.00	U
METHYLENE CHLORIDE	10.00	U
ACETONE	10.00	U
CARBON DISULFIDE	10.00	U
1,1-DICHLOROETHENE	6.00	J
1,1-DICHLOROETHANE	10.00	U
1,2-DICHLOROETHENE	10.00	U
CHLOROFORM	10.00	U
1,2-DICHLOROETHANE	10.00	U
2-BUTANONE	10.00	U
1,1,1-TRICHLOROETHANE	10.00	U
CARBON TETRACHLORIDE	10.00	U
BROMODICHLOROMETHANE	10.00	U
1,2-DICHLOROPROPANE	10.00	U
CIS-1,3-DICHLOROPROPENE	10.00	U
TRICHLOROETHENE	1.00	J
DIBROMOCHLOROMETHANE	10.00	U
1,1,2-TRICHLOROETHANE	10.00	U
BENZENE	12.00	
TRANS-1,3-DICHLOROPROPENE	10.00	U
BROMOFORM	10.00	U
4-METHYL-2-PENTANONE	10.00	U
2-HEXANONE	10.00	U
TETRACHLOROETHENE	1.00	J
1,1,2,2-TETRACHLOROETHANE	10.00	U
TOLUENE	4.00	J
CHLOROBENZENE	10.00	U
ETHYLBENZENE	10.00	U
STYRENE	10.00	U
XYLENE	1.00	BJ

Appendix A1
Ryan's Pit Soil Treatment - Analytical Data
Volatile Organic Compounds

Sample ID PV01078IT Units ug/Kg

Analyte	Result	Qual
CHLOROMETHANE	600.00	U
BROMOMETHANE	600.00	U
VINYL CHLORIDE	600.00	U
CHLOROETHANE	600.00	U
METHYLENE CHLORIDE	600.00	U
ACETONE	600.00	U
CARBON DISULFIDE	600.00	U
1,1-DICHLOROETHENE	600.00	U
1,1-DICHLOROETHANE	600.00	U
1,2-DICHLOROETHENE	620.00	U
CHLOROFORM	600.00	U
1,2-DICHLOROETHANE	600.00	U
2-BUTANONE	600.00	U
1,1,1-TRICHLOROETHANE	87.00	J
CARBON TETRACHLORIDE	600.00	U
BROMODICHLOROMETHANE	600.00	U
1,2-DICHLOROPROPANE	600.00	U
CIS-1,3-DICHLOROPROPENE	600.00	U
TRICHLOROETHENE	600.00	U
DIBROMOCHLOROMETHANE	600.00	U
1,1,2-TRICHLOROETHANE	600.00	U
BENZENE	600.00	U
TRANS-1,3-DICHLOROPROPENE	600.00	U
BROMOFORM	600.00	U
4-METHYL-2-PENTANONE	600.00	U
2-HEXANONE	600.00	U
TETRACHLOROETHENE	620.00	J
1,1,2,2-TETRACHLOROETHANE	600.00	U
TOLUENE	600.00	U
CHLOROBENZENE	600.00	U
ETHYLBENZENE	600.00	U
STYRENE	600.00	U
XYLENE	600.00	U

Sample ID : PV01079IT Units : ug/Kg

Analyte	Result	Qual
CHLOROMETHANE	12,000.00	U
BROMOMETHANE	12,000.00	U
VINYL CHLORIDE	12,000.00	U
CHLOROETHANE	12,000.00	U
METHYLENE CHLORIDE	12,000.00	U
ACETONE	12,000.00	U
CARBON DISULFIDE	12,000.00	U
1,1-DICHLOROETHENE	12,000.00	U
1,1-DICHLOROETHANE	12,000.00	U
1,2-DICHLOROETHENE	12,000.00	U
CHLOROFORM	12,000.00	U
1,2-DICHLOROETHANE	12,000.00	U
2-BUTANONE	12,000.00	U
1,1,1-TRICHLOROETHANE	12,000.00	U
CARBON TETRACHLORIDE	12,000.00	U
BROMODICHLOROMETHANE	12,000.00	U
1,2-DICHLOROPROPANE	12,000.00	U
CIS-1,3-DICHLOROPROPENE	12,000.00	U
TRICHLOROETHENE	12,000.00	U
DIBROMOCHLOROMETHANE	12,000.00	U
1,1,2-TRICHLOROETHANE	12,000.00	U
BENZENE	12,000.00	U
TRANS-1,3-DICHLOROPROPENE	12,000.00	U
BROMOFORM	12,000.00	U

Appendix A1
Ryan's Pit Soil Treatment Analytical Data
Volatile Organic Compounds

Sample ID PV01079IT Units : ug/Kg

Analyte	Result	Qual
4-METHYL-2-PENTANONE	12,000.00	U
2-HEXANONE	12,000.00	U
TETRACHLOROETHENE	37,000.00	
1,1,2,2-TETRACHLOROETHANE	12,000.00	U
TOLUENE	2,700.00	J
CHLOROBENZENE	12,000.00	U
ETHYLBENZENE	1,800.00	J
STYRENE	12,000.00	U
XYLENE	12,000.00	J

Sample ID : PV01080IT Units : ug/Kg

Analyte	Result	Qual
CHLOROMETHANE	1,200.00	U
BROMOMETHANE	1,200.00	U
VINYL CHLORIDE	1,200.00	U
CHLOROETHANE	1,200.00	U
METHYLENE CHLORIDE	1,200.00	U
ACETONE	3,300.00	
CARBON DISULFIDE	1,200.00	U
1,1-DICHLOROETHENE	1,200.00	U
1,1-DICHLOROETHANE	1,200.00	U
1,2-DICHLOROETHENE	1,200.00	U
CHLOROFORM	1,200.00	U
1,2-DICHLOROETHANE	1,200.00	U
2-BUTANONE	1,200.00	U
1,1,1-TRICHLOROETHANE	1,200.00	U
CARBON TETRACHLORIDE	1,200.00	U
BROMODICHLOROMETHANE	1,200.00	U
1,2-DICHLOROPROPANE	1,200.00	U
CIS-1,3-DICHLOROPROPENE	1,200.00	U
TRICHLOROETHENE	1,200.00	U
DIBROMOCHLOROMETHANE	1,200.00	U
1,1,2-TRICHLOROETHANE	1,200.00	U
BENZENE	1,200.00	U
TRANS-1,3-DICHLOROPROPENE	1,200.00	U
BROMOFORM	1,200.00	U
4-METHYL-2-PENTANONE	1,200.00	U
2-HEXANONE	1,200.00	U
TETRACHLOROETHENE	14,000.00	
1,1,2,2-TETRACHLOROETHANE	1,200.00	U
TOLUENE	3,300.00	B
CHLOROBENZENE	1,200.00	U
ETHYLBENZENE	2,400.00	
STYRENE	1,200.00	U
XYLENE	20,000.00	B

Sample ID : PV01081IT Units : ug/Kg

Analyte	Result	Qual
CHLOROMETHANE	1,200.00	U
BROMOMETHANE	1,200.00	U
VINYL CHLORIDE	1,200.00	U
CHLOROETHANE	1,200.00	U
METHYLENE CHLORIDE	1,200.00	U
ACETONE	360.00	J
CARBON DISULFIDE	1,200.00	U
1,1-DICHLOROETHENE	1,200.00	U
1,1-DICHLOROETHANE	1,200.00	U
1,2-DICHLOROETHENE	1,200.00	U

Appendix A1
Ryan's Pit Soil Treatment - Analytical Data
Volatile Organic Compounds

Sample ID : PV01081IT Units : ug/Kg

Analyte	Result	Qual
CHLOROFORM	1,200.00	U
1,2-DICHLOROETHANE	1,200.00	U
2-BUTANONE	1,200.00	U
1,1,1-TRICHLOROETHANE	1,200.00	U
CARBON TETRACHLORIDE	1,200.00	U
BROMODICHLOROMETHANE	1,200.00	U
1,2-DICHLOROPROPANE	1,200.00	U
CIS-1,3-DICHLOROPROPENE	1,200.00	U
TRICHLOROETHENE	1,200.00	U
DIBROMOCHLOROMETHANE	1,200.00	U
1,1,2-TRICHLOROETHANE	1,200.00	U
BENZENE	1,200.00	U
TRANS-1,3-DICHLOROPROPENE	1,200.00	U
BROMOFORM	1,200.00	U
4-METHYL-2-PENTANONE	1,200.00	U
2-HEXANONE	1,200.00	U
TETRACHLOROETHENE	2,300.00	
1,1,2,2-TETRACHLOROETHANE	1,200.00	U
TOLUENE	160.00	BJ
CHLOROBENZENE	1,200.00	U
ETHYLBENZENE	1,200.00	U
STYRENE	1,200.00	U
XYLENE	990.00	BJ

Sample ID : PV01082IT Units : ug/Kg

Analyte	Result	Qual
CHLOROMETHANE	12,000.00	U
BROMOMETHANE	12,000.00	U
VINYL CHLORIDE	12,000.00	U
CHLOROETHANE	12,000.00	U
METHYLENE CHLORIDE	12,000.00	U
ACETONE	12,000.00	U
CARBON DISULFIDE	12,000.00	U
1,1-DICHLOROETHENE	12,000.00	U
1,1-DICHLOROETHANE	12,000.00	U
1,2-DICHLOROETHENE	12,000.00	U
CHLOROFORM	12,000.00	U
1,2-DICHLOROETHANE	12,000.00	U
2-BUTANONE	12,000.00	U
1,1,1-TRICHLOROETHANE	12,000.00	U
CARBON TETRACHLORIDE	12,000.00	U
BROMODICHLOROMETHANE	12,000.00	U
1,2-DICHLOROPROPANE	12,000.00	U
CIS-1,3-DICHLOROPROPENE	12,000.00	U
TRICHLOROETHENE	12,000.00	U
DIBROMOCHLOROMETHANE	12,000.00	U
1,1,2-TRICHLOROETHANE	12,000.00	U
BENZENE	12,000.00	U
TRANS-1,3-DICHLOROPROPENE	12,000.00	U
BROMOFORM	12,000.00	U
4-METHYL-2-PENTANONE	12,000.00	U
2-HEXANONE	12,000.00	U
TETRACHLOROETHENE	25,000.00	
1,1,2,2-TETRACHLOROETHANE	12,000.00	U
TOLUENE	12,000.00	U
CHLOROBENZENE	12,000.00	U
ETHYLBENZENE	12,000.00	U
STYRENE	12,000.00	U
XYLENE	12,000.00	U

Appendix A1
Ryan's Pit Soil Treatment Analytical Data
Volatile Organic Compounds

Sample ID PV01083IT Units : ug/Kg

Analyte	Result	Qual
CHLOROMETHANE	12,000.00	U
BROMOMETHANE	12,000.00	U
VINYL CHLORIDE	12,000.00	U
CHLOROETHANE	12,000.00	U
METHYLENE CHLORIDE	12,000.00	U
ACETONE	12,000.00	U
CARBON DISULFIDE	12,000.00	U
1,1-DICHLOROETHENE	12,000.00	U
1,1-DICHLOROETHANE	12,000.00	U
1,2-DICHLOROETHENE	12,000.00	U
CHLOROFORM	12,000.00	U
1,2-DICHLOROETHANE	12,000.00	U
2-BUTANONE	12,000.00	U
1,1,1-TRICHLOROETHANE	12,000.00	U
CARBON TETRACHLORIDE	12,000.00	U
BROMODICHLOROMETHANE	12,000.00	U
1,2-DICHLOROPROPANE	12,000.00	U
CIS-1,3-DICHLOROPROPENE	12,000.00	U
TRICHLOROETHENE	12,000.00	U
DIBROMOCHLOROMETHANE	12,000.00	U
1,1,2-TRICHLOROETHANE	12,000.00	U
BENZENE	12,000.00	U
TRANS-1,3-DICHLOROPROPENE	12,000.00	U
BROMOFORM	12,000.00	U
4-METHYL-2-PENTANONE	12,000.00	U
2-HEXANONE	12,000.00	U
TETRACHLOROETHENE	3,600.00	J
1,1,2,2-TETRACHLOROETHANE	12,000.00	U
TOLUENE	12,000.00	U
CHLOROBENZENE	12,000.00	U
ETHYLBENZENE	12,000.00	U
STYRENE	12,000.00	U
XYLENE	12,000.00	U

Sample ID : PV01085IT Units : ug/Kg

Analyte	Result	Qual
CHLOROMETHANE	12,000.00	U
BROMOMETHANE	12,000.00	U
VINYL CHLORIDE	12,000.00	U
CHLOROETHANE	12,000.00	U
METHYLENE CHLORIDE	12,000.00	U
ACETONE	12,000.00	U
CARBON DISULFIDE	12,000.00	U
1,1-DICHLOROETHENE	12,000.00	U
1,1-DICHLOROETHANE	12,000.00	U
1,2-DICHLOROETHENE	12,000.00	U
CHLOROFORM	12,000.00	U
1,2-DICHLOROETHANE	12,000.00	U
2-BUTANONE	12,000.00	U
1,1,1-TRICHLOROETHANE	12,000.00	U
CARBON TETRACHLORIDE	12,000.00	U
BROMODICHLOROMETHANE	12,000.00	U
1,2-DICHLOROPROPANE	12,000.00	U
CIS-1,3-DICHLOROPROPENE	12,000.00	U
TRICHLOROETHENE	12,000.00	U
DIBROMOCHLOROMETHANE	12,000.00	U
1,1,2-TRICHLOROETHANE	12,000.00	U
BENZENE	12,000.00	U
TRANS-1,3-DICHLOROPROPENE	12,000.00	U
BROMOFORM	12,000.00	U

Appendix A1
Ryan's Pit Soil Treatment - Analytical Data
Volatile Organic Compounds

Sample ID : PV01085IT Units ug/Kg

Analyte	Result	Qual
4-METHYL-2-PENTANONE	12,000.00	U
2-HEXANONE	12,000.00	U
TETRACHLOROETHENE	2,100.00	J
1,1,2,2-TETRACHLOROETHANE	12,000.00	U
TOLUENE	12,000.00	U
CHLOROBENZENE	12,000.00	U
ETHYLBENZENE	12,000.00	U
STYRENE	12,000.00	U
XYLENE	12,000.00	U

Sample ID : PV01086IT Units ug/Kg

Analyte	Result	Qual
CHLOROMETHANE	10.00	U
BROMOMETHANE	10.00	U
VINYL CHLORIDE	10.00	U
CHLOROETHANE	10.00	U
METHYLENE CHLORIDE	10.00	U
ACETONE	12.00	
CARBON DISULFIDE	10.00	U
1,1-DICHLOROETHENE	10.00	U
1,1-DICHLOROETHANE	10.00	U
1,2-DICHLOROETHENE	10.00	U
CHLOROFORM	10.00	U
1,2-DICHLOROETHANE	10.00	U
2-BUTANONE	6.00	J
1,1,1-TRICHLOROETHANE	10.00	U
CARBON TETRACHLORIDE	10.00	U
BROMODICHLOROMETHANE	10.00	U
1,2-DICHLOROPROPANE	10.00	U
CIS-1,3-DICHLOROPROPENE	10.00	U
TRICHLOROETHENE	10.00	U
DIBROMOCHLOROMETHANE	10.00	U
1,1,2-TRICHLOROETHANE	10.00	U
BENZENE	8.00	J
TRANS-1,3-DICHLOROPROPENE	10.00	U
BROMOFORM	10.00	U
4-METHYL-2-PENTANONE	10.00	U
2-HEXANONE	10.00	U
TETRACHLOROETHENE	2.00	J
1,1,2,2-TETRACHLOROETHANE	10.00	U
TOLUENE	10.00	U
CHLOROBENZENE	10.00	U
ETHYLBENZENE	10.00	U
STYRENE	10.00	U
XYLENE	10.00	U

Sample ID : PV01087IT Units : ug/Kg

Analyte	Result	Qual
CHLOROMETHANE	10.00	U
BROMOMETHANE	10.00	U
VINYL CHLORIDE	10.00	U
CHLOROETHANE	10.00	U
METHYLENE CHLORIDE	10.00	U
ACETONE	20.00	
CARBON DISULFIDE	10.00	U
1,1-DICHLOROETHENE	2.00	J
1,1-DICHLOROETHANE	10.00	U
1,2-DICHLOROETHENE	10.00	U

Appendix A1
Ryan's Pit Soil Treatment - Analytical Data
Volatile Organic Compounds

Sample ID PV01087IT Units : ug/Kg

Analyte	Result	Qual
CHLOROFORM	10.00	U
1,2-DICHLOROETHANE	10.00	U
2-BUTANONE	7.00	J
1,1,1-TRICHLOROETHANE	2.00	J
CARBON TETRACHLORIDE	10.00	U
BROMODICHLOROMETHANE	10.00	U
1,2-DICHLOROPROPANE	10.00	U
CIS-1,3-DICHLOROPROPENE	10.00	U
TRICHLOROETHENE	1.00	J
DIBROMOCHLOROMETHANE	10.00	U
1,1,2-TRICHLOROETHANE	10.00	U
BENZENE	5.00	J
TRANS-1,3-DICHLOROPROPENE	10.00	U
BROMOFORM	10.00	U
4-METHYL-2-PENTANONE	10.00	U
2-HEXANONE	10.00	U
TETRACHLOROETHENE	5.00	J
1,1,2,2-TETRACHLOROETHANE	10.00	U
TOLUENE	1.00	J
CHLOROBENZENE	10.00	U
ETHYLBENZENE	10.00	U
STYRENE	10.00	U
XYLENE	10.00	U

Sample ID : PV01088IT Units : ug/Kg

Analyte	Result	Qual
CHLOROMETHANE	10.00	U
BROMOMETHANE	10.00	U
VINYL CHLORIDE	10.00	U
CHLOROETHANE	10.00	U
METHYLENE CHLORIDE	10.00	U
ACETONE	16.00	
CARBON DISULFIDE	10.00	U
1,1-DICHLOROETHENE	3.00	J
1,1-DICHLOROETHANE	10.00	U
1,2-DICHLOROETHENE	10.00	U
CHLOROFORM	10.00	U
1,2-DICHLOROETHANE	10.00	U
2-BUTANONE	7.00	J
1,1,1-TRICHLOROETHANE	10.00	U
CARBON TETRACHLORIDE	10.00	U
BROMODICHLOROMETHANE	10.00	U
1,2-DICHLOROPROPANE	10.00	U
CIS-1,3-DICHLOROPROPENE	10.00	U
TRICHLOROETHENE	10.00	U
DIBROMOCHLOROMETHANE	10.00	U
1,1,2-TRICHLOROETHANE	10.00	U
BENZENE	9.00	J
TRANS-1,3-DICHLOROPROPENE	10.00	U
BROMOFORM	10.00	U
4-METHYL-2-PENTANONE	10.00	U
2-HEXANONE	10.00	U
TETRACHLOROETHENE	3.00	J
1,1,2,2-TETRACHLOROETHANE	10.00	U
TOLUENE	1.00	J
CHLOROBENZENE	10.00	U
ETHYLBENZENE	10.00	U
STYRENE	10.00	U
XYLENE	10.00	U

Appendix A1.
Ryan's Pit Soil Treatment - Analytical Data
Volatile Organic Compounds

Sample ID : PV01089IT Units : ug/Kg

Analyte	Result	Qual
CHLOROMETHANE	10.00	U
BROMOMETHANE	10.00	U
VINYL CHLORIDE	10.00	U
CHLOROETHANE	10.00	U
METHYLENE CHLORIDE	10.00	U
ACETONE	11.00	
CARBON DISULFIDE	10.00	U
1,1-DICHLOROETHENE	3.00	J
1,1-DICHLOROETHANE	10.00	U
1,2-DICHLOROETHENE	10.00	U
CHLOROFORM	10.00	U
1,2-DICHLOROETHANE	10.00	U
2-BUTANONE	10.00	U
1,1,1-TRICHLOROETHANE	10.00	U
CARBON TETRACHLORIDE	10.00	U
BROMODICHLOROMETHANE	10.00	U
1,2-DICHLOROPROPANE	10.00	U
CIS-1,3-DICHLOROPROPENE	10.00	U
TRICHLOROETHENE	10.00	U
DIBROMOCHLOROMETHANE	10.00	U
1,1,2-TRICHLOROETHANE	10.00	U
BENZENE	6.00	J
TRANS-1,3-DICHLOROPROPENE	10.00	U
BROMOFORM	10.00	U
4-METHYL-2-PENTANONE	10.00	U
2-HEXANONE	10.00	U
TETRACHLOROETHENE	3.00	J
1,1,2,2-TETRACHLOROETHANE	10.00	U
TOLUENE	1.00	J
CHLOROBENZENE	10.00	U
ETHYLBENZENE	10.00	U
STYRENE	10.00	U
XYLENE	10.00	U

Sample ID : PV01090IT Units : ug/Kg

Analyte	Result	Qual
CHLOROMETHANE	12,000.00	U
BROMOMETHANE	12,000.00	U
VINYL CHLORIDE	12,000.00	U
CHLOROETHANE	12,000.00	U
METHYLENE CHLORIDE	12,000.00	U
ACETONE	12,000.00	U
CARBON DISULFIDE	12,000.00	U
1,1-DICHLOROETHENE	12,000.00	U
1,1-DICHLOROETHANE	12,000.00	U
1,2-DICHLOROETHENE	12,000.00	U
CHLOROFORM	12,000.00	U
1,2-DICHLOROETHANE	12,000.00	U
2-BUTANONE	12,000.00	U
1,1,1-TRICHLOROETHANE	12,000.00	U
CARBON TETRACHLORIDE	12,000.00	U
BROMODICHLOROMETHANE	12,000.00	U
1,2-DICHLOROPROPANE	12,000.00	U
CIS-1,3-DICHLOROPROPENE	12,000.00	U
TRICHLOROETHENE	12,000.00	U
DIBROMOCHLOROMETHANE	12,000.00	U
1,1,2-TRICHLOROETHANE	12,000.00	U
BENZENE	12,000.00	U
TRANS-1,3-DICHLOROPROPENE	12,000.00	U
BROMOFORM	12,000.00	U

Appendix A1
Ryan's Pit Soil Treatment Analytical Data
Volatile Organic Compounds

Sample ID PV01090IT Units ug/Kg

Analyte	Result	Qual
4-METHYL-2-PENTANONE	12,000.00	U
2-HEXANONE	12,000.00	U
TETRACHLOROETHENE	49,000.00	
1,1,2,2-TETRACHLOROETHANE	12,000.00	U
TOLUENE	1,400.00	J
CHLOROBENZENE	12,000.00	U
ETHYLBENZENE	1,800.00	J
STYRENE	12,000.00	U
XYLENE	16,000.00	

Sample ID PV01091IT Units : ug/Kg

Analyte	Result	Qual
CHLOROMETHANE	12,000.00	U
BROMOMETHANE	12,000.00	U
VINYL CHLORIDE	12,000.00	U
CHLOROETHANE	12,000.00	U
METHYLENE CHLORIDE	12,000.00	U
ACETONE	12,000.00	U
CARBON DISULFIDE	12,000.00	U
1,1-DICHLOROETHENE	12,000.00	U
1,1-DICHLOROETHANE	12,000.00	U
1,2-DICHLOROETHENE	12,000.00	U
CHLOROFORM	12,000.00	U
1,2-DICHLOROETHANE	12,000.00	U
2-BUTANONE	12,000.00	U
1,1,1-TRICHLOROETHANE	12,000.00	U
CARBON TETRACHLORIDE	12,000.00	U
BROMODICHLOROMETHANE	12,000.00	U
1,2-DICHLOROPROPANE	12,000.00	U
CIS-1,3-DICHLOROPROPENE	12,000.00	U
TRICHLOROETHENE	12,000.00	U
DIBROMOCHLOROMETHANE	12,000.00	U
1,1,2-TRICHLOROETHANE	12,000.00	U
BENZENE	12,000.00	U
TRANS-1,3-DICHLOROPROPENE	12,000.00	U
BROMOFORM	12,000.00	U
4-METHYL-2-PENTANONE	12,000.00	U
2-HEXANONE	12,000.00	U
TETRACHLOROETHENE	2,500.00	J
1,1,2,2-TETRACHLOROETHANE	12,000.00	U
TOLUENE	12,000.00	U
CHLOROBENZENE	12,000.00	U
ETHYLBENZENE	12,000.00	U
STYRENE	12,000.00	U
XYLENE	12,000.00	U

Sample ID : PV01092IT Units : ug/Kg

Analyte	Result	Qual
CHLOROMETHANE	1,200.00	U
BROMOMETHANE	1,200.00	U
VINYL CHLORIDE	1,200.00	U
CHLOROETHANE	1,200.00	U
METHYLENE CHLORIDE	1,200.00	U
ACETONE	8,000.00	
CARBON DISULFIDE	1,200.00	U
1,1-DICHLOROETHENE	1,200.00	U
1,1-DICHLOROETHANE	1,200.00	U
1,2-DICHLOROETHENE	1,200.00	U

Appendix A1
Ryan's Pit Soil Treatment - Analytical Data
Volatile Organic Compounds

Sample ID PV01092IT Units ug/Kg

Analyte	Result	Qual
CHLOROFORM	1,200.00	U
1,2-DICHLOROETHANE	1,200.00	U
2-BUTANONE	11,000.00	
1,1,1-TRICHLOROETHANE	1,200.00	U
CARBON TETRACHLORIDE	1,200.00	U
BROMODICHLOROMETHANE	1,200.00	U
1,2-DICHLOROPROPANE	1,200.00	U
CIS-1,3-DICHLOROPROPENE	1,200.00	U
TRICHLOROETHENE	1,200.00	U
DIBROMOCHLOROMETHANE	1,200.00	U
1,1,2-TRICHLOROETHANE	1,200.00	U
BENZENE	1,200.00	U
TRANS-1,3-DICHLOROPROPENE	1,200.00	U
BROMOFORM	1,200.00	U
4-METHYL-2-PENTANONE	1,200.00	U
2-HEXANONE	1,200.00	U
TETRACHLOROETHENE	14,000.00	
1,1,2,2-TETRACHLOROETHANE	1,200.00	U
TOLUENE	3,000.00	B
CHLOROBENZENE	1,200.00	U
ETHYLBENZENE	1,800.00	
STYRENE	1,200.00	U
XYLENE	14,000.00	B

Sample ID : PV01093IT Units : ug/Kg

Analyte	Result	Qual
CHLOROMETHANE	1,200.00	U
BROMOMETHANE	1,200.00	U
VINYL CHLORIDE	1,200.00	U
CHLOROETHANE	1,200.00	U
METHYLENE CHLORIDE	1,200.00	U
ACETONE	3,600.00	
CARBON DISULFIDE	1,200.00	U
1,1-DICHLOROETHENE	1,200.00	U
1,1-DICHLOROETHANE	1,200.00	U
1,2-DICHLOROETHENE	1,200.00	U
CHLOROFORM	1,200.00	U
1,2-DICHLOROETHANE	1,200.00	U
2-BUTANONE	3,200.00	
1,1,1-TRICHLOROETHANE	300.00	J
CARBON TETRACHLORIDE	1,200.00	U
BROMODICHLOROMETHANE	1,200.00	U
1,2-DICHLOROPROPANE	1,200.00	U
CIS-1,3-DICHLOROPROPENE	1,200.00	U
TRICHLOROETHENE	540.00	J
DIBROMOCHLOROMETHANE	1,200.00	U
1,1,2-TRICHLOROETHANE	1,200.00	U
BENZENE	1,200.00	U
TRANS-1,3-DICHLOROPROPENE	1,200.00	U
BROMOFORM	1,200.00	U
4-METHYL-2-PENTANONE	1,200.00	U
2-HEXANONE	1,200.00	U
TETRACHLOROETHENE	2,400.00	
1,1,2,2-TETRACHLOROETHANE	1,200.00	U
TOLUENE	4,000.00	B
CHLOROBENZENE	1,200.00	U
ETHYLBENZENE	2,400.00	
STYRENE	1,200.00	U
XYLENE	16,000.00	B

Appendix A1
Ryan's Pit Soil Treatment - Analytical Data
Volatile Organic Compounds

Sample ID : PV01096IT Units : ug/Kg

Analyte	Result	Qual
CHLOROMETHANE	10.00	U
BROMOMETHANE	10.00	U
VINYL CHLORIDE	10.00	U
CHLOROETHANE	10.00	U
METHYLENE CHLORIDE	10.00	U
ACETONE	10.00	U
CARBON DISULFIDE	10.00	U
1,1-DICHLOROETHENE	7.00	J
1,1-DICHLOROETHANE	10.00	U
1,2-DICHLOROETHENE	10.00	U
CHLOROFORM	10.00	U
1,2-DICHLOROETHANE	10.00	U
2-BUTANONE	10.00	U
1,1,1-TRICHLOROETHANE	24.00	
CARBON TETRACHLORIDE	10.00	U
BROMODICHLOROMETHANE	10.00	U
1,2-DICHLOROPROPANE	10.00	U
CIS-1,3-DICHLOROPROPENE	10.00	U
TRICHLOROETHENE	8.00	J
DIBROMOCHLOROMETHANE	10.00	U
1,1,2-TRICHLOROETHANE	10.00	U
BENZENE	10.00	U
TRANS-1,3-DICHLOROPROPENE	10.00	U
BROMOFORM	10.00	U
4-METHYL-2-PENTANONE	10.00	U
2-HEXANONE	10.00	U
TETRACHLOROETHENE	130.00	
1,1,2,2-TETRACHLOROETHANE	10.00	U
TOLUENE	10.00	
CHLOROBENZENE	10.00	U
ETHYLBENZENE	10.00	U
STYRENE	10.00	U
XYLENE	6.00	J

Sample ID : PV01097IT Units : ug/Kg

Analyte	Result	Qual
CHLOROMETHANE	10.00	U
BROMOMETHANE	10.00	U
VINYL CHLORIDE	10.00	U
CHLOROETHANE	10.00	U
METHYLENE CHLORIDE	10.00	U
ACETONE	10.00	U
CARBON DISULFIDE	10.00	U
1,1-DICHLOROETHENE	14.00	
1,1-DICHLOROETHANE	10.00	U
1,2-DICHLOROETHENE	10.00	U
CHLOROFORM	10.00	U
1,2-DICHLOROETHANE	10.00	U
2-BUTANONE	10.00	U
1,1,1-TRICHLOROETHANE	14.00	
CARBON TETRACHLORIDE	10.00	U
BROMODICHLOROMETHANE	10.00	U
1,2-DICHLOROPROPANE	10.00	U
CIS-1,3-DICHLOROPROPENE	10.00	U
TRICHLOROETHENE	8.00	J
DIBROMOCHLOROMETHANE	10.00	U
1,1,2-TRICHLOROETHANE	10.00	U
BENZENE	1.00	J
TRANS-1,3-DICHLOROPROPENE	10.00	U
BROMOFORM	10.00	U

Appendix A1.
Ryan's Pit Soil Treatment - Analytical Data
Volatile Organic Compounds

Sample ID : PV01097IT Units : ug/Kg

Analyte	Result	Qual
4-METHYL-2 PENTANONE	10.00	U
2-HEXANONE	10.00	U
TETRACHLOROETHENE	120.00	
1,1,2,2-TETRACHLOROETHANE	10.00	U
TOLUENE	8.00	J
CHLOROBENZENE	10.00	U
ETHYLBENZENE	10.00	U
STYRENE	10.00	U
XYLENE	5.00	J

Sample ID : PV01100IT Units : ug/Kg

Analyte	Result	Qual
CHLOROMETHANE	10.00	U
CHLOROMETHANE	50.00	U
BROMOMETHANE	10.00	U
BROMOMETHANE	50.00	U
VINYL CHLORIDE	10.00	U
VINYL CHLORIDE	50.00	U
CHLOROETHANE	10.00	U
CHLOROETHANE	50.00	U
METHYLENE CHLORIDE	10.00	U
METHYLENE CHLORIDE	50.00	U
ACETONE	41.00	
ACETONE	77.00	
CARBON DISULFIDE	10.00	U
CARBON DISULFIDE	50.00	U
1,1-DICHLOROETHENE	10.00	U
1,1-DICHLOROETHENE	50.00	U
1,1-DICHLOROETHANE	10.00	U
1,1-DICHLOROETHANE	50.00	U
1,2-DICHLOROETHENE	10.00	U
1,2-DICHLOROETHENE	50.00	U
CHLOROFORM	10.00	U
CHLOROFORM	50.00	U
1,2-DICHLOROETHANE	10.00	U
1,2-DICHLOROETHANE	50.00	U
2-BUTANONE	7.00	J
2-BUTANONE	50.00	U
1,1,1-TRICHLOROETHANE	40.00	J
1,1,1-TRICHLOROETHANE	44.00	
CARBON TETRACHLORIDE	10.00	U
CARBON TETRACHLORIDE	50.00	U
BROMODICHLOROMETHANE	10.00	U
BROMODICHLOROMETHANE	50.00	U
1,2-DICHLOROPROPANE	10.00	U
1,2-DICHLOROPROPANE	50.00	U
CIS-1,3-DICHLOROPROPENE	10.00	U
CIS-1,3-DICHLOROPROPENE	50.00	U
TRICHLOROETHENE	8.00	J
TRICHLOROETHENE	9.00	J
DIBROMOCHLOROMETHANE	10.00	U
DIBROMOCHLOROMETHANE	50.00	U
1,1,2-TRICHLOROETHANE	10.00	U
1,1,2-TRICHLOROETHANE	50.00	U
BENZENE	12.00	
BENZENE	13.00	J
TRANS-1,3-DICHLOROPROPENE	10.00	U
TRANS-1,3-DICHLOROPROPENE	50.00	U
BROMOFORM	10.00	U
BROMOFORM	50.00	U

Appendix A1
Ryan's Pit Soil Treatment - Analytical Data
Volatile Organic Compounds

Sample ID : PV01100IT Units : ug/Kg

Analyte	Result	Qual
4-METHYL-2-PENTANONE	10.00	U
4-METHYL-2-PENTANONE	50.00	U
2-HEXANONE	10.00	U
2-HEXANONE	50.00	U
TETRACHLOROETHENE	490.00	
TETRACHLOROETHENE	520.00	E
1,1,2,2-TETRACHLOROETHANE	10.00	U
1,1,2,2-TETRACHLOROETHANE	50.00	U
TOLUENE	31.00	J
TOLUENE	32.00	
CHLOROBENZENE	4.00	J
CHLOROBENZENE	50.00	U
ETHYLBENZENE	3.00	J
ETHYLBENZENE	50.00	U
STYRENE	10.00	U
STYRENE	50.00	U
XYLENE	9.00	J
XYLENE	10.00	

Sample ID : PV01101IT Units : ug/Kg

Analyte	Result	Qual
CHLOROMETHANE	10.00	U
CHLOROMETHANE	20.00	U
BROMOMETHANE	10.00	U
BROMOMETHANE	20.00	U
VINYL CHLORIDE	10.00	U
VINYL CHLORIDE	20.00	U
CHLOROETHANE	10.00	U
CHLOROETHANE	20.00	U
METHYLENE CHLORIDE	10.00	U
METHYLENE CHLORIDE	20.00	U
ACETONE	36.00	
ACETONE	71.00	U
CARBON DISULFIDE	10.00	U
CARBON DISULFIDE	20.00	U
1,1-DICHLOROETHENE	10.00	U
1,1-DICHLOROETHENE	20.00	U
1,1-DICHLOROETHANE	10.00	U
1,1-DICHLOROETHANE	20.00	U
1,2-DICHLOROETHENE	10.00	U
1,2-DICHLOROETHENE	20.00	U
CHLOROFORM	10.00	U
CHLOROFORM	20.00	U
1,2-DICHLOROETHANE	10.00	U
1,2-DICHLOROETHANE	20.00	U
2-BUTANONE	6.00	J
2-BUTANONE	11.00	J
1,1,1-TRICHLOROETHANE	23.00	
1,1,1-TRICHLOROETHANE	26.00	
CARBON TETRACHLORIDE	10.00	U
CARBON TETRACHLORIDE	20.00	U
BROMODICHLOROMETHANE	10.00	U
BROMODICHLOROMETHANE	20.00	U
1,2-DICHLOROPROPANE	10.00	U
1,2-DICHLOROPROPANE	20.00	U
CIS-1,3-DICHLOROPROPENE	10.00	U
CIS-1,3-DICHLOROPROPENE	20.00	U
TRICHLOROETHENE	5.00	J
DIBROMOCHLOROMETHANE	10.00	U
DIBROMOCHLOROMETHANE	20.00	U

Appendix A1
Ryan's Pit Soil Treatment - Analytical Data
Volatile Organic Compounds

Sample ID : PV01101IT Units : ug/Kg

Analyte	Result	Qual
1,1,2-TRICHLOROETHANE	10.00	U
1,1,2-TRICHLOROETHANE	20.00	U
BENZENE	10.00	
BENZENE	13.00	J
TRANS-1,3-DICHLOROPROPENE	10.00	U
TRANS-1,3-DICHLOROPROPENE	20.00	U
BROMOFORM	10.00	U
BROMOFORM	20.00	U
4-METHYL-2-PENTANONE	10.00	U
4-METHYL-2-PENTANONE	20.00	U
2-HEXANONE	10.00	U
2-HEXANONE	20.00	U
TETRACHLOROETHENE	350.00	E
TETRACHLOROETHENE	510.00	E
1,1,2,2-TETRACHLOROETHANE	10.00	U
1,1,2,2-TETRACHLOROETHANE	20.00	U
TOLUENE	19.00	
TOLUENE	26.00	
CHLOROBENZENE	10.00	U
CHLOROBENZENE	20.00	U
ETHYLBENZENE	3.00	J
ETHYLBENZENE	4.00	J
STYRENE	10.00	U
STYRENE	20.00	U
XYLENE	9.00	J
XYLENE	13.00	J

Sample ID : PV01102IT Units : ug/Kg

Analyte	Result	Qual
CHLOROMETHANE	10.00	U
BROMOMETHANE	10.00	U
VINYL CHLORIDE	10.00	U
CHLOROETHANE	10.00	U
METHYLENE CHLORIDE	10.00	U
ACETONE	23.00	
CARBON DISULFIDE	10.00	U
1,1-DICHLOROETHENE	10.00	U
1,1-DICHLOROETHANE	10.00	U
1,2-DICHLOROETHENE	10.00	U
CHLOROFORM	10.00	U
1,2-DICHLOROETHANE	10.00	U
2-BUTANONE	4.00	J
1,1,1-TRICHLOROETHANE	42.00	
CARBON TETRACHLORIDE	10.00	U
BROMODICHLOROMETHANE	10.00	U
1,2-DICHLOROPROPANE	10.00	U
CIS-1,3-DICHLOROPROPENE	10.00	U
TRICHLOROETHENE	8.00	J
DIBROMOCHLOROMETHANE	10.00	U
1,1,2-TRICHLOROETHANE	10.00	U
BENZENE	9.00	J
TRANS-1,3-DICHLOROPROPENE	10.00	U
BROMOFORM	10.00	U
4-METHYL-2-PENTANONE	10.00	U
2-HEXANONE	10.00	U
TETRACHLOROETHENE	190.00	
1,1,2,2-TETRACHLOROETHANE	10.00	U
TOLUENE	14.00	
CHLOROBENZENE	4.00	J
ETHYLBENZENE	1.00	J

Appendix A1
Ryan's Pit'Soil Treatment - Analytical Data
Volatile Organic Compounds

Sample ID : PV01102IT Units : ug/Kg

Analyte	Result	Qual
STYRENE	10.00	U
XYLENE	6.00	J

Sample ID : PV01103IT Units : ug/Kg

Analyte	Result	Qual
CHLOROMETHANE	20.00	U
BROMOMETHANE	20.00	U
VINYL CHLORIDE	20.00	U
CHLOROETHANE	20.00	U
METHYLENE CHLORIDE	20.00	U
ACETONE	30.00	
CARBON DISULFIDE	20.00	U
1,1-DICHLOROETHENE	20.00	U
1,1-DICHLOROETHANE	20.00	U
1,2-DICHLOROETHENE	20.00	U
CHLOROFORM	20.00	U
1,2-DICHLOROETHANE	20.00	U
2-BUTANONE	20.00	U
1,1,1-TRICHLOROETHANE	26.00	
CARBON TETRACHLORIDE	20.00	U
BROMODICHLOROMETHANE	20.00	U
1,2-DICHLOROPROPANE	20.00	U
CIS-1,3-DICHLOROPROPENE	20.00	U
TRICHLOROETHENE	5.00	J
DIBROMOCHLOROMETHANE	20.00	U
1,1,2-TRICHLOROETHANE	20.00	U
BENZENE	18.00	J
TRANS-1,3-DICHLOROPROPENE	20.00	U
BROMOFORM	20.00	U
4-METHYL-2-PENTANONE	20.00	U
2-HEXANONE	20.00	U
TETRACHLOROETHENE	330.00	
1,1,2,2-TETRACHLOROETHANE	20.00	U
TOLUENE	8.00	J
CHLOROBENZENE	20.00	U
ETHYLBENZENE	20.00	U
STYRENE	20.00	U
XYLENE	2.00	J

Sample ID : PV01108IT Units : ug/Kg

Analyte	Result	Qual
CHLOROMETHANE	10.00	U
BROMOMETHANE	10.00	U
VINYL CHLORIDE	10.00	U
CHLOROETHANE	10.00	U
METHYLENE CHLORIDE	10.00	U
ACETONE	10.00	U
CARBON DISULFIDE	10.00	U
1,1-DICHLOROETHENE	7.00	J
1,1-DICHLOROETHANE	10.00	U
1,2-DICHLOROETHENE	10.00	U
CHLOROFORM	10.00	U
1,2-DICHLOROETHANE	10.00	U
2-BUTANONE	10.00	U
1,1,1-TRICHLOROETHANE	10.00	U
CARBON TETRACHLORIDE	10.00	U
BROMODICHLOROMETHANE	10.00	U
1,2-DICHLOROPROPANE	10.00	U

Appendix A1
Ryan's Pit Soil Treatment - Analytical Data
Volatile Organic Compounds

Sample ID : PV01108IT Units : ug/Kg

Analyte	Result	Qual
CIS-1,3-DICHLOROPROPENE	10.00	U
TRICHLOROETHENE	2.00	J
DIBROMOCHLOROMETHANE	10.00	U
1,1,2-TRICHLOROETHANE	10.00	U
BENZENE	8.00	J
TRANS-1,3-DICHLOROPROPENE	10.00	U
BROMOFORM	10.00	U
4-METHYL-2-PENTANONE	10.00	U
2-HEXANONE	10.00	U
TETRACHLOROETHENE	8.00	J
1,1,2,2-TETRACHLOROETHANE	10.00	U
TOLUENE	4.00	J
CHLOROBENZENE	10.00	U
ETHYLBENZENE	10.00	U
STYRENE	10.00	U
XYLENE	10.00	U

Sample ID : PV01109IT Units : ug/Kg

Analyte	Result	Qual
CHLOROMETHANE	10.00	U
BROMOMETHANE	10.00	U
VINYL CHLORIDE	10.00	U
CHLOROETHANE	10.00	U
METHYLENE CHLORIDE	10.00	U
ACETONE	10.00	U
CARBON DISULFIDE	10.00	U
1,1-DICHLOROETHENE	4.00	J
1,1-DICHLOROETHANE	10.00	U
1,2-DICHLOROETHENE	10.00	U
CHLOROFORM	10.00	U
1,2-DICHLOROETHANE	10.00	U
2-BUTANONE	10.00	U
1,1,1-TRICHLOROETHANE	10.00	U
CARBON TETRACHLORIDE	10.00	U
BROMODICHLOROMETHANE	10.00	U
1,2-DICHLOROPROPANE	10.00	U
CIS-1,3-DICHLOROPROPENE	10.00	U
TRICHLOROETHENE	1.00	J
DIBROMOCHLOROMETHANE	10.00	U
1,1,2-TRICHLOROETHANE	10.00	U
BENZENE	2.00	J
TRANS-1,3-DICHLOROPROPENE	10.00	U
BROMOFORM	10.00	U
4-METHYL-2-PENTANONE	10.00	U
2-HEXANONE	10.00	U
TETRACHLOROETHENE	6.00	J
1,1,2,2-TETRACHLOROETHANE	10.00	U
TOLUENE	2.00	J
CHLOROBENZENE	10.00	U
ETHYLBENZENE	10.00	U
STYRENE	10.00	U
XYLENE	10.00	U

Sample ID : PV01112IT Units : ug/Kg

Analyte	Result	Qual
CHLOROMETHANE	10.00	U
BROMOMETHANE	10.00	U
VINYL CHLORIDE	10.00	U

Appendix A1
Ryan's Pit Soil Treatment - Analytical Data
Volatile Organic Compounds

Sample ID : PV01112IT Units : ug/Kg

Analyte	Result	Qual
CHLOROETHANE	10.00	U
METHYLENE CHLORIDE	10.00	U
ACETONE	3.00	J
CARBON DISULFIDE	10.00	U
1,1-DICHLOROETHENE	2.00	J
1,1-DICHLOROETHANE	10.00	U
1,2-DICHLOROETHENE	10.00	U
CHLOROFORM	10.00	U
1,2-DICHLOROETHANE	10.00	U
2-BUTANONE	10.00	U
1,1,1-TRICHLOROETHANE	10.00	U
CARBON TETRACHLORIDE	10.00	U
BROMODICHLOROMETHANE	10.00	U
1,2-DICHLOROPROPANE	10.00	U
CIS-1,3-DICHLOROPROPENE	10.00	U
TRICHLOROETHENE	10.00	U
DIBROMOCHLOROMETHANE	10.00	U
1,1,2-TRICHLOROETHANE	10.00	U
BENZENE	15.00	
TRANS-1,3-DICHLOROPROPENE	10.00	U
BROMOFORM	10.00	U
4-METHYL-2-PENTANONE	10.00	U
2-HEXANONE	10.00	U
TETRACHLOROETHENE	3.00	J
1,1,2,2-TETRACHLOROETHANE	10.00	U
TOLUENE	3.00	J
CHLOROBENZENE	10.00	U
ETHYLBENZENE	10.00	U
STYRENE	10.00	U
XYLENE	10.00	U

Sample ID : PV01113IT Units : ug/Kg

Analyte	Result	Qual
CHLOROMETHANE	10.00	U
BROMOMETHANE	10.00	U
VINYL CHLORIDE	10.00	U
CHLOROETHANE	10.00	U
METHYLENE CHLORIDE	10.00	U
ACETONE	3.00	J
CARBON DISULFIDE	10.00	U
1,1-DICHLOROETHENE	5.00	J
1,1-DICHLOROETHANE	10.00	U
1,2-DICHLOROETHENE	10.00	U
CHLOROFORM	10.00	U
1,2-DICHLOROETHANE	10.00	U
2-BUTANONE	10.00	U
1,1,1-TRICHLOROETHANE	10.00	U
CARBON TETRACHLORIDE	10.00	U
BROMODICHLOROMETHANE	10.00	U
1,2-DICHLOROPROPANE	10.00	U
CIS-1,3-DICHLOROPROPENE	10.00	U
TRICHLOROETHENE	10.00	U
DIBROMOCHLOROMETHANE	10.00	U
1,1,2-TRICHLOROETHANE	10.00	U
BENZENE	28.00	
TRANS-1,3-DICHLOROPROPENE	10.00	U
BROMOFORM	10.00	U
4-METHYL-2-PENTANONE	10.00	U
2-HEXANONE	10.00	U
TETRACHLOROETHENE	4.00	J

Appendix A1
Ryan's Pit Soil Treatment - Analytical Data
Volatile Organic Compounds

Sample ID PV01113IT Units ug/Kg

Analyte	Result	Qual
1,1,2,2-TETRACHLOROETHANE	10.00	U
TOLUENE	6.00	J
CHLOROBENZENE	10.00	U
ETHYLBENZENE	10.00	U
STYRENE	10.00	U
XYLENE	2.00	J

Sample ID PV01116IT Units : ug/Kg

Analyte	Result	Qual
CHLOROMETHANE	10.00	U
CHLOROMETHANE	600.00	U
BROMOMETHANE	10.00	U
BROMOMETHANE	600.00	U
VINYL CHLORIDE	10.00	U
VINYL CHLORIDE	600.00	U
CHLOROETHANE	10.00	U
CHLOROETHANE	600.00	U
METHYLENE CHLORIDE	10.00	U
METHYLENE CHLORIDE	600.00	U
ACETONE	890.00	
ACETONE	5,500.00	E
CARBON DISULFIDE	10.00	U
CARBON DISULFIDE	600.00	U
1,1-DICHLOROETHENE	10.00	U
1,1-DICHLOROETHENE	600.00	U
1,1-DICHLOROETHANE	10.00	U
1,1-DICHLOROETHANE	600.00	U
1,2-DICHLOROETHENE	10.00	U
1,2-DICHLOROETHENE	620.00	U
CHLOROFORM	10.00	U
CHLOROFORM	600.00	U
1,2-DICHLOROETHANE	10.00	U
1,2-DICHLOROETHANE	600.00	U
2-BUTANONE	290.00	E
2-BUTANONE	380.00	J
1,1,1-TRICHLOROETHANE	71.00	
1,1,1-TRICHLOROETHANE	600.00	U
CARBON TETRACHLORIDE	10.00	U
CARBON TETRACHLORIDE	600.00	U
BROMODICHLOROMETHANE	10.00	U
BROMODICHLOROMETHANE	600.00	U
1,2-DICHLOROPROPANE	10.00	U
1,2-DICHLOROPROPANE	600.00	U
CIS-1,3-DICHLOROPROPENE	10.00	U
CIS-1,3-DICHLOROPROPENE	600.00	U
TRICHLOROETHENE	18.00	
TRICHLOROETHENE	600.00	U
DIBROMOCHLOROMETHANE	10.00	U
DIBROMOCHLOROMETHANE	600.00	U
1,1,2-TRICHLOROETHANE	10.00	U
1,1,2-TRICHLOROETHANE	600.00	U
BENZENE	11.00	
BENZENE	600.00	U
TRANS-1,3-DICHLOROPROPENE	10.00	U
TRANS-1,3-DICHLOROPROPENE	600.00	U
BROMOFORM	10.00	U
BROMOFORM	600.00	U
4-METHYL-2-PENTANONE	25.00	
4-METHYL-2-PENTANONE	600.00	U
2-HEXANONE	10.00	U

Appendix A1
Ryan's Pit Soil Treatment - Analytical Data
Volatile Organic Compounds

Sample ID PV01116IT Units ug/Kg

Analyte	Result	Qual
2-HEXANONE	600.00	U
TETRACHLOROETHENE	1,500.00	
TETRACHLOROETHENE	2,800.00	
1,1,2,2-TETRACHLOROETHANE	10.00	U
1,1,2,2-TETRACHLOROETHANE	600.00	U
TOLUENE	320.00	J
TOLUENE	690.00	
CHLOROBENZENE	10.00	U
CHLOROBENZENE	600.00	U
ETHYLBENZENE	360.00	BJ
ETHYLBENZENE	650.00	E
STYRENE	10.00	U
STYRENE	600.00	U
XYLENE	2,700.00	B
XYLENE	4,800.00	E

Sample ID PV01117IT Units : ug/Kg

Analyte	Result	Qual
CHLOROMETHANE	10.00	U
CHLOROMETHANE	600.00	U
BROMOMETHANE	10.00	U
BROMOMETHANE	600.00	U
VINYL CHLORIDE	10.00	U
VINYL CHLORIDE	600.00	U
CHLOROETHANE	10.00	U
CHLOROETHANE	600.00	U
METHYLENE CHLORIDE	10.00	U
METHYLENE CHLORIDE	600.00	U
ACETONE	950.00	
ACETONE	5,400.00	E
CARBON DISULFIDE	10.00	U
CARBON DISULFIDE	600.00	U
1,1-DICHLOROETHENE	10.00	U
1,1-DICHLOROETHENE	600.00	U
1,1-DICHLOROETHANE	10.00	U
1,1-DICHLOROETHANE	600.00	U
1,2-DICHLOROETHENE	10.00	U
1,2-DICHLOROETHENE	620.00	U
CHLOROFORM	10.00	U
CHLOROFORM	600.00	U
1,2-DICHLOROETHANE	10.00	U
1,2-DICHLOROETHANE	600.00	U
2-BUTANONE	480.00	E
2-BUTANONE	1,700.00	
1,1,1-TRICHLOROETHANE	16.00	
1,1,1-TRICHLOROETHANE	600.00	U
CARBON TETRACHLORIDE	10.00	U
CARBON TETRACHLORIDE	600.00	U
BROMODICHLOROMETHANE	10.00	U
BROMODICHLOROMETHANE	600.00	U
1,2-DICHLOROPROPANE	10.00	U
1,2-DICHLOROPROPANE	600.00	U
CIS-1,3-DICHLOROPROPENE	10.00	U
CIS-1,3-DICHLOROPROPENE	600.00	U
TRICHLOROETHENE	7.00	J
TRICHLOROETHENE	600.00	U
DIBROMOCHLOROMETHANE	10.00	U
DIBROMOCHLOROMETHANE	600.00	U
1,1,2-TRICHLOROETHANE	10.00	U
1,1,2-TRICHLOROETHANE	600.00	U

Appendix A1
Ryan's Pit Soil Treatment - Analytical Data
Volatile Organic Compounds

Sample ID : PV01117IT Units ug/Kg

Analyte	Result	Qual
BENZENE	12.00	
BENZENE	600.00	U
TRANS-1,3-DICHLOROPROPENE	10.00	U
TRANS-1,3-DICHLOROPROPENE	600.00	U
BROMOFORM	10.00	U
BROMOFORM	600.00	U
4-METHYL-2-PENTANONE	34.00	
4-METHYL-2-PENTANONE	600.00	U
2-HEXANONE	10.00	U
2-HEXANONE	600.00	U
TETRACHLOROETHENE	910.00	
TETRACHLOROETHENE	1,100.00	E
1,1,2,2-TETRACHLOROETHANE	10.00	U
1,1,2,2-TETRACHLOROETHANE	600.00	U
TOLUENE	130.00	J
TOLUENE	180.00	
CHLOROBENZENE	10.00	U
CHLOROBENZENE	600.00	U
ETHYLBENZENE	120.00	BJ
ETHYLBENZENE	190.00	
STYRENE	10.00	U
STYRENE	600.00	U
XYLENE	1,300.00	B
XYLENE	1,800.00	E

Sample ID : PV01122IT Units : ug/Kg

Analyte	Result	Qual
CHLOROMETHANE	10.00	U
BROMOMETHANE	10.00	U
VINYL CHLORIDE	10.00	U
CHLOROETHANE	10.00	U
METHYLENE CHLORIDE	10.00	U
ACETONE	10.00	U
CARBON DISULFIDE	1.00	J
1,1-DICHLOROETHENE	10.00	U
1,1-DICHLOROETHANE	10.00	U
1,2-DICHLOROETHENE	10.00	U
CHLOROFORM	10.00	U
1,2-DICHLOROETHANE	10.00	U
2-BUTANONE	10.00	U
1,1,1-TRICHLOROETHANE	10.00	U
CARBON TETRACHLORIDE	10.00	U
BROMODICHLOROMETHANE	10.00	U
1,2-DICHLOROPROPANE	10.00	U
CIS-1,3-DICHLOROPROPENE	10.00	U
TRICHLOROETHENE	10.00	U
DIBROMOCHLOROMETHANE	10.00	U
1,1,2-TRICHLOROETHANE	10.00	U
BENZENE	4.00	J
TRANS-1,3-DICHLOROPROPENE	10.00	U
BROMOFORM	10.00	U
4-METHYL-2-PENTANONE	10.00	U
2-HEXANONE	10.00	U
TETRACHLOROETHENE	1.00	J
1,1,2,2-TETRACHLOROETHANE	10.00	U
TOLUENE	1.00	J
CHLOROBENZENE	10.00	U
ETHYLBENZENE	10.00	U
STYRENE	10.00	U
XYLENE	10.00	U

Appendix A1
Ryan's Pit Soil Treatment - Analytical Data
Volatile Organic Compounds

Sample ID PV01123IT Units : ug/Kg

Analyte	Result	Qual
CHLOROMETHANE	10.00	U
BROMOMETHANE	10.00	U
VINYL CHLORIDE	10.00	U
CHLOROETHANE	10.00	U
METHYLENE CHLORIDE	10.00	U
ACETONE	10.00	U
CARBON DISULFIDE	10.00	U
1,1-DICHLOROETHENE	10.00	U
1,1-DICHLOROETHANE	10.00	U
1,2-DICHLOROETHENE	10.00	U
CHLOROFORM	10.00	U
1,2-DICHLOROETHANE	10.00	U
2-BUTANONE	10.00	U
1,1,1-TRICHLOROETHANE	10.00	U
CARBON TETRACHLORIDE	10.00	U
BROMODICHLOROMETHANE	10.00	U
1,2-DICHLOROPROPANE	10.00	U
CIS-1,3-DICHLOROPROPENE	10.00	U
TRICHLOROETHENE	10.00	U
DIBROMOCHLOROMETHANE	10.00	U
1,1,2-TRICHLOROETHANE	10.00	U
BENZENE	8.00	J
TRANS-1,3-DICHLOROPROPENE	10.00	U
BROMOFORM	10.00	U
4-METHYL-2-PENTANONE	10.00	U
2-HEXANONE	10.00	U
TETRACHLOROETHENE	3.00	J
1,1,2,2-TETRACHLOROETHANE	10.00	U
TOLUENE	3.00	J
CHLOROBENZENE	10.00	U
ETHYLBENZENE	10.00	U
STYRENE	10.00	U
XYLENE	10.00	U

Sample ID : PV01124IT Units : ug/Kg

Analyte	Result	Qual
CHLOROMETHANE	10.00	U
BROMOMETHANE	10.00	U
VINYL CHLORIDE	10.00	U
CHLOROETHANE	10.00	U
METHYLENE CHLORIDE	10.00	U
ACETONE	10.00	U
CARBON DISULFIDE	1.00	J
1,1-DICHLOROETHENE	10.00	U
1,1-DICHLOROETHANE	10.00	U
1,2-DICHLOROETHENE	10.00	U
CHLOROFORM	10.00	U
1,2-DICHLOROETHANE	10.00	U
2-BUTANONE	10.00	U
1,1,1-TRICHLOROETHANE	10.00	U
CARBON TETRACHLORIDE	10.00	U
BROMODICHLOROMETHANE	10.00	U
1,2-DICHLOROPROPANE	10.00	U
CIS-1,3-DICHLOROPROPENE	10.00	U
TRICHLOROETHENE	10.00	U
DIBROMOCHLOROMETHANE	10.00	U
1,1,2-TRICHLOROETHANE	10.00	U
BENZENE	4.00	J
TRANS-1,3-DICHLOROPROPENE	10.00	U
BROMOFORM	10.00	U

Appendix A1
Ryan's Pit Soil Treatment - Analytical Data
Volatile Organic Compounds

Sample ID : PV01124IT Units : ug/Kg

Analyte	Result	Qual
4-METHYL-2-PENTANONE	10.00	U
2-HEXANONE	10.00	U
TETRACHLOROETHENE	5.00	J
1,1,2,2-TETRACHLOROETHANE	10.00	U
TOLUENE	1.00	J
CHLOROBENZENE	10.00	U
ETHYLBENZENE	10.00	U
STYRENE	10.00	U
XYLENE	10.00	U

Sample ID : PV01125IT Units : ug/Kg

Analyte	Result	Qual
CHLOROMETHANE	10.00	U
BROMOMETHANE	10.00	U
VINYL CHLORIDE	10.00	U
CHLOROETHANE	10.00	U
METHYLENE CHLORIDE	10.00	U
ACETONE	10.00	U
CARBON DISULFIDE	10.00	U
1,1-DICHLOROETHENE	10.00	U
1,1-DICHLOROETHANE	10.00	U
1,2-DICHLOROETHENE	10.00	U
CHLOROFORM	10.00	U
1,2-DICHLOROETHANE	10.00	U
2-BUTANONE	10.00	U
1,1,1-TRICHLOROETHANE	10.00	U
CARBON TETRACHLORIDE	10.00	U
BROMODICHLOROMETHANE	10.00	U
1,2-DICHLOROPROPANE	10.00	U
CIS-1,3-DICHLOROPROPENE	10.00	U
TRICHLOROETHENE	10.00	U
DIBROMOCHLOROMETHANE	10.00	U
1,1,2-TRICHLOROETHANE	10.00	U
BENZENE	7.00	J
TRANS-1,3-DICHLOROPROPENE	10.00	U
BROMOFORM	10.00	U
4-METHYL-2-PENTANONE	10.00	U
2-HEXANONE	10.00	U
TETRACHLOROETHENE	5.00	J
1,1,2,2-TETRACHLOROETHANE	10.00	U
TOLUENE	2.00	J
CHLOROBENZENE	10.00	U
ETHYLBENZENE	10.00	U
STYRENE	10.00	U
XYLENE	1.00	J

Sample ID : PV01127IT Units : MG/KG

Analyte	Result	Qual
CHLOROMETHANE	24.00	U
BROMOMETHANE	24.00	U
VINYL CHLORIDE	24.00	U
CHLOROETHANE	24.00	U
METHYLENE CHLORIDE	24.00	U
ACETONE	360.00	
CARBON DISULFIDE	24.00	U
1,1-DICHLOROETHENE	6.00	J
1,1-DICHLOROETHANE	3.00	J
1,2-DICHLOROETHENE	25.00	U

Appendix A1
Ryan's Pit Soil Treatment - Analytical Data
Volatile Organic Compounds

Sample ID : PV01127IT Units : MG/KG

Analyte	Result	Qual
CHLOROFORM	24.00	U
1,2-DICHLOROETHANE	28.00	
2-BUTANONE	27.00	
1,1,1-TRICHLOROETHANE	400.00	
CARBON TETRACHLORIDE	24.00	U
BROMODICHLOROMETHANE	24.00	U
1,2-DICHLOROPROPANE	24.00	U
CIS-1,3-DICHLOROPROPENE	24.00	U
TRICHLOROETHENE	200.00	
DIBROMOCHLOROMETHANE	24.00	U
1,1,2-TRICHLOROETHANE	24.00	U
BENZENE	130.00	
TRANS-1,3-DICHLOROPROPENE	24.00	U
BROMOFORM	24.00	U
4-METHYL-2-PENTANONE	24.00	U
2-HEXANONE	24.00	U
TETRACHLOROETHENE	300.00	
1,1,2,2-TETRACHLOROETHANE	24.00	U
TOLUENE	33.00	
CHLOROBENZENE	24.00	U
ETHYLBENZENE	11.00	J
STYRENE	24.00	U
XYLENE	28.00	

Sample ID : PV01129IT Units : MG/KG

Analyte	Result	Qual
CHLOROMETHANE	24.00	U
BROMOMETHANE	24.00	U
VINYL CHLORIDE	24.00	U
CHLOROETHANE	24.00	U
METHYLENE CHLORIDE	24.00	U
ACETONE	330.00	
CARBON DISULFIDE	24.00	U
1,1-DICHLOROETHENE	5.00	J
1,1-DICHLOROETHANE	3.00	J
1,2-DICHLOROETHENE	25.00	U
CHLOROFORM	24.00	U
1,2-DICHLOROETHANE	30.00	
2-BUTANONE	29.00	
1,1,1-TRICHLOROETHANE	410.00	
CARBON TETRACHLORIDE	24.00	U
BROMODICHLOROMETHANE	24.00	U
1,2-DICHLOROPROPANE	24.00	U
CIS-1,3-DICHLOROPROPENE	24.00	U
TRICHLOROETHENE	250.00	
DIBROMOCHLOROMETHANE	24.00	U
1,1,2-TRICHLOROETHANE	24.00	U
BENZENE	160.00	
TRANS-1,3-DICHLOROPROPENE	24.00	U
BROMOFORM	24.00	U
4-METHYL-2-PENTANONE	24.00	U
2-HEXANONE	24.00	U
TETRACHLOROETHENE	300.00	
1,1,2,2-TETRACHLOROETHANE	24.00	U
TOLUENE	40.00	
CHLOROBENZENE	24.00	U
ETHYLBENZENE	17.00	J
STYRENE	24.00	U
XYLENE	43.00	

Appendix A1
Ryan's Pit Soil Treatment Analytical Data
Volatile Organic Compounds

Sample ID PV01131IT Units MG/KG

Analyte	Result	Qual
CHLOROMETHANE	120.00	U
BROMOMETHANE	120.00	U
VINYL CHLORIDE	120.00	U
CHLOROETHANE	120.00	U
METHYLENE CHLORIDE	120.00	U
ACETONE	420.00	
CARBON DISULFIDE	120.00	U
1,1-DICHLOROETHENE	120.00	U
1,1-DICHLOROETHANE	120.00	U
1,2-DICHLOROETHENE	120.00	U
CHLOROFORM	120.00	U
1,2-DICHLOROETHANE	31.00	J
2-BUTANONE	80.00	J
1,1,1-TRICHLOROETHANE	380.00	
CARBON TETRACHLORIDE	120.00	U
BROMODICHLOROMETHANE	120.00	U
1,2-DICHLOROPROPANE	120.00	U
CIS-1,3-DICHLOROPROPENE	120.00	U
TRICHLOROETHENE	290.00	
DIBROMOCHLOROMETHANE	120.00	U
1,1,2-TRICHLOROETHANE	120.00	U
BENZENE	200.00	
TRANS-1,3-DICHLOROPROPENE	120.00	U
BROMOFORM	120.00	U
4-METHYL-2-PENTANONE	27.00	
2-HEXANONE	120.00	U
TETRACHLOROETHENE	1,100.00	
1,1,2,2-TETRACHLOROETHANE	120.00	U
TOLUENE	110.00	J
CHLOROBENZENE	120.00	U
ETHYLBENZENE	13.00	J
STYRENE	120.00	U
XYLENE	29.00	J

Appendix A2
Ryan's Pit Excavation
Sample Locations

Location Code	Sample No	Location
TR00001KH	A639901	N wall
TR00001KH	A639903	N wall
TR00002KH	A640001	E wall
TR00002KH	A640003	E wall
TR00003KH	A640101	S wall
TR00003KH	A640103	S wall
TR00004KH	A640201	W wall
TR00004KH	A640203	W wall
TR00005KH	A640301	SW floor
TR00005KH	A640303	SW floor
TR00006KH	A640401	NW floor
TR00006KH	A640406	NW floor
TR00007KH	A640501	NE floor
TR00007KH	A640503	NE floor
TR00008KH	A640601	SE floor
TR00008KH	A640603	SE floor
TR00008KH	A640603D	SE floor
TR00009KH	A640701	NW wall
TR00009KH	A640703	NW wall
TR00010KH	A640801	SW wall
TR00010KH	A640803	SW wall
TR00006KH	A643103	NW floor
TR00006KH	A643107	NW floor
TR00006KH	A643107D	NW floor
TR00010KH	A643304	S wall
TR00010KH	A643305	S wall
TR00012KH	A643401	Rolloff 1
TR00012KH	A643405	Rolloff 1
TR00012KH	A643502D	Rolloff 1
TR00012KH	A643503	Rolloff 1
FLDBLNK	A643604FB	FLDBLNK
TR00013KH	A643701	Rolloff 2
TR00013KH	A643702	Rolloff 2
TR00014KH	A643801	Rolloff 3
TR00014KH	A643802	Rolloff 3
TR00015KH	A643901	Rolloff 4
TR00015KH	A643902	Rolloff 4
TR00016KH	A644001	Rolloff 5
TR00016KH	A644002	Rolloff 5
TR00017KH	A644101	Rolloff 6
TR00017KH	A644102	Rolloff 6
TR00018KH	A644201	Rolloff 7
TR00018KH	A644202	Rolloff 7
TR00019KH	A644301	Rolloff 8
TR00019KH	A644302	Rolloff 8
TR00020KH	A644401	Rolloff 9
TR00020KH	A644402	Rolloff 9
TR00020KHD	A644402	Rolloff 9
TR00020KHD	A6444402D	Rolloff 9
EQUIPBLNK	A644908EB	EQUIBLNK

Sample No : A639901 Units ug/Kg

Analyte	Result	C	Q	Error	Method	QA/QC
CHLOROMETHANE		U			GCMS	REAL
BROMOMETHANE		U			GCMS	REAL
VINYL CHLORIDE		U			GCMS	REAL
CHLOROETHANE		U			GCMS	REAL
METHYLENE CHLORIDE		U			GCMS	REAL
ACETONE		U			GCMS	REAL
CARBON DISULFIDE		U			GCMS	REAL
1,1-DICHLOROETHENE		U			GCMS	REAL
1,1-DICHLOROETHANE		U			GCMS	REAL
1,2-DICHLOROETHENE		U			GCMS	REAL
CHLOROFORM		U			GCMS	REAL
1,2-DICHLOROETHANE		U			GCMS	REAL
2-BUTANONE		U			GCMS	REAL
1,1,1-TRICHLOROETHANE		U			GCMS	REAL
CARBON TETRACHLORID		U			GCMS	REAL
BROMODICHLOROMETHA		U			GCMS	REAL
1,2-DICHLOROPROPANE		U			GCMS	REAL
CIS-1,3-DICHLOROPROPE		U			GCMS	REAL
TRICHLOROETHENE		U			GCMS	REAL
DIBROMOCHLOROMETHA		U			GCMS	REAL
1,1,2-TRICHLOROETHANE	2.00	J			GCMS	REAL
BENZENE		U			GCMS	REAL
TRANS-1,3-DICHLOROPR		U			GCMS	REAL
BROMOFORM		U			GCMS	REAL
4-METHYL-2-PENTANONE		U			GCMS	REAL
2-HEXANONE		U			GCMS	REAL
TETRACHLOROETHENE	19.00				GCMS	REAL
1,1,2,2-TETRACHLOROET		U			GCMS	REAL
TOLUENE		U			GCMS	REAL
CHLOROBENZENE		U			GCMS	REAL
ETHYLBENZENE		U			GCMS	REAL
STYRENE		U			GCMS	REAL
XYLENE		U			GCMS	REAL

Sample No : A640001 Units : ug/Kg

Analyte	Result	C	Q	Error	Method	QA/QC
CHLOROMETHANE		U			GCMS	REAL
BROMOMETHANE		U			GCMS	REAL
VINYL CHLORIDE		U			GCMS	REAL
CHLOROETHANE		U			GCMS	REAL
METHYLENE CHLORIDE		U			GCMS	REAL
ACETONE		U			GCMS	REAL
CARBON DISULFIDE		U			GCMS	REAL
1,1-DICHLOROETHENE		U			GCMS	REAL
1,1-DICHLOROETHANE		U			GCMS	REAL
1,2-DICHLOROETHENE		U			GCMS	REAL
CHLOROFORM		U			GCMS	REAL
1,2-DICHLOROETHANE		U			GCMS	REAL
2-BUTANONE		U			GCMS	REAL
1,1,1-TRICHLOROETHANE		U			GCMS	REAL
CARBON TETRACHLORID		U			GCMS	REAL
BROMODICHLOROMETHA		U			GCMS	REAL
1,2-DICHLOROPROPANE		U			GCMS	REAL
CIS-1,3-DICHLOROPROPE		U			GCMS	REAL

Sample No : A640001 Units : ug/Kg

Analyte	Result	C	Q	Error	Method	QA/QC
TRICHLOROETHENE		U			GCMS	REAL
DIBROMOCHLOROMETHA		U			GCMS	REAL
1,1,2-TRICHLOROETHANE		U			GCMS	REAL
BENZENE		U			GCMS	REAL
TRANS-1,3-DICHLOROPR		U			GCMS	REAL
BROMOFORM		U			GCMS	REAL
4-METHYL-2-PENTANONE		U			GCMS	REAL
2-HEXANONE		U			GCMS	REAL
TETRACHLOROETHENE	2.00	J			GCMS	REAL
1,1,2,2-TETRACHLOROET		U			GCMS	REAL
TOLUENE		U			GCMS	REAL
CHLOROBENZENE		U			GCMS	REAL
ETHYLBENZENE		U			GCMS	REAL
STYRENE		U			GCMS	REAL
XYLENE		U			GCMS	REAL

Sample No : A640101 Units : ug/Kg

Analyte	Result	C	Q	Error	Method	QA/QC
CHLOROMETHANE	99.00	J			GCMS	REAL
BROMOMETHANE		U			GCMS	REAL
VINYL CHLORIDE		U			GCMS	REAL
CHLOROETHANE		U			GCMS	REAL
METHYLENE CHLORIDE		U			GCMS	REAL
ACETONE	300.00	BJ			GCMS	REAL
CARBON DISULFIDE		U			GCMS	REAL
1,1-DICHLOROETHENE		U			GCMS	REAL
1,1-DICHLOROETHANE		U			GCMS	REAL
1,2-DICHLOROETHENE		U			GCMS	REAL
CHLOROFORM		U			GCMS	REAL
1,2-DICHLOROETHANE		U			GCMS	REAL
2-BUTANONE		U			GCMS	REAL
1,1,1-TRICHLOROETHANE	120.00	J			GCMS	REAL
CARBON TETRACHLORID		U			GCMS	REAL
BROMODICHLOROMETHA		U			GCMS	REAL
1,2-DICHLOROPROPANE		U			GCMS	REAL
CIS-1,3-DICHLOROPROPE		U			GCMS	REAL
TRICHLOROETHENE	98.00	J			GCMS	REAL
DIBROMOCHLOROMETHA		U			GCMS	REAL
1,1,2-TRICHLOROETHANE		U			GCMS	REAL
BENZENE		U			GCMS	REAL
TRANS-1,3-DICHLOROPR		U			GCMS	REAL
BROMOFORM		U			GCMS	REAL
4-METHYL-2-PENTANONE	1,700.00				GCMS	REAL
2-HEXANONE		U			GCMS	REAL
TETRACHLOROETHENE	1,200.00				GCMS	REAL
1,1,2,2-TETRACHLOROET		U			GCMS	REAL
TOLUENE	230.00	J			GCMS	REAL
CHLOROBENZENE		U			GCMS	REAL
ETHYLBENZENE	72.00	J			GCMS	REAL
STYRENE		U			GCMS	REAL
XYLENE	400.00	J			GCMS	REAL

Sample No : A640201 Units ug/Kg

Analyte	Result	C	Q	Error	Method	QA/QC
CHLOROMETHANE		U			GCMS	REAL
BROMOMETHANE		U			GCMS	REAL
VINYL CHLORIDE		U			GCMS	REAL
CHLOROETHANE		U			GCMS	REAL
METHYLENE CHLORIDE		U			GCMS	REAL
ACETONE	28.00	B			GCMS	REAL
CARBON DISULFIDE		U			GCMS	REAL
1,1-DICHLOROETHENE		U			GCMS	REAL
1,1-DICHLOROETHANE		U			GCMS	REAL
1,2-DICHLOROETHENE		U			GCMS	REAL
CHLOROFORM		U			GCMS	REAL
1,2-DICHLOROETHANE		U			GCMS	REAL
2-BUTANONE	7 00	BJ			GCMS	REAL
1,1,1-TRICHLOROETHANE		U			GCMS	REAL
CARBON TETRACHLORID		U			GCMS	REAL
BROMODICHLOROMETHA		U			GCMS	REAL
1,2-DICHLOROPROPANE		U			GCMS	REAL
CIS-1,3-DICHLOROPROPE		U			GCMS	REAL
TRICHLOROETHENE		U			GCMS	REAL
DIBROMOCHLOROMETHA		U			GCMS	REAL
1,1,2-TRICHLOROETHANE		U			GCMS	REAL
BENZENE		U			GCMS	REAL
TRANS-1,3-DICHLOROPR		U			GCMS	REAL
BROMOFORM		U			GCMS	REAL
4-METHYL-2-PENTANONE		U			GCMS	REAL
2-HEXANONE		U			GCMS	REAL
TETRACHLOROETHENE		U			GCMS	REAL
1,1,2,2-TETRACHLOROET		U			GCMS	REAL
TOLUENE		U			GCMS	REAL
CHLOROBENZENE		U			GCMS	REAL
ETHYLBENZENE		U			GCMS	REAL
STYRENE		U			GCMS	REAL
XYLENE		U			GCMS	REAL

Sample No : A640301 Units : ug/Kg

Analyte	Result	C	Q	Error	Method	QA/QC
CHLOROMETHANE		U			GCMS	REAL
BROMOMETHANE	1.00	J			GCMS	REAL
VINYL CHLORIDE		U			GCMS	REAL
CHLOROETHANE		U			GCMS	REAL
METHYLENE CHLORIDE		U			GCMS	REAL
ACETONE	3.00	BJ			GCMS	REAL
CARBON DISULFIDE		U			GCMS	REAL
1,1-DICHLOROETHENE		U			GCMS	REAL
1,1-DICHLOROETHANE		U			GCMS	REAL
1,2-DICHLOROETHENE		U			GCMS	REAL
CHLOROFORM		U			GCMS	REAL
1,2-DICHLOROETHANE		U			GCMS	REAL
2-BUTANONE	3.00	BJ			GCMS	REAL
1,1,1-TRICHLOROETHANE		U			GCMS	REAL
CARBON TETRACHLORID		U			GCMS	REAL
BROMODICHLOROMETHA		U			GCMS	REAL
1,2-DICHLOROPROPANE		U			GCMS	REAL
CIS-1,3-DICHLOROPROPE		U			GCMS	REAL

Sample No A640301 Units ug/Kg

Analyte	Result	C	Q	Error	Method	QA/QC
TRICHLOROETHENE		U			GCMS	REAL
DIBROMOCHLOROMETHA		U			GCMS	REAL
1,1,2-TRICHLOROETHANE		U			GCMS	REAL
BENZENE		U			GCMS	REAL
TRANS-1,3-DICHLOROPR		U			GCMS	REAL
BROMOFORM		U			GCMS	REAL
4-METHYL-2-PENTANONE		U			GCMS	REAL
2-HEXANONE		U			GCMS	REAL
TETRACHLOROETHENE	14.00				GCMS	REAL
1,1,2,2-TETRACHLOROET		U			GCMS	REAL
TOLUENE		U			GCMS	REAL
CHLOROBENZENE		U			GCMS	REAL
ETHYLBENZENE		U			GCMS	REAL
STYRENE		U			GCMS	REAL
XYLENE		U			GCMS	REAL

Sample No . A640401 Units : ug/Kg

Analyte	Result	C	Q	Error	Method	QA/QC
CHLOROMETHANE		U			GCMS	REAL
BROMOMETHANE		U			GCMS	REAL
VINYL CHLORIDE		U			GCMS	REAL
CHLOROETHANE		U			GCMS	REAL
METHYLENE CHLORIDE		U			GCMS	REAL
ACETONE	4.00	BJ			GCMS	REAL
CARBON DISULFIDE		U			GCMS	REAL
1,1-DICHLOROETHENE		U			GCMS	REAL
1,1-DICHLOROETHANE	5.00	J			GCMS	REAL
1,2-DICHLOROETHENE		U			GCMS	REAL
CHLOROFORM		U			GCMS	REAL
1,2-DICHLOROETHANE		U			GCMS	REAL
2-BUTANONE	3.00	BJ			GCMS	REAL
1,1,1-TRICHLOROETHANE		U			GCMS	REAL
CARBON TETRACHLORID		U			GCMS	REAL
BROMODICHLOROMETHA		U			GCMS	REAL
1,2-DICHLOROPROPANE		U			GCMS	REAL
CIS-1,3-DICHLOROPROPE		U			GCMS	REAL
TRICHLOROETHENE	2.00	J			GCMS	REAL
DIBROMOCHLOROMETHA		U			GCMS	REAL
1,1,2-TRICHLOROETHANE		U			GCMS	REAL
BENZENE		U			GCMS	REAL
TRANS-1,3-DICHLOROPR		U			GCMS	REAL
BROMOFORM		U			GCMS	REAL
4-METHYL-2-PENTANONE		U			GCMS	REAL
2-HEXANONE		U			GCMS	REAL
TETRACHLOROETHENE		U			GCMS	REAL
1,1,2,2-TETRACHLOROET		U			GCMS	REAL
TOLUENE		U			GCMS	REAL
CHLOROBENZENE		U			GCMS	REAL
ETHYLBENZENE		U			GCMS	REAL
STYRENE		U			GCMS	REAL
XYLENE		U			GCMS	REAL

Sample No : A640501 Units ug/Kg

Analyte	Result	C	Q	Error	Method	QA/QC
CHLOROMETHANE		U			GCMS	REAL
BROMOMETHANE		U			GCMS	REAL
VINYL CHLORIDE		U			GCMS	REAL
CHLOROETHANE		U			GCMS	REAL
METHYLENE CHLORIDE		U			GCMS	REAL
ACETONE	3.00	BJ			GCMS	REAL
CARBON DISULFIDE		U			GCMS	REAL
1,1-DICHLOROETHENE		U			GCMS	REAL
1,1-DICHLOROETHANE	18.00				GCMS	REAL
1,2-DICHLOROETHENE		U			GCMS	REAL
CHLOROFORM	60.00				GCMS	REAL
1,2-DICHLOROETHANE	5.00	J			GCMS	REAL
2-BUTANONE	4.00	BJ			GCMS	REAL
1,1,1-TRICHLOROETHANE	4.00	J			GCMS	REAL
CARBON TETRACHLORID		U			GCMS	REAL
BROMODICHLOROMETHA		U			GCMS	REAL
1,2-DICHLOROPROPANE	1.00	J			GCMS	REAL
CIS-1,3-DICHLOROPROPE		U			GCMS	REAL
TRICHLOROETHENE	4.00	J			GCMS	REAL
DIBROMOCHLOROMETHA		U			GCMS	REAL
1,1,2-TRICHLOROETHANE	6.00	J			GCMS	REAL
BENZENE		U			GCMS	REAL
TRANS-1,3-DICHLOROPR		U			GCMS	REAL
BROMOFORM		U			GCMS	REAL
4-METHYL-2-PENTANONE		U			GCMS	REAL
2-HEXANONE		U			GCMS	REAL
TETRACHLOROETHENE	2.00	J			GCMS	REAL
1,1,2,2-TETRACHLOROET		U			GCMS	REAL
TOLUENE		U			GCMS	REAL
CHLOROBENZENE		U			GCMS	REAL
ETHYLBENZENE		U			GCMS	REAL
STYRENE		U			GCMS	REAL
XYLENE		U			GCMS	REAL

Sample No : A640601 Units : ug/Kg

Analyte	Result	C	Q	Error	Method	QA/QC
CHLOROMETHANE		U			GCMS	REAL
BROMOMETHANE		U			GCMS	REAL
VINYL CHLORIDE		U			GCMS	REAL
CHLOROETHANE		U			GCMS	REAL
METHYLENE CHLORIDE		U			GCMS	REAL
ACETONE	4.00	BJ			GCMS	REAL
CARBON DISULFIDE		U			GCMS	REAL
1,1-DICHLOROETHENE		U			GCMS	REAL
1,1-DICHLOROETHANE		U			GCMS	REAL
1,2-DICHLOROETHENE		U			GCMS	REAL
CHLOROFORM		U			GCMS	REAL
1,2-DICHLOROETHANE		U			GCMS	REAL
2-BUTANONE	3.00	BJ			GCMS	REAL
1,1,1-TRICHLOROETHANE		U			GCMS	REAL
CARBON TETRACHLORID		U			GCMS	REAL
BROMODICHLOROMETHA		U			GCMS	REAL
1,2-DICHLOROPROPANE		U			GCMS	REAL
CIS-1,3-DICHLOROPROPE		U			GCMS	REAL

Sample No A640601 Units : ug/Kg

Analyte	Result	C	Q	Error	Method	QA/QC
TRICHLOROETHENE		U			GCMS	REAL
DIBROMOCHLOROMETHA		U			GCMS	REAL
1,1,2-TRICHLOROETHANE		U			GCMS	REAL
BENZENE		U			GCMS	REAL
TRANS-1,3-DICHLOROPR		U			GCMS	REAL
BROMOFORM		U			GCMS	REAL
4-METHYL-2-PENTANONE		U			GCMS	REAL
2-HEXANONE		U			GCMS	REAL
TETRACHLOROETHENE	3.00	J			GCMS	REAL
1,1,2,2-TETRACHLOROET		U			GCMS	REAL
TOLUENE		U			GCMS	REAL
CHLOROBENZENE		U			GCMS	REAL
ETHYLBENZENE		U			GCMS	REAL
STYRENE		U			GCMS	REAL
XYLENE		U			GCMS	REAL

Sample No : A640701 Units : ug/Kg

Analyte	Result	C	Q	Error	Method	QA/QC
CHLOROMETHANE		U			GCMS	REAL
BROMOMETHANE		U			GCMS	REAL
VINYL CHLORIDE		U			GCMS	REAL
CHLOROETHANE		U			GCMS	REAL
METHYLENE CHLORIDE		U			GCMS	REAL
ACETONE	4.00	BJ			GCMS	REAL
CARBON DISULFIDE		U			GCMS	REAL
1,1-DICHLOROETHENE		U			GCMS	REAL
1,1-DICHLOROETHANE	6.00	J			GCMS	REAL
1,2-DICHLOROETHENE		U			GCMS	REAL
CHLOROFORM		U			GCMS	REAL
1,2-DICHLOROETHANE		U			GCMS	REAL
2-BUTANONE	5.00	BJ			GCMS	REAL
1,1,1-TRICHLOROETHANE	7.00	J			GCMS	REAL
CARBON TETRACHLORID		U			GCMS	REAL
BROMODICHLOROMETHA		U			GCMS	REAL
1,2-DICHLOROPROPANE		U			GCMS	REAL
CIS-1,3-DICHLOROPROPE		U			GCMS	REAL
TRICHLOROETHENE	3.00	J			GCMS	REAL
DIBROMOCHLOROMETHA		U			GCMS	REAL
1,1,2-TRICHLOROETHANE		U			GCMS	REAL
BENZENE		U			GCMS	REAL
TRANS-1,3-DICHLOROPR		U			GCMS	REAL
BROMOFORM		U			GCMS	REAL
4-METHYL-2-PENTANONE		U			GCMS	REAL
2-HEXANONE		U			GCMS	REAL
TETRACHLOROETHENE	13.00				GCMS	REAL
1,1,2,2-TETRACHLOROET		U			GCMS	REAL
TOLUENE		U			GCMS	REAL
CHLOROBENZENE		U			GCMS	REAL
ETHYLBENZENE		U			GCMS	REAL
STYRENE		U			GCMS	REAL
XYLENE		U			GCMS	REAL

Sample No A640801 Units ug/Kg

Analyte	Result	C	Q	Error	Method	QA/QC
CHLOROMETHANE		U			GCMS	REAL
BROMOMETHANE		U			GCMS	REAL
VINYL CHLORIDE		U			GCMS	REAL
CHLOROETHANE		U			GCMS	REAL
METHYLENE CHLORIDE		U			GCMS	REAL
ACETONE	4,000.00	J			GCMS	REAL
CARBON DISULFIDE		U			GCMS	REAL
1,1-DICHLOROETHENE		U			GCMS	REAL
1,1-DICHLOROETHANE		U			GCMS	REAL
1,2-DICHLOROETHENE		U			GCMS	REAL
CHLOROFORM		U			GCMS	REAL
1,2-DICHLOROETHANE		U			GCMS	REAL
2-BUTANONE		U			GCMS	REAL
1,1,1-TRICHLOROETHANE	8,000.00	J			GCMS	REAL
CARBON TETRACHLORID		U			GCMS	REAL
BROMODICHLOROMETHA		U			GCMS	REAL
1,2-DICHLOROPROPANE		U			GCMS	REAL
CIS-1,3-DICHLOROPROPE		U			GCMS	REAL
TRICHLOROETHENE	19,000.00				GCMS	REAL
DIBROMOCHLOROMETHA		U			GCMS	REAL
1,1,2-TRICHLOROETHANE		U			GCMS	REAL
BENZENE		U			GCMS	REAL
TRANS-1,3-DICHLOROPR		U			GCMS	REAL
BROMOFORM		U			GCMS	REAL
4-METHYL-2-PENTANONE	19,000.00				GCMS	REAL
2-HEXANONE		U			GCMS	REAL
TETRACHLOROETHENE	250,000.00				GCMS	REAL
1,1,2,2-TETRACHLOROET		U			GCMS	REAL
TOLUENE	100,000.00				GCMS	REAL
CHLOROBENZENE		U			GCMS	REAL
ETHYLBENZENE	28,000.00				GCMS	REAL
STYRENE		U			GCMS	REAL
XYLENE	140,000.00				GCMS	REAL

Sample No : A643103 Units : ug/Kg

Analyte	Result	C	Q	Error	Method	QA/QC
CHLOROMETHANE		U			GCMS	REAL
BROMOMETHANE		U			GCMS	REAL
VINYL CHLORIDE		U			GCMS	REAL
CHLOROETHANE		U			GCMS	REAL
METHYLENE CHLORIDE		U			GCMS	REAL
ACETONE	2.00	BJ			GCMS	REAL
CARBON DISULFIDE		U			GCMS	REAL
1,1-DICHLOROETHENE		U			GCMS	REAL
1,1-DICHLOROETHANE	19.00				GCMS	REAL
1,2-DICHLOROETHENE		U			GCMS	REAL
CHLOROFORM		U			GCMS	REAL
1,2-DICHLOROETHANE		U			GCMS	REAL
2-BUTANONE	4.00	BJ			GCMS	REAL
1,1,1-TRICHLOROETHANE	4.00	J			GCMS	REAL
CARBON TETRACHLORID		U			GCMS	REAL
BROMODICHLOROMETHA		U			GCMS	REAL
1,2-DICHLOROPROPANE	3.00	J			GCMS	REAL
CIS-1,3-DICHLOROPROPE		U			GCMS	REAL

Sample No : A643103 Units : ug/Kg

Analyte	Result	C	Q	Error	Method	QA/QC
TRICHLOROETHENE	9.00	J			GCMS	REAL
DIBROMOCHLOROMETHA		U			GCMS	REAL
1,1,2-TRICHLOROETHANE	1.00	J			GCMS	REAL
BENZENE		U			GCMS	REAL
TRANS-1,3-DICHLOROPR		U			GCMS	REAL
BROMOFORM		U			GCMS	REAL
4-METHYL-2-PENTANONE		U			GCMS	REAL
2-HEXANONE		U			GCMS	REAL
TETRACHLOROETHENE		U			GCMS	REAL
1,1,2,2-TETRACHLOROET		U			GCMS	REAL
TOLUENE		U			GCMS	REAL
CHLOROBENZENE		U			GCMS	REAL
ETHYLBENZENE		U			GCMS	REAL
STYRENE		U			GCMS	REAL
XYLENE		U			GCMS	REAL

Sample No : A643304 Units : ug/Kg

Analyte	Result	C	Q	Error	Method	QA/QC
CHLOROMETHANE		U			GCMS	REAL
BROMOMETHANE		U			GCMS	REAL
VINYL CHLORIDE		U			GCMS	REAL
CHLOROETHANE		U			GCMS	REAL
METHYLENE CHLORIDE		U			GCMS	REAL
ACETONE	5,800.00	B			GCMS	REAL
CARBON DISULFIDE		U			GCMS	REAL
1,1-DICHLOROETHENE		U			GCMS	REAL
1,1-DICHLOROETHANE		U			GCMS	REAL
1,2-DICHLOROETHENE		U			GCMS	REAL
CHLOROFORM		U			GCMS	REAL
1,2-DICHLOROETHANE		U			GCMS	REAL
2-BUTANONE	4,600.00	J			GCMS	REAL
1,1,1-TRICHLOROETHANE		U			GCMS	REAL
CARBON TETRACHLORID		U			GCMS	REAL
BROMODICHLOROMETHA		U			GCMS	REAL
1,2-DICHLOROPROPANE		U			GCMS	REAL
CIS-1,3-DICHLOROPROPE		U			GCMS	REAL
TRICHLOROETHENE	1,000.00	J			GCMS	REAL
DIBROMOCHLOROMETHA		U			GCMS	REAL
1,1,2-TRICHLOROETHANE		U			GCMS	REAL
BENZENE		U			GCMS	REAL
TRANS-1,3-DICHLOROPR		U			GCMS	REAL
BROMOFORM		U			GCMS	REAL
4-METHYL-2-PENTANONE	6,300.00				GCMS	REAL
2-HEXANONE		U			GCMS	REAL
TETRACHLOROETHENE	110,000.00				GCMS	REAL
1,1,2,2-TETRACHLOROET		U			GCMS	REAL
TOLUENE	19,000.00				GCMS	REAL
CHLOROBENZENE		U			GCMS	REAL
ETHYLBENZENE	15,000.00				GCMS	REAL
STYRENE		U			GCMS	REAL
XYLENE	130,000.00				GCMS	REAL

Sample No A643305

Units ug/Kg

Analyte	Result	C	Q	Error	Method	QA/QC
CHLOROMETHANE		U			GCMS	REAL
BROMOMETHANE		U			GCMS	REAL
VINYL CHLORIDE		U			GCMS	REAL
CHLOROETHANE		U			GCMS	REAL
METHYLENE CHLORIDE		U			GCMS	REAL
ACETONE	11,000.00	JB			GCMS	REAL
CARBON DISULFIDE		U			GCMS	REAL
1,1-DICHLOROETHENE		U			GCMS	REAL
1,1-DICHLOROETHANE		U			GCMS	REAL
1,2-DICHLOROETHENE		U			GCMS	REAL
CHLOROFORM		U			GCMS	REAL
1,2-DICHLOROETHANE		U			GCMS	REAL
2-BUTANONE		U			GCMS	REAL
1,1,1-TRICHLOROETHANE		U			GCMS	REAL
CARBON TETRACHLORID		U			GCMS	REAL
BROMODICHLOROMETHA		U			GCMS	REAL
1,2-DICHLOROPROPANE		U			GCMS	REAL
CIS-1,3-DICHLOROPROPE		U			GCMS	REAL
TRICHLOROETHENE	4,000.00	J			GCMS	REAL
DIBROMOCHLOROMETHA		U			GCMS	REAL
1,1,2-TRICHLOROETHANE		U			GCMS	REAL
BENZENE		U			GCMS	REAL
TRANS-1,3-DICHLOROPR		U			GCMS	REAL
BROMOFORM		U			GCMS	REAL
4-METHYL-2-PENTANONE	18,000.00				GCMS	REAL
2-HEXANONE		U			GCMS	REAL
TETRACHLOROETHENE	220,000.00				GCMS	REAL
1,1,2,2-TETRACHLOROET	53,000.00				GCMS	REAL
TOLUENE		U			GCMS	REAL
CHLOROBENZENE		U			GCMS	REAL
ETHYLBENZENE	27,000.00				GCMS	REAL
STYRENE		U			GCMS	REAL
XYLENE	220,000.00				GCMS	REAL

Sample No A643401 Units mg/Kg

Analyte	Result	C	Q	Error	Method	QA/QC
ALUMINUM	9,260.00		*		P	REAL
ANTIMONY	2.80	U	N		P	REAL
ARSENIC	11.60	U			P	REAL
BARIUM	63.50				P	REAL
BERYLLIUM	2.10		*		P	REAL
CADMIUM	0.43	U			P	REAL
CALCIUM	2,550.00				P	REAL
CHROMIUM	13.30		*		P	REAL
COBALT	4.20	B			P	REAL
COPPER	15.10				P	REAL
IRON	11,400.00				P	REAL
LEAD	17.20	B			P	REAL
LITHIUM	7.50	B			P	REAL
MAGNESIUM	2,030.00				P	REAL
MANGANESE	125.00				P	REAL
MOLYBDENUM	1.30	U			P	REAL
NICKEL	8.00				P	REAL
POTASSIUM	1,910.00				P	REAL
SELENIUM	5.50	U			P	REAL
SILICON	996.00				P	REAL
SILVER	3.60		*		P	REAL
SODIUM	315.00	B			P	REAL
STRONTIUM	17.70	B			P	REAL
THALLIUM	9.60	U			P	REAL
TIN	3.10	B			P	REAL
TITANIUM	300.00		*		P	REAL
URANIUM	14.10	U			P	REAL
VANADIUM	24.90				P	REAL
ZINC	57.60				P	REAL
MERCURY	0.11	U			CV	REAL

Sample No : A643502D Units : mg/Kg

Analyte	Result	C	Q	Error	Method	QA/QC
ALUMINUM	12,000.00		*		P	DUP
ANTIMONY	2.80	U	N		P	DUP
ARSENIC	11.70	U			P	DUP
BARIUM	82.10				P	DUP
BERYLLIUM	3.10		*		P	DUP
CADMIUM	0.65	B			P	DUP
CALCIUM	2,670.00				P	DUP
CHROMIUM	17.20		*		P	DUP
COBALT	5.30	B			P	DUP
COPPER	20.60				P	DUP
IRON	12,300.00				P	DUP
LEAD	20.60	B			P	DUP
LITHIUM	9.30	B			P	DUP
MAGNESIUM	2,230.00				P	DUP
MANGANESE	143.00				P	DUP
MOLYBDENUM	1.30	U			P	DUP
NICKEL	11.00				P	DUP
POTASSIUM	2,120.00				P	DUP
SELENIUM	5.50	U			P	DUP
SILICON	976.00				P	DUP
SILVER	8.70		*		P	DUP

Sample No A643502D Units : mg/Kg

Analyte	Result	C	Q	Error	Method	QA/QC
SODIUM	449.00	B			P	DUP
STRONTIUM	18.60	B			P	DUP
THALLIUM	9.60	U			P	DUP
TIN	3.70	B			P	DUP
TITANIUM	296.00		*		P	DUP
URANIUM	14.20	U			P	DUP
VANADIUM	28.50				P	DUP
ZINC	76.50				P	DUP
MERCURY	0.11	U			CV	DUP

Sample No A643503 Units : mg/Kg

Analyte	Result	C	Q	Error	Method	QA/QC
ALUMINUM	6,290.00				P	REAL
ANTIMONY	9.80	U	N		P	REAL
ARSENIC	2.30				P	REAL
BARIUM	52.80				P	REAL
BERYLLIUM	1.70				P	REAL
CADMIUM	0.66	U			P	REAL
CALCIUM	3,290.00				P	REAL
CHROMIUM	11.30				P	REAL
COBALT	3.90	B			P	REAL
COPPER	13.50				P	REAL
IRON	10,800.00				P	REAL
LEAD	16.60				P	REAL
MAGNESIUM	1,730.00		E		P	REAL
MANGANESE	116.00				P	REAL
NICKEL	5.60	B			P	REAL
POTASSIUM	1,460.00				P	REAL
SELENIUM	0.62	U			P	REAL
SILVER	2.90		N		P	REAL
SODIUM	292.00	B			P	REAL
THALLIUM	1.80	B			P	REAL
VANADIUM	17.80				P	REAL
ZINC	58.10				P	REAL
MERCURY	0.06	B			CV	REAL

Sample No : A643604FB Units : mg/Kg

Analyte	Result	C	Q	Error	Method	QA/QC
MERCURY	0.00	U			CV	FLDBLNK

Sample No : A643701 Units mg/Kg

Analyte	Result	C	Q	Error	Method	QA/QC
ALUMINUM	19,600.00		*		P	REAL
ANTIMONY	3.20	U	N		P	REAL
ARSENIC	27.10	B			P	REAL
BARIUM	292.00				P	REAL
BERYLLIUM	34.10		*		P	REAL
CADMIUM	1.30				P	REAL
CALCIUM	13,800.00				P	REAL
CHROMIUM	91.10		*		P	REAL
COBALT	10.10				P	REAL
COPPER	83.90				P	REAL
IRON	15,900.00				P	REAL
LEAD	58.20				P	REAL
LITHIUM	11.80	B			P	REAL
MAGNESIUM	3,270.00				P	REAL
MANGANESE	239.00				P	REAL
MOLYBDENUM	1.50	U			P	REAL
NICKEL	17.80				P	REAL
POTASSIUM	2,100.00				P	REAL
SELENIUM	6.30	U			P	REAL
SILICON	1,100.00				P	REAL
SILVER	23.50		*		P	REAL
SODIUM	907.00				P	REAL
STRONTIUM	60.30				P	REAL
THALLIUM	11.00	U			P	REAL
TIN	8.20	B			P	REAL
TITANIUM	110.00		*		P	REAL
URANIUM	16.10	U			P	REAL
VANADIUM	47.30				P	REAL
ZINC	157.00				P	REAL
MERCURY	0.99				CV	REAL

Sample No : A643801 Units : mg/Kg

Analyte	Result	C	Q	Error	Method	QA/QC
ALUMINUM	15,400.00		*		P	REAL
ANTIMONY	3.00	U	N		P	REAL
ARSENIC	20.70	B			P	REAL
BARIUM	236.00				P	REAL
BERYLLIUM	34.20		*		P	REAL
CADMIUM	7.40				P	REAL
CALCIUM	13,800.00				P	REAL
CHROMIUM	131.00		*		P	REAL
COBALT	9.50				P	REAL
COPPER	221.00				P	REAL
IRON	12,600.00				P	REAL
LEAD	83.80				P	REAL
LITHIUM	8.50	B			P	REAL
MAGNESIUM	2,620.00				P	REAL
MANGANESE	217.00				P	REAL
MOLYBDENUM	1.70	B			P	REAL
NICKEL	24.50				P	REAL
POTASSIUM	1,570.00				P	REAL
SELENIUM	5.90	U			P	REAL
SILICON	904.00				P	REAL
SILVER	83.40		*		P	REAL

Sample No A643801 Units : mg/Kg

Analyte	Result	C	Q	Error	Method	QA/QC
SODIUM	449.00	B			P	REAL
STRONTIUM	70.70				P	REAL
THALLIUM	10.30	U			P	REAL
TIN	23.60	B			P	REAL
TITANIUM	89.90		*		P	REAL
URANIUM	186.00				P	REAL
VANADIUM	34.10				P	REAL
ZINC	370.00				P	REAL
MERCURY	0.31				CV	REAL

Sample No : A643901 Units : mg/Kg

Analyte	Result	C	Q	Error	Method	QA/QC
ALUMINUM	23,600.00		*		P	REAL
ANTIMONY	2.80	U	N		P	REAL
ARSENIC	11.80	U			P	REAL
BARIUM	242.00				P	REAL
BERYLLIUM	26.90		*		P	REAL
CADMIUM	7.00				P	REAL
CALCIUM	10,400.00				P	REAL
CHROMIUM	81.80		*		P	REAL
COBALT	10.90				P	REAL
COPPER	164.00				P	REAL
IRON	18,300.00				P	REAL
LEAD	70.40				P	REAL
LITHIUM	15.40				P	REAL
MAGNESIUM	3,820.00				P	REAL
MANGANESE	268.00				P	REAL
MOLYBDENUM	2.50	B			P	REAL
NICKEL	24.60				P	REAL
POTASSIUM	3,250.00				P	REAL
SELENIUM	5.60	U			P	REAL
SILICON	946.00				P	REAL
SILVER	87.40		*		P	REAL
SODIUM	667.00	B			P	REAL
STRONTIUM	72.80				P	REAL
THALLIUM	9.70	U			P	REAL
TIN	27.20	B			P	REAL
TITANIUM	166.00		*		P	REAL
URANIUM	159.00				P	REAL
VANADIUM	50.90				P	REAL
ZINC	540.00				P	REAL
MERCURY	1.00				CV	REAL

Sample No : A644001 Units : mg/Kg

Analyte	Result	C	Q	Error	Method	QA/QC
ALUMINUM	22,500.00		*		P	REAL
ANTIMONY	3.10	U	N		P	REAL

Sample No : A644001 Units : mg/Kg

Analyte	Result	C	Q	Error	Method	QA/QC
ARSENIC	13.00	U			P	REAL
BARIUM	276.00				P	REAL
BERYLLIUM	36.20		*		P	REAL
CADMIUM	4.70				P	REAL
CALCIUM	16,900.00				P	REAL
CHROMIUM	127.00		*		P	REAL
COBALT	8.20				P	REAL
COPPER	192.00				P	REAL
IRON	14,800.00				P	REAL
LEAD	76.30				P	REAL
LITHIUM	12.00	B			P	REAL
MAGNESIUM	3,110.00				P	REAL
MANGANESE	185.00				P	REAL
MOLYBDENUM	2.70	B			P	REAL
NICKEL	21.20				P	REAL
POTASSIUM	2,070.00				P	REAL
SELENIUM	6.20	U			P	REAL
SILICON	405.00				P	REAL
SILVER	95.10		*		P	REAL
SODIUM	497.00	B			P	REAL
STRONTIUM	75.80				P	REAL
THALLIUM	10.70	U			P	REAL
TIN	21.60	B			P	REAL
TITANIUM	73.70		*		P	REAL
URANIUM	114.00				P	REAL
VANADIUM	48.30				P	REAL
ZINC	311.00				P	REAL
MERCURY	0.68				CV	REAL

Sample No : A644101 Units : mg/Kg

Analyte	Result	C	Q	Error	Method	QA/QC
ALUMINUM	19,600.00		*		P	REAL
ANTIMONY	3.10	U	N		P	REAL
ARSENIC	13.00	U			P	REAL
BARIUM	308.00				P	REAL
BERYLLIUM	65.60		*		P	REAL
CADMIUM	11.10				P	REAL
CALCIUM	21,900.00				P	REAL
CHROMIUM	169.00		*		P	REAL
COBALT	13.00				P	REAL
COPPER	329.00				P	REAL
IRON	13,800.00				P	REAL
LEAD	147.00				P	REAL
LITHIUM	10.40	B			P	REAL
MAGNESIUM	2,900.00				P	REAL
MANGANESE	261.00				P	REAL
MOLYBDENUM	6.10	B			P	REAL
NICKEL	31.70				P	REAL
POTASSIUM	1,990.00				P	REAL
SELENIUM	6.20	U			P	REAL
SILICON	543.00				P	REAL
SILVER	83.90		*		P	REAL
SODIUM	313.00	B			P	REAL
STRONTIUM	87.80				P	REAL

Sample No : A644101 Units : mg/Kg

Analyte	Result	C	Q	Error	Method	QA/QC
THALLIUM	10.70	U			P	REAL
TIN	40.30				P	REAL
TITANIUM	131.00		*		P	REAL
URANIUM	327.00				P	REAL
VANADIUM	37.00				P	REAL
ZINC	676.00				P	REAL
MERCURY	2.90				CV	REAL

Sample No : A644201 Units : mg/Kg

Analyte	Result	C	Q	Error	Method	QA/QC
ALUMINUM	15,000.00		*		P	REAL
ANTIMONY	3.60	B	N		P	REAL
ARSENIC	16.40	B			P	REAL
BARIUM	258.00				P	REAL
BERYLLIUM	44.70		*		P	REAL
CADMIUM	11.70				P	REAL
CALCIUM	16,100.00				P	REAL
CHROMIUM	153.00		*		P	REAL
COBALT	9.20				P	REAL
COPPER	281.00				P	REAL
IRON	11,700.00				P	REAL
LEAD	178.00				P	REAL
LITHIUM	7.50	B			P	REAL
MAGNESIUM	2,420.00				P	REAL
MANGANESE	142.00				P	REAL
MOLYBDENUM	4.30	B			P	REAL
NICKEL	32.50				P	REAL
POTASSIUM	1,340.00				P	REAL
SELENIUM	6.50	U			P	REAL
SILICON	953.00				P	REAL
SILVER	86.10		*		P	REAL
SODIUM	442.00	B			P	REAL
STRONTIUM	94.10				P	REAL
THALLIUM	11.40	U			P	REAL
TIN	40.10				P	REAL
TITANIUM	72.40		*		P	REAL
URANIUM	416.00				P	REAL
VANADIUM	31.60				P	REAL
ZINC	652.00				P	REAL
MERCURY	1.60				CV	REAL

Sample No : A644301 Units : mg/Kg

Analyte	Result	C	Q	Error	Method	QA/QC
ALUMINUM	22,600.00		*		P	REAL
ANTIMONY	3.20	U	N		P	REAL
ARSENIC	15.50	B			P	REAL
BARIUM	216.00				P	REAL

Sample No A644301 Units mg/Kg

Analyte	Result	C	Q	Error	Method	QA/QC
BERYLLIUM	33.90		*		P	REAL
CADMIUM	7.60				P	REAL
CALCIUM	15,100.00				P	REAL
CHROMIUM	114.00		*		P	REAL
COBALT	7.20	B			P	REAL
COPPER	196.00				P	REAL
IRON	12,000.00				P	REAL
LEAD	134.00				P	REAL
LITHIUM	11.30	B			P	REAL
MAGNESIUM	2,810.00				P	REAL
MANGANESE	111.00				P	REAL
MOLYBDENUM	3.80	B			P	REAL
NICKEL	26.40				P	REAL
POTASSIUM	1,910.00				P	REAL
SELENIUM	6.40	U			P	REAL
SILICON	1,520.00				P	REAL
SILVER	91.20		*		P	REAL
SODIUM	334.00	B			P	REAL
STRONTIUM	92.10				P	REAL
THALLIUM	11.10	U			P	REAL
TIN	30.70	B			P	REAL
TITANIUM	87.10		*		P	REAL
URANIUM	287.00				P	REAL
VANADIUM	50.90				P	REAL
ZINC	489.00				P	REAL
MERCURY	4.20				CV	REAL

Sample No : A644401 Units : mg/Kg

Analyte	Result	C	Q	Error	Method	QA/QC
ALUMINUM	13,900.00		*		P	REAL
ANTIMONY	2.80	U	N		P	REAL
ARSENIC	15.40	B			P	REAL
BARIUM	156.00				P	REAL
BERYLLIUM	26.50		*		P	REAL
CADMIUM	2.00				P	REAL
CALCIUM	14,600.00				P	REAL
CHROMIUM	42.50		*		P	REAL
COBALT	7.30	B			P	REAL
COPPER	49.80				P	REAL
IRON	14,200.00				P	REAL
LEAD	70.80				P	REAL
LITHIUM	8.50	B			P	REAL
MAGNESIUM	2,530.00				P	REAL
MANGANESE	171.00				P	REAL
MOLYBDENUM	1.30	U			P	REAL
NICKEL	16.10				P	REAL
POTASSIUM	1,800.00				P	REAL
SELENIUM	5.50	U			P	REAL
SILICON	1,020.00				P	REAL
SILVER	48.00		*		P	REAL
SODIUM	296.00	B			P	REAL
STRONTIUM	60.90				P	REAL
THALLIUM	9.60	U			P	REAL
TIN	10.40	B			P	REAL

Sample No : A644401 Units : mg/Kg

Analyte	Result	C	Q	Error	Method	QA/QC
TITANIUM	82.20				P	REAL
URANIUM	45.60				P	REAL
VANADIUM	36.80				P	REAL
ZINC	143.00				P	REAL
MERCURY	0.13				CV	REAL

Sample No : A644908EB Units : mg/Kg

Analyte	Result	C	Q	Error	Method	QA/QC
MERCURY	0.00	U			CV	EQUIBLNK

Sample No : A643405 Units : ug/L

Analyte	Result	C	Q	Error	Method	QA/QC
ALUMINUM	187.00	B			P	REAL
ANTIMONY	19.00	U			P	REAL
ARSENIC	80.00	U			P	REAL
BARIUM	922.00				P	REAL
BERYLLIUM	4.40	B			P	REAL
CADMIUM	3.70	B			P	REAL
CALCIUM	81,600.00				P	REAL
CHROMIUM	4.00	U			P	REAL
COBALT	7.10	B			P	REAL
COPPER	11.10	B			P	REAL
IRON	25.90	B			P	REAL
LEAD	35.00	U			P	REAL
LITHIUM	6.10	B			P	REAL
MAGNESIUM	4,150.00	B			P	REAL
MANGANESE	663.00				P	REAL
MOLYBDENUM	9.40	B			P	REAL
NICKEL	10.80	B			P	REAL
POTASSIUM	3,920.00	B			P	REAL
SELENIUM	38.00	U			P	REAL
SILVER	3.00	U			P	REAL
SODIUM	1,420,000.00				P	REAL
STRONTIUM	268.00				P	REAL
THALLIUM	66.00	U			P	REAL
TIN	16.00	U			P	REAL
TITANIUM	2.10	B			P	REAL
URANIUM	97.00	U			P	REAL
VANADIUM	3.00	U			P	REAL
ZINC	308.00				P	REAL
MERCURY	0.20	U			CV	REAL

Sample No : A643502D Units : ug/L

Analyte	Result	C	Q	Error	Method	QA/QC
ALUMINUM	180.00	B			P	REAL
ANTIMONY	19.00	U			P	REAL
ARSENIC	80.00	U			P	REAL
BARIUM	884.00				P	REAL
BERYLLIUM	5.20				P	REAL
CADMIUM	3.00	U			P	REAL
CALCIUM	63,100.00				P	REAL
CHROMIUM	4.00	U			P	REAL
COBALT	4.00	U			P	REAL
COPPER	6.60	B			P	REAL
IRON	23.60	B			P	REAL
LEAD	35.00	U			P	REAL
LITHIUM	4.50	B			P	REAL
MAGNESIUM	4,010.00	B			P	REAL
MANGANESE	344.00				P	REAL
MOLYBDENUM	9.00	U			P	REAL
NICKEL	10.00	U			P	REAL
POTASSIUM	3,830.00	B			P	REAL
SELENIUM	38.00	U			P	REAL
SILVER	3.00	U			P	REAL
SODIUM	1,420,000.00				P	REAL
STRONTIUM	252.00				P	REAL

Sample No : A643502D Units : ug/L

Analyte	Result	C	Q	Error	Method	QA/QC
THALLIUM	66.00	U			P	REAL
TIN	16.00	B			P	REAL
TITANIUM	2.00	U			P	REAL
URANIUM	97.00	U			P	REAL
VANADIUM	3.00	U			P	REAL
ZINC	383.00				P	REAL
MERCURY	0.20	U			CV	REAL

Sample No : A643702 Units : ug/L

Analyte	Result	C	Q	Error	Method	QA/QC
ALUMINUM	184.00	B			P	REAL
ANTIMONY	19.00	U			P	REAL
ARSENIC	80.00	U			P	REAL
BARIUM	1,040.00				P	REAL
BERYLLIUM	32.80				P	REAL
CADMIUM	10.50				P	REAL
CALCIUM	380,000.00				P	REAL
CHROMIUM	6.30	B			P	REAL
COBALT	8.90	B			P	REAL
COPPER	13.60	B			P	REAL
IRON	11.40	B			P	REAL
LEAD	35.00	U			P	REAL
LITHIUM	5.30	B			P	REAL
MAGNESIUM	12,400.00				P	REAL
MANGANESE	1,420.00				P	REAL
MOLYBDENUM	9.00	U			P	REAL
NICKEL	10.00	U			P	REAL
POTASSIUM	3,790.00	B			P	REAL
SELENIUM	38.00	U			P	REAL
SILVER	3.00	U			P	REAL
SODIUM	1,390,000.00				P	REAL
STRONTIUM	790.00				P	REAL
THALLIUM	66.00	U			P	REAL
TIN	25.10	B			P	REAL
TITANIUM	2.00	U			P	REAL
URANIUM	97.00	U			P	REAL
VANADIUM	3.00	U			P	REAL
ZINC	360.00				P	REAL
MERCURY	0.20	U			CV	REAL

Sample No : A643802 Units : ug/L

Analyte	Result	C	Q	Error	Method	QA/QC
ALUMINUM	134.00	B			P	REAL
ANTIMONY	19.00	U			P	REAL
ARSENIC	80.00	U			P	REAL
BARIUM	822.00				P	REAL
BERYLLIUM	2.80	B			P	REAL

Sample No : A643802 Units ug/L

Analyte	Result	C	Q	Error	Method	QA/QC
CADMIUM	27.00				P	REAL
CALCIUM	302,000.00				P	REAL
CHROMIUM	9.10	B			P	REAL
COBALT	14.30	B			P	REAL
COPPER	46.60				P	REAL
IRON	9.00	B			P	REAL
LEAD	35.00	U			P	REAL
LITHIUM	5.70	B			P	REAL
MAGNESIUM	13,300.00				P	REAL
MANGANESE	1,230.00				P	REAL
MOLYBDENUM	9.00	U			P	REAL
NICKEL	17.00	B			P	REAL
POTASSIUM	2,930.00	B			P	REAL
SELENIUM	38.00	U			P	REAL
SILVER	3.00	U			P	REAL
SODIUM	1,360,000.00				P	REAL
STRONTIUM	770.00				P	REAL
THALLIUM	66.00	U			P	REAL
TIN	40.50	B			P	REAL
TITANIUM	2.00	U			P	REAL
URANIUM	97.00	U			P	REAL
VANADIUM	3.60	B			P	REAL
ZINC	796.00				P	REAL

Sample No : A643902 Units : ug/L

Analyte	Result	C	Q	Error	Method	QA/QC
ALUMINUM	114.00	B			P	REAL
ANTIMONY	19.00	U			P	REAL
ARSENIC	80.00	U			P	REAL
BARIUM	889.00				P	REAL
BERYLLIUM	1.00	U			P	REAL
CADMIUM	19.30				P	REAL
CALCIUM	201,000.00				P	REAL
CHROMIUM	4.00	U			P	REAL
COBALT	7.10	B			P	REAL
COPPER	40.40				P	REAL
IRON	14.60	B			P	REAL
LEAD	35.00	U			P	REAL
LITHIUM	9.30	B			P	REAL
MAGNESIUM	9,990.00				P	REAL
MANGANESE	1,130.00				P	REAL
MOLYBDENUM	9.00	U			P	REAL
NICKEL	29.40	B			P	REAL
POTASSIUM	3,770.00	B			P	REAL
SELENIUM	38.00	U			P	REAL
SILVER	3.00	U			P	REAL
SODIUM	1,340,000.00				P	REAL
STRONTIUM	617.00				P	REAL
THALLIUM	66.00	U			P	REAL
TIN	17.80	B			P	REAL
TITANIUM	2.00	U			P	REAL
URANIUM	97.00	U			P	REAL
VANADIUM	7.00	B			P	REAL
ZINC	12.60				P	REAL

Sample No : A643902 Units : ug/L

Analyte	Result	C	Q	Error	Method	QA/QC
MERCURY	0.20	U			CV	REAL

Sample No : A644002 Units : ug/L

Analyte	Result	C	Q	Error	Method	QA/QC
ALUMINUM	77.90	B			P	REAL
ANTIMONY	19.00	U			P	REAL
ARSENIC	80.00	U			P	REAL
BARIUM	749.00				P	REAL
BERYLLIUM	4.20	B			P	REAL
CADMIUM	23.00				P	REAL
CALCIUM	452,000.00				P	REAL
CHROMIUM	12.40				P	REAL
COBALT	20.50	B			P	REAL
COPPER	41.20				P	REAL
IRON	39.70	B			P	REAL
LEAD	35.00	U			P	REAL
LITHIUM	4.50	B			P	REAL
MAGNESIUM	13,900.00				P	REAL
MANGANESE	1,680.00				P	REAL
MOLYBDENUM	9.00	U			P	REAL
NICKEL	44.90				P	REAL
POTASSIUM	4,200.00	B			P	REAL
SELENIUM	38.00	U			P	REAL
SILVER	3.00	U			P	REAL
SODIUM	1,380,000.00				P	REAL
STRONTIUM	963.00				P	REAL
THALLIUM	66.00	U			P	REAL
TIN	16.00	U			P	REAL
TITANIUM	2.00	U			P	REAL
URANIUM	97.00	U			P	REAL
VANADIUM	3.00	U			P	REAL
ZINC	696.00				P	REAL
MERCURY	0.20	U			CV	REAL

Sample No : A644102 Units : ug/L

Analyte	Result	C	Q	Error	Method	QA/QC
ALUMINUM	101.00	B			P	REAL
ANTIMONY	19.00	U			P	REAL
ARSENIC	80.00	U			P	REAL
BARIUM	536.00				P	REAL
BERYLLIUM	2.40	B			P	REAL
CADMIUM	43.30				P	REAL
CALCIUM	371,000.00				P	REAL
CHROMIUM	15.20				P	REAL
COBALT	28.00	B			P	REAL
COPPER	85.00				P	REAL
IRON	30.10	B			P	REAL

Sample No : A644102 Units : ug/L

Analyte	Result	C	Q	Error	Method	QA/QC
LEAD	35.00	U			P	REAL
LITHIUM	4.50	B			P	REAL
MAGNESIUM	10,400.00				P	REAL
MANGANESE	1,440.00				P	REAL
MOLYBDENUM	9.00	U			P	REAL
NICKEL	46.50				P	REAL
POTASSIUM	3,350.00	B			P	REAL
SELENIUM	38.00	U			P	REAL
SILVER	3.00	U			P	REAL
SODIUM	1,430,000.00				P	REAL
STRONTIUM	755.00				P	REAL
THALLIUM	66.00	U			P	REAL
TIN	16.00	U			P	REAL
TITANIUM	2.00	U			P	REAL
URANIUM	97.00	U			P	REAL
VANADIUM	4.30	B			P	REAL
ZINC	1,680.00				P	REAL
MERCURY	0.20	U			CV	REAL

Sample No : A644202 Units : ug/L

Analyte	Result	C	Q	Error	Method	QA/QC
ALUMINUM	107.00	B			P	REAL
ANTIMONY	19.00	U			P	REAL
ARSENIC	80.00	U			P	REAL
BARIUM	601.00				P	REAL
BERYLLIUM	2.30	B			P	REAL
CADMIUM	29.60				P	REAL
CALCIUM	264,000.00				P	REAL
CHROMIUM	4.50	B			P	REAL
COBALT	20.50	B			P	REAL
COPPER	42.20				P	REAL
IRON	21.20	B			P	REAL
LEAD	35.00	U			P	REAL
LITHIUM	4.50	B			P	REAL
MAGNESIUM	12,700.00				P	REAL
MANGANESE	988.00				P	REAL
MOLYBDENUM	9.00	U			P	REAL
NICKEL	74.40				P	REAL
POTASSIUM	2,320.00	B			P	REAL
SELENIUM	38.00	U			P	REAL
SILVER	3.00	U			P	REAL
SODIUM	1,390,000.00				P	REAL
STRONTIUM	713.00				P	REAL
THALLIUM	66.00	U			P	REAL
TIN	16.00	U			P	REAL
TITANIUM	2.00	U			P	REAL
URANIUM	97.00	U			P	REAL
VANADIUM	4.10	B			P	REAL
ZINC	1,160.00				P	REAL
MERCURY	0.20	U			CV	REAL

Sample No : A644302 Units : ug/L

Analyte	Result	C	Q	Error	Method	QA/QC
ALUMINUM	119.00	B			P	REAL
ANTIMONY	19.00	U			P	REAL
ARSENIC	80.00	U			P	REAL
BARIUM	536.00				P	REAL
BERYLLIUM	2.60	B			P	REAL
CADMIUM	15.80				P	REAL
CALCIUM	267,000.00				P	REAL
CHROMIUM	6.90	B			P	REAL
COBALT	21.70	B			P	REAL
COPPER	11.70	B			P	REAL
IRON	161.00				P	REAL
LEAD	35.00	U			P	REAL
LITHIUM	6.10	B			P	REAL
MAGNESIUM	15,100.00				P	REAL
MANGANESE	947.00				P	REAL
MOLYBDENUM	9.00	U			P	REAL
NICKEL	20.10	B			P	REAL
POTASSIUM	4,230.00	B			P	REAL
SELENIUM	38.00	U			P	REAL
SILVER	3.00	U			P	REAL
SODIUM	1,400,000.00				P	REAL
STRONTIUM	776.00				P	REAL
THALLIUM	66.00	U			P	REAL
TIN	16.00	B			P	REAL
TITANIUM	2.00	U			P	REAL
URANIUM	97.50	B			P	REAL
VANADIUM	3.40	B			P	REAL
ZINC	1,230.00				P	REAL
MERCURY	0.20	U			CV	REAL

Sample No : A644402 Units : ug/L

Analyte	Result	C	Q	Error	Method	QA/QC
ALUMINUM	119.00	B			P	REAL
ANTIMONY	19.00	U			P	REAL
ARSENIC	80.00	U			P	REAL
BARIUM	698.00				P	REAL
BERYLLIUM	9.70				P	REAL
CADMIUM	6.90				P	REAL
CALCIUM	325,000.00				P	REAL
CHROMIUM	5.70	B			P	REAL
COBALT	8.60	B			P	REAL
COPPER	7.20	B			P	REAL
IRON	12.00	B			P	REAL
LEAD	35.00	U			P	REAL
LITHIUM	6.50	B			P	REAL
MAGNESIUM	16,800.00				P	REAL
MANGANESE	765.00				P	REAL
MOLYBDENUM	9.00	U			P	REAL
NICKEL	10.00	U			P	REAL
POTASSIUM	4,820.00	B			P	REAL
SELENIUM	38.00	U			P	REAL
SILVER	3.00	U			P	REAL
SODIUM	1,380,000.00				P	REAL
STRONTIUM	805.00				P	REAL

Sample No A644402 Units : ug/L

Analyte	Result	C	Q	Error	Method	QA/QC
THALLIUM	66.00	U			P	REAL
TIN	23.20	B			P	REAL
TITANIUM	2.00	U			P	REAL
URANIUM	97.00	U			P	REAL
VANADIUM	3.00	U			P	REAL
ZINC	195.00				P	REAL
MERCURY	0.20	U			CV	REAL

Sample No A639903 Units : pCi/g

Analyte	Result	C	Q	Error	Method	QA/QC
GROSS ALPHA	36.00			15.00		REAL
GROSS BETA	71.00			17.00		REAL
URANIUM 238	1.08			0.07		
URANIUM 235	0.05			0.01		
URANIUM 233/234	1.07			0.07		
PLUTONIUM 239/240	0.05			0.01		
AMERICIUM 241	0.04			0.02		

Sample No : A640003 Units : pCi/g

Analyte	Result	C	Q	Error	Method	QA/QC
GROSS ALPHA	19.00			12.00		REAL
GROSS BETA	48.00			17.00		REAL
URANIUM 238	1.42			0.08		
URANIUM 235	0.04			0.01		
URANIUM 233/234	1.21			0.07		
PLUTONIUM 239/240	0.32			0.03		
AMERICIUM 241	0.10			0.04		

Sample No : A640103 Units : pCi/g

Analyte	Result	C	Q	Error	Method	QA/QC
GROSS ALPHA	30.00			14.00		REAL
GROSS BETA	51.00			19.00		REAL
URANIUM 238	6.33			0.31		
URANIUM 235	0.17			0.03		
URANIUM 233/234	3.30			0.18		
PLUTONIUM 239/240	0.15			0.02		
AMERICIUM 241	0.16			0.03		

Sample No : A640203 Units : pCi/g

Analyte	Result	C	Q	Error	Method	QA/QC
GROSS ALPHA	25.00			13.00		REAL
GROSS BETA	26.00			16.00		REAL
URANIUM 238	1.06			0.08		
URANIUM 235	0.05			0.02		
URANIUM 233/234	0.94			0.08		
PLUTONIUM 239/240	0.03			0.01		
AMERICIUM 241	0.03			0.01		

Sample No : A640303 Units pCi/g

Analyte	Result	C	Q	Error	Method	QA/QC
GROSS ALPHA	27.00			14.00		REAL
GROSS BETA	62.00			19.00		REAL
URANIUM 238	11.15			0.43		
URANIUM 235	0.23			0.03		
URANIUM 233/234	4.55			0.20		
PLUTONIUM 239/240	5.86			0.35		
AMERICIUM 241	1.16			0.43		

Sample No : A640406 Units : pCi/g

Analyte	Result	C	Q	Error	Method	QA/QC
GROSS ALPHA	14.00			11.00		REAL
GROSS BETA	32.00			16.00		REAL
URANIUM 238	1.16			0.07		
URANIUM 235	0.04			0.01		
URANIUM 233/234	1.13			0.07		
PLUTONIUM 239/240	0.02			0.01		
AMERICIUM 241	-0.01			0.01		

Sample No : A640503 Units : pCi/g

Analyte	Result	C	Q	Error	Method	QA/QC
GROSS ALPHA	19.00			11.00		REAL
GROSS BETA	38.00			15.00		REAL
URANIUM 238	1.76			0.09		
URANIUM 235	0.05			0.01		
URANIUM 233/234	1.18			0.07		
PLUTONIUM 239/240	0.06			0.01		
AMERICIUM 241	0.01			0.02		

Sample No : A640603 Units : pCi/g

Analyte	Result	C	Q	Error	Method	QA/QC
GROSS ALPHA	25.00			12.00		REAL
GROSS BETA	44.00			15.00		REAL
URANIUM 238	2.14			0.12		
URANIUM 235	0.06			0.02		
URANIUM 233/234	1.61			0.10		
PLUTONIUM 239/240	0.32			0.04		
AMERICIUM 241	0.18			0.04		

Sample No A640603D Units : pCi/g

Analyte	Result	C	Q	Error	Method	QA/QC
URANIUM 238	1.87			0.10		
URANIUM 235	0.08			0.02		
URANIUM 233/234	1.64			0.09		
PLUTONIUM 239/240	0.25			0.03		
AMERICIUM 241	0.19			0.05		

Sample No : A640703 Units : pCi/g

Analyte	Result	C	Q	Error	Method	QA/QC
GROSS ALPHA	28.00			14.00		REAL
GROSS BETA	28.00			18.00		REAL
URANIUM 238	1.19			0.08		
URANIUM 235	0.03			0.01		
URANIUM 233/234	1.07			0.07		
PLUTONIUM 239/240	0.86			0.07		
AMERICIUM 241	0.05			0.02		

Sample No : A640803 Units : pCi/g

Analyte	Result	C	Q	Error	Method	QA/QC
GROSS ALPHA	22.00			12.00		REAL
GROSS BETA	42.00			16.00		REAL
URANIUM 238	2.37			0.12		
URANIUM 235	0.07			0.02		
URANIUM 233/234	1.27			0.08		
PLUTONIUM 239/240	0.26			0.04		
AMERICIUM 241	0.46			0.08		

Sample No : A643107 Units : pCi/g

Analyte	Result	C	Q	Error	Method	QA/QC
GROSS ALPHA	19.00			12.00		REAL
GROSS BETA	31.00			17.00		REAL
URANIUM 238	1.21			0.08		
URANIUM 235	0.03			0.01		
URANIUM 233/234	1.08			0.07		
PLUTONIUM 239/240	0.15			0.03		
AMERICIUM 241	0.05			0.03		

Sample No : A643107D Units : pCi/g

Analyte	Result	C	Q	Error	Method	QA/QC
URANIUM 238	1.20			0.07		
URANIUM 235	0.06			0.01		
URANIUM 233/234	0.97			0.06		
PLUTONIUM 239/240	0.04			0.01		
AMERICIUM 241	0.01			0.02		

Sample No : A643405 Units : pCi/g

Analyte	Result	C	Q	Error	Method	QA/QC
URANIUM 238	14.30			0.50		
URANIUM 235	0.45			0.05		
URANIUM 233/234	13.80			0.50		
PLUTONIUM 239/240	3.20			0.20		
AMERICIUM 241	399.00			22.00		

Sample No : A643702 Units : pCi/g

Analyte	Result	C	Q	Error	Method	QA/QC
URANIUM 238	16.20			0.70		
URANIUM 235	0.52			0.08		
URANIUM 233/234	12.90			0.60		
PLUTONIUM 239/240	40.00			2.00		
AMERICIUM 241	44.00			2.00		

Sample No : A643802 Units : pCi/g

Analyte	Result	C	Q	Error	Method	QA/QC
URANIUM 238	41.10			1.70		
URANIUM 235	1.30			0.20		
URANIUM 233/234	31.10			1.40		
PLUTONIUM 239/240	56.00			3.00		
AMERICIUM 241	25.00			2.00		

Sample No : A643902 Units : pCi/g

Analyte	Result	C	Q	Error	Method	QA/QC
URANIUM 238	48.60			1.80		
URANIUM 235	1.50			0.20		
URANIUM 233/234	32.10			1.30		
PLUTONIUM 239/240	258.00			13.00		
AMERICIUM 241	116.00			7.00		

Sample No : A644002 Units : pCi/g

Analyte	Result	C	Q	Error	Method	QA/QC
URANIUM 238	28.10			1.30		
URANIUM 235	0.99			0.18		
URANIUM 233/234	28.50			1.30		
PLUTONIUM 239/240	35.00			2.00		
AMERICIUM 241	17.00			1.00		

Sample No : A644102 Units : pCi/g

Analyte	Result	C	Q	Error	Method	QA/QC
URANIUM 238	205.00			8.00		
URANIUM 235	7.90			0.80		
URANIUM 233/234	193.00			8.00		
PLUTONIUM 239/240	111.00			6.00		
AMERICIUM 241	45.00			3.00		

Sample No : A644202 Units : pCi/g

Analyte	Result	C	Q	Error	Method	QA/QC
URANIUM 238	588.00			23.00		
URANIUM 235	26.90			2.60		
URANIUM 233/234	553.00			21.00		
PLUTONIUM 239/240	1,380.00			64.00		
AMERICIUM 241	260.00			16.00		

Sample No : A644302 Units pCi/g

Analyte	Result	C	Q	Error	Method	QA/QC
URANIUM 238	641.00			24.00		
URANIUM 235	24.10			2.50		
URANIUM 233/234	577.00			22.00		
PLUTONIUM 239/240	305.00			16.00		
AMERICIUM 241	102.00			7.00		

Sample No : A644402 Units : pCi/g

Analyte	Result	C	Q	Error	Method	QA/QC
URANIUM 238	101.00			4.00		
URANIUM 235	3.00			0.40		
URANIUM 233/234	92.00			4.00		
PLUTONIUM 239/240	38.00			2.00		
AMERICIUM 241	11.00			1.00		

Sample No : A6444402D Units : pCi/g

Analyte	Result	C	Q	Error	Method	QA/QC
URANIUM 238	102.00			4.00		
URANIUM 235	4.10			0.40		
URANIUM 233/234	95.00			4.00		
PLUTONIUM 239/240	42.00			2.00		
AMERICIUM 241	10.00			1.00		

APPENDIX 2

Ryan's Pit Debris Treatment Equivalency Information

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

NOV 27 1996

OFFICE OF
SOLID WASTE AND EMERGENCY
RESPONSE

Dr. Gail Hill
Acting Lead, Regulatory Liaison Group
Department of Energy, Rocky Flats Field Office
P.O. Box 928
Golden, Colorado 80402-0928

Dear Dr. Hill:

EPA has reviewed your request for a "***determination of equivalent treatment***"(***DET***) as authorized by 40 CFR 268.42(b)for 120 cubic yards of thermally desorbed debris that resulted from the clean up of trenches number T3 and T4 as well as the Ryan's Pit at your Rocky Flats facility in Golden, Colorado.

Based on the information provided in your application and conversations between Mr. José E. Labiosa of my staff and Ms. Jean Lillich of EPA Region 8, EPA is conditionally approving the request for a ***DET***. The management of debris described in your letter of September 18,1996, appears to meet the provisions in the 40 CFR § 268.45(b)(1)&(2) and(d)(I)&(ii).

This ***DET*** is conditional on your submittal to EPA Region 8 of * data supporting that other hazardous waste characteristics such as ignitability, corrosivity, reactivity, and other toxicity (e.g. leachable metals)are not present in the debris. We are also * requiring that you submit to EPA appropriate documentation supporting your compliance with this ***DET***. See attached ***DET*** Notice, page 5, Replacement Treatment Standards discussion and Table 4 for a list of documents that can support how you have complied with this ***DET***.

Compliance with these standards does not relieve the facility from compliance with any other applicable treatment standards associated with this waste. This standard does not replace any other applicable federal, state, or local requirements as specified in the facility's waste analysis plan.

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Enclosed you will find our determination on your request. If you need further assistance, please contact Mr. José E. Labiosa, Chemical Engineer, Waste Treatment Branch. Mr. Labiosa can be reached at (703)308-8464 or via email at "Labiosa.Jose @epamail.epa.gov".

Sincerely yours,

Elizabeth A. Cotsworth

Michael Shapiro, Director
Office of Solid Waste

Enclosure

cc: Jim Thompson, OECA
Steven Silverman, OGC
Jean Lillich, EPA Region 8

Determination of Equivalent Treatment
40 CFR § 268.42(b)
Notification of Acceptance
Notification Number: OSW-DE012-1096A

Requesting Facility:	United States Department of Energy Rocky Flats Environmental Technology Site
Facility Address:	P.O. Box 928, Golden, Colorado 80402-0928
EPA Facility ID #:	CO7890010526
Facility Representative:	Dave Grosack
Phone:	(303) 966-3305
Date of Initial Request:	June 1996

Waste Description for Which Replacement Standard Are Applicable:
This ***Determination of Equivalent Treatment (DET)*** is for approximately 120 cubic yards of thermally desorbed debris materials consisting of about 98% corroded, flattened, and non-functional iron steel drums and about 2% nondescriptive debris materials. These treated debris are currently stored at the Department of Energy's (DOE's) Rocky Flats facility and the thermally desorbed debris are awaiting characterization for the presence of hazardous waste characteristics identified in the 40 CFR§ 261.20- 261.24. Pursuant to an EPA mandated removal action, under the Comprehensive Emergency Removal Compensation and Liability Act (CERCLA), all excavated debris were treated via thermal desorption for the purpose of extracting hazardous organic constituents classified as RCRA hazardous wastes F001 and F002 (in the Ryan's Pit) and as specific organic hazardous toxicity characteristic (at trenches T3, T4, and the Ryan's Pit). (See Tables 1, 2 and 3 below.)

Sanitary sewage sludges contaminated with uranium and plutonium and miscellaneous wastes were routinely landfilled in two trenches that DOE refers to as T3 and T4 before they became backfilled and their use discontinued. Ryan's Pit also was used as a disposal unit for various organic chemicals from approximately 1966 to 1970. Based on the available site characterization data, volatile organics were detected in soils from the Ryan's Pit, T3, and T4.
Also, groundwater contamination was observed. It was determined that the Ryan's Pit contained contaminants that carried F001 and F002 constituents. Several volatile organics detected in the excavated soils from T3 and T4 and the Ryan's Pit are believed to exhibit the Toxicity Characteristic of organic constituents listed in the 40 CFR § 261.24. EPA refers to these particular constituents as TC Organics. Other organics that do not appear to meet a criteria of TC Organics are classified under this DET as underlying hazardous constituents

which are associated with the TC Organic wastes identified in T3, T4, and the Ryan's Pit. (See below: (1) Table 1 for a list of F001 and F002 constituents; (2) Table 2 for a list of TC Organics; and (3) Table 3 for a list of potential underlying hazardous constituents in T3, T4, and the Ryan's Pit.)

As a result, EPA directed DOE's Rocky Flats facility to excavate the source of contamination and to treat the excavated materials via thermal desorption. To the extent possible, soils and debris were separated prior to treatment and disposal. In any case, soils and debris were treated under the same range of operating temperatures and residence times.

All thermally desorbed debris arising or derived from CERCLA removal actions on two trenches designated as T3 and T4 (both combined are about 118 cu. yd.) as well as the RCRA remediation orders and subsequent CERCLA removal actions at the Ryan's pit (about 2 cu. yd.) are subject to this DET. EPA, DOE, and the Colorado Department of Public Health and the Environment (CDPHE) refer to the Ryan's Pit as to the "Individual Hazardous Substance Site 109 " (IHSS 109) at Operable Unit 2. EPA, DOE, and CDPHE refer to T3 and T4 as IHSS 110 and IHSS 111.1 operable units respectively. IHSS 110 and IHSS 111.1 are located in a remedial area known as the buffer zone. (See specific documents annotated in Appendix 1 to this notice, in particular documents [09], [11], [10] and [13].)

Basis of Request:
In seeking a DET, DOE is following the requirements for hazardous debris treatment set out in the 40 CFR §268.45 of the regulations. Those rules state that thermal desorption may be used to treat hazardous debris provided that: (1) a DET is obtained under §268.42 (b); (2) treated debris is separated from treatment residuals using simple physical or mechanical means; and (3) the treatment residue meets the waste specific treatment standards for organic compounds in the waste contaminating the debris. See §268.45, Table 1 (at A.3.b. and footnotes 8 and 9 to Table 1).

DOE determined that the materials of concern meet EPA's definition of hazardous debris in 268.2 (g). DOE stated that the excavated materials are debris from 55 gallon drums that are non functional and have particle sizes exceeding 60 mm. DOE stated that the hazardous debris were mechanically separated from the hazardous soils to the extent possible prior and/or after thermal desorption. Finally, DOE has submitted information to EPA that DOE believes supports a determination that the organic hazardous constituents of concern are no longer present in the thermally desorbed debris that were contaminated with F001, F002 and other toxicity characteristic hazardous organic constituents (see document [01]).

Based on the available data for the thermally desorbed soils (see Appendix 1 to this notice, document [01]), it appears that the concentration of each organic present in the thermally desorbed soils is below the treatment standard for F001 and F002 hazardous constituents, the treatment standard for TC Organics, and the treatment standard for underlying hazardous constituents present in debris from T3, T4, and Ryan's Pit. See applicable treatment standards

in the 40 CFR §268.40 and §268.48. (See Tables 1, 2, and 3 for a list of hazardous waste constituents identified in DOE's Plans of Action Memoranda for T3, T4, and the Ryan's Pit.)

Previously Applicable Treatment Standard for Which Equivalency is Granted:

Table 1*
Ryan's Pit RCRA Hazardous Constituents of Concern

Waste Code	Physical Form	40 CFR 268.40 Concentration Based Standards for Hazardous Constituents Listed Below
F001	Nonwastewater	tetrachloroethylene, trichloroethylene, methylene chloride, 1,1,1-trichloroethane, carbon tetrachloride, and chlorinated fluorocarbons
F002	Nonwastewaters	tetrachloroethylene, methylene chloride, trichloroethylene, 1,1,1-trichloroethane, chlorobenzene, 1,1,2-trichloro-1,2,2-trifluoroethane, ortho-dichlorobenzene, trichlorofluoromethane, and 1,1,2-trichloroethane

** This list is based on DOE's expert knowledge and characterization data on what kind of Listed Hazardous Wastes were present in hazardous debris materials excavated from Ryan's Pit (see document [01]). DOE has not identified the presence of other listed hazardous wastes in T3 and T4. However, hazardous Toxicity Characteristic organics were identified in T3, T4, and the Ryan's Pit. Toxicity Characteristic organics identified by DOE can be found in Table 2. A list of suspected Underlying Hazardous Constituents that DOE identified in Toxicity Characteristic Organic debris can be found in Table 3.*

Table 2*

RCRA Organic Toxicity Characteristic Constituents of Concern in T3,T4, and Ryan's Pit

Waste Code	Physical Form	40 CFR 268.40 Concentration Based Standards for Hazardous Constituents Listed Below
D029	Nonwastewater	1,1-Dichlroroethene
D028	Nonwastewater	1,2-Dichlroroethane
D018	Nonwastewater	Benzene
D019	Nonwastewater	Carbon Tetrachloride
D022	Nonwastewater	Chloroform
D039	Nonwastewater	Tetrachloroethane
D040	Nonwastewater	Trichloroethene

** This list is based on DOE's expert knowledge and characterization data on what kind of Toxicity Characteristic organic constituents are present in hazardous debris materials excavated from T3, T4, and the Ryan's Pit (see document [01]). As a result, Table 2 should not be construed as an exhaustive list of all the Toxicity Characteristic organic constituents present in DOE's debris. For an exhaustive list of Toxicity Characteristic organic constituents, see Table 1 under § 261.24. Applicable treatment standards under § 260.40 and 268.48 to other Toxicity Characteristic metals and organics identified in § 261.24 as well as to other hazardous waste characteristics under § 261.21 through 261.23 must be met in the debris itself prior to disposal. At the present time, DOE has emphasized that none of these other constituents or hazardous characteristics are present in the treated debris.*

Table 3*
Potential Underlying Hazardous Organic Constituents of Concern
in T3, T4, and the Ryan's Pit

Physical Form	40 CFR 268.48 Concentration Based Standards for Hazardous Constituents Listed Below
Nonwastewater	1,1,1-Trichlorpethane
Nonwastewater	Acetone
Nonwastewater	Ethylbenzene
Nonwastewater	Methylene Chloride
Nonwastewater	Toluene

** This list is based on DOE's expert knowledge and characterization data on what kind of organic constituents are present in hazardous debris materials excavated from T3, T4, and the Ryan's Pit (see document [01]). As a result, Table 3 should not be construed as an exhaustive list of all the underlying hazardous constituents present in Toxicity Characteristic organics identified in Table 2. For an exhaustive list of underlying hazardous constituents, see list of Universal Treatment Standards in § 268.48.*

Replacement Treatment Standards

Treatment standards applicable to hazardous debris are expressed as a maximum concentration, measured in mg/kg, for each hazardous organic constituent of concern in nonwastewater forms of F001, F002, and Toxicity Characteristic wastes (see 40 CFR § 268.40). Because Toxicity Characteristic organics have been identified in debris excavated from T3, T4, and the Ryan's Pit (see Tables 2 and 3), the facility must also comply with specific maximum concentrations, applicable to suspected or measured underlying hazardous constituent analytes identified in the 40 CFR 268.48.

The replacement standards approved under this DET sets for the hazardous debris organics the use of thermal desorption as the applicable treatment standard and this DET is conditioned on DOE demonstrating to EPA how the debris were thermally desorbed and segregated; and to DOE demonstrating to EPA that the debris does not show a hazardous waste characteristic listed in the 40 CFR 268.21-261.24 (e.g. ignitability, corrosivity, reactivity, and Toxicity Characteristic metals). Table 4 is a list of documents that DOE should submit EPA Region VIII officials in order to demonstrate how DOE has complied with this DET. DOE should consult in writing with Region 8 on specific documents and reports that can be submitted in support of or as a substitute of those items required under Table 4. Once EPA Region 8 provides DOE with written confirmation on the type of documents that can satisfy the items listed under Table 4 of this Notice, DOE may dispose of the treated debris.

Compliance with these standards does not relieve the facility from compliance with any other applicable treatment standards associated with this waste under other provisions in the 40 CFR 268. These replacement standards do not replace any other applicable federal, state, or local requirements as specified in the facility's waste analysis plan.

Table 4
Key Information Items to Document Compliance with this DET.

1	A certification by DOE that the thermally desorbed debris have been separated from thermally desorbed hazardous soils;
2	A certification by DOE that the treated debris do not exhibit other hazardous characteristics listed in the 40 CFR 261.21 through 261.24; or (3) below,
3	A certification by DOE that any treated debris which exhibited other hazardous characteristics listed in the 40 CFR 261.21 through 261.24, was treated to applicable treatment standards under the 40 CFR 268.40 and 268.48;
4	A certification by DOE that the treated soil and other wastewater and nonwastewater forms resulting from the thermal desorption of debris meet applicable treatment standards under the 40 CFR 268.40 and 268.48;
5	Operating logs documenting that the debris have been treated under the same or higher range of operating temperatures and the same or longer residence time conditions applied to hazardous soils; and
6	Submittal of a DET compliance report to appropriate persons in EPA Region VIII and the CDPHE that consolidates the compliance certifications supporting compliance with this DET.

Justification for the Equivalent Treatment Standard:
EPA agrees that a 268.42 (b) is warranted for the debris materials originating from Ryan's pit, T-3, and T-4 as long as the excavated debris are thermally desorbed, and subsequently treated to remove any hazardous characteristic shown in the debris. Also, segregation of the debris prior to treatment/disposal must be performed to the best extent possible. EPA Region VIII determined that the excavated materials of concern meet the definition of hazardous debris and that the approved removal actions for T-3 and T-4 meet the requirements prescribed in the 40 CFR 268.45. This TED is conditional to verification and certification that debris comply with applicable treatment standards promulgated in the 40 CFR 268.40 or 268.45 for hazardous waste characteristics in 40 CFR 261.21-261.24, if any were found in the thermally desorbed debris, prior to disposal.

Authorities and References:

This **Determination of Equivalent Treatment** is in accordance with 40 CFR 268.42(b) which states: "Any person may submit an application to the Administrator demonstrating that an alternative treatment method can achieve a measure of performance equivalent to that achievable by methods specified in paragraphs (a),(c), and (d) of this section. The applicant must submit information demonstrating that his treatment method is in compliance with federal, state, and local requirements and is protective of human health and the environment. On the basis of such information and any other available information, the Administrator may approve the use of the alternative treatment method if he finds that the alternative treatment method provides a measure of performance equivalent to that achieved by methods specified in paragraphs (a), (c), and (d) of this section. Any approval must be stated in writing and may contain such provisions and conditions as the Administrator deems appropriate. The person to whom such approval is issued must comply with all limitations contained in such a determination." This provision was further clarified in the preamble for the Land Disposal Restrictions for Third Third Scheduled Wastes; Final Rule (55 FR 22536 (June 1, 1990)) as follows: "When EPA requires the use of a technology (or technologies), a generator or treater may demonstrate that an alternative treatment method can achieve the equivalent level of performance as that of the specified treatment method [40 CFR 268.42(b)], this demonstration is typically both waste-specific and site-specific and may be based on: (1) The development of a concentration based standard that utilizes a surrogate or indicator compound that guarantees effective treatment of the hazardous constituents; (2) the development of a new analytical method for quantifying the hazardous constituents; and (3) other demonstrations of equivalence for an alternative method of treatment based on a statistical comparison of technologies, including a comparison of specific design and operating parameters."

Attachments:

Effective Date: Date of Signature.

Dated: November 27, 1996

Elizabeth A Cotsworth

Michael Shapiro, Director
Office of Solid Waste

Appendix 1

A. DOE's Correspondence

[01] **September 18, 1996, DOE's TED Request Letter** from Gail Hill, Acting Lead for the Regulatory Liaison Group, DOE's Rocky Flat Office, to Mike Shapiro, Director of EPA's Office of Solid Waste, Washington, DC. **(Two enclosures**: (1) Equivalent Technology Approval Pursuant to the 40 CFR §268.42(b) for Debris Treated by Thermal Desorption (4 pages) and (2) Equivalent Technology Approval Pursuant to 40 CFR §268 42 (b) for the Rocky Flats Environmental Technology Site Debris Treated By Thermal Desorption.

[02] **April 2, 1996, DOE's Letter** from Dr. Bob April, Group Lead Stakeholder and Environmental Liaison of DOE's Rocky Flats Filed Office to Mr. Tim Rehder of USEPA Region 8, Denver , Colorado, regarding **Proposed Action Memorandum** for the Source Removal at Trenches T3 and T4, IHSSs 110 and 111.1. **(One enclosure.)**

[03] **November 6, 1996** (originally stamped 10/30/96) **Proposed Action Modification Memorandum and DRAFT Modification of the Corrective Action Section of the Operating Permit for rocky Flats Environmental Technology Site** (nine pages plus one page Attachment titled: **"The More Detailed and Complete Operating and Monitoring Parameters Should Include:"**).

[04] **May 29, 1996, Field Sampling Plan for the Source Removal at Trenches T-3 and T-4 IHSSs 110 and 111.1**, (Revision 3) Rocky Flats Environmental Technology Site, **RF/ER-96-0020.UN**, prepared by Rocky Mountain Remediation Services, L.L.C. and Kaiser Hill Company.

[05] **March 28, 1996, Proposed Action Memorandum for the Source Removal at Trenches T-3 and T-4 IHSSs 110 and 111.1**, (Revision 2) Rocky Flats Environmental Technology Site, **RF/ER-95-111.UN**, prepared by Rocky Montain Remediation Services, L.L.C. and Kaiser Hill Company.

[06] **January 1996, Proposed Action Memorandum for the Source Removal at Trenches T-3 and T-4 IHSSs 110 and 111.1**, (Revision 1) Rocky Flats Environmental Technology Site, RF/ER-95-111.UN, prepared by Rocky Montain Remediation Services, L.L.C. and Kaiser Hill Company.

[07] **August 25, 1995, letter** from Mr. Steven W. Slaten, I.G. Project Coordinator for the Environmental Restoration, Department of Energy, Rocky Flats to Mr. Martin Hestmark, USEPA Region VIII, and Mr. Joe Schieffelin, Unit Leader, Hazardous Waste Control Program, Colorado Department of Public Health and the Environment, regarding **the submittal of a document titled: "Final Proposed Action Memorandum (PAM) for the Remediation of Individual Hazardous Substance Site 109, Ryan's Pit, in Operable Unit 2 at the Rocky Flats Environmental Technology Site.**

[08] **August 24, 1996, document titled: "Final Proposed Action Memorandum (PAM)**

for the Remediation of Individual Hazardous Substance Site 109, Ryan's Pit, in Operable Unit 2 at the Rocky Flats Environmental Technology Site", Revision 5- document control No. RF/ER-95-0097.UN, prepared by Rocky Mountain Remedial Services, L.L.C.

B. EPA Region 8 and State of Colorado's correspondences:

[09] **April 30, 1996, Letter** from Mr. Tim Reheder, EPA Manager for Rocky Flats Project, **EPA Region 8**, Denver, Colorado to Mr. Steven Slaten, Department of Energy, Golden Colorado, regarding ***approval*** of the **April 2, 1996, submittal (96-DOE-09490) of the revised Proposed Action Memorandum (PAM) for the Source Removal at Trenches T3 and T4, IHSSs 110 and 111.1.**

[10] **September 15, 1996 through October 30, 1995, State of Colorado Public Notice for Permit Modification** to allow storage and treatment of contaminated soils from the excavation activities at **Individual Hazardous Substance Sites (IHSS) 109 at Operable** Unit 2 --i.e. **Ryan's Pit** --a disposal site for organic chemicals from approximately 1966 to 1970. (Also attached: 11/06/96, **Proposed Action Modification Memorandum and DRAFT Modification of the Corrective Action Section of the Operating Permit for rocky Flats Environmental Technology Site** (nine pages plus one page Attachment titled: **"The More Detailed and Complete Operating and Monitoring Parameters Should Include:"**).

[11] **June 20, 1996, Letter** from Mr. Tim Reheder, EPA Manager for Rocky Flats Project, **EPA Region 8**, Denver, Colorado to Mr. Steven Slaten, Department of Energy, Golden Colorado, regarding ***approval*** of the **Revised Field Sampling Plan Revision 3 and dated May 29, 1996 (RF/ER-96-0200, for the Source Removal at Trenches T3 and T4, IHSSs 110 and 111.1.**

[12] **May 22, 1996, Letter** from Mr. Tim Reheder, EPA Manager for Rocky Flats Project, **EPA Region 8**, Denver, Colorado to Mr. Steven Slaten, Department of Energy, Golden Colorado, regarding ***approval*** of the **April 24, 1996, submittal (96-DOE-09961) of the Modification to the Proposed Action Memorandum (PAM) for the Source Removal at Ryan's Pit, IHSSs 109.**

[13] **August 9, 1995, conditional approval letter** for the **Proposed Action Memorandum (PAM) and Sampling Plan Analysis (SAP) for IHSS 109 (Ryan's Trench, Operable Unit No. 2.** This **August 9, 1995, conditional approval letter** was from Mr. Martin Hestmark, Rocky Flats Project Leader for the USEPA Region VIII and Mr. Joe Schieffelin, Rocky Flats Unit Leader, Hazardous Waste Control Program, Colorado Department of Public Healklth and the Environment to Mr. Steven Slate of U.S. Department of Energy, Rocky Flats, Colorado.)

APPENDIX 3

Radiological Data and Agreements Supporting Return of Ryan's Pit Soil to the Original Excavation

KAISER • HILL
COMPANY

INTEROFFICE MEMORANDUM

DATE: August 20, 1996

TO: M.C. Broussard, RMRS Accelerated Actions Manager, Bldg T893B, X6007

FROM: R. S. Tyson, Radiological Engineering, Bldg T690B, X8172/D7982

SUBJECT: REPORT OF RESULTS FROM GAMMA RAY SPECTROSCOPY OF RYAN'S PIT SOIL - RST-014-96

Radiological Engineering (RE) was tasked with performing gamma ray spectroscopy of the remediated soil from Ryan's Pit to ascertain whether this soil could be returned to the ground following treatment for volatile organic constituents. The treated soil was sampled in accordance with the project Sampling and Analysis Plan (SAP), and thirty-three 250ml samples contained in plastic jars were transferred to the custody of RE for analysis. The samples were weighed and the weights recorded, and net weights of the soil calculated.

Gamma spectroscopy measurements were acquired in accordance with RE Procedure 4-W03-REP-1401, Operation of the Gamma Spectroscopy Systems. This procedure provides the guidance to perform measurements in various geometries and system configurations. Additionally, the equipment used for data acquisition was previously calibrated and characterized in accordance with procedure 4-R29-REP-1402, Routine Characterization of a High Purity Germanium Detector (HPGe). This process included characterization and calibration for the geometry of 250ml plastic sample jars.

The system utilized for acquisition of data was an EG&G Ortec Lo-Ax HPGe detector coupled to an EG&G Nomad™ 92X multichannel analyzer. The microprocessor used was a Compaq 386S/20™ laptop computer. EG&G Ortec Maestro II™ software was used for data collection, and the Environmental Gamma-Ray Analysis Software (EGAS) was used for data reduction and analysis.

Data Collection Methodology

After calibration of the instrument, a 3600 second background measurement was performed so as to be able to subtract any natural radiation contributions from the acquired data. Then, a sample jar was placed 1 centimeter (cm) from the face of the detector, and a 3600 second acquisition was performed of the sample. Once collected, the data was transferred to the EGAS software for analysis.

Results

Photopeaks, or energy lines corresponding to the normal mixture of naturally occurring radioisotopes were present in the spectra, and corresponded to typical levels of activity in the background measurements. Additionally, photopeaks were identified above background for the following isotopes: Uranium-235 (^{235}U), Uranium-238 (^{238}U), and Americium-241 (^{241}Am). Based on empirically established ratios of ^{241}Am to Plutonium-239/240 ($^{239/240}Pu$) of 1 to 5, a concentration of $^{239/240}Pu$ was calculated and included in the summary report provided as Attachment 1. Also, since there was no detection of the isotope Uranium-234 (^{234}U), a Minimum Detectable Activity (MDA) value for the detector used was calculated and included for computational purposes in Attachment 1. Provided as Attachment 2 are the individual data analysis reports for each of the thirty-three samples.

Summary

Attachment 1 provides a summary report of the acquired data after analysis, including sample weight, activity per unit mass of each isotope, ratios of individual isotope concentrations to approved TIER I and TIER II concentrations for return to the ground, and the sum of the ratios of the isotopes to the TIER I and TIER II levels.

Based on the values of the individual isotopic ratios and the sums of the ratios, the soil from Ryan's Pit represented by these samples may be returned to the trench in accordance with the project Proposed Action Memorandum (PAM). Please contact me at extension 8172 or on digital pager 7982 with any questions regarding this matter.

Concurrence:

BPColby 8/20/96

B. P. Colby Date

rst

Attachments
As stated

cc (w/o Attachment 2):
J. L. Anderson
B. P. Colby
R. S. Roberts
A. K. Sieben
A. M. Tyson

GAMMA SPECTROSCOPY ANALYSIS
RYAN'S PIT SOIL

Sample Number	Net Weight (g)	Activity (picoCuries)					Concentration (picoCuries/gram)				
		U-234 (a)	U-235 (b)	U-238	Am-241	Pu-239/240	U-234	U-235	U-238	Am-241	Pu-239/240
TR00501RM	320.40	1,249.60	266.00	5,570.00	2,310.00	11,550.00	3.90	0.83	17.38	7.21	36.05
TR00502RM	296.10	1,249.60	287.00	6,470.00	3,510.00	17,550.00	4.22	0.97	21.85	11.85	59.27
TR00503RM	296.50	1,249.60	430.00	10,000.00	5,050.00	25,250.00	4.21	1.45	33.73	17.03	85.16
TR00504RM	340.70	1,249.60	221.00	6,540.00	1,300.00	6,500.00	3.67	0.65	19.20	3.82	19.08
TR00505RM	321.70	1,249.60	338.00	7,510.00	1,550.00	7,750.00	3.88	1.05	23.34	4.82	24.09
TR00506RM	311.80	1,249.60	225.00	5,810.00	1,030.00	5,150.00	4.01	0.72	18.63	3.30	16.52
TR00507RM	290.20	1,249.60	387.00	9,900.00	2,510.00	12,550.00	4.31	1.33	34.11	8.65	43.25
TR00508RM	269.80	1,249.60	511.00	10,800.00	2,690.00	13,450.00	4.63	1.89	40.03	9.97	49.85
TR00509RM	298.80	1,249.60	530.00	10,700.00	2,630.00	13,150.00	4.18	1.77	35.81	8.80	44.01
TR00510RM	326.10	1,249.60	330.00	11,600.00	3,140.00	15,700.00	3.83	1.01	35.57	9.63	48.14
TR00511RM	320.20	1,249.60	512.00	12,500.00	5,440.00	27,200.00	3.90	1.60	39.04	16.99	84.95
TR00512RM	335.90	1,249.60	402.00	9,710.00	3,490.00	17,450.00	3.72	1.20	28.91	10.39	51.95
TR00513RM	335.30	1,249.60	335.00	10,000.00	3,540.00	17,700.00	3.73	1.00	29.82	10.56	52.79
TR00514RM	285.70	1,249.60	269.00	7,060.00	2,050.00	10,250.00	4.37	0.94	24.71	7.18	35.88
TR00515RM	314.00	1,249.60	390.00	7,940.00	1,980.00	9,900.00	3.98	1.24	25.29	6.31	31.53
TR00516RM	277.80	1,249.60	285.00	9,170.00	4,130.00	20,650.00	4.50	1.03	33.01	14.87	74.33
TR00517RM	315.10	1,249.60	324.00	8,070.00	2,220.00	11,100.00	3.97	1.03	25.61	7.05	35.23
TR00518RM	261.10	1,249.60	281.00	6,870.00	1,630.00	8,150.00	4.79	1.08	26.31	6.24	31.21
TR00519RM	290.20	1,249.60	234.00	4470.00	898.00	4,490.00	4.31	0.81	15.40	3.09	15.47
TR00520RM	257.90	1,249.60	259.00	4220.00	744.00	3,720.00	4.85	1.00	16.36	2.88	14.42
TR00521RM	264.10	1,249.60	212.00	2940.00	706.00	3,530.00	4.73	0.80	11.13	2.67	13.37
TR00522RM	348.00	1,249.60	193.00	3800.00	1160.00	5,800.00	3.59	0.55	10.92	3.33	16.67
TR00523RM	343.00	1,249.60	284.00	5240.00	1610.00	8,050.00	3.64	0.83	15.28	4.69	23.47
TR00524RM	308.80	1,249.60	220.00	5330.00	1980.00	9,900.00	4.05	0.71	17.26	6.41	32.06
TR00525RM	287.10	1,249.60	174.00	4940.00	1550.00	7,750.00	4.35	0.61	17.21	5.40	26.99
TR00526RM	292.20	1,249.60	267.00	4640.00	1370.00	6,850.00	4.28	0.91	15.88	4.69	23.44
TR00527RM	281.70	1,249.60	266.00	5960.00	1570.00	7,850.00	4.44	0.94	21.16	5.57	27.87
TR00528RM	325.40	1,249.60	217.00	4930.00	1220.00	6,100.00	3.84	0.67	15.15	3.75	18.75
TR00529RM	310.40	1,249.60	256.00	6870.00	1680.00	8,400.00	4.03	0.82	22.13	5.41	27.06
TR00530RM	321.90	1,249.60	224.00	7240.00	1830.00	9,150.00	3.88	0.70	22.49	5.68	28.42
TR00531RM	400.70	1,249.60	3.24	1960.00	235.00	1,175.00	3.12	0.01	4.89	0.59	2.93
TR00532RM	380.80	1,249.60	140.00	2100.00	264.00	1,320.00	3.28	0.37	5.51	0.69	3.47
TR00533RM	419.10	1,249.60	175.00	1780.00	2750.00	13,750.00	2.98	0.42	4.25	6.56	32.81
MEAN	313.59	1,249.60	286.28	6,746.67	2,114.15	10,570.76	4.04	0.94	22.04	6.85	34.26
				STANDARD DEVIATION			0.44	0.39	9.63	4.09	20.47
				95% UCL			4.17	1.05	24.88	8.06	40.29
				TIER I Value			2,042.00	136.80	613.90	229.00	2,001.00
				CONC / TIER I			0.00	0.01	0.04	0.04	0.02
				TIER II Value			360.40	24.10	108.30	40.40	353.20
				CONC / TIER II			0.01	0.04	0.23	0.20	0.11
				Sum of Ratios for TIER I		0.11					
				Sum of Ratios for TIER II		0.60					

(a): The Minimum Detectable Activity (MDA) value of the HPGe detector for U-234 was used for all samples due to no detectable activity of this isotope.

(b): The MDA value of the HPGe detector for U-235 was used for sample TR00531RM due to no detectable activity for U-235 in this sample.

A soil concentration based on an annual site-wide radiation dose of 85 mrem (the Working Group's proposed Tier I subsurface soils action level) shall be used as a temporary "putback" level for excavated soils from Ryan's Pit and as a temporary putback level for soils excavated as part of the accelerated actions at Trenches T-3 and T-4.

Neither the Action Levels for radionuclides in soils nor the "putback" levels for replacement of soils into excavated areas have been presented for public review and comment and can not, accordingly, be finalized at this time. Both the Action Levels and the "putback" levels will be presented for public review by July 15, 1996 and a 30 day comment period will be initiated at that time. These values will be incorporated into RFCA; or, finalized as addenda or modifications to RFCA if RFCA is finalized first. Final approval of RFCA shall not be delayed pending resolution of these Action Levels and / or "putback" levels.

If values more conservative than those which will be derived from an annual site-wide radiation dose of 85 mrem are ultimately selected as the "putback" levels for replacement of soils into excavated areas by the Parties to this Agreement, then the soils replaced into Ryan's Pit and Trenches T-3 and T-4 will be removed and addressed by future remedial actions.

The temporary "putback" level does not represent a "free-release" number. Residually contaminated soils must still meet the Tier II levels of protection, in accordance with the Action Levels Framework as it will be finalized for radionuclides in soils.

The Parties shall prepare a joint statement explaining this temporary decision in terms of the contaminants to be targeted in these Accelerated Actions, proposed Action Levels for radionuclides, the need for an intermediate decision at this time, the relative costs of alternatives (including cancellation or postponement of the existing contract, continued storage, and offsite disposal), relative risks, and environmental benefit.

Agreed by the Undersigned, May 30, 1996:

Tom Looby
Director, Office of Environment
Colorado Department of Public
Health and Environment

Mark Silverman
Manager, Rocky Flats
Environmental Technology Site
United States Department of Energy

/s/ by Johnson for McGraw

Jack McGraw
Acting Regional Administrator
United States Environmental
Protection Agency, Region VIII

Jessie Roberson
Manager-Designee, Rocky Flats
Environmental Technology Site
United States Department of Energy

G:\SOILS.JHB

Department of Energy

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SEP 10 1996

96-DOE-07980

Mr. Tim Rehder
U.S. Environmental Protection Agency, Region VIII
ATTN: Rocky Flats Project Manager, 8HWM-RI
999 18th Street, Suite 500, 8WM-C
Denver, Colorado 80202-2405

Dear Mr. Rehder:

The purpose of this letter is to confirm agreements reached regarding disposition of soils excavated from Ryan's Pit and from Trenches T-3 and T-4 at the Rocky Flats Environmental Technology Site (RFETS). As you recall, these agreements were reached during a meeting held on August 28, 1996, during a conference call on the morning of September 4, 1996, and during subsequent conversations between yourself and Mr. Carl Spreng of the Colorado Department of Public Health and Environment (CDPHE).

Regarding the Ryan's Pit soils, data were presented at the August 28 meeting demonstrating that these soils, now stored in eleven roll-off containers at RFETS, contained levels of radionuclides below the proposed Tier II soil action levels. These data are the results of a statistically valid soil sampling program and a summary is enclosed. Based upon these data, parties at the August 28 meeting agreed that the Ryan's Pit soils would be returned to the excavation; Kaiser-Hill and RMRS plan to accomplish this in mid-September.

Kaiser-Hill and RMRS presented radiological sampling data for the majority of the soils excavated from T-4 (that is, those soils that did not show radiological levels above background when surveyed with field instruments) during the September 4 conference call. These data (enclosed) showed levels of radiological constituents that were below the proposed Tier II soil action levels. As per the Ryan's Pit soil, all parties agree that these soils could be returned to the excavation; Kaiser-Hill and RMRS plan to have this accomplished by September 9, 1996.

Considerable discussion took place both on August 28 and September 4 regarding the appropriate disposition of T-3 and T-4 soils that exhibited radiological concentrations above background (when surveyed with field instruments during the excavation), and which were segregated from other excavated soils. Sampling results indicate that about 250 cubic yards of this soil, has radiological concentrations that exceed the proposed Tier II soil action level, but which does not exceed the proposed Tier I soil action level. The parties have agreed to the following course of action for these soils:

- those soils that exhibit radionuclides below the proposed Tier II action level will be segregated and returned to the excavation per the Ryan's Pit and T-4 soils discussed above; and,

• those soils that exhibit radionuclides above the proposed Tier II action level will also be returned to the excavation. They will be deposited in a specific area of the trench and will be underlain, and overlain, by a geotextile fabric or similar material for the purpose of demarcating these soils should re-excavation be deemed necessary at some point. The soils will be covered with topsoil and their location will be recorded, again to facilitate re-excavation if necessary.

In taking this action, RFFO recognizes, per the May 30, 1996, letter agreement governing this project, that use of the Tier I action level as a "putback" level is temporary, pending final resolution of the soil action level framework. RFFO also recognizes that if lower values are eventually agreed to as soil action levels, these soils may need to be removed and addressed in future remedial actions, consistent with the final soil action levels.

Consistent with our letter agreement of May 30, RFFO believes that this action is reasonable based upon the following:

• volatile organic contaminants, and not radionuclides, were the focus of this remedial action, and they have been successfully removed from the soils in question (these soils would not have been removed on the basis of radiological content alone);

• all soils proposed for return to the excavation conform to the proposed Tier I soil action limit;

• some immediate action is required to place the soils in a more stable configuration in order to minimize the need for ongoing management and to minimize the possibility of dispersal of the material;

• this action is cost effective as compared to on-site storage (estimated at $13,000 per month, primarily for rental of roll-off storage containers) and off-site disposal (estimated at $130,000, plus interim storage costs while awaiting shipment);

• this action poses no substantial environmental risk. Placing these soils back in the excavation and covering them with soil minimizes the likelihood of contaminant migration, and we regard this as an environmentally beneficial action as compared with storing the soil in a stockpile; and,

• should the decision ultimately be made to allow these soils to remain in the excavation, this will be consistent with anticipated land use. While the soils do contain somewhat higher levels of radionuclides than the other soils returned to the excavation, their radiological levels are below the proposed Tier I values for office worker and future residential exposure. Additionally, these soils contain lower radionuclide levels than are anticipated to remain following remediation at the nearby 903 Pad and Lip area.

The agreement of the Dispute Resolution Committee of August 22, 1996, was that put-back level decisions should be project specific, and made and explained within the decision documents associated with those actions. The agreement also specified that Decision factors to be considered include protectiveness and effectiveness, anticipated future land uses, contaminant levels in surrounding soils, and costs. Although agreement on specific put-back levels was agreed on May 30, we believe that we are also meeting the spirit of the August 22nd agreement.

I acknowledge your belief that due to the site specific conditions at Trench T3, that the contaminants being replaced above the Tier II levels may need to be revisited in the future. We are confident that the manner in which the soils are being replaced will not preclude such an action.

Thank you for your assistance in resolving this issue. Please call me at 966-4839 if you have any questions.

Sincerely,

Steve Slaten
RFCA Project Coordinator

Enclosures

cc w/o enc:
H. Roitman, CDPHE
C. Spreng, CDPHE
S. Tarlton, CDPHE
M. Dodson, USEPA Region VIII
L. Johnson, USEPA Region VIII
K. Korkia, Citizens' Advisory Board
D. Butterfield, RFLII
K. Schnoor, City of Broomfield
R. Lightner, EM-40, HQ
C. Gesalman, EM-40, HQ
J. Roberson, OOM, RFFO
K. Klein, OOM, RFFO
J. Legare, AMEC, RFFO
S. Olinger, PPI, RFFO
J. Rampe, PLD, RFFO
D. Lindsay, OCC, RFFO