

Technical Memorandum

To:	Kathy Arnold	From:	Michael Dieckhaus
Company:	Rosemont Copper Company	Date:	August 30, 2010
Re:	Rosemont Tailings Geochemistry Sample Sources	Doc #:	236/10-320887-5.3
CC:	Mark Williamson, Amy Hudson, David Krizek, P.E. (Tetra Tech)		

1.0 Introduction

In addition to the tailings samples prepared in 2006-2008, six (6) new samples were prepared to better characterize the dry stack tailings associated with the proposed Rosemont Copper Project (Project). Tailings samples were generated from each of the five (5) major sulfide ore rock units and one (1) composite sample was generated from ore material representing production years 4 through 7.

The preparation and analysis of additional tailings samples was in response to the April 14, 2010 Comprehensive Request for Additional Information from the Arizona Department of Environmental Quality (ADEQ) to Rosemont Copper Company (Rosemont) as part of the Aquifer Protection Permit (APP) application dated February 2009 (Tetra Tech, 2009). Specifically, this Technical Memorandum answers the following:

- *Item No. 9, Page 8 of 18: To date, four samples were tested for acid-generating potential and metal release for the tailings material. (Reference the Technical Memorandum for Tailings Geochemistry, March 24, 2009).*

Though the test results indicate less than 0.01% sulfide-sulfur and posses a high capacity for acid neutralization, yet, the number of samples tested to establish tailings geochemistry is insufficient and cannot be considered representative of the varying lithology present in the orebody. The sampling program should be designed so that the collected samples are representative of the geochemical behavior of various rock units with respect to acid generation. Please submit a revised sampling plan.

The tailings material samples generated in 2006-2008 and in 2010 were prepared by Mountain States R&D International, Inc. (Mountain States) using current metallurgical processes and submitted to Turner Labs or SVL Analytical (SVL) for geochemical characterization testing. Geochemical testing including acid-generating capacity and metals release using standard static and short-term leaching procedures including: Acid-Base Accounting (ABA) (Sobek et al, 1978), Net Acid Generation pH (NAG pH) (Stuart, 2005), Synthetic Precipitation Leaching Procedure (SPLP) (EPA Method 1312 - EPA, 1994), Meteoric Water Mobility Procedure (MWMP) (ASTM, 2002), and whole rock analysis.

2.0 Sampling and Analysis

In addition to the six (6) tailings samples prepared in 2010, four (4) tailings samples were previously prepared in 2006-2008 and submitted for geochemical characterization. Table 1 indicates the composition of the various tailings samples.

Table 1 Rock composition for Tailings Samples

Sample ID	Rock Units
Tailings – May 2006	Horquilla
Tailings 022807	Horquilla
Tailings-05 June2007	Horquilla
Year 0-3 Tailings	21.3% Earp 72.9% Horquilla 5.8% Escabrosa (Year 0 to 3 composite)
4-7 Yr. Composite	50% Horquilla 28% Earp 18% Colina 4% Epitaph
Horquilla	Horquilla
Colina	Colina
Epitaph	Epitaph
Earp	Earp
Escabrosa	Escabrosa

The approximate generation dates of the ten (10) tailings samples are shown in Table 2 along with a listing of the geochemical tests performed on each sample.

Table 2 Tailings Sample Generation Date and Test Protocols

Sample ID	Sample Date	ABA	NAG pH	Whole Rock	SPLP	MWMP
Tailings – May 2006	05/19/2006	X		X	X	
Tailings 022807	02/28/2007	X	X	X	X	
Tailings-05 June2007	06/05/2007	X	X	X	X	X
Year 0-3 Tailings	July 2008	X		X	X	X
4-7 Year Composite	06/21/2010	X	X	X	X	X
Escabrosa	06/21/2010	X	X	X	X	
Horquilla	07/08/2010	X	X	X	X	X
Colina	07/08/2010	X	X	X	X	X
Epitaph	07/01/2010	X	X	X	X	X
Earp	07/01/2010	X	X	X	X	X



As indicated above and in Section 1.0, the six (6) 2010 tailings samples were comprised of the major rock types making up the total sulfide ore material and one (1) composite sample representing production years 4 through 7. As indicated in the Technical Memorandum titled *Rosemont 2006-2008 Tailings Material Sample Sources* (Tetra Tech, 2010) provided in Attachment A, the 2006-2008 tailings samples were also comprised of the major rock types.

For reference, Table 3 below shows the percentages of the different sulfide ore rock types to be mined and milled based on the current P673 pit configuration.

Table 3 Summary of the Sulfide Rock Types and Tonnages

Sulfide Rock Type	Tons of Material	Percent of Material (by weight)
Horquilla	259,251,000	47.45%
Earp	91,218,000	16.70%
Colina	79,220,000	14.50%
Epitaph	47,993,000	8.78%
Escabrosa	19,812,000	3.63%
Andesite	12,836,000	2.35%
Quartz Monzonite Porphyry	10,407,000	1.90%
Arkose	10,363,000	1.90%
Abrigo	7,321,000	1.34%
Martin	2,606,000	0.48%
Concha	2,308,000	0.42%
Glance	1,614,000	0.30%
Bolsa	1,109,000	0.20%
Pre-Cambrian Granodiorite	268,000	0.05%
Scherrer	11,000	0.00%
Total Amounts	546,337,000	100%

A summary of the core sample intervals used to develop the 2006-2008 tailings samples is provided in Attachment A. Attachment B provides the metallurgical coding associating the core group codes with the lithology types. Attachment C relates the source cores from the core group codes with the core sample intervals selected to develop the 2010 tailings samples.

The remaining sections of this Technical Memorandum summarize the results of the geochemical testing associated with all ten (10) tailings samples. In general, testing results indicate that the tailings material generally contains less than 0.30% sulfide-sulfur except for the Epitaph sample prepared in 2010, which contained 0.72% sulfide sulfur. The tailings samples also produced relatively low concentrations in leachates from the short-term leaching tests (SPLP and MWMP).



2.1 2010 Tailings Sample Preparation

The six (6) additional tailings samples prepared in 2010 were selected from rock types representing the highest percentages of the total sulfide ore material: Horquilla, Earp, Colina, Epitaph, and Escabrosa. In addition to tailings samples comprised of 100 percent Horquilla, Earp, Colina, Epitaph, and Escabrosa, a composite tailings sample was also prepared representing production year 4 through 7. The five (5) individual rock units make up about 91 percent of the total sulfide ore to be mined and milled.

The 2010 tailings material samples were assembled from coarse reject material derived from exploratory drilling core samples completed in 2007. When the core samples were originally collected, the core samples were logged by a geologist with coding that was entered into a database based on the drill hole number, drill hole interval, and lithology. This metallurgical coding is documented in Attachment B.

Core samples were crushed for metallurgical and geochemical testing. Following the original metallurgical and geochemical testing programs, approximately 75 percent of the crushed sample material was archived at the Rosemont Project site. The archived crushed material was stored in drums that were coded with the lithology, interval depth, and drill hole.

The 2010 tailings samples were selected to ensure that the materials tested were spatially representative; that the material was sulfide ore and not oxide ore; contained between 0.2 to one (1) percent copper. The tailing sample details, including the metallurgical codes indicating the source cores and core intervals, are documented in Attachment C. The crushed ore samples were submitted to Mountain States for processing.

After the tailings samples were prepared, Rosemont provided the samples for both geochemical and physical analyses. Samples of the 2010 tailings samples were submitted to AMEC Earth & Environmental, Inc (AMEC) for physical analyses. Geochemical characterization of the 2010 samples was performed by SVL.

2.2 Acid-Base Accounting

Based on the results of ABA testing, all of the tailings samples (Table 4) have a low risk for acid generation as defined by the ADEQ Best Available Demonstrated Control Technology (BADCT) guidance (ADEQ, 2005). The ABA characterization of the tailings indicates a lack of acid potential (AP) and a significant neutralizing potential (NP). Net neutralizing potentials (NNPs) greater than 20 and the ratio of NP to AP greater than 3:1 supports the characterization of the material as non-acid generating. Thus, with respect to the potential for acidic drainage, the tailings present a low risk and will likely be acid consuming.

NAG pH results provide another indication of the acid generating or acid neutralization potential (NNP) for of a material. NAG pH levels below 4.5 are usually characterized as acid generating while values above 6 are characterized as non-acid generating. The NAG pH results obtained from the ten (10) tailings samples support the overall non-acid generating nature of the tailings, i.e. results being greater than 6 (Table 4).

Table 4 Summary of ABA Results for Rosemont Tailings Samples

Sample ID	AP	NP	NNP	NP/AP	NAG pH	Non- Extractable Sulfur (%)	Sulfide Sulfur (%)	Sulfate Sulfur (%)	Total Sulfur (%)
	T CaCO ₃ /kT								
Tailings – May 2006	1	426	425	426	NM	<0.01	0.01	0.04	0.05
Tailings 022807	<0.3	332	332	2210	7.87	<0.01	<0.01	<0.01	<0.01
Tailings-05 June2007	<0.3	248	248	1650	8.25	<0.01	<0.01	0.04	0.04
Year 0-3 Tailings	<0.3	304	304	2030	NM	<0.01	<0.01	<0.01	<0.01
4-7 Year Composite	4.89	241	236	49.3	9.34	0.02	0.16	0.18	0.36
Escabrosa	8.16	371	363	45.5	9.63	0.02	0.26	0.55	0.83
Horquilla	9.0	548	539	60.9	11.27	0.02	0.29	0.49	0.80
Colina	1.1	181	180	165	11.48	<0.01	0.03	0.04	0.07
Epitaph	22.6	400	377	17.7	7.99	0.02	0.72	0.46	1.20
Earp	6.1	145	138	23.8	8.88	0.01	0.19	0.09	0.29

NM-Not Measured

2.3 Whole Rock Analysis

Whole rock analysis determines the total concentration of selected chemical constituents in a sample. This analysis was performed on all of the tailings samples. The results are provided in Attachment D. There were variations in the composition of each sample tested. The results identified potential constituents of concern in the individual rock units that make up the tailings material. Metals such as arsenic, cadmium, copper, lead, manganese, mercury, and zinc were detected in the tailings rock unit samples during whole rock analysis. Therefore, the leaching characteristics of these metals were further evaluated using the short-term leaching tests such as SPLP and MWMP. The supporting analytical data from SVL is provided in Attachment E.

2.4 Synthetic Precipitation Leaching Procedure (SPLP)

The SPLP is designed to determine the potential for release of chemical constituents from a solid that is exposed to meteoric precipitation (rain or snow melt). There are no specific regulatory criteria that dictate interpretation of SPLP results, but the results may be used as input to models that predict potential impacts to either groundwater or surface water resources. The tailings material SPLP results indicate that there were very limited releases of any chemical parameter, including metals (see table in Attachment D). This is expected due to the non-acidic nature of the tailings and the near-neutral pH conditions that are associated with the SPLP tests. Although most metals have limited solubility at neutral pH, some chemical constituents, such as arsenic and selenium, can be mobile under such pH conditions. However, the majority



of metal concentrations in the SPLP extractions (Attachment D) was either below the detection limit or low compared to the Arizona Water Quality Standards (AWQS).

2.5 Meteoric Water Mobility Procedure (MWMP)

The majority of the tailings samples were analyzed by MWMP. The exceptions were the Tailings – May 2006, Tailings-022807, and 2010 Escabrosa samples due to the lack of sample material volume. The MWMP, a short-term leaching test, has similar objectives to the SPLP in determining the release potential of metals from the material. The MWMP, however, is tailored more for “run of mine” materials without crushing, whereas the SPLP was developed more for soil materials with smaller grain sizes. However, the MWMP is a suitable and largely accepted test of mine materials.

The MWMP results are presented in Attachment D and indicate a very limited release of metals, similar to the SPLP results. A number of the metals, including arsenic, cadmium, lead, mercury, and zinc, however, were not detected in the MWMP leachate for the various rock types.

There were a few differences in the extractable concentrations between the SPLP and the MWMP results, which are largely related to the water:rock ratio employed by the test. For example, the sulfate concentration in the MWMP test for the 4-7 year composite sample was 264 milligrams per liter (mg/L) compared to only 24.3 mg/L in the SPLP test of the same sample (Attachment D). The MWMP is performed using a water to rock ratio of 1:1 while the SPLP ratio is 20:1; therefore, constituent concentrations are generally higher in the MWMP compared to the SPLP. On a mass basis, however, the MWMP yields a value of 264 mg sulfate/kg of rock, while the SPLP yields a value of 486 mg/kg. Thus, both the MWMP and SPLP provide information which can estimate the potential for release of various constituents from geologic materials.

3.0 Conclusions

Geochemical characterization of the Rosemont tailings samples indicates that the tailings generally contain less than 0.30% sulfide-sulfur, present essentially no risk associated with acid generation, and possess a high capacity for acid neutralization. The tailings were also subjected to short-term leaching tests (SPLP and MWMP) which produced only very low metal concentrations in the resulting leachates.



REFERENCES

- Arizona Department of Environmental Quality (ADEQ) (2005), *Arizona Mining BADCT Guidance Manual: Aquifer Protection Program*.
- American Society for Testing and Materials (ASTM) (2002), *Standard Test Method for Column Percolation Extraction of Mine Rock by the Meteoric Water Mobility Procedure, Designation D2242-02*, ASTM, Conshohocken, PA, 7p.
- EPA. 1994. Method 1312 - *Synthetic Precipitation Leaching Procedure. Revision 1*. SW-846 online. <http://www.epa.gov/epaoswer/hazwaste/test/pdfs/1312.pdf>.
- Sobek, A.A., W.A. Schuller, J.R. Freeman, and R.M. Smith, (1978). *Field and laboratory methods applicable to overburden and minesoils*. U.S. E.P.A. Report EPA-600/2-78-054.
- Stuart, W., (2005). *Development of Acid Rock Drainage Prediction Methodologies For Coal Mine Wastes*. Ph.D. dissertation. Ian Wark Research Institute, University of South Australia.
- Tetra Tech (2009) *Aquifer Protection Permit (APP) Application*. Prepared for Rosemont Copper Company. Report dated February 2009.
- Tetra Tech, Dieckhaus, M. (2010). *Rosemont 2006-2008 Tailings Material Sample Sources*. Technical Memorandum to Kathy Arnold (Rosemont Copper Company). Technical Memorandum Dated August 30, 2010.

ATTACHMENT A
TECHNICAL MEMORANDUM
ROSEMONT 2006-2008 TAILINGS MATERIAL SAMPLE
SOURCES

Technical Memorandum

To:	Kathy Arnold	From:	Michael Dieckhaus
Company:	Rosemont Copper Company	Date:	August 30, 2010
Re:	Rosemont 2006-2008 Tailings Material Sample Sources	Doc #:	235/10-320887-5.3
CC:	Mark Williamson, Amy Hudson, David Krizek, P.E. (Tetra Tech)		

1.0 Introduction

This Technical Memorandum provides details related to the source of the tailings material samples analyzed in 2006, 2007, and 2008 as part of the proposed Rosemont Copper Project (Project) located in Pima County, Arizona. Details related to the 2006-2008 tailings samples, such as specific boreholes and depth intervals, were derived from the Rosemont Copper Project core database. The results of the geochemical characterization of the four (4) 2006-2008 tailings material samples were documented in the Technical Memorandum titled *Tailings Geochemistry* dated March 24, 2009 (Tetra Tech, 2009b). This March 24, 2009 Technical Memorandum is provided in Attachment 1 for reference.

This information is provided in response to the April 14, 2010 Comprehensive Request for Additional Information from the Arizona Department of Environmental Quality (ADEQ) to Rosemont Copper Company (Rosemont) in the response to the Aquifer Protection Permit (APP) application dated February 2009 (Tetra Tech, 2009a). Specifically, this Technical Memorandum partially answers item no. 9 on page 8 of 18:

- *Tailings Geochemistry: To date, four samples were tested for acid-generating potential and metal release for the tailings material. (Ref. Technical Memorandum – Tailings Geochemistry, March 24, 2009).*

Though the test results indicate less than 0.01% sulfide-sulfur and possess a high capacity for acid neutralization, yet, the number of samples tested to establish tailings geochemistry is insufficient and cannot be considered representative of the varying lithology present in the orebody. The sampling program should be designed so that the collected samples are representative of the geochemical behavior of various rock units with respect to acid generation. Please submit a revised sampling plan.

2.0 Sample Plan and Details

The 2006-2008 tailings samples were generated in May 2006, February 2007, June 2007, and July 2008. The May 2006 sample was prepared Mountain States R&D International, Inc. (Mountain States) under guidance from the Washington Group. The 2007-2008 samples were prepared directly by Mountain States. Geochemical test work on the samples was performed by Turner Labs or SVL Analytical, Inc. (SVL).



The July 2008 tailings sample was a weight proportioned composite to represent the major lithologies that would be removed during the first three (3) years of mining operations. This composite sample was assembled using previously crushed coarse core reject material. During the metallurgical testing program, core samples were crushed and the unused portions of the material were archived in drums at the Rosemont Project site. Typically, about 75 percent of the crushed rock material from any given core interval was archived. The drums were coded with the lithology, interval depth, and drill hole to enable later identification and use of the material.

The original core samples were logged by a geologist with coding that was entered into a database based on the drill hole, interval, and lithology. This metallurgical coding is documented in Attachment 2.

The 2008 composite tailings sample was selected from core samples to ensure that the sample was representative of the rock types to be tested; that the material was sulfide ore and not oxide ore; and that the samples contained between 0.2 percent and one (1) percent copper.

The tailing sample details, including the source cores and depth intervals for the 2006-2007 tailings material samples, are documented in Attachment 3. Attachment 4 documents the production year 0-3 composite sample (July 2008 sample).

3.0 Geochemical Test Results

The rock composition of each of the tailings samples submitted for geochemical testing are provided in Table 1. Table 2 provides a summary of the analyses completed for each sample. The analyses performed included acid-generating capacity and metals release using standard static and short-term leaching procedures such as: Acid-Base Accounting (ABA) (Sobek et al, 1978), Net Acid Generation pH (NAG pH) (Stuart, 2005), Synthetic Precipitation Leaching Procedure (SPLP) (EPA Method 1312 - EPA, 1994), whole rock analysis, and Meteoric Water Mobility Procedure (MWMP) (ASTM, 2002). The analytical results for the tailings geochemical characterization conducted to date are presented in the Technical Memorandum titled *Tailings Geochemistry* (Tetra Tech, 2009b) dated March 24, 2009 (see Attachment 1).

Table 1: Rock Composition of 2006-2008 Tailings Samples

Sample ID	Rock Units
Tailings – May 2006	Horquilla
Tailings 022807	Horquilla
Tailings-05 June2007	Horquilla
Year 0-3 Tailings (July 2008)	21.3% Earp 72.9% Horquilla 5.8% Escabrosa (Year 0 to 3 composite)

Table 2: Tailings Test Protocols

Sample ID	Sample Date	ABA	NAG pH	Whole Rock	SPLP	MWMP
Tailings – May 2006	05/19/2006	X		X	X	
Tailings 022807	02/28/2007	X	X	X	X	
Tailings-05 June2007	06/05/2007	X	X	X	X	X
Year 0-3 Tailings	July 2008	X		X	X	X



REFERENCES

- ADEQ (2009). *Arizona Mining BADCT Guidance Manual: Aquifer Protection Program*.
- American Society for Testing and Materials (ASTM) (2002), *Standard Test Method for Column Percolation Extraction of Mine Rock by the Meteoric Water Mobility Procedure, Designation D2242-02*, ASTM, Conshohocken, PA, 7p.
- EPA. 1994. *Method 1312 - Synthetic Precipitation Leaching Procedure. Revision 1*. SW-846 online. <http://www.epa.gov/epaoswer/hazwaste/test/pdfs/1312.pdf>.
- Sobek, A.A., W.A. Schuller, J.R. Freeman, and R.M. Smith, (1978). *Field and laboratory methods applicable to overburden and minesoils*. U.S. E.P.A. Report EPA-600/2-78-054.
- Tetra Tech (2009a) *Aquifer Protection Permit (APP) Application*. Prepared for Rosemont Copper Company. Report dated February 2009.
- Tetra Tech (2009b), Williamson, M., (2010). *Tailings Geochemistry*. Technical Memorandum to Jamie Sturgess (Rosemont Copper Company). Technical Memorandum Dated March 24, 2009.

ATTACHMENT 1
TECHNICAL MEMORANDUM
TAILINGS GEOCHEMISTRY

Technical Memorandum

To: Jamie Sturgess	From: Mark A. Williamson
Company: Rosemont Copper Company	Date: March 24, 2009
Re: Tailings Geochemistry	Project #: 114-3207777
CC: Kathy Arnold (Rosemont Copper) Jamie Joggerst (Tetra Tech)	Document # 038/09-320777-5.3

Summary

To date, four (4) samples of tailings material (predominantly Horquilla) have been generated for the proposed Rosemont Copper Project. All of the samples were tested for acid-generating capacity and metals release using standard static and short-term leaching procedures, including: Acid-base accounting (ABA), net acid generation (NAG) pH testing, kinetic (humidity cell testing), synthetic precipitation leaching procedure (SPLP), meteoric water mobility procedure (MWMP), and whole rock analysis. Results from the testing indicate that the tailings material generally contains less than 0.01% sulfide-sulfur, can be classified as inert with respect to acid generation, and possess a high capacity for acid neutralization. Humidity cell testing was used to accelerate the weathering and release of various constituents from the tailings and the results provided no indication for the onset of acid generation or leaching of significant metals concentrations for tests lasting 20 weeks. The tailings were also subjected to short-term leaching tests (SPLP and MWMP) which produced only very low metal concentrations in the resulting leachates.

Sampling and Analysis

The approximate dates in which each tailings sample was generated are May 2006, February 2007, June 2007, and July 2008, and their rock compositions are provided in Table 1. Table 2 provides a summary of the completed test work for each sample and the analytical results for all tailings geochemical characterization conducted to date are presented in this memorandum.

Table 1. Rock composition for Tailings Samples

Sample Date	Rock Units
May 2006	Horquilla ¹
February 2007	Horquilla ¹
June 2007	Horquilla
July 2008	21.3% Earp 72.9% Horquilla 5.8% Escabrosa (Year 0 to 3 composite)

¹ Assumed rock samples processed for flotation was composed of Horquilla

Table 2. Tailings Test Protocols

Sample Date	ABA	NAG	Whole Rock	SPLP	MWMP	Kinetic
May 2006	X	X	X	X		
February 2007	X	X	X			X
June 2007	X	X	X	X	X	
July 2008	X		X	X	X	X

Acid-Base Accounting

The ABA properties of the tailings (Table 3) meets Arizona Department of Environmental Quality (ADEQ) criteria as inert, with total-Sulfur concentrations less than 0.3%, and a net neutralization potential (NNP) greater than 0 or a neutralization potential ratio (NPR) greater than 3 (ADEQ, 1999). The ABA characterization of the tailings indicates not simply a lack of acid potential (AP) but a pronounced neutralizing potential (NP). Thus, with respect to the potential for acidic drainage, the tailings are not only inert but furthermore acid consuming.

The NAG pH is a measure of the net acid generating capacity of a sample. The value of the NAG test is typically associated with waste rock, where the NAG result can often be tied to NNP. Thus, NAG testing offers an on-the-ground technique for segregating waste rock during operations. With respect to tailings, NAG testing has limited value, as this material is seldom segregated for specific handling and storage. However, the results obtained from two (2) tailings samples support the overall non-acid generating nature of the tailings due to the NAG pH values greater than 7 (Table 3).

Table 3. Summary of ABA Results for Rosemont Tailings Samples

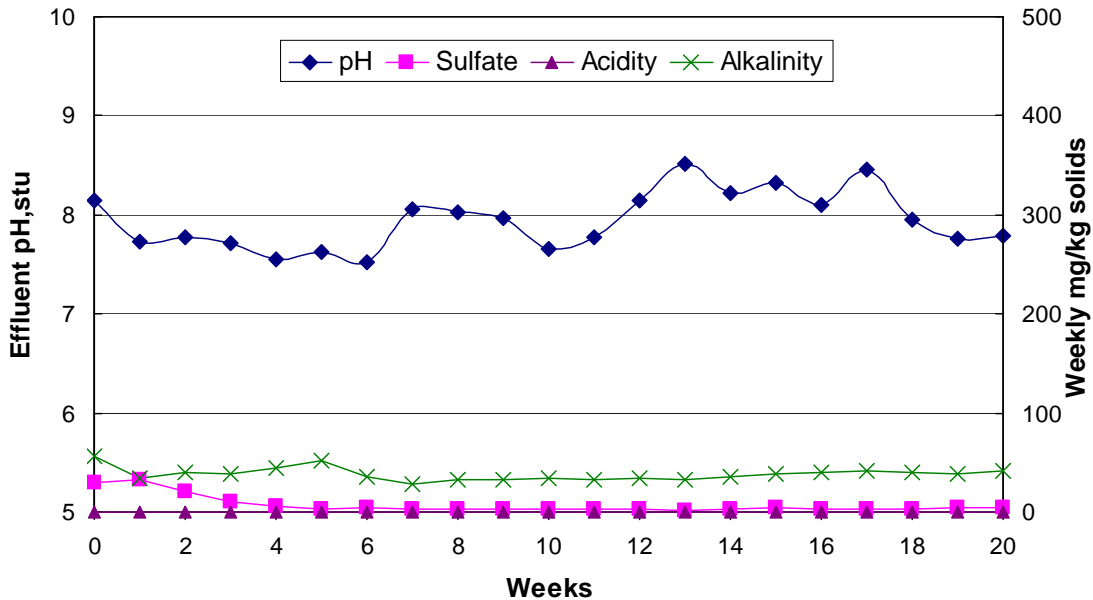
Sample ID	AP	NP	NNP	NP/AP	NAG pH	Non-Extractable Sulfur (%)	Sulfide Sulfur (%)	Sulfate Sulfur (%)	Total Sulfur (%)
	T CaCO ₃ /kT								
May 2006	1	426	425	426	NA	<0.01	0.01	0.04	0.05
February 2007	<0.3	332	332	2210	7.87	<0.01	<0.01	<0.01	<0.01
June 2007	<0.3	248	248	1650	8.25	<0.01	<0.01	0.04	0.04
July 2008	<0.3	304	304	2030	NA	<0.01	<0.01	<0.01	<0.01

Kinetic Testing

Kinetic, humidity cell testing, is an accelerated weathering laboratory-based test. During the procedure, the tested material is exposed to moist, oxygenated air which accelerates the weathering of any sulfide minerals present. The purpose is to gauge the extent to which mine materials with uncertain acid generation potential (per ABA) can produce acidic drainage. On a weekly basis, the weathering solids are rinsed with water and the leachate is analyzed for its chemical constituents.

The humidity cell results from the tailings samples are consistent with the results from ABA testing. The tailings samples meet the ADEQ criteria as inert and did not produce acidic drainage. Results from the February 2007 sample show that in addition to maintaining a neutral pH, the effluent from the humidity cell also maintained a constant alkalinity value (Figure 1). A decreasing alkalinity value (despite a neutral pH) is a precursor to the onset of lower pH values, and therefore the February 2007 tailings sample showed no signs of acid onset. The concentrations of aluminum, beryllium, cadmium, chromium, copper, iron, lead, mercury, nickel, selenium, silver, and thallium were below detection in all of the humidity cell leachate samples (Table 4). All of the remaining metal concentrations were low, although antimony and arsenic were present in at least one (1) sample at concentrations near or slightly above its Aquifer Water Quality Standard (AWQS) value (0.006 mg/L for antimony and 0.01 mg/L proposed for arsenic). A general depletion in soluble constituents (rinse-out), rather than accumulation of weathering products, was observed as the test progressed by the decreasing concentrations of TDS and major ion concentrations (Table 4).

Figure 1. Humidity Cell Results for February 2007 Tailings Sample



The tailings sample from July 2008 produced a very similar humidity cell response (Figure 2). The effluent from the July 2008 sample maintained a pH greater than 8, with stable alkalinity values and low sulfate concentrations due to the high carbonate content and resulting NNP characteristics of the sample. Trends in the humidity cell leachate concentrations were also similar, with aluminum, beryllium, cadmium, chromium, iron, lead, mercury, silver, thallium, uranium, and zinc below detection in all leachates (Table 5). The remaining detectable metals were present at low concentrations, although one of the antimony values exceeded its respective AWQS and half arsenic analyses were slightly above the proposed AWQS of 0.01 mg/L. The July 2008 tailings sample also produced the characteristic initial “rinse-out” of more soluble constituents, as indicated by the decreasing concentrations of TDS and major constituents over time (Table 5).

Figure 2. Humidity Cell Results for July 2008 Tailings Sample

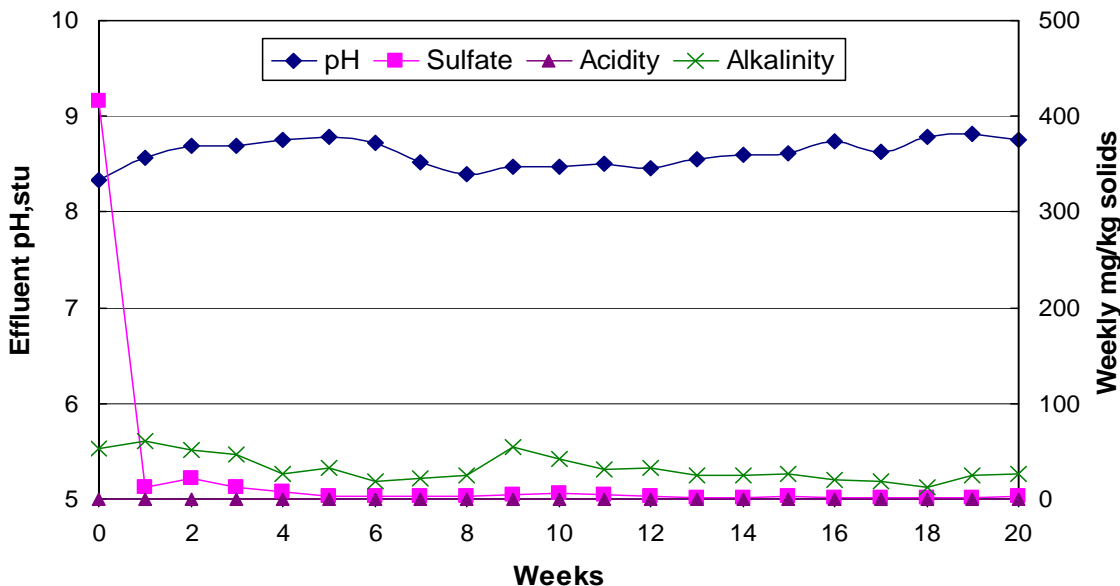


Table 4. Summary of Humidity Cell Metal Concentrations for the February 2007 Tailings Sample.

Parameter	Humidity Cell Effluent Metal Concentration (mg/L)				
	February 2007				
Sample Date					
Week	0	1-5	6-10	11-15	16-20
Aluminum	<0.08	<0.08	<0.08	<0.08	<0.08
Antimony	<0.006	0.0035	0.0057	0.0058	0.0056
Arsenic	<0.01	0.0071	0.0095	0.0087	0.0153
Barium	0.0409	0.0176	0.0113	0.0067	0.0094
Beryllium	<0.002	<0.002	<0.002	<0.002	<0.002
Cadmium	<0.002	<0.002	<0.002	<0.002	<0.002
Calcium	26.9	22.8	14.4	10.7	11.8
Chloride	4.07	1.5	1.43	0.2	<0.2
Chromium	<0.006	<0.006	<0.006	<0.006	<0.006
Copper	<0.01	<0.01	<0.01	<0.01	<0.01
Fluoride	0.81	1.09	1.17	1.34	1.65
Iron	<0.06	<0.06	<0.06	<0.06	<0.06
Lead	<0.0075	<0.0075	<0.0075	<0.0075	<0.0075
Magnesium	1.45	1.49	0.75	0.6	0.75
Manganese	0.005	0.017	0.005	<0.004	<0.004
Mercury	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Molybdenum	NM	NM	NM	NM	NM
Nickel	<0.01	<0.01	<0.01	<0.01	<0.01
Potassium	3.99	3.24	1.57	1.08	1.03
Selenium	<0.04	<0.04	<0.04	<0.04	<0.04
Silver	<0.005	<0.005	<0.005	<0.005	<0.005
Sodium	15.6	10.3	2.7	6.32	7.58
Sulfate	74.3	50.5	14.4	13.7	15.3
Thallium	<0.002	<0.002	<0.002	<0.001	<0.001
TDS	162	137	83	99	112
Uranium	NM	NM	NM	NM	NM
Zinc	0.0162	<0.01	<0.01	<0.01	<0.01

NM = Not measured.

Table 5. Summary of Humidity Cell Metal Concentrations for the July 2008 Tailings Sample.

Parameter	Humidity Cell Effluent Metal Concentration (mg/L)					
	July 2008					
Sample Date						
Weeks	0	1-4	4-8	9-12	13-16	17-20
Aluminum	<0.08	<0.080	<0.080	<0.080	<0.080	<0.080
Antimony	0.009	0.00573	0.00654	0.00469	0.00328	0.00354
Arsenic	0.017	0.00619	0.00871	0.0102	0.0110	0.00937
Barium	0.017	0.0182	0.0447	0.0758	0.0509	0.0510
Beryllium	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Cadmium	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Calcium	335	46.1	13.5	16.8	13.5	13.5
Chloride	15.2	0.255	0.275	0.250	<0.2	<0.2
Chromium	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006
Copper	0.012	<0.01	<0.01	<0.01	<0.01	<0.01
Fluoride	1.68	2.44	2.22	1.81	2.19	2.05
Iron	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06
Lead	<0.0075	<0.0075	<0.0075	<0.0075	<0.0075	<0.0075
Magnesium	6.92	1.09	0.475	0.744	0.558	0.546
Manganese	0.045	0.0089	<0.0040	0.0074	0.0057	0.0069
Mercury	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Molybdenum	0.832	0.369	0.241	0.111	0.0965	0.0867
Potassium	25.4	6.60	3.08	2.26	1.34	1.18
Selenium	0.151	<0.04	<0.04	<0.04	<0.04	<0.04
Silver	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Sodium	106	5.20	0.58	<0.50	<0.50	<0.50
Sulfate	1060	114	12.3	6.88	7.32	6.99
Thallium	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
TDS	1,700	230	56	110	96	121
Uranium	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Zinc	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

Whole Rock Analysis

Whole rock analysis determines the total concentration of selected chemical constituents in a sample and has been performed on every tailings sample to date (Table 6). There are variations in the composition of each sample tested. However, such total analyses do not bear directly on potential impacts to water resources, but serve to identify potential constituents of concern in the tailings. Metals such as arsenic, cadmium, copper, lead, manganese, and zinc were detected in the tailings during whole rock analysis (Table 6) and therefore the leaching characteristics of these metals were further evaluated using the SPLP and MWMP.

Synthetic Precipitation Leaching Procedure (SPLP)

The SPLP is designed to determine the potential for release of chemical constituents from a solid that is exposed to meteoric precipitation (rain or snow melt). There are no specific regulatory criteria that dictate interpretation of SPLP results, but the results may be used as input to models that predict potential impacts to either ground or surface water resources. The tailings samples tested for SPLP to date show very limited release of any chemical parameter, including metals (Table 6). This is expected due to the non-acidic nature of the tailings and the near-neutral pH conditions that are associated with its leaching. Most metals have limited solubility at neutral pH, although some chemical constituents, such as arsenic and selenium, can be mobile under such pH conditions. However, the majority of the metal concentrations in the tailings SPLP extractions (Table 6) were either below detection or low compared to AWQS values.

Meteoric Water Mobility Procedure (MWMP)

The MWMP is a short-term leaching test with similar objectives to the SPLP. The MWMP is tailored more for “run of mine” materials without crushing, whereas the SPLP was developed more for soil materials with smaller grain size. This grain size issue is more germane to waste rock than to the tailings results reported here. However, the MWMP is a suitable and largely accepted test of mine materials.

Consistent with the SPLP results, MWMP results indicate a very limited release of metals. There are a few differences in the extractable concentrations which are largely related to the water:rock ratio employed by the test. For example, the sulfate concentration for the June 2007 MWMP was 285 mg/L compared to only 20 mg/L in the SPLP test of the same sample (Table 6). The MWMP is performed using a water to rock ratio of 1:1 while the SPLP ratio is 20:1, and therefore constituent concentrations are generally higher in the MWMP compared to the SPLP. On a mass basis, however, the MWMP yields a value of 285 mg sulfate/kg of rock, while the SPLP yields a value of 400 mg/kg. Thus, both the MWMP and SPLP provide information which can be used to better understand the potential for release of various constituents from geologic materials. It should be noted that the SPLP leaching solution uses sulfuric acid, which adds a very small amount of sulfate, perhaps on the order of 1 to 3 mg/L in the leachate. Thus, the 400 mg sulfate/kg solid value calculated above is biased a bit high. The result is that the leachable sulfate values for SPLP and MWMP are actually a bit closer. The value of 400 mg/kg may be more on the order of 340 mg/kg compared to the value of 285 mg/kg from MWMP. The recasting of extraction solutions concentration in the MWMP and SPLP to a mass of solid basis is shown here only to illustrate the effect of the different water:rock ratios in each test. Although they provide a gauge of a similar property, the SPLP and MWMP tests are inherently different and should not be expected to produce identical results.

Summary of Tailings Geochemical Testing

Geochemical characterization of four (4) Rosemont tailings samples (predominantly Horquilla) indicates that the tailings generally contain less than 0.01% sulfide-sulfur, can be classified as inert with respect to acid generation, and possess a high capacity for acid neutralization. Humidity cells were used to accelerate the weathering and release of various constituents from the tailings, but the results provided no indication for the onset of acid generation or leaching of significant metals concentrations for tests lasting 20 weeks. The tailings were also subjected to short-term leaching tests (SPLP and MWMP) which produced only very low metal concentrations in the resulting leachates.

References

Arizona Department of Environmental Quality (ADEQ). 1999. Draft Policy for the Evaluation of Mining Rock Materials for the Determination of Inertness.

Table 6. Summary of Geochemical Data for Rosemont Tailings Testing

Parameter	May 2006		February 2007		June 2007			July 2008		
	Whole Rock (mg/kg)	SPLP (mg/L)	Whole Rock (mg/kg)	SPLP (mg/L)	Whole Rock (mg/kg)	SPLP (mg/L)	MWMP (mg/L)	Whole Rock (mg/kg)	SPLP (mg/L)	MWMP (mg/L)
pH	NA	NM	NA	NM	NA	NM	7.43	NA	9.5	8.5
Alkalinity	NA	NM	NA	NM	NA	NM	NM	NA	8.3	11.5
Aluminum	12,000	NM	3,910	<0.08	6,210	<0.08	<0.08	5,870	<0.08	<0.08
Antimony	<10	NM	2	<0.02	2.2	<0.02	<0.02	<2.0	<0.02	<0.02
Arsenic	5.5	<1.0	8.6	<0.003	8.2	<0.003	<0.003	22	<0.02	<0.003
Barium	20	<10	7.7	<0.002	12.2	0.0032	0.0172	25.6	0.02	0.0229
Beryllium	NM	NM	0.36	NM	0.58	<0.002	<0.002	0.537	<0.002	<0.002
Cadmium	0.9	<0.50	1.51	<0.002	0.97	<0.002	<0.002	1.10	<0.002	<0.002
Calcium	150,000	NM	125,000	8.78	146,000	13.1	103	126,000	15.6	150
Chloride	40	NM	11.3	0.36	46	0.43	5.69	10.3	0.55	5.18
Chromium	14	<1.0	10.4	<0.006	21	<0.006	<0.006	17.7	<0.006	<0.006
Copper	NM	NM	2,070	<0.010	1,100	<0.010	<0.01	1,120	<0.01	<0.01
Fluoride	NM	NM	8.72	1.25	NM	1.29	1.02	2.35	0.85	1.11
Iron	18,000	NM	15,300	<0.06	23,600	<0.06	<0.06	21,700	<0.06	<0.06
Lead	7	<1.0	10.4	<0.0075	13.6	<0.0075	<0.0075	20	<0.0075	<0.008
Magnesium	8,400	NM	4,960	0.23	5,410	0.172	0.65	8,300	0.2	1.91
Manganese	2,100	NM	1,520	<0.004	2,000	<0.0040	0.0186	1,670	<0.004	0.0172
Mercury	<0.100	<0.01	0.038	<0.0002	0.042	<0.0002	0.00033	1.77	0.0007	<0.0002
Molybdenum	NM	NM	90	NM	46	0.075	0.46	13.8	0.06	0.463
Nickel	NM	NM	8.8	<1	5.5	<0.01	<0.01	11.2	<0.01	<0.01
NO ₂ +NO ₃ -N	NM	NM	NM	0.04	NM	NM	0.021	NM	NM	NM
Potassium	1,000	NM	786	0.62	977	0.86	8.33	1,040	1.24	11.3
Selenium	<5	<0.5	<4	<0.4	<4	<0.04	<0.04	<4	<0.04	<0.04
Silver	0.8	<2.0	2.41	<0.005	0.87	<0.0050	<0.005	1.15	<0.005	<0.005
Sodium	<250	NM	117	2.57	154	2.22	27.6	225	4.1	37.1
Sulfate	320	NM	123	6.95	311	20	285	632	35	441
TDS	NA	NM	NA	13	NA	66	505	NA	NM	NM
Thallium	NM	NM	1.5	NM	2	<0.015	<0.015	<1.5	<0.02	<0.015
Uranium	NM	NM	NM	NM	NM	NM	NM	2.89	<0.002	<0.001
Zinc	85	NM	271	<0.01	118	<0.01	<0.01	108	<0.01	<0.01

NA = Not applicable. NM = Not measured.

ATTACHMENT 2
2006-2008 TAILINGS MATERIAL SAMPLE
METALLURGICAL DATABASE CODES

Attachment 2
Tailings Material Samples Metallurgical Database Codes
Rosemont Copper Project
August 2010

Work Date	Type Of Sample	Sample Processor/ Laboratory	Material Type	Lithology Type	Composite Name	Data File Code	Comments
2006	Initial Metallurgical Testwork	Washington Group	Core	Horquilla	NA	999	Source of May 2006 and February/ June 2007 initial tailings samples
2007	Scoping Flotation - 50 Composite Variability	Mountain States	Coarse Rejects Primarily/ Minor Core	Various	NA	50	
2007	Definitive Flotation	Mountain States	Coarse Rejects	Horquilla (5)	Composite 1	1	Source of tailings samples analyzed in July 2010
2007	Definitive Flotation	Mountain States	Coarse Rejects	Colina (3)	Composite 2	2	
2007	Definitive Flotation	Mountain States	Coarse Rejects	Earp (4)	Composite 3	3	
2007	Definitive Flotation	Mountain States	Coarse Rejects	Epitaph (2)	Composite 4	4	
2007	Definitive Flotation	Mountain States	Coarse Rejects	Escabrosa (6)	Composite 5	5	
2007	Definitive Flotation	Mountain States	Coarse Rejects	Horquilla (5)	Composite 1A	10	
2007	Comminution - work indexes	Hazen	Core	Various	by dh & depth	not coded	
2008	Mixed Oxide- Sulfide - Leaching Testwork	Mountain States	Coarse Rejects	Horquilla (5)	Comp. 1	31	

Attachment 2
 Tailings Material Samples Metallurgical Database Codes
 Rosemont Copper Project
 August 2010

Work Date	Type Of Sample	Sample Processor/ Laboratory	Material Type	Lithology Type	Composite Name	Data File Code	Comments
2008	Definitive Flotation- EOY03	Mountain States	Coarse Rejects	Horquilla (5)	Composite EOY03 - 1	701	Source of tailings samples used for weight proportioned 4-7 year composite
2008	Definitive Flotation- EOY03	Mountain States	Coarse Rejects	Earp (4)	Composite EOY03 - 2	702	
2008	Definitive Flotation- EOY03	Mountain States	Coarse Rejects	Colina (3)	Composite EOY03 - 3	703	
2008	Definitive Flotation- EOY03	Mountain States	Coarse Rejects	Epitaph (2)	Composite EOY03 - 4	704	
2008	Mixed Oxide- Sulfide - Flotation Testwork	Mountain States	Core	Horquilla (5)	Composite 1	95	

ATTACHMENT 3
2006-2007 TAILINGS MATERIAL SAMPLE CORES

Attachment 3
 2006-2007 Tailings Material Samples Source Cores
 Rosemont Copper Project
 August 2010

Rock Type	Borehole	Sample ID	Code	Interval		ABA/NAG	Whole Rock	SPLP	MWMP
				Depth from	Depth to				
Horquilla	AR-2018	NA	999	313	565	X	X	X	X
	AR-2018	NA	999	565	621	X	X	X	X
	AR-2018	NA	999	621	727	X	X	X	X

ATTACHMENT 4
2008 TAILINGS 0-3 YEAR COMPOSITE MATERIAL
SAMPLE CORES

Attachment 4
 0-3 year Composite Tailings Sample Source Cores
 Rosemont Copper Project
 August 2010

Rock Type	Borehole	Sample ID	Code	Interval		ABA/NAG	Whole Rock	SPLP	MWMP
				Depth from	Depth to				
0-3 Year Composite (72.9% Horquilla)	A-844	234115	301	335	340	X	X	X	X
	A-844	234116	301	340	345	X	X	X	X
	A-844	234117	301	345	349	X	X	X	X
	A-844	234118	301	349	354	X	X	X	X
	A-844	234119	301	354	357	X	X	X	X
	A-844	234120	301	357	363	X	X	X	X
	A-844	234121	301	363	367	X	X	X	X
	A-844	234122	301	367	369	X	X	X	X
	A-844	234123	301	369	370	X	X	X	X
	A-844	234124	301	370	374	X	X	X	X
	A-844	234125	301	374	379	X	X	X	X
	A-846	275331	301	537	542	X	X	X	X
	A-846	275332	301	542	544	X	X	X	X
	A-846	275333	301	544	551	X	X	X	X
	A-846	275334	301	551	558	X	X	X	X
	A-846	275335	301	558	561	X	X	X	X
	A-846	275336	301	561	565	X	X	X	X
	A-846	275338	301	565	570	X	X	X	X
	A-846	275339	301	570	573	X	X	X	X
	A-846	275340	301	573	577	X	X	X	X
	A-846	275341	301	577	582	X	X	X	X
	A-853	322063	301	170	175	X	X	X	X
	A-853	322065	301	181	187	X	X	X	X
	A-853	322066	301	187	191	X	X	X	X
	A-853	322067	301	191	195	X	X	X	X
	A-853	322068	301	195	200	X	X	X	X
	A-853	322069	301	200	205	X	X	X	X
	A-853	322070	301	205	210	X	X	X	X
	A-853	322071	301	210	215	X	X	X	X
	A-853	322072	301	215	220	X	X	X	X
	A-856	322032	301	497	502	X	X	X	X
	A-856	322033	301	502	506	X	X	X	X
	A-856	322034	301	506	512	X	X	X	X

Attachment 4
 0-3 year Composite Tailings Sample Source Cores
 Rosemont Copper Project
 August 2010

Rock Type	Borehole	Sample ID	Code	Interval		ABA/NAG	Whole Rock	SPLP	MWMP
				Depth from	Depth to				
0-3 Year Composite (72.9% Horquilla)	A-856	322035	301	512	516	X	X	X	X
	A-856	322036	301	516	519	X	X	X	X
	A-856	322037	301	519	523	X	X	X	X
	A-856	322038	301	523	525	X	X	X	X
	A-856	322039	301	525	527	X	X	X	X
	A-856	322040	301	527	532	X	X	X	X
	A-856	322041	301	532	537	X	X	X	X
	A-866	276456	301	452	457	X	X	X	X
	A-866	276457	301	457	462	X	X	X	X
	A-866	276458	301	462	467	X	X	X	X
	A-866	276459	301	467	472	X	X	X	X
	A-866	276460	301	472	477	X	X	X	X
	A-866	276461	301	477	482	X	X	X	X
	A-866	276462	301	482	487	X	X	X	X
	A-866	276463	301	487	492	X	X	X	X
	A-869	274528	301	594	599	X	X	X	X
	A-869	274529	301	599	604	X	X	X	X
	A-869	274530	301	604	609	X	X	X	X
	A-869	274531	301	609	614	X	X	X	X
	A-869	274532	301	614	619	X	X	X	X
	A-869	274533	301	619	624	X	X	X	X
	A-869	274534	301	624	629	X	X	X	X
	A-869	274535	301	629	634	X	X	X	X
	A-869	274536	301	634	637	X	X	X	X
	A-869	274537	301	637	640	X	X	X	X
	A-873	240917	301	719	724	X	X	X	X
	A-873	240918	301	724	729	X	X	X	X
	A-873	240919	301	729	734	X	X	X	X
	A-873	240920	301	734	739	X	X	X	X
	A-873	240921	301	739	744	X	X	X	X
A-873	240922	301	744	749	X	X	X	X	
A-873	240922	301	749	750	X	X	X	X	
A-873	240923	301	750	754	X	X	X	X	

Attachment 4
 0-3 year Composite Tailings Sample Source Cores
 Rosemont Copper Project
 August 2010

Rock Type	Borehole	Sample ID	Code	Interval		ABA/NAG	Whole Rock	SPLP	MWMP
				Depth from	Depth to				
0-3 Year Composite (72.9% Horquilla)	A-873	240924	301	754	758	X	X	X	X
	A-873	240925	301	758	764	X	X	X	X
	A-873	240926	301	764	767	X	X	X	X
	A-875	314550	301	314	316	X	X	X	X
	A-875	314551	301	316	320	X	X	X	X
	A-875	314552	301	320	326	X	X	X	X
	A-875	314553	301	326	330	X	X	X	X
	A-875	314554	301	330	336	X	X	X	X
	A-875	314555	301	336	341	X	X	X	X
	A-875	314556	301	341	346	X	X	X	X
	1485	170141	301	638	643	X	X	X	X
	1485	170142	301	643	647	X	X	X	X
	1485	170143	301	647	652	X	X	X	X
	1485	170145	301	657	661	X	X	X	X
	1485	170146	301	661	666	X	X	X	X
	1485	170147	301	666	671	X	X	X	X
	1502	326792	301	633	638	X	X	X	X
	1502	326793	301	638	643	X	X	X	X
	1502	326794	301	643	648	X	X	X	X
	1502	326795	301	648	653	X	X	X	X
	1502	326796	301	653	656	X	X	X	X
	1502	326798	301	656	658	X	X	X	X
	1502	326799	301	658	663	X	X	X	X
	1502	326800	301	663	668	X	X	X	X
	AR-2004	176447	301	600	605	X	X	X	X
	AR-2004	176448	301	605	610	X	X	X	X
	AR-2004	176449	301	610	615	X	X	X	X
	AR-2004	176450	301	615	620	X	X	X	X
	AR-2004	176451	301	620	625	X	X	X	X
	AR-2004	176452	301	625	630	X	X	X	X
	AR-2004	176454	301	635	640	X	X	X	X
	AR-2004	176455	301	640	645	X	X	X	X
	AR-2004	176456	301	645	650	X	X	X	X

0-3 year Composite Tailings Sample Source Cores
Rosemont Copper Project
August 2010

Rock Type	Borehole	Sample ID	Code	Interval		ABA/NAG	Whole Rock	SPLP	MWMP
				Depth from	Depth to				
0-3 Year Composite (21.3% Earp)	A-834	170682	302	535	540	X	X	X	X
	A-834	170683	302	540	546	X	X	X	X
	A-834	170684	302	546	553	X	X	X	X
	A-836	232782	302	579	582	X	X	X	X
	A-836	232783	302	582	584	X	X	X	X
	A-836	232790	302	605.5	610.5	X	X	X	X
	A-836	232791	302	610.5	615.5	X	X	X	X
	A-836	232792	302	615.5	620.5	X	X	X	X
	1504	275429	302	800	804	X	X	X	X
	1504	275430	302	804	809	X	X	X	X
	1504	275431	302	809	814	X	X	X	X
	1504	275432	302	814	819	X	X	X	X
	1504	275433	302	819	824	X	X	X	X
	1916	276649	302	482	488	X	X	X	X
	1916	276652	302	495	500	X	X	X	X
	1916	276673	302	587	590	X	X	X	X
	1916	276679	302	610	613	X	X	X	X
	1916	276682	302	623	628	X	X	X	X
	1941	237776	302	729	734	X	X	X	X
	1941	237777	302	734	737	X	X	X	X
	1941	237778	302	737	744	X	X	X	X
	1941	237779	302	744	749	X	X	X	X
	1941	237780	302	749	753	X	X	X	X
	AR-2000	174746	302	593	595	X	X	X	X
	AR-2000	174747	302	595	600	X	X	X	X
	AR-2000	174749	302	600	605	X	X	X	X
	AR-2000	174751	302	610	615	X	X	X	X
	AR-2029	243177	302	585	590	X	X	X	X
	AR-2029	243178	302	590	595	X	X	X	X
	AR-2029	243182	302	610	615	X	X	X	X
AR-2029	243183	302	615	620	X	X	X	X	
0-3 Year Composite (5.8% Escabrosa)	1506	228926	303	550	556	X	X	X	X

0-3 year Composite Tailings Sample Source Cores
 Rosemont Copper Project
 August 2010

Rock Type	Borehole	Sample ID	Code	Interval		ABA/NAG	Whole Rock	SPLP	MWMP
				Depth from	Depth to				
0-3 Year Composite (5.8% Escabrosa)	1506	228930	303	570	574	X	X	X	X
	1506	228932	303	577	583	X	X	X	X
	1580	241491	303	638	644	X	X	X	X
	1580	241495	303	660	665	X	X	X	X
	1580	241496	303	665	670	X	X	X	X
	1580	241507	303	736	741	X	X	X	X
	1580	241508	303	741	746	X	X	X	X
	1580	241513	303	766	770	X	X	X	X

ATTACHMENT B
TAILINGS MATERIAL SAMPLE METALLURGICAL
DATABASE CODES

Attachment B
Tailings Material Samples Metallurgical Database Codes
Rosemont Copper Project
August 2010

Work Date	Type Of Sample	Sample Processor/ Laboratory	Material Type	Lithology Type	Composite Name	Data File Code	Comments
2006	Initial Metallurgical Testwork	Washington Group	Core	Horquilla	NA	999	Source of May 2006 and February/ June 2007 initial tailings samples
2007	Scoping Flotation - 50 Composite Variability	Mountain States	Coarse Rejects Primarily/ Minor Core	Various	NA	50	
2007	Definitive Flotation	Mountain States	Coarse Rejects	Horquilla (5)	Composite 1	1	Source of tailings samples analyzed in July 2010
2007	Definitive Flotation	Mountain States	Coarse Rejects	Colina (3)	Composite 2	2	
2007	Definitive Flotation	Mountain States	Coarse Rejects	Earp (4)	Composite 3	3	
2007	Definitive Flotation	Mountain States	Coarse Rejects	Epitaph (2)	Composite 4	4	
2007	Definitive Flotation	Mountain States	Coarse Rejects	Escabrosa (6)	Composite 5	5	
2007	Definitive Flotation	Mountain States	Coarse Rejects	Horquilla (5)	Composite 1A	10	
2007	Comminution - work indexes	Hazen	Core	Various	by dh & depth	not coded	
2008	Mixed Oxide- Sulfide - Leaching Testwork	Mountain States	Coarse Rejects	Horquilla (5)	Comp. 1	31	
2008	Mixed Oxide- Sulfide - Leaching Testwork	Mountain States	Coarse Rejects	Earp (4)	Comp. 2	32	

Attachment B
 Tailings Material Samples Metallurgical Database Codes
 Rosemont Copper Project
 August 2010

Work Date	Type Of Sample	Sample Processor/ Laboratory	Material Type	Lithology Type	Composite Name	Data File Code	Comments
2008	Mixed Oxide- Sulfide - Leaching Testwork	Mountain States	Coarse Rejects	Andesite (9)	Comp. 3	33	
2008	Mixed Oxide- Sulfide - Leaching Testwork	Mountain States	Coarse Rejects	Horquilla (5)	Comp. 5	35	
2008	Mixed Oxide- Sulfide - Leaching Testwork	Mountain States	Coarse Rejects	Horquilla (5)	Comp. 6	36	
2008	Mixed Oxide- Sulfide - Leaching Testwork	Mountain States	Coarse Rejects	Horquilla (5)	Comp. 7	37	
2008	Definitive Flotation- EOY03	Mountain States	Coarse Rejects	Horquilla (5)	Composite EOY03 - 1	301	Source of tailings samples used for weight proportioned 0- 3 year composite
2008	Definitive Flotation- EOY03	Mountain States	Coarse Rejects	Earp (4)	Composite EOY03 - 2	302	
2008	Definitive Flotation- EOY03	Mountain States	Coarse Rejects	Escabrosa (6)	Composite EOY03 - 3	303	
2008	Definitive Flotation- EOY03	Mountain States	Coarse Rejects	Horquilla (5)	Composite EOY03 - 1	701	Source of tailings samples used for weight proportioned 4-7 year composite
2008	Definitive Flotation- EOY03	Mountain States	Coarse Rejects	Earp (4)	Composite EOY03 - 2	702	
2008	Definitive Flotation- EOY03	Mountain States	Coarse Rejects	Colina (3)	Composite EOY03 - 3	703	
2008	Definitive Flotation- EOY03	Mountain States	Coarse Rejects	Epitaph (2)	Composite EOY03 - 4	704	
2008	Mixed Oxide- Sulfide - Flotation Testwork	Mountain States	Core	Horquilla (5)	Composite 1	95	

ATTACHMENT C
2010 TAILINGS MATERIAL SAMPLE CORES

Attachment C
Tailings Material Sample Cores
Rosemont Copper Project
August 2010

Rock Type	Borehole	Sample ID	Code	Interval		ABA/NAG	Whole Rock	SPLP	MWMP
				Depth from	Depth to				
Horquilla	A-804	278168	1	1102	1107	X	X	X	X
	A-804	278173	1	1121	1122.5	X	X	X	X
	A-804	278173	1	1122.5	1124	X	X	X	X
	A-804	278193	1	1203	1208	X	X	X	X
	A-812	234319	1	443	447	X	X	X	X
	A-812	234341	1	527	529	X	X	X	X
	A-812	234431	1	816	819	X	X	X	X
	A-827	262352	1	1225	1230	X	X	X	X
	A-827	262393	1	1326	1331	X	X	X	X
	A-827	262436	1	1451	1456	X	X	X	X
	A-827	262437	1	1456	1461	X	X	X	X
	A-827	262439	1	1465	1470	X	X	X	X
	A-827	262445	1	1511	1516	X	X	X	X
	A-833	274762	1	1074	1079	X	X	X	X
	A-833	274763	1	1079	1084	X	X	X	X
	A-833	274813	1	1253	1258	X	X	X	X
	A-833	274838	1	1360	1365	X	X	X	X
	A-833	274847	1	1401	1406	X	X	X	X
	A-845	242485	1	736	741	X	X	X	X
	A-845	242952	1	1504	1509	X	X	X	X
	A-867	237014	1	377	382	X	X	X	X
	A-867	237016	1	387	392	X	X	X	X
	A-867	237018	1	397	402	X	X	X	X
	A-867	237040	1	487	492	X	X	X	X
	A-867	237043	1	505	510	X	X	X	X
	A-867	237045	1	515	520	X	X	X	X
	A-867	237046	1	520	525	X	X	X	X
	A-867	237063	1	596	601	X	X	X	X
	A-867	237064	1	601	606	X	X	X	X
	A-867	237068	1	613	618	X	X	X	X
	A-867	237070	1	622	627	X	X	X	X
	A-867	237071	1	627	632	X	X	X	X
A-867	237072	1	632	637	X	X	X	X	
A-867	237074	1	639	644	X	X	X	X	

Attachment C
Tailings Material Sample Cores
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Rock Type	Borehole	Sample ID	Code	Interval		ABA/NAG	Whole Rock	SPLP	MWMP
				Depth from	Depth to				
Horquilla	A-867	237075	1	644	649	X	X	X	X
	A-867	237091	1	715	720	X	X	X	X
	A-878	264079	1	695	700	X	X	X	X
	A-878	264082	1	709	714	X	X	X	X
	A-878	264122	1	875	880	X	X	X	X
	A-878	264125	1	889	894	X	X	X	X
	A-878	264134	1	924	929	X	X	X	X
	A-878	264140	1	951	956	X	X	X	X
	1504	275478	1	1012	1017	X	X	X	X
	1504	275488	1	1055	1060	X	X	X	X
	1504	275500	1	1102	1107	X	X	X	X
	1504	275501	1	1107	1112	X	X	X	X
	1504	275513	1	1150	1155	X	X	X	X
	1504	275514	1	1155	1160	X	X	X	X
	1504	275520	1	1180	1185	X	X	X	X
	1504	275526	1	1210	1215	X	X	X	X
	1504	275529	1	1220	1225	X	X	X	X
	1504	275532	1	1235	1240	X	X	X	X
	1504	275533	1	1240	1245	X	X	X	X
	1504	275534	1	1245	1250	X	X	X	X
	1504	275539	1	1265	1270	X	X	X	X
	1507	241313	1	724	729	X	X	X	X
	1528	240659	1	1194	1200	X	X	X	X
	1552	235787	1	2387	2393	X	X	X	X
	1916	276766	1	937	942	X	X	X	X
	1921	263818	1	730	735	X	X	X	X
	1941	239503	1	1471	1476	X	X	X	X
	1941	239555	1	1708	1713	X	X	X	X
	AR-2006	175916	1	1095	1100	X	X	X	X
	AR-2006	175917	1	1100	1105	X	X	X	X
	AR-2006	175937	1	1200	1205	X	X	X	X
	AR-2006	175943	1	1225	1235	X	X	X	X
	AR-2007	176860	1	738	743	X	X	X	X
AR-2007	176927	1	1041	1046	X	X	X	X	

Attachment C
Tailings Material Sample Cores
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Rock Type	Borehole	Sample ID	Code	Interval		ABA/NAG	Whole Rock	SPLP	MWMP
				Depth from	Depth to				
Horquilla	AR-2015	216005	1	1880	1885	X	X	X	X
	AR-2026	244776	1	1045	1050	X	X	X	X
	AR-2026	244778	1	1055	1060	X	X	X	X
	AR-2026	244784	1	1085	1090	X	X	X	X
	AR-2026	244787	1	1095	1100	X	X	X	X
	AR-2026	244799	1	1150	1155	X	X	X	X
	AR-2026	244801	1	1160	1165	X	X	X	X
	AR-2026	244803	1	1170	1175	X	X	X	X
	AR-2026	244809	1	1195	1200	X	X	X	X
	AR-2026	244812	1	1210	1215	X	X	X	X
	AR-2026	244824	1	1270	1275	X	X	X	X
	AR-2026	244826	1	1275	1280	X	X	X	X
	AR-2026	244857	1	1420	1425	X	X	X	X
	AR-2026	244858	1	1425	1430	X	X	X	X
	AR-2029	243296	1	1135	1140	X	X	X	X
	AR-2030	244268	1	1005	1010	X	X	X	X
	AR-2030	244287	1	1095	1100	X	X	X	X
	AR-2030	244292	1	1115	1120	X	X	X	X
	AR-2030	244297	1	1140	1145	X	X	X	X
	AR-2030	244319	1	1245	1250	X	X	X	X
	AR-2030	244340	1	1340	1345	X	X	X	X
	AR-2030	244342	1	1350	1355	X	X	X	X
	AR-2030	244343	1	1355	1360	X	X	X	X
	AR-2030	244344	1	1360	1365	X	X	X	X
	AR-2031	236702	1	1175	1180	X	X	X	X
	AR-2031	236749	1	1390	1395	X	X	X	X
	AR-2031	236755	1	1420	1425	X	X	X	X
	AR-2031	236757	1	1430	1435	X	X	X	X
	AR-2031	236759	1	1440	1445	X	X	X	X
	AR-2031	236760	1	1445	1450	X	X	X	X
	AR-2031	236764	1	1465	1470	X	X	X	X
	AR-2031	236817	1	1705	1710	X	X	X	X
	AR-2031	236822	1	1730	1735	X	X	X	X
AR-2034	261012	1	1440	1445	X	X	X	X	

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Rock Type	Borehole	Sample ID	Code	Interval		ABA/NAG	Whole Rock	SPLP	MWMP
				Depth from	Depth to				
Horquilla	AR-2034	261030	1	1520	1525	X	X	X	X
	AR-2034	261032	1	1530	1535	X	X	X	X
	AR-2034	261048	1	1605	1610	X	X	X	X
	AR-2034	261051	1	1620	1625	X	X	X	X
	AR-2034	261078	1	1740	1745	X	X	X	X
	AR-2034	261084	1	1770	1775	X	X	X	X
	AR-2034	261088	1	1790	1795	X	X	X	X
	AR-2034	261108	1	1880	1885	X	X	X	X
	AR-2034	261109	1	1885	1890	X	X	X	X
	AR-2034	261125	1	1960	1965	X	X	X	X
	AR-2034	261134	1	2005	2010	X	X	X	X
	AR-2034	261142	1	2035	2040	X	X	X	X
	AR-2037	277819	1	1745	1750	X	X	X	X
	AR-2038	278840	1	1605	1610	X	X	X	X
	AR-2038	278841	1	1610	1615	X	X	X	X
	AR-2038	278842	1	1615	1620	X	X	X	X
	AR-2038	278849	1	1650	1655	X	X	X	X
	AR-2038	278861	1	1700	1705	X	X	X	X
	AR-2038	278862	1	1705	1710	X	X	X	X
	AR-2038	278866	1	1725	1730	X	X	X	X
	AR-2038	278878	1	1780	1785	X	X	X	X
	AR-2038	278879	1	1785	1790	X	X	X	X
	AR-2039	260080	1	1755	1760	X	X	X	X
	AR-2040	278914	1	2140	2145	X	X	X	X
	AR-2042	285137	1	640	645	X	X	X	X
	AR-2042	285143	1	670	675	X	X	X	X
	AR-2042	285160	1	745	750	X	X	X	X
	AR-2042	285161	1	750	755	X	X	X	X
	AR-2042	285162	1	755	760	X	X	X	X
	AR-2042	285163	1	760	765	X	X	X	X
	AR-2042	285174	1	810	815	X	X	X	X
	AR-2042	285175	1	815	820	X	X	X	X
	AR-2042	285176	1	820	825	X	X	X	X
	AR-2042	285177	1	825	830	X	X	X	X

Attachment C
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Rock Type	Borehole	Sample ID	Code	Interval		ABA/NAG	Whole Rock	SPLP	MWMP
				Depth from	Depth to				
Horquilla	AR-2042	285178	1	830	835	X	X	X	X
	AR-2042	285182	1	850	855	X	X	X	X
	AR-2042	285184	1	860	865	X	X	X	X
	AR-2042	285185	1	865	870	X	X	X	X
	AR-2042	285186	1	870	875	X	X	X	X
	AR-2042	285187	1	875	880	X	X	X	X
	AR-2042	285189	1	885	890	X	X	X	X
	AR-2042	285190	1	890	895	X	X	X	X
	AR-2042	285192	1	895	900	X	X	X	X
	AR-2042	285193	1	900	905	X	X	X	X
	AR-2042	285195	1	910	915	X	X	X	X
	AR-2042	285197	1	915	920	X	X	X	X
	AR-2042	285198	1	920	925	X	X	X	X
	AR-2042	285199	1	925	930	X	X	X	X
	AR-2042	285223	1	1040	1045	X	X	X	X
Colina	A-815	232250	2	1144	1149	X	X	X	X
	A-815	232251	2	1149	1154	X	X	X	X
	A-815	232265	2	1196	1201	X	X	X	X
	A-815	232269	2	1211	1216	X	X	X	X
	A-815	232297	2	1306	1311	X	X	X	X
	A-815	232298	2	1311	1316	X	X	X	X
	A-815	232301	2	1324	1329	X	X	X	X
	A-815	232307	2	1346	1351	X	X	X	X
	A-815	232308	2	1351	1356	X	X	X	X
	A-823	233108	2	918	923	X	X	X	X
	A-823	233116	2	951.5	956.5	X	X	X	X
	A-823	233117	2	956.5	961.5	X	X	X	X
	A-823	233126	2	979	984	X	X	X	X
	A-823	233127	2	984	989	X	X	X	X
	A-823	233131	2	999	1004	X	X	X	X
	A-823	233139	2	1021	1026	X	X	X	X
	A-823	233141	2	1031	1036	X	X	X	X
	A-823	233156	2	1075	1080	X	X	X	X
	A-823	233165	2	1103	1108	X	X	X	X

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Rock Type	Borehole	Sample ID	Code	Interval		ABA/NAG	Whole Rock	SPLP	MWMP
				Depth from	Depth to				
Colina	A-823	233166	2	1108	1113	X	X	X	X
	A-829	264301	2	1284	1289	X	X	X	X
	A-829	264308	2	1306	1311	X	X	X	X
	A-829	264311	2	1322	1327	X	X	X	X
	A-829	264321	2	1353	1358	X	X	X	X
	A-829	263957	2	1606	1611	X	X	X	X
	A-829	263959	2	1616	1621	X	X	X	X
	A-829	263960	2	1621	1626	X	X	X	X
	A-840	288317	2	1366	1371	X	X	X	X
	A-840	288322	2	1384	1389	X	X	X	X
	A-840	288348	2	1488	1493	X	X	X	X
	A-840	288359	2	1532	1537	X	X	X	X
	A-840	288365	2	1572	1577	X	X	X	X
	A-840	288367	2	1582	1587	X	X	X	X
	A-840	288368	2	1587	1592	X	X	X	X
	A-840	288369	2	1592	1597	X	X	X	X
	A-840	288370	2	1597	1602	X	X	X	X
	A-840	288371	2	1602	1607	X	X	X	X
	A-850	232501	2	1456	1461	X	X	X	X
	A-850	232502	2	1461	1466	X	X	X	X
	A-850	232503	2	1466	1471	X	X	X	X
	A-850	232504	2	1471	1476	X	X	X	X
	A-850	232507	2	1484	1489	X	X	X	X
	A-850	232511	2	1499	1504	X	X	X	X
	A-850	232512	2	1504	1509	X	X	X	X
	A-850	232513	2	1509	1514	X	X	X	X
	A-850	232514	2	1514	1519	X	X	X	X
	A-850	232515	2	1519	1524	X	X	X	X
	A-850	232518	2	1532	1537	X	X	X	X
	A-850	232522	2	1547	1552	X	X	X	X
	A-850	232524	2	1557	1562	X	X	X	X
	A-855	193768	2	1583	1588	X	X	X	X
	A-865	242592	2	1167	1172	X	X	X	X
A-865	242595	2	1177	1182	X	X	X	X	

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Rock Type	Borehole	Sample ID	Code	Interval		ABA/NAG	Whole Rock	SPLP	MWMP
				Depth from	Depth to				
Colina	A-865	242598	2	1193	1198	X	X	X	X
	A-865	242600	2	1203	1208	X	X	X	X
	A-865	242613	2	1291	1296	X	X	X	X
	A-865	242624	2	1335	1340	X	X	X	X
	A-865	242626	2	1343	1348	X	X	X	X
	A-865	242628	2	1352	1357	X	X	X	X
	1535	285650	2	1360	1365	X	X	X	X
	1535	285651	2	1365	1370	X	X	X	X
	1535	285657	2	1385	1390	X	X	X	X
	1535	285663	2	1407	1412	X	X	X	X
	1535	285672	2	1441	1446	X	X	X	X
	1535	285673	2	1446	1451	X	X	X	X
	1535	285680	2	1476	1478	X	X	X	X
	1535	285682	2	1483	1487	X	X	X	X
	1535	285687	2	1503	1508	X	X	X	X
	1535	285688	2	1508	1513	X	X	X	X
	1535	285689	2	1513	1518	X	X	X	X
	1535	285695	2	1534	1539	X	X	X	X
	1535	285698	2	1547	1552	X	X	X	X
	1535	285708	2	1585	1590	X	X	X	X
	1535	285711	2	1600	1605	X	X	X	X
	1535	285714	2	1617	1622	X	X	X	X
	1535	285718	2	1628	1633	X	X	X	X
	1535	285719	2	1633	1638	X	X	X	X
	1535	285721	2	1642	1647	X	X	X	X
	1535	285726	2	1662	1667	X	X	X	X
	1535	285730	2	1677	1682	X	X	X	X
	1552	235481	2	1086	1091	X	X	X	X
	1552	235496	2	1141	1146	X	X	X	X
	AR-2010	190531	2	1589	1594	X	X	X	X
	AR-2010	190539	2	1628	1633	X	X	X	X
	AR-2010	190541	2	1638	1643	X	X	X	X
	AR-2011	190956	2	1768	1773	X	X	X	X
AR-2016	215458	2	780	785	X	X	X	X	

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Rock Type	Borehole	Sample ID	Code	Interval		ABA/NAG	Whole Rock	SPLP	MWMP
				Depth from	Depth to				
Colina	AR-2016	215461	2	790	795	X	X	X	X
	AR-2016	215462	2	795	800	X	X	X	X
	AR-2016	215464	2	805	810	X	X	X	X
	AR-2016	215466	2	815	820	X	X	X	X
	AR-2016	213653	2	985	990	X	X	X	X
	AR-2016	213654	2	990	995	X	X	X	X
	AR-2016	213656	2	1000	1005	X	X	X	X
	AR-2016	213677	2	1075	1080	X	X	X	X
	AR-2022	243898	2	1650	1655	X	X	X	X
	AR-2022	243906	2	1685	1690	X	X	X	X
	AR-2022	243907	2	1690	1695	X	X	X	X
	AR-2022	243909	2	1700	1705	X	X	X	X
	AR-2031	236580	2	610	615	X	X	X	X
	AR-2031	236581	2	615	620	X	X	X	X
	AR-2031	236582	2	620	625	X	X	X	X
	AR-2031	236586	2	635	640	X	X	X	X
	AR-2031	236588	2	645	650	X	X	X	X
	AR-2031	236589	2	650	655	X	X	X	X
	AR-2031	236590	2	655	660	X	X	X	X
	AR-2031	236592	2	665	670	X	X	X	X
	AR-2031	236593	2	670	675	X	X	X	X
	AR-2031	236595	2	680	685	X	X	X	X
	AR-2031	236597	2	690	695	X	X	X	X
	AR-2038	278681	2	870	875	X	X	X	X
	AR-2038	278683	2	880	885	X	X	X	X
	AR-2038	278687	2	900	905	X	X	X	X
	AR-2038	278688	2	905	910	X	X	X	X
	AR-2038	278689	2	910	915	X	X	X	X
	AR-2038	278691	2	920	925	X	X	X	X
	AR-2038	278693	2	930	935	X	X	X	X
	AR-2038	278696	2	940	945	X	X	X	X
	AR-2038	278697	2	945	950	X	X	X	X
	AR-2038	278702	2	965	970	X	X	X	X
	AR-2038	278704	2	975	980	X	X	X	X

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Rock Type	Borehole	Sample ID	Code	Interval		ABA/NAG	Whole Rock	SPLP	MWMP
				Depth from	Depth to				
Colina	AR-2038	278706	2	985	990	X	X	X	X
	AR-2038	278709	2	1000	1005	X	X	X	X
	AR-2038	278710	2	1005	1010	X	X	X	X
	AR-2038	278714	2	1025	1030	X	X	X	X
	AR-2040	277268	2	1240	1245	X	X	X	X
	AR-2040	277269	2	1245	1250	X	X	X	X
	AR-2040	277270	2	1250	1255	X	X	X	X
	AR-2040	277272	2	1260	1265	X	X	X	X
	AR-2040	277273	2	1265	1270	X	X	X	X
	AR-2040	277276	2	1275	1280	X	X	X	X
	AR-2040	277278	2	1285	1290	X	X	X	X
	AR-2040	277284	2	1310	1315	X	X	X	X
	AR-2040	277288	2	1330	1335	X	X	X	X
	AR-2040	277292	2	1350	1355	X	X	X	X
	AR-2040	277296	2	1365	1370	X	X	X	X
	AR-2040	277298	2	1375	1380	X	X	X	X
	AR-2040	277303	2	1400	1405	X	X	X	X
	AR-2040	277307	2	1420	1425	X	X	X	X
	AR-2040	277309	2	1430	1435	X	X	X	X
	AR-2040	277312	2	1445	1450	X	X	X	X
	AR-2040	277313	2	1450	1455	X	X	X	X
	AR-2040	277318	2	1470	1475	X	X	X	X
	AR-2040	277319	2	1475	1480	X	X	X	X
	AR-2040	277324	2	1495	1500	X	X	X	X
	AR-2040	277325	2	1500	1505	X	X	X	X
	AR-2040	277327	2	1510	1515	X	X	X	X
	AR-2040	277330	2	1525	1530	X	X	X	X
	AR-2040	277333	2	1540	1545	X	X	X	X
AR-2040	277334	2	1545	1550	X	X	X	X	
Earp	A-831	233366	3	557	562	X	X	X	X
	A-831	233367	3	562	567	X	X	X	X
	A-831	233369	3	572	577	X	X	X	X
	A-831	233370	3	577	582	X	X	X	X
	A-831	233371	3	582	587	X	X	X	X

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Rock Type	Borehole	Sample ID	Code	Interval		ABA/NAG	Whole Rock	SPLP	MWMP
				Depth from	Depth to				
Earp	A-831	233409	3	754	759	X	X	X	X
	A-831	233410	3	759	764	X	X	X	X
	A-831	233416	3	779	784	X	X	X	X
	A-831	233430	3	844.5	849.5	X	X	X	X
	A-831	233442	3	886	891	X	X	X	X
	A-831	233443	3	891	896	X	X	X	X
	A-831	233450	3	921	926	X	X	X	X
	A-831	233452	3	931	936	X	X	X	X
	A-831	233462	3	971	976	X	X	X	X
	A-831	233466	3	991	996	X	X	X	X
	A-831	233472	3	1015	1020	X	X	X	X
	A-831	233473	3	1020	1025	X	X	X	X
	A-831	233483	3	1064	1069	X	X	X	X
	A-831	233495	3	1116	1121	X	X	X	X
	A-831	233496	3	1121	1126	X	X	X	X
	A-831	233497	3	1126	1131	X	X	X	X
	A-831	233498	3	1131	1136	X	X	X	X
	A-831	233499	3	1136	1141	X	X	X	X
	A-831	233500	3	1141	1146	X	X	X	X
	A-831	233501	3	1146	1151	X	X	X	X
	A-833	274673	3	651	656	X	X	X	X
	A-833	274733	3	945	950	X	X	X	X
	A-834	169905	3	644	649	X	X	X	X
	A-834	169909	3	666	671	X	X	X	X
	A-834	169911	3	671	676	X	X	X	X
	A-834	169912	3	676	681	X	X	X	X
	A-834	169913	3	681	686	X	X	X	X
	A-834	169971	3	949	954	X	X	X	X
	A-841	242112	3	1190	1195	X	X	X	X
	A-841	242141	3	1306	1311	X	X	X	X
	A-841	242177	3	1450	1455	X	X	X	X
	A-843	234975	3	891	896	X	X	X	X
	A-843	234984	3	934	939	X	X	X	X
A-843	234986	3	944	949	X	X	X	X	

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Rock Type	Borehole	Sample ID	Code	Interval		ABA/NAG	Whole Rock	SPLP	MWMP
				Depth from	Depth to				
Earp	A-843	234991	3	971	976	X	X	X	X
	A-843	234992	3	976	981	X	X	X	X
	A-843	234999	3	1001	1006	X	X	X	X
	A-843	235007	3	1037	1042	X	X	X	X
	A-843	235017	3	1081	1086	X	X	X	X
	A-843	235018	3	1086	1091	X	X	X	X
	A-843	235020	3	1096	1101	X	X	X	X
	A-843	235024	3	1114	1119	X	X	X	X
	A-843	235034	3	1156	1161	X	X	X	X
	A-843	235036	3	1166	1171	X	X	X	X
	A-843	235078	3	1355	1360	X	X	X	X
	A-843	235079	3	1360	1365	X	X	X	X
	A-861	235225	3	604	609	X	X	X	X
	A-861	235244	3	677	682	X	X	X	X
	A-861	235253	3	712	717	X	X	X	X
	A-861	235262	3	751	756	X	X	X	X
	A-865	242642	3	1417	1422	X	X	X	X
	A-865	242645	3	1447	1452	X	X	X	X
	A-865	242648	3	1462	1467	X	X	X	X
	A-865	242652	3	1477	1482	X	X	X	X
	1528	240604	3	954	959	X	X	X	X
	1528	240608	3	975	980	X	X	X	X
	1528	240615	3	1001	1006	X	X	X	X
	1552	235561	3	1404	1409	X	X	X	X
	1552	235566	3	1424	1429	X	X	X	X
	1552	235581	3	1487	1492	X	X	X	X
	1552	235593	3	1537	1542	X	X	X	X
	1916	276711	3	736	741	X	X	X	X
	1920	275088	3	679	684	X	X	X	X
	1941	237766	3	689	694	X	X	X	X
	1941	237770	3	704	709	X	X	X	X
	1941	237782	3	758	763	X	X	X	X
	1941	237785	3	768	773	X	X	X	X
	1941	237786	3	773	778	X	X	X	X

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Rock Type	Borehole	Sample ID	Code	Interval		ABA/NAG	Whole Rock	SPLP	MWMP
				Depth from	Depth to				
Earp	1941	237787	3	778	783	X	X	X	X
	1941	237790	3	793	798	X	X	X	X
	1941	237793	3	802	807	X	X	X	X
	1941	237794	3	807	812	X	X	X	X
	1941	237795	3	812	817	X	X	X	X
	1941	237797	3	822	827	X	X	X	X
	AR-2000	174734	3	545	550	X	X	X	X
	AR-2000	174750	3	605	610	X	X	X	X
	AR-2000	174770	3	685	690	X	X	X	X
	AR-2000	174778	3	720	725	X	X	X	X
	AR-2000	174779	3	725	730	X	X	X	X
	AR-2000	174780	3	730	735	X	X	X	X
	AR-2016	213719	3	1260	1265	X	X	X	X
	AR-2019	229688	3	635	640	X	X	X	X
	AR-2019	229718	3	775	780	X	X	X	X
	AR-2019	229747	3	910	915	X	X	X	X
	AR-2019	229786	3	1090	1095	X	X	X	X
	AR-2019	229798	3	1145	1150	X	X	X	X
	AR-2019	229823	3	1265	1270	X	X	X	X
	AR-2019	229824	3	1270	1275	X	X	X	X
	AR-2020	231195	3	705	710	X	X	X	X
	AR-2020	231198	3	720	725	X	X	X	X
	AR-2020	231284	3	1120	1125	X	X	X	X
	AR-2020	231289	3	1140	1145	X	X	X	X
	AR-2020	231291	3	1145	1150	X	X	X	X
	AR-2020	231329	3	1325	1330	X	X	X	X
	AR-2020	231331	3	1330	1335	X	X	X	X
	AR-2020	231333	3	1340	1345	X	X	X	X
	AR-2020	231355	3	1445	1450	X	X	X	X
	AR-2020	231356	3	1450	1455	X	X	X	X
	AR-2026	244663	3	525	530	X	X	X	X
	AR-2026	244669	3	550	555	X	X	X	X
	AR-2026	244702	3	705	710	X	X	X	X
	AR-2026	244731	3	835	840	X	X	X	X

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Rock Type	Borehole	Sample ID	Code	Interval		ABA/NAG	Whole Rock	SPLP	MWMP
				Depth from	Depth to				
Earp	AR-2026	244740	3	880	885	X	X	X	X
	AR-2028B	236370	3	1750	1755	X	X	X	X
	AR-2029	243179	3	595	600	X	X	X	X
	AR-2029	243181	3	605	610	X	X	X	X
	AR-2029	243184	3	620	625	X	X	X	X
	AR-2029	243199	3	690	695	X	X	X	X
	AR-2029	243200	3	695	700	X	X	X	X
	AR-2029	243203	3	710	715	X	X	X	X
	AR-2029	243206	3	720	725	X	X	X	X
	AR-2029	243208	3	730	735	X	X	X	X
	AR-2029	243230	3	830	835	X	X	X	X
	AR-2030	244148	3	450	455	X	X	X	X
	AR-2030	244175	3	575	580	X	X	X	X
	AR-2031	236604	3	725	730	X	X	X	X
	AR-2031	236617	3	780	785	X	X	X	X
	AR-2031	236624	3	815	820	X	X	X	X
	AR-2031	236644	3	910	915	X	X	X	X
	AR-2031	236647	3	920	925	X	X	X	X
	AR-2032	260511	3	1480	1485	X	X	X	X
	AR-2034	260961	3	1200	1205	X	X	X	X
	AR-2035	261818	3	540	545	X	X	X	X
	AR-2035	261849	3	685	690	X	X	X	X
	AR-2035	261851	3	695	700	X	X	X	X
	AR-2037	277630	3	870	875	X	X	X	X
	AR-2037	277637	3	905	910	X	X	X	X
	AR-2037	277649	3	960	965	X	X	X	X
	AR-2037	277673	3	1070	1075	X	X	X	X
	AR-2038	278761	3	1240	1245	X	X	X	X
	AR-2038	278768	3	1275	1280	X	X	X	X
	AR-2038	278792	3	1385	1390	X	X	X	X
	AR-2038	278796	3	1400	1405	X	X	X	X
	AR-2038	278797	3	1405	1410	X	X	X	X
	AR-2038	278812	3	1480	1485	X	X	X	X
AR-2039	260010	3	1435	1440	X	X	X	X	

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Rock Type	Borehole	Sample ID	Code	Interval		ABA/NAG	Whole Rock	SPLP	MWMP
				Depth from	Depth to				
Earp	AR-2039	260028	3	1515	1520	X	X	X	X
	AR-2039	260033	3	1540	1545	X	X	X	X
	AR-2040	277359	3	1660	1665	X	X	X	X
	AR-2040	277392	3	1815	1820	X	X	X	X
	AR-2043	284890	3	1815	1820	X	X	X	X
	AR-2043	284900	3	1855	1860	X	X	X	X
Epitaph	A-825	239114	4	1400	1405	X	X	X	X
	A-825	239147	4	1546	1551	X	X	X	X
	A-829	264224	4	1005	1010	X	X	X	X
	A-829	264228	4	1025	1030	X	X	X	X
	A-829	264232	4	1035	1040	X	X	X	X
	A-829	264235	4	1050	1055	X	X	X	X
	A-829	264236	4	1055	1060	X	X	X	X
	A-848	275721	4	870	875	X	X	X	X
	A-848	275729	4	899	904	X	X	X	X
	A-850	234020	4	853	858	X	X	X	X
	A-850	234021	4	858	863	X	X	X	X
	A-850	234022	4	863	868	X	X	X	X
	A-851	274441	4	1318	1323	X	X	X	X
	A-851	274462	4	1420	1425	X	X	X	X
	A-851	274463	4	1425	1430	X	X	X	X
	A-851	274470	4	1451	1456	X	X	X	X
	1538	287272	4	881	886	X	X	X	X
	1538	287274	4	891	896	X	X	X	X
	1538	287303	4	982	987	X	X	X	X
	1538	287304	4	987	992	X	X	X	X
	1538	287311	4	1016	1021	X	X	X	X
	1538	287312	4	1021	1026	X	X	X	X
	AR-2002	175336	4	890	895	X	X	X	X
	AR-2010	190367	4	833	838	X	X	X	X
	AR-2010	190384	4	918	923	X	X	X	X
	AR-2010	190403	4	1003	1008	X	X	X	X
	AR-2010	190419	4	1076	1081	X	X	X	X
	AR-2010	190420	4	1081	1086	X	X	X	X

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Rock Type	Borehole	Sample ID	Code	Interval		ABA/NAG	Whole Rock	SPLP	MWMP
				Depth from	Depth to				
Epitaph	AR-2010	190421	4	1086	1091	X	X	X	X
	AR-2010	190422	4	1091	1096	X	X	X	X
	AR-2010	190423	4	1096	1101	X	X	X	X
	AR-2010	190424	4	1101	1106	X	X	X	X
	AR-2010	190428	4	1115	1120	X	X	X	X
	AR-2010	190440	4	1168	1173	X	X	X	X
	AR-2010	190442	4	1178	1183	X	X	X	X
	AR-2010	190467	4	1293	1298	X	X	X	X
	AR-2010	190468	4	1298	1303	X	X	X	X
	AR-2011	190773	4	923	928	X	X	X	X
	AR-2011	190774	4	928	933	X	X	X	X
	AR-2011	190782	4	958	963	X	X	X	X
	AR-2011	190783	4	963	968	X	X	X	X
	AR-2011	190784	4	968	973	X	X	X	X
	AR-2011	190785	4	973	978	X	X	X	X
	AR-2011	190787	4	983	988	X	X	X	X
	AR-2011	190789	4	993	998	X	X	X	X
	AR-2011	190790	4	998	1003	X	X	X	X
	AR-2011	190791	4	1003	1008	X	X	X	X
	AR-2011	190792	4	1008	1013	X	X	X	X
	AR-2011	190793	4	1013	1018	X	X	X	X
	AR-2011	190803	4	1058	1063	X	X	X	X
	AR-2011	190805	4	1068	1073	X	X	X	X
	AR-2011	190807	4	1078	1083	X	X	X	X
	AR-2011	190816	4	1118	1123	X	X	X	X
	AR-2011	190818	4	1128	1133	X	X	X	X
	AR-2011	190819	4	1133	1138	X	X	X	X
	AR-2011	190823	4	1148	1153	X	X	X	X
	AR-2011	190824	4	1153	1158	X	X	X	X
	AR-2011	190827	4	1168	1173	X	X	X	X
	AR-2011	190836	4	1208	1213	X	X	X	X
	AR-2011	190846	4	1258	1263	X	X	X	X
	AR-2011	190852	4	1288	1293	X	X	X	X
AR-2011	190859	4	1323	1328	X	X	X	X	

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Rock Type	Borehole	Sample ID	Code	Interval		ABA/NAG	Whole Rock	SPLP	MWMP
				Depth from	Depth to				
Epitaph	AR-2011	190869	4	1368	1373	X	X	X	X
	AR-2011	190870	4	1373	1378	X	X	X	X
	AR-2011	190871	4	1378	1383	X	X	X	X
	AR-2011	190872	4	1383	1388	X	X	X	X
	AR-2011	190876	4	1398	1403	X	X	X	X
	AR-2012	193014	4	848	853	X	X	X	X
	AR-2012	193020	4	878	883	X	X	X	X
	AR-2012	193027	4	913	918	X	X	X	X
	AR-2013	194712	4	1042	1047	X	X	X	X
	AR-2013	194718	4	1067	1072	X	X	X	X
	AR-2013	194724	4	1097	1102	X	X	X	X
	AR-2013	194731	4	1132	1137	X	X	X	X
	AR-2013	194732	4	1137	1142	X	X	X	X
	AR-2013	194733	4	1142	1147	X	X	X	X
	AR-2013	194739	4	1167	1172	X	X	X	X
	AR-2013	194741	4	1172	1177	X	X	X	X
	AR-2013	194753	4	1232	1237	X	X	X	X
	AR-2014	194217	4	1047	1052	X	X	X	X
	AR-2014	194218	4	1052	1057	X	X	X	X
	AR-2014	194226	4	1092	1097	X	X	X	X
	AR-2014	194227	4	1097	1102	X	X	X	X
	AR-2014	194232	4	1117	1122	X	X	X	X
	AR-2014	194233	4	1122	1127	X	X	X	X
	AR-2021	230251	4	945	950	X	X	X	X
	AR-2021	230252	4	950	955	X	X	X	X
	AR-2021	230258	4	980	985	X	X	X	X
	AR-2021	230259	4	985	990	X	X	X	X
	AR-2021	230262	4	1000	1005	X	X	X	X
	AR-2021	230264	4	1010	1015	X	X	X	X
	AR-2021	230271	4	1040	1045	X	X	X	X
	AR-2021	230278	4	1075	1080	X	X	X	X
	AR-2021	230287	4	1115	1120	X	X	X	X
AR-2021	230289	4	1125	1130	X	X	X	X	
AR-2021	230297	4	1160	1165	X	X	X	X	

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Rock Type	Borehole	Sample ID	Code	Interval		ABA/NAG	Whole Rock	SPLP	MWMP
				Depth from	Depth to				
Epitaph	AR-2021	230300	4	1175	1180	X	X	X	X
	AR-2021	230307	4	1205	1210	X	X	X	X
	AR-2021	230308	4	1210	1215	X	X	X	X
	AR-2021	230312	4	1230	1235	X	X	X	X
	AR-2021	230320	4	1270	1275	X	X	X	X
	AR-2021	230321	4	1275	1280	X	X	X	X
	AR-2021	230326	4	1295	1300	X	X	X	X
	AR-2021	230333	4	1325	1330	X	X	X	X
	AR-2021	230340	4	1360	1365	X	X	X	X
	AR-2021	230344	4	1380	1385	X	X	X	X
	AR-2025	238270	4	1045	1050	X	X	X	X
	AR-2025	238275	4	1070	1075	X	X	X	X
	AR-2025	238276	4	1075	1080	X	X	X	X
	AR-2025	238280	4	1095	1100	X	X	X	X
	AR-2025	238286	4	1120	1125	X	X	X	X
	AR-2025	238292	4	1145	1150	X	X	X	X
	AR-2025	238293	4	1150	1155	X	X	X	X
	AR-2025	238302	4	1195	1200	X	X	X	X
	AR-2025	238308	4	1220	1225	X	X	X	X
	AR-2025	238310	4	1230	1235	X	X	X	X
	AR-2025	238311	4	1235	1240	X	X	X	X
	AR-2025	238316	4	1260	1265	X	X	X	X
	AR-2025	238332	4	1330	1335	X	X	X	X
	AR-2025	238336	4	1350	1355	X	X	X	X
	AR-2025	238337	4	1355	1360	X	X	X	X
	AR-2025	238343	4	1385	1390	X	X	X	X
	AR-2025	238346	4	1395	1400	X	X	X	X
	AR-2025	238349	4	1410	1415	X	X	X	X
	AR-2039	259847	4	680	685	X	X	X	X
	AR-2039	259852	4	705	710	X	X	X	X
	AR-2039	259866	4	765	770	X	X	X	X
	AR-2039	259870	4	785	790	X	X	X	X
	AR-2039	259876	4	810	815	X	X	X	X
	AR-2039	259877	4	815	820	X	X	X	X

Attachment C
Tailings Material Sample Cores
Rosemont Copper Project
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Rock Type	Borehole	Sample ID	Code	Interval		ABA/NAG	Whole Rock	SPLP	MWMP
				Depth from	Depth to				
Epitaph	AR-2040	277165	4	760	765	X	X	X	X
	AR-2040	277172	4	795	800	X	X	X	X
	AR-2040	277173	4	800	805	X	X	X	X
	AR-2040	277176	4	810	815	X	X	X	X
	AR-2040	277183	4	845	850	X	X	X	X
	AR-2040	277185	4	855	860	X	X	X	X
	AR-2040	277188	4	870	875	X	X	X	X
	AR-2040	277193	4	895	900	X	X	X	X
	AR-2040	277199	4	920	925	X	X	X	X
	AR-2040	277201	4	925	930	X	X	X	X
	AR-2040	277217	4	1000	1005	X	X	X	X
	AR-2043	284682	4	850	855	X	X	X	X
	AR-2043	284684	4	860	865	X	X	X	X
	AR-2043	284688	4	880	885	X	X	X	X
	AR-2043	284689	4	885	890	X	X	X	X
	AR-2043	284692	4	895	900	X	X	X	X
	AR-2043	284693	4	900	905	X	X	X	X
	AR-2043	284698	4	920	925	X	X	X	X
	AR-2043	284713	4	990	995	X	X	X	X
	AR-2043	284714	4	995	1000	X	X	X	X
Escabrosa	A-809	288791	5	1160	1164	X	X	X	
	A-809	288793	5	1168	1172.5	X	X	X	
	A-809	288826	5	1279	1282	X	X	X	
	A-809	288827	5	1282	1287.5	X	X	X	
	A-809	288830	5	1293	1296	X	X	X	
	A-809	288832	5	1301	1306	X	X	X	
	A-809	288833	5	1306	1309	X	X	X	
	A-809	288834	5	1309	1312	X	X	X	
	A-809	288835	5	1312	1316	X	X	X	
	A-809	288836	5	1316	1320.5	X	X	X	
	A-814	241634	5	604.5	609	X	X	X	
	A-814	241635	5	609	612.5	X	X	X	
	A-814	241636	5	612.5	616	X	X	X	
	A-814	241637	5	616	621	X	X	X	

Attachment C
Tailings Material Sample Cores
Rosemont Copper Project
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Rock Type	Borehole	Sample ID	Code	Interval		ABA/NAG	Whole Rock	SPLP	MWMP
				Depth from	Depth to				
Escabrosa	A-814	241638	5	621	626	X	X	X	
	A-814	241640	5	629	632	X	X	X	
	A-814	241641	5	632	636	X	X	X	
	A-814	241642	5	636	639	X	X	X	
	A-814	241645	5	647	649	X	X	X	
	A-814	241650	5	665	666	X	X	X	
	A-814	241650	5	666	670.5	X	X	X	
	A-814	241651	5	670.5	676	X	X	X	
	A-814	241652	5	676	681	X	X	X	
	A-814	241655	5	691	696	X	X	X	
	A-814	241656	5	696	699.5	X	X	X	
	A-814	241657	5	699.5	703	X	X	X	
	A-814	241658	5	703	706	X	X	X	
	A-814	241660	5	711	715.5	X	X	X	
	A-814	241661	5	715.5	721	X	X	X	
	A-814	241664	5	726	731	X	X	X	
	A-814	241667	5	741	746	X	X	X	
	A-814	241669	5	751	756	X	X	X	
	A-814	241670	5	756	761	X	X	X	
	A-814	241671	5	761	766	X	X	X	
	A-814	241672	5	766	771	X	X	X	
	A-814	241674	5	776	779	X	X	X	
	A-814	241675	5	779	782	X	X	X	
	A-814	241678	5	788.5	792.5	X	X	X	
	A-814	241682	5	805	810	X	X	X	
	A-814	241686	5	824.5	829.5	X	X	X	
	A-814	241687	5	829.5	834	X	X	X	
	A-814	241688	5	834	836	X	X	X	
	A-858	170597	5	779	784	X	X	X	
	A-858	170598	5	784	789	X	X	X	
	A-858	170599	5	789	794	X	X	X	
	A-858	170601	5	794	799	X	X	X	
A-858	170602	5	799	804	X	X	X		
A-858	170603	5	804	809	X	X	X		

Attachment C
Tailings Material Sample Cores
Rosemont Copper Project
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Rock Type	Borehole	Sample ID	Code	Interval		ABA/NAG	Whole Rock	SPLP	MWMP
				Depth from	Depth to				
Escabrosa	A-858	170604	5	809	811	X	X	X	
	A-858	170607	5	815	819	X	X	X	
	A-858	170608	5	819	824	X	X	X	
	A-858	170609	5	824	830	X	X	X	
	A-867	237119	5	843	845	X	X	X	
	A-867	237120	5	845	849	X	X	X	
	A-873	241015	5	1170	1174	X	X	X	
	A-873	241017	5	1177	1183	X	X	X	
	A-873	241018	5	1183	1187	X	X	X	
	A-873	241021	5	1195	1198	X	X	X	
	A-873	241021	5	1198	1200	X	X	X	
	A-873	241022	5	1200	1203	X	X	X	
	A-873	241024	5	1209	1213	X	X	X	
	A-874	263657	5	710	715	X	X	X	
	A-874	263658	5	715	720	X	X	X	
	A-874	263659	5	720	725	X	X	X	
	A-874	263661	5	730	735	X	X	X	
	A-874	263662	5	735	737	X	X	X	
	A-875	314560	5	571	576	X	X	X	
	A-875	314562	5	580	584	X	X	X	
	A-875	314563	5	584	589	X	X	X	
	A-875	314565	5	594	599	X	X	X	
	1503	263723	5	149	152	X	X	X	
	1503	263728	5	171	175	X	X	X	
	1503	263731	5	184	187	X	X	X	
	1503	263734	5	195	200	X	X	X	
	1503	263735	5	200	205	X	X	X	
	1503	263737	5	210	215	X	X	X	
	1503	263738	5	215	220	X	X	X	
	1503	263742	5	232	236	X	X	X	
	1503	263743	5	236	242	X	X	X	
	1506	228934	5	588	593	X	X	X	
	1506	228936	5	593	598	X	X	X	
	1506	228937	5	598	600	X	X	X	

Attachment C
Tailings Material Sample Cores
Rosemont Copper Project
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Rock Type	Borehole	Sample ID	Code	Interval		ABA/NAG	Whole Rock	SPLP	MWMP
				Depth from	Depth to				
Escabrosa	1506	228938	5	600	603	X	X	X	
	1506	228939	5	603	608	X	X	X	
	1506	228942	5	613	618	X	X	X	
	1506	228948	5	641	646	X	X	X	
	1506	228949	5	646	651	X	X	X	
	1506	228416	5	736	741	X	X	X	
	1506	228416	5	741	746	X	X	X	
	1506	228418	5	751	755	X	X	X	
	1507	263870	5	982	987	X	X	X	
	1507	263872	5	992	997	X	X	X	
	1507	263873	5	997	1002	X	X	X	
	1507	263874	5	1002	1007	X	X	X	
	1507	263877	5	1017	1021	X	X	X	
	1507	263880	5	1022	1027	X	X	X	
	1507	263882	5	1032	1037	X	X	X	
	1507	263886	5	1052	1058	X	X	X	
	1507	263891	5	1071	1073	X	X	X	
	1507	263914	5	1388	1393	X	X	X	
	1507	263917	5	1403	1408	X	X	X	
	1507	263919	5	1413	1417	X	X	X	
	1507	263920	5	1417	1420	X	X	X	
	1507	263922	5	1426	1431	X	X	X	
	1508	288662	5	850	853	X	X	X	
	1508	288669	5	878	881	X	X	X	
	1508	288670	5	881	885	X	X	X	
	1508	288671	5	885	890	X	X	X	
	1508	288682	5	935	940	X	X	X	
	1508	288683	5	940	945	X	X	X	
	1508	288692	5	970	975	X	X	X	
	1508	288693	5	975	980	X	X	X	
	1508	288694	5	980	985	X	X	X	
	1508	288695	5	985	990	X	X	X	
	1508	288698	5	1000	1005	X	X	X	
	1508	288717	5	1082	1087	X	X	X	

Attachment C
Tailings Material Sample Cores
Rosemont Copper Project
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Rock Type	Borehole	Sample ID	Code	Interval		ABA/NAG	Whole Rock	SPLP	MWMP
				Depth from	Depth to				
Escabrosa	1508	288718	5	1087	1092	X	X	X	
	1508	288721	5	1100	1105	X	X	X	
	1508	288723	5	1105	1110	X	X	X	
	1508	288725	5	1113	1118	X	X	X	
	1508	288728	5	1126	1132	X	X	X	
	1508	288729	5	1132	1137	X	X	X	
	1528	240811	5	1842	1847	X	X	X	
	1528	240819	5	1879	1884	X	X	X	
	1580	241487	5	620	622	X	X	X	
	1580	241494	5	655	660	X	X	X	
	1580	241497	5	670	674	X	X	X	
	1580	241498	5	674	679	X	X	X	
	1580	241499	5	679	685	X	X	X	
	1580	241501	5	690	695	X	X	X	
	1580	241503	5	716	721	X	X	X	
	1580	241504	5	721	726	X	X	X	
	1580	241506	5	731	736	X	X	X	
	1580	241509	5	746	751	X	X	X	
	1580	241514	5	770	773	X	X	X	
	1580	241518	5	785	790	X	X	X	
	1580	241519	5	790	795	X	X	X	
	1580	241521	5	800	805	X	X	X	
	1580	241522	5	805	810	X	X	X	
	1580	241525	5	816	822	X	X	X	
	1580	241526	5	822	826	X	X	X	
	1926	242336	5	556	561	X	X	X	
	1926	242339	5	570	575	X	X	X	
	1926	242340	5	575	580	X	X	X	
	1926	242341	5	580	585	X	X	X	
	AR-2026	244942	5	1815	1820	X	X	X	
	AR-2026	244951	5	1850	1855	X	X	X	
	AR-2031	236827	5	1750	1755	X	X	X	
	AR-2031	236834	5	1785	1790	X	X	X	
	AR-2031	236873	5	1965	1970	X	X	X	

Attachment C
Tailings Material Sample Cores
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Rock Type	Borehole	Sample ID	Code	Interval		ABA/NAG	Whole Rock	SPLP	MWMP
				Depth from	Depth to				
4-7 Year Composite (50% Horquilla)	A-809	316040	701	815	818	X	X	X	X
	A-809	316042	701	871	873	X	X	X	X
	A-812	234409	701	744	749	X	X	X	X
	A-812	234425	701	800	804	X	X	X	X
	A-812	234444	701	852	855	X	X	X	X
	A-812	235875	701	939	943	X	X	X	X
	A-827	262280	701	809	814	X	X	X	X
	A-835	288894	701	775	780	X	X	X	X
	A-836	232893	701	1058	1062	X	X	X	X
	A-836	232896	701	1070	1075	X	X	X	X
	A-838	276228	701	899	904	X	X	X	X
	A-861	235323	701	1015	1020	X	X	X	X
	A-869	274566	701	774	779	X	X	X	X
	A-876	276022	701	877	882	X	X	X	X
	1483	263133	701	828	833	X	X	X	X
	1485	170184	701	825	830	X	X	X	X
	1485	170193	701	860	864	X	X	X	X
	1485	170244	701	1089	1096	X	X	X	X
	1507	263854	701	915	921	X	X	X	X
	1528	240677	701	1274	1277	X	X	X	X
	1920	275168	701	974	979	X	X	X	X
	1920	275187	701	1039	1043	X	X	X	X
	1941	237829	701	962	966	X	X	X	X
	1941	237846	701	1030	1035	X	X	X	X
	1941	237878	701	1167	1170	X	X	X	X
	AR-2004	176512	701	903	908	X	X	X	X
	AR-2004	176547	701	1060	1065	X	X	X	X
AR-2042	285159	701	740	745	X	X	X	X	
4-7 Year Composite (28% Earp)	A-831	233413	702	771	774	X	X	X	X
	A-831	233423	702	809.5	815	X	X	X	X
	A-831	233438	702	868	871	X	X	X	X
	A-831	233455	702	946	950	X	X	X	X
	A-833	274667	702	623	626	X	X	X	X

Attachment C
Tailings Material Sample Cores
Rosemont Copper Project
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Rock Type	Borehole	Sample ID	Code	Interval		ABA/NAG	Whole Rock	SPLP	MWMP
				Depth from	Depth to				
4-7 Year Composite (28% Earp)	A-834	169917	702	704	709	X	X	X	X
	A-834	169926	702	751	756	X	X	X	X
	A-834	169981	702	990	995	X	X	X	X
	A-842	321108	702	941	945	X	X	X	X
	1528	240607	702	969	975	X	X	X	X
	AR-2015	215794	702	910	915	X	X	X	X
	AR-2015	215802	702	940	945	X	X	X	X
	AR-2015	215831	702	1080	1085	X	X	X	X
	AR-2031	236623	702	810	815	X	X	X	X
AR-2035	261857	702	720	725	X	X	X	X	
4-7 Year Composite (18% Colina)	A-841	242022	703	815	820	X	X	X	X
	A-841	242067	703	989	993	X	X	X	X
	A-841	242068	703	993	997	X	X	X	X
	A-848	275730	703	904	910	X	X	X	X
	A-848	275733	703	921	926	X	X	X	X
	A-848	275734	703	926	931	X	X	X	X
	A-848	275750	703	996	1001	X	X	X	X
	A-865	242607	703	1229	1233	X	X	X	X
	1552	235464	703	1011	1016	X	X	X	X
	AR-2038	278694	703	935	940	X	X	X	X
4-7 Year Composite (4% Epitaph)	A-821	286541	704	816	821	X	X	X	X
	1538	287282	704	920	925	X	X	X	X
	AR-2002	175328	704	855	860	X	X	X	X
	AR-2040	277184	704	850	855	X	X	X	X

ATTACHMENT D
SUMMARY OF GEOCHEMICAL DATA FOR TAILINGS
SAMPLES

Attachment D
Summary of Geochemical Data for Tailings Samples
Rosemont Copper Project
August 2010

Parameter	Tailings – May 2006		Tailings 022807		Tailings-05 June2007			Year 0-3 Tailings			4-7 Year Composite			Escabrosa		Horquilla			Colina			Epitaph			Earp		
	Whole Rock (mg/kg)	SPLP (mg/L)	Whole Rock (mg/kg)	SPLP (mg/L)	Whole Rock (mg/kg)	SPLP (mg/L)	MWMP (mg/L)	Whole Rock (mg/kg)	SPLP (mg/L)	MWMP (mg/L)	Whole Rock (mg/kg)	SPLP (mg/L)	MWMP (mg/L)	Whole Rock (mg/kg)	SPLP (mg/L)	Whole Rock (mg/kg)	SPLP (mg/L)	MWMP (mg/L)	Whole Rock (mg/kg)	SPLP (mg/L)	MWMP (mg/L)	Whole Rock (mg/kg)	SPLP (mg/L)	MWMP (mg/L)	Whole Rock (mg/kg)	SPLP (mg/L)	MWMP (mg/L)
pH End	NA	NM	NA	NM	NA	NM	7.43	NA	NM	8.5	NA	8.66	8.2	NA	8.81	NA	9.48	8.2	NA	9.48	8.42	NA	7.85	6.47	NA	8.74	6.86
Alkalinity	NA	NM	NA	NM	NA	NM	NM	NA	8.3	11.5	NA	NM	NM	NA	NM	NA	NM	NM	NA	NM	NM	NA	NM	NM	NA	NM	NM
Aluminum	12000	NM	3910	0.08	6210	0.08	<0.08	5870	<0.08	<0.08	9,180	<0.08	<0.08	7,350	<0.08	7,110	0.7	<0.08	4,870	<0.08	<0.08	5,500	<0.08	<0.08	13,700	<0.08	<0.08
Antimony	<10	NM	2	NM	2.2	<0.02	<0.02	<2	<0.02	<0.02	<2.0	<0.02	<0.02	<2.0	<0.02	<2.0	<0.02	<0.02	<2.0	<0.02	<0.02	4.6	<0.02	<0.02	3.3	<0.02	<0.02
Arsenic	5.5	<1	8.6	<0.003	8.2	<0.003	<0.003	22	<0.02	<0.003	8.8	<0.02	<0.025	16.5	<0.02	13.5	<0.02	<0.025	27.6	<0.02	<0.025	28.7	<0.02	<0.025	5.3	<0.02	<0.025
Barium	20	<10	7.7	<0.0020	12.2	0.0032	0.0172	25.6	0.02	0.0229	22	0.02	0.0191	15	0.02	5.17	0.005	0.008	12.5	0.02	0.0346	13.6	0.02	0.0266	67.6	0.05	0.0297
Beryllium	NM	NM	0.36	NM	0.58	<0.0020	<0.002	0.537	<0.002	<0.002	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
Cadmium	0.9	<0.5	1.51	<0.0020	0.97	<0.0020	<0.002	1.1	<0.002	<0.002	<0.20	<0.002	<0.002	0.6	<0.002	0.24	<0.002	<0.002	0.58	<0.002	<0.002	0.64	<0.002	<0.002	0.29	<0.002	<0.002
Calcium	150000	NM	125000	8.8	146000	13	103	126000	15.6	150	99,900	10.5	52.6	163,000	27.1	84,600	9.8	29.4	167,000	193	658	155,000	107	557	62,600	18.4	151
Chloride	40	NM	11.3	0.36	46	0.43	5.69	10.3	0.55	5.18	NM	0.425	6.27	NM	0.352	NM	<0.200	3.56	NM	0.218	4.14	NM	0.34	<1.00	NM	0.628	3.51
Chromium	14	<1	10.4	<0.0060	21	<0.0060	<0.006	17.7	<0.006	<0.006	23.9	<0.006	<0.006	36.6	<0.006	14.3	<0.006	<0.006	11.8	<0.006	<0.006	11.8	<0.006	<0.006	30.7	<0.006	<0.006
Copper	NM	NM	2070	<0.010	1100	<0.010	<0.01	1120	<0.01	<0.01	2,380	<0.01	<0.01	1,120	<0.01	1,030	0.17	<0.01	2,770	<0.01	0.011	1,780	<0.01	0.016	2,250	<0.01	0.01
Fluoride	NM	NM	8.72	1.25	NM	1.29	1.02	2.35	0.85	1.11	NM	1.12	6.49	NM	1	NM	0.694	1.05	NM	0.844	2.76	NM	0.846	0.944	NM	0.63	1.25
Iron	18000	NM	15300	<0.06	23600	<0.06	<0.06	21700	<0.06	<0.06	26,100	<0.06	<0.06	36,800	<0.06	33,800	1.2	<0.06	20,100	<0.06	<0.06	37,700	<0.06	<0.06	25,900	<0.06	<0.06
Lead	7	<1	10.4	NM	13.6	<0.0075	<0.0075	20	<0.0075	<0.008	4.92	<0.0075	<0.008	27.4	<0.0075	30.4	<0.0075	<0.008	2.55	<0.0075	<0.008	11.9	<0.0075	<0.008	14.8	<0.0075	<0.008
Magnesium	8400	NM	4960	0.23	5410	0.17	0.65	8300	0.2	1.91	24,400	2.5	13.8	11,400	1.3	6,010	1.9	0.535	57,900	3.7	15.5	35,800	8.5	148	16,600	1	11.4
Manganese	2100	NM	1520	<0.0040	2000	<0.0040	0.019	1670	<0.004	0.0172	1,990	<0.004	0.0081	2,510	0.007	1,950	0.1	<0.004	1,460	<0.004	<0.004	1,980	0.01	0.0988	1,720	<0.004	0.0372
Mercury	<0.100	<0.01	0.038	<0.0002	0.042	<0.0002	0.00033	1.77	0.0007	<0.0002	0.058	<0.0002	<0.0002	0.05	<0.0002	0.13	<0.0002	<0.0002	0.057	<0.0002	<0.0002	<0.033	<0.0002	<0.0002	0.053	<0.0002	<0.0002
Molybdenum	NM	NM	90	NM	46	0.075	0.46	13.8	0.06	0.463	109	NM	NM	94.8	NM	53.3	NM	NM	112	NM	NM	122	NM	NM	78.9	NM	NM
Nickel	NM	NM	8.8	<1	5.5	<0.01	<0.01	11.2	<0.01	<0.01	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
NO ₂ +NO ₃ as N	NM	NM	NM	0.04	NM	NM	0.021	NM	NM	NM	NM	0.12	<0.500	NM	<0.100	NM	<0.100	<0.500	NM	<0.100	<0.500	NM	0.111	<0.500	NM	<0.100	<0.500
Potassium	1000	NM	786	0.62	977	0.86	8.33	1040	1.24	11.3	1,120	1.05	11.6	1040	1.05	435	0.84	4.97	1,130	1.27	5.53	799	1.04	17.9	2,020	1.97	15
Selenium	<5	<0.5	<4	<0.50	<4	<0.04	<0.04	<4	<0.04	<0.04	29.2	<0.04	<0.04	52.7	<0.04	5.5	<0.04	<0.04	22.1	<0.04	0.048	<4.0	<0.04	<0.040	<4.0	<0.04	<0.040
Silver	0.8	NM	2.41	<0.0050	0.87	<0.0050	<0.005	1.15	<0.005	<0.005	1.92	<0.005	<0.005	1.59	<0.005	0.56	<0.005	<0.005	2.6	<0.005	<0.005	2.22	<0.005	<0.005	2.29	<0.005	<0.005
Sodium	<250	NM	117	2.57	154	2.22	27.6	225	4.1	37.1	262	3.2	33.9	97.5	2.1	102	2.4	19.3	76.1	1.4	15.4	94.2	3.3	32.6	579	3.3	33.9
Sulfate	320	NM	123	6.95	311	20	285	632	35	441	NM	24.3	264	NM	61.5	NM	6.88	91.1	NM	432	1,560	NM	278	1,960	NM	36.8	435
TDS	NM	NM	NM	13	NM	66	505	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
Thallium	NM	NM	1.5	NM	2	<0.015	<0.015	<1.5	<0.02	<0.015	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
Uranium	NM	NM	NM	NM	NM	NM	NM	2.89	<0.002	<0.001	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
Zinc	85	NM	271	NM	118	<0.01	<0.01	108	<0.01	<0.01	146	<0.01	<0.01	234	<0.01	184	0.05	<0.01	163	<0.01	<0.01	141	<0.01	<0.01	140	<0.01	<0.01

NA = Not applicable
 NM = Not measured

ATTACHMENT E
SVL ANALYTICAL DATA FOR THE 2010 TAILINGS
SAMPLES



One Government Gulch - PO Box 929

Kellogg ID 83837-0929

(208) 784-1258

Fax (208) 783-0891

Tetra Tech EM, Inc. (Tucson)
3031 West Ina Road
Tucson, AZ 85741

Project Name: Rosemont
Work Order: **W0F0728**
Reported: 09-Jul-10 12:09

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Sampled By	Date Received
4-7 YR. COMPOSITE	W0F0728-01	Soil	21-Jun-10 17:00	DP	30-Jun-2010
ESCABROSA	W0F0728-02	Soil	21-Jun-10 17:00	DP	30-Jun-2010

Solid samples are analyzed on an as-received, wet-weight basis, unless otherwise requested.

Sample preparation is defined by the client as per their Data Quality Objectives.

This report supercedes any previous reports for this Work Order. The complete report includes pages for each sample, a full QC report, and a notes section.

The results presented in this report relate only to the samples, and meet all requirements of the NELAC Standards unless otherwise noted.

Case Narrative

Arizona does not accredit for ABA, Sulfur Forms, and NAG pH.



Tetra Tech EM, Inc. (Tucson)
3031 West Ina Road
Tucson, AZ 85741

Project Name: Rosemont
Work Order: **W0F0728**
Reported: 09-Jul-10 12:09

Client Sample ID: **4-7 YR. COMPOSITE**

SVL Sample ID: **W0F0728-01 (Soil)**

Sample Report Page 1 of 3

Sampled: 21-Jun-10 17:00
Received: 30-Jun-10
Sampled By: DP

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
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Metals (Total) by EPA 6000/7000 Methods

EPA 6010B	Aluminum	9180	mg/kg	8.0	1.9		W027327	FEH	07/08/10 21:40	
EPA 6010B	Antimony	< 2.0	mg/kg	2.0	0.3		W027327	FEH	07/08/10 21:42	
EPA 6010B	Arsenic	8.8	mg/kg	2.5	0.5		W027327	FEH	07/08/10 21:42	
EPA 6010B	Barium	22.0	mg/kg	0.20	0.02		W027327	FEH	07/08/10 21:42	
EPA 6010B	Cadmium	< 0.20	mg/kg	0.20	0.03		W027327	FEH	07/08/10 21:42	
EPA 6010B	Calcium	99900	mg/kg	40.0	9.6	10	W027327	FEH	07/08/10 22:05	D2
EPA 6010B	Chromium	23.9	mg/kg	0.60	0.07		W027327	FEH	07/08/10 21:42	
EPA 6010B	Copper	2380	mg/kg	1.00	0.21		W027327	FEH	07/08/10 21:41	
EPA 6010B	Iron	26100	mg/kg	6.0	1.0		W027327	FEH	07/08/10 21:40	
EPA 6010B	Lead	4.92	mg/kg	0.75	0.36		W027327	FEH	07/08/10 21:42	
EPA 6010B	Magnesium	24400	mg/kg	6.0	2.6		W027327	FEH	07/08/10 21:40	
EPA 6010B	Manganese	1990	mg/kg	0.40	0.06		W027327	FEH	07/08/10 21:40	
EPA 6010B	Molybdenum	109	mg/kg	0.80	0.13		W027327	FEH	07/08/10 21:42	
EPA 6010B	Potassium	1120	mg/kg	50.0	8.70		W027327	FEH	07/08/10 21:40	
EPA 6010B	Selenium	29.2	mg/kg	4.0	1.4		W027327	FEH	07/08/10 21:42	
EPA 6010B	Silver	1.92	mg/kg	0.50	0.04		W027327	FEH	07/08/10 21:41	
EPA 6010B	Sodium	262	mg/kg	50.0	5.7		W027327	FEH	07/08/10 21:40	
EPA 6010B	Zinc	146	mg/kg	1.00	0.22		W027327	FEH	07/08/10 21:41	
EPA 7471A	Mercury	0.058	mg/kg	0.033	0.010		W027267	JAA	07/06/10 14:15	

Acid/Base Accounting & Sulfur Forms

Modified Sobek	ABA	236	TCaCO3/kT	0.3			N/A		07/07/10 15:20	
Modified Sobek	AGP	4.9	TCaCO3/kT	0.3			N/A		07/07/10 15:20	
Modified Sobek	ANP	241	TCaCO3/kT	0.3	0.01		W028034	LMG	07/07/10 12:35	
Modified Sobek	Non-extractable Sulfur	0.02	%	0.01			W028034	HJG	07/07/10 13:52	
Modified Sobek	Non-Sulfate Sulfur	0.18	%	0.01			W028034	HJG	07/07/10 15:20	
Modified Sobek	Pyritic Sulfur	0.16	%	0.01			N/A		07/07/10 15:20	
Modified Sobek	Sulfate Sulfur	0.18	%	0.01			N/A		07/07/10 15:20	
Modified Sobek	Total Sulfur	0.36	%	0.01			W028034	HJG	07/06/10 11:31	

Classical Chemistry Parameters

NAG	NAG pH	9.34	pH Units				W028028	KC	07/07/10 14:29	
NAG	NAG@pH 4.5	0.00	kg H2SO4/T				W028028	KC	07/07/10 14:29	
NAG	NAG@pH 7	0.00	kg H2SO4/T				W028028	KC	07/07/10 14:29	

Anions by Ion Chromatography

EPA 300.0	Chloride	6.72	mg/kg	2.00	0.33		W027325	FEH	07/06/10 13:14	
EPA 300.0	Fluoride	11.7	mg/kg	1.00	0.13		W027325	FEH	07/06/10 13:14	
EPA 300.0	Sulfate as SO4	219	mg/kg	3.00	0.75		W027325	FEH	07/06/10 13:14	

Percent Solids

Percent Solids	% Solids	97.8	%	0.1			W027326	DP	07/03/10 09:00	
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Meteoritic Water Mobility Extraction Parameters

ASTM E2242-02	Extraction Fluid pH	5.39	pH Units				W027334	ESB	07/06/10 12:39	
ASTM E2242-02	Extraction Time	24.0	Hrs				W027334	ESB	07/06/10 12:39	
ASTM E2242-02	Extraction Type	Rotation					W027334	ESB	07/06/10 12:39	
ASTM E2242-02	Feed Moisture	1.12	%				W027334	ESB	07/06/10 12:39	
ASTM E2242-02	Final Fluid pH	8.20	pH Units				W027334	ESB	07/06/10 12:39	
ASTM E2242-02	Retained Moisture	0.00	%				W027334	ESB	07/06/10 12:39	
ASTM E2242-02	Sample Weight	5000	g				W027334	ESB	07/06/10 12:39	



Tetra Tech EM, Inc. (Tucson)
3031 West Ina Road
Tucson, AZ 85741

Project Name: Rosemont
Work Order: **W0F0728**
Reported: 09-Jul-10 12:09

Client Sample ID: **4-7 YR. COMPOSITE**

SVL Sample ID: **W0F0728-01 (Soil)**

Sample Report Page 2 of 3

Sampled: 21-Jun-10 17:00
Received: 30-Jun-10
Sampled By: DP

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Meteoric Water Mobility Leachates (Metals by 200 Series)										
EPA 200.7	Aluminum	< 0.080	mg/L Extract	0.080	0.019		W028001	FEH	07/06/10 20:05	
EPA 200.7	Antimony	< 0.020	mg/L Extract	0.020	0.005		W028001	FEH	07/06/10 20:06	
EPA 200.7	Arsenic	< 0.025	mg/L Extract	0.025	0.005		W028001	FEH	07/06/10 20:06	
EPA 200.7	Barium	0.0191	mg/L Extract	0.0020	0.0007		W028001	FEH	07/06/10 20:06	
EPA 200.7	Cadmium	< 0.0020	mg/L Extract	0.0020	0.0005		W028001	FEH	07/06/10 20:06	
EPA 200.7	Calcium	52.6	mg/L Extract	0.040	0.012		W028001	FEH	07/06/10 20:04	
EPA 200.7	Chromium	< 0.0060	mg/L Extract	0.0060	0.0009		W028001	FEH	07/06/10 20:06	
EPA 200.7	Copper	< 0.010	mg/L Extract	0.010	0.005		W028001	FEH	07/06/10 20:06	
EPA 200.7	Iron	< 0.060	mg/L Extract	0.060	0.018		W028001	FEH	07/06/10 20:05	
EPA 200.7	Lead	< 0.008	mg/L Extract	0.008	0.004		W028001	FEH	07/06/10 20:06	
EPA 200.7	Magnesium	13.8	mg/L Extract	0.060	0.011		W028001	FEH	07/06/10 20:04	
EPA 200.7	Manganese	0.0081	mg/L Extract	0.0040	0.0019		W028001	FEH	07/06/10 20:05	
EPA 200.7	Potassium	11.6	mg/L Extract	0.50	0.06		W028001	FEH	07/06/10 20:04	
EPA 200.7	Selenium	< 0.040	mg/L Extract	0.040	0.013		W028001	FEH	07/06/10 20:06	
EPA 200.7	Silver	< 0.0050	mg/L Extract	0.0050	0.0012		W028001	FEH	07/06/10 20:06	
EPA 200.7	Sodium	33.9	mg/L Extract	0.50	0.04		W028001	FEH	07/06/10 20:04	
EPA 200.7	Zinc	< 0.0100	mg/L Extract	0.0100	0.0016		W028001	FEH	07/06/10 20:06	
EPA 245.1	Mercury	< 0.00020	mg/L Extract	0.00020	0.000065		W028061	JAA	07/08/10 08:29	

Meteoric Water Mobility Leachates (Classical)

EPA 353.2	Nitrate/Nitrite as N	< 0.500	mg/L Extract	0.500	0.0440	10	W028055	TJK	07/06/10 18:50	N3
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Meteoric Water Mobility Leachates (Anions)

EPA 300.0	Chloride	6.27	mg/L Extract	0.200	0.033		W028081	FEH	07/07/10 11:17	
EPA 300.0	Fluoride	6.49	mg/L Extract	1.00	0.130	10	W028081	FEH	07/07/10 11:47	D2
EPA 300.0	Sulfate as SO4	264	mg/L Extract	3.00	0.75	10	W028081	FEH	07/07/10 11:47	D2

SPLP Extraction Parameters

ASTM E2242-02	Final Fluid pH	8.66	pH Units				W027335	ESB	07/06/10 12:31	
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SPLP Leachates (Metals)

EPA 6010B	Aluminum	< 0.08	mg/L Extract	0.08	0.02		W028036	DG	07/08/10 10:32	
EPA 6010B	Antimony	< 0.02	mg/L Extract	0.02	0.005		W028036	DG	07/08/10 10:34	
EPA 6010B	Arsenic	< 0.02	mg/L Extract	0.02	0.005		W028036	DG	07/08/10 10:34	
EPA 6010B	Barium	0.02	mg/L Extract	0.002	0.0007		W028036	DG	07/08/10 10:34	
EPA 6010B	Cadmium	< 0.002	mg/L Extract	0.002	0.0005		W028036	DG	07/08/10 10:34	
EPA 6010B	Calcium	10.5	mg/L Extract	0.04	0.01		W028036	DG	07/08/10 10:32	
EPA 6010B	Chromium	< 0.006	mg/L Extract	0.006	0.0009		W028036	DG	07/08/10 10:34	
EPA 6010B	Copper	< 0.01	mg/L Extract	0.01	0.005		W028036	DG	07/08/10 10:33	
EPA 6010B	Iron	< 0.06	mg/L Extract	0.06	0.02		W028036	DG	07/08/10 10:32	
EPA 6010B	Lead	< 0.0075	mg/L Extract	0.0075	0.0040		W028036	DG	07/08/10 10:34	
EPA 6010B	Magnesium	2.5	mg/L Extract	0.06	0.01		W028036	DG	07/08/10 10:32	
EPA 6010B	Manganese	< 0.004	mg/L Extract	0.004	0.002		W028036	DG	07/08/10 10:32	
EPA 6010B	Potassium	1.05	mg/L Extract	0.50	0.06		W028036	DG	07/08/10 10:32	
EPA 6010B	Selenium	< 0.040	mg/L Extract	0.040	0.013		W028036	DG	07/08/10 10:34	
EPA 6010B	Silver	< 0.005	mg/L Extract	0.005	0.001		W028036	DG	07/08/10 10:33	
EPA 6010B	Sodium	3.2	mg/L Extract	0.5	0.04		W028036	DG	07/08/10 10:32	
EPA 6010B	Zinc	< 0.01	mg/L Extract	0.01	0.002		W028036	DG	07/08/10 10:34	
EPA 7470A	Mercury	< 0.0002	mg/L Extract	0.0002	0.00006		W028062	JAA	07/08/10 08:38	



One Government Gulch - PO Box 929

Kellogg ID 83837-0929

(208) 784-1258

Fax (208) 783-0891

Tetra Tech EM, Inc. (Tucson)
3031 West Ina Road
Tucson, AZ 85741

Project Name: Rosemont
Work Order: **W0F0728**
Reported: 09-Jul-10 12:09

Client Sample ID: **4-7 YR. COMPOSITE**

SVL Sample ID: **W0F0728-01 (Soil)**

Sample Report Page 3 of 3

Sampled: 21-Jun-10 17:00
Received: 30-Jun-10
Sampled By: DP

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
SPLP Leachates (Anions)										
EPA 300.0	Chloride	0.425	mg/L Extract	0.200	0.033		W028082	FEH	07/07/10 12:57	
EPA 300.0	Fluoride	1.12	mg/L Extract	0.100	0.013		W028082	FEH	07/07/10 12:57	
EPA 300.0	Nitrate/Nitrite as N	0.120	mg/L Extract	0.100	0.022		W028082	FEH	07/07/10 12:57	
EPA 300.0	Sulfate as SO4	24.3	mg/L Extract	0.30	0.08		W028082	FEH	07/07/10 12:57	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Nan Wilson
Laboratory Director



Tetra Tech EM, Inc. (Tucson)
3031 West Ina Road
Tucson, AZ 85741

Project Name: Rosemont
Work Order: **W0F0728**
Reported: 09-Jul-10 12:09

Client Sample ID: **ESCABROSA**

Sampled: 21-Jun-10 17:00

SVL Sample ID: **W0F0728-02 (Soil)**

Received: 30-Jun-10

Sample Report Page 1 of 2

Sampled By: DP

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
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Metals (Total) by EPA 6000/7000 Methods

EPA 6010B	Aluminum	7350	mg/kg	8.0	1.9		W027327	FEH	07/08/10 21:58	
EPA 6010B	Antimony	< 2.0	mg/kg	2.0	0.3		W027327	FEH	07/08/10 21:59	
EPA 6010B	Arsenic	16.5	mg/kg	2.5	0.5		W027327	FEH	07/08/10 21:59	
EPA 6010B	Barium	15.0	mg/kg	0.20	0.02		W027327	FEH	07/08/10 21:59	
EPA 6010B	Cadmium	0.60	mg/kg	0.20	0.03		W027327	FEH	07/08/10 21:59	
EPA 6010B	Calcium	163000	mg/kg	40.0	9.6	10	W027327	FEH	07/08/10 22:22	D2
EPA 6010B	Chromium	36.6	mg/kg	0.60	0.07		W027327	FEH	07/08/10 21:59	
EPA 6010B	Copper	1120	mg/kg	1.00	0.21		W027327	FEH	07/08/10 21:59	
EPA 6010B	Iron	36800	mg/kg	6.0	1.0		W027327	FEH	07/08/10 21:58	
EPA 6010B	Lead	27.4	mg/kg	0.75	0.36		W027327	FEH	07/08/10 21:59	
EPA 6010B	Magnesium	11400	mg/kg	6.0	2.6		W027327	FEH	07/08/10 21:58	
EPA 6010B	Manganese	2510	mg/kg	0.40	0.06		W027327	FEH	07/08/10 21:58	
EPA 6010B	Molybdenum	94.8	mg/kg	0.80	0.13		W027327	FEH	07/08/10 21:59	
EPA 6010B	Potassium	1040	mg/kg	50.0	8.70		W027327	FEH	07/08/10 21:58	
EPA 6010B	Selenium	52.7	mg/kg	4.0	1.4		W027327	FEH	07/08/10 21:59	
EPA 6010B	Silver	1.59	mg/kg	0.50	0.04		W027327	FEH	07/08/10 21:59	
EPA 6010B	Sodium	97.5	mg/kg	50.0	5.7		W027327	FEH	07/08/10 21:58	
EPA 6010B	Zinc	234	mg/kg	1.00	0.22		W027327	FEH	07/08/10 21:59	
EPA 7471A	Mercury	0.050	mg/kg	0.033	0.010		W027267	JAA	07/06/10 14:16	

Acid/Base Accounting & Sulfur Forms

Modified Sobek	ABA	363	TCaCO3/kT	0.3			N/A		07/07/10 15:24	
Modified Sobek	AGP	8.2	TCaCO3/kT	0.3			N/A		07/07/10 15:24	
Modified Sobek	ANP	371	TCaCO3/kT	0.3	0.01		W028034	LMG	07/07/10 12:35	
Modified Sobek	Non-extractable Sulfur	0.02	%	0.01			W028034	HJG	07/07/10 14:00	
Modified Sobek	Non-Sulfate Sulfur	0.28	%	0.01			W028034	HJG	07/07/10 15:24	
Modified Sobek	Pyritic Sulfur	0.26	%	0.01			N/A		07/07/10 15:24	
Modified Sobek	Sulfate Sulfur	0.55	%	0.01			N/A		07/07/10 15:24	
Modified Sobek	Total Sulfur	0.83	%	0.01			W028034	HJG	07/06/10 11:36	

Classical Chemistry Parameters

NAG	NAG pH	9.63	pH Units				W028028	KC	07/07/10 14:29	
NAG	NAG@pH 4.5	0.00	kg H2SO4/T				W028028	KC	07/07/10 14:29	
NAG	NAG@pH 7	0.00	kg H2SO4/T				W028028	KC	07/07/10 14:29	

Anions by Ion Chromatography

EPA 300.0	Chloride	8.83	mg/kg	2.00	0.33		W027325	FEH	07/06/10 13:23	
EPA 300.0	Fluoride	5.47	mg/kg	1.00	0.13		W027325	FEH	07/06/10 13:23	
EPA 300.0	Sulfate as SO4	796	mg/kg	15.0	3.75	5	W027325	FEH	07/06/10 13:34	

Percent Solids

Percent Solids	% Solids	89.5	%	0.1			W027326	DP	07/03/10 09:00	
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SPLP Extraction Parameters

ASTM E2242-02	Final Fluid pH	8.81	pH Units				W027335	ESB	07/06/10 12:31	
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Tetra Tech EM, Inc. (Tucson)
3031 West Ina Road
Tucson, AZ 85741

Project Name: Rosemont
Work Order: **W0F0728**
Reported: 09-Jul-10 12:09

Client Sample ID: **ESCABROSA**
SVL Sample ID: **W0F0728-02 (Soil)**

Sampled: 21-Jun-10 17:00
Received: 30-Jun-10
Sampled By: DP

Sample Report Page 2 of 2

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
SPLP Leachates (Metals)										
EPA 6010B	Aluminum	< 0.08	mg/L Extract	0.08	0.02		W028036	DG	07/08/10 10:50	
EPA 6010B	Antimony	< 0.02	mg/L Extract	0.02	0.005		W028036	DG	07/08/10 10:51	
EPA 6010B	Arsenic	< 0.02	mg/L Extract	0.02	0.005		W028036	DG	07/08/10 10:51	
EPA 6010B	Barium	0.02	mg/L Extract	0.002	0.0007		W028036	DG	07/08/10 10:51	
EPA 6010B	Cadmium	< 0.002	mg/L Extract	0.002	0.0005		W028036	DG	07/08/10 10:51	
EPA 6010B	Calcium	27.1	mg/L Extract	0.04	0.01		W028036	DG	07/08/10 10:49	
EPA 6010B	Chromium	< 0.006	mg/L Extract	0.006	0.0009		W028036	DG	07/08/10 10:51	
EPA 6010B	Copper	< 0.01	mg/L Extract	0.01	0.005		W028036	DG	07/08/10 10:51	
EPA 6010B	Iron	< 0.06	mg/L Extract	0.06	0.02		W028036	DG	07/08/10 10:50	
EPA 6010B	Lead	< 0.0075	mg/L Extract	0.0075	0.0040		W028036	DG	07/08/10 10:51	
EPA 6010B	Magnesium	1.3	mg/L Extract	0.06	0.01		W028036	DG	07/08/10 10:50	
EPA 6010B	Manganese	0.007	mg/L Extract	0.004	0.002		W028036	DG	07/08/10 10:50	
EPA 6010B	Potassium	0.86	mg/L Extract	0.50	0.06		W028036	DG	07/08/10 10:49	
EPA 6010B	Selenium	< 0.040	mg/L Extract	0.040	0.013		W028036	DG	07/08/10 10:51	
EPA 6010B	Silver	< 0.005	mg/L Extract	0.005	0.001		W028036	DG	07/08/10 10:51	
EPA 6010B	Sodium	2.1	mg/L Extract	0.5	0.04		W028036	DG	07/08/10 10:49	
EPA 6010B	Zinc	< 0.01	mg/L Extract	0.01	0.002		W028036	DG	07/08/10 10:51	
EPA 7470A	Mercury	< 0.0002	mg/L Extract	0.0002	0.00006		W028062	JAA	07/08/10 08:46	

SPLP Leachates (Anions)										
EPA 300.0	Chloride	0.352	mg/L Extract	0.200	0.033		W028082	FEH	07/07/10 13:26	
EPA 300.0	Fluoride	1.00	mg/L Extract	0.100	0.013		W028082	FEH	07/07/10 13:26	
EPA 300.0	Nitrate/Nitrite as N	< 0.100	mg/L Extract	0.100	0.022		W028082	FEH	07/07/10 13:26	
EPA 300.0	Sulfate as SO4	61.5	mg/L Extract	1.50	0.38	5	W028082	FEH	07/07/10 13:36	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Nan Wilson
Laboratory Director



Tetra Tech EM, Inc. (Tucson)
3031 West Ina Road
Tucson, AZ 85741

Project Name: Rosemont
Work Order: W0F0728
Reported: 09-Jul-10 12:09

Quality Control - BLANK Data

Table with 9 columns: Method, Analyte, Units, Result, MDL, MRL, Batch ID, Analyzed, Notes

Metals (Total) by EPA 6000/7000 Methods

Table listing metal analysis results for EPA 6000/7000 methods, including elements like Aluminum, Antimony, Arsenic, Barium, Cadmium, Calcium, Chromium, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Potassium, Selenium, Silver, Sodium, Zinc, and Mercury.

Acid/Base Accounting & Sulfur Forms

Table listing acid/base accounting and sulfur form results, including parameters like ANP, Non-Sulfate Sulfur, Total Sulfur, and Non-extractable Sulfur.

Anions by Ion Chromatography

Table listing anion analysis results by ion chromatography, including Fluoride, Chloride, and Sulfate as SO4.

Meteoritic Water Mobility Leachates (Metals by 200 Series)

Table listing meteoritic water mobility leachate results for metals by 200 series, including elements like Aluminum, Antimony, Arsenic, Barium, Cadmium, Calcium, Chromium, Copper, Iron, Lead, Magnesium, Manganese, Potassium, Selenium, Silver, Sodium, Zinc, and Mercury.

Meteoritic Water Mobility Leachates (Classical)

Table listing meteoritic water mobility leachate results (classical), including Nitrate/Nitrite as N.

Meteoritic Water Mobility Leachates (Anions)

Table listing meteoritic water mobility leachate results (anions), including Fluoride and Chloride.



Tetra Tech EM, Inc. (Tucson)
3031 West Ina Road
Tucson, AZ 85741

Project Name: Rosemont
Work Order: **W0F0728**
Reported: 09-Jul-10 12:09

Quality Control - BLANK Data (Continued)

Method	Analyte	Units	Result	MDL	MRL	Batch ID	Analyzed	Notes
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Meteoric Water Mobility Leachates (Anions) (Continued)

EPA 300.0	Sulfate as SO4	mg/L Extract	<0.30	0.08	0.30	W028081	07-Jul-10	
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SPLP Extraction Parameters

ASTM E2242-02	Final Fluid pH	pH Units	0.00			W027335	06-Jul-10	
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SPLP Leachates (Metals)

EPA 6010B	Aluminum	mg/L Extract	<0.08	0.02	0.08	W028036	08-Jul-10	
EPA 6010B	Antimony	mg/L Extract	<0.02	0.005	0.02	W028036	08-Jul-10	
EPA 6010B	Arsenic	mg/L Extract	<0.02	0.005	0.02	W028036	08-Jul-10	
EPA 6010B	Barium	mg/L Extract	<0.002	0.0007	0.002	W028036	08-Jul-10	
EPA 6010B	Cadmium	mg/L Extract	<0.002	0.0005	0.002	W028036	08-Jul-10	
EPA 6010B	Calcium	mg/L Extract	<0.04	0.01	0.04	W028036	08-Jul-10	B7
EPA 6010B	Chromium	mg/L Extract	<0.006	0.0009	0.006	W028036	08-Jul-10	
EPA 6010B	Copper	mg/L Extract	<0.01	0.005	0.01	W028036	08-Jul-10	
EPA 6010B	Iron	mg/L Extract	<0.06	0.02	0.06	W028036	08-Jul-10	
EPA 6010B	Lead	mg/L Extract	<0.0075	0.0040	0.0075	W028036	08-Jul-10	
EPA 6010B	Magnesium	mg/L Extract	<0.06	0.01	0.06	W028036	08-Jul-10	
EPA 6010B	Manganese	mg/L Extract	<0.004	0.002	0.004	W028036	08-Jul-10	
EPA 6010B	Potassium	mg/L Extract	<0.50	0.06	0.50	W028036	08-Jul-10	
EPA 6010B	Selenium	mg/L Extract	<0.040	0.013	0.040	W028036	08-Jul-10	
EPA 6010B	Silver	mg/L Extract	<0.005	0.001	0.005	W028036	08-Jul-10	
EPA 6010B	Sodium	mg/L Extract	<0.5	0.04	0.5	W028036	08-Jul-10	
EPA 6010B	Zinc	mg/L Extract	<0.01	0.002	0.01	W028036	08-Jul-10	
EPA 7470A	Mercury	mg/L Extract	<0.0002	0.00006	0.0002	W028062	08-Jul-10	

SPLP Leachates (Anions)

EPA 300.0	Fluoride	mg/L Extract	<0.100	0.013	0.100	W028082	07-Jul-10	
EPA 300.0	Chloride	mg/L Extract	<0.200	0.033	0.200	W028082	07-Jul-10	
EPA 300.0	Sulfate as SO4	mg/L Extract	<0.30	0.08	0.30	W028082	07-Jul-10	
EPA 300.0	Nitrate/Nitrite as N	mg/L Extract	<0.100	0.022	0.100	W028082	07-Jul-10	

Quality Control - LABORATORY CONTROL SAMPLE Data

Method	Analyte	Units	LCS Result	LCS True	% Rec.	Acceptance Limits	Batch ID	Analyzed	Notes
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Metals (Total) by EPA 6000/7000 Methods

EPA 6010B	Aluminum	mg/kg	96.3	100	96.3	80 - 120	W027327	08-Jul-10	
EPA 6010B	Antimony	mg/kg	101	100	101	80 - 120	W027327	08-Jul-10	
EPA 6010B	Arsenic	mg/kg	101	100	101	80 - 120	W027327	08-Jul-10	
EPA 6010B	Barium	mg/kg	102	100	102	80 - 120	W027327	08-Jul-10	
EPA 6010B	Cadmium	mg/kg	101	100	101	80 - 120	W027327	08-Jul-10	
EPA 6010B	Calcium	mg/kg	2100	2000	105	80 - 120	W027327	08-Jul-10	
EPA 6010B	Chromium	mg/kg	109	100	109	80 - 120	W027327	08-Jul-10	
EPA 6010B	Copper	mg/kg	108	100	108	80 - 120	W027327	08-Jul-10	
EPA 6010B	Iron	mg/kg	1010	1000	101	80 - 120	W027327	08-Jul-10	
EPA 6010B	Lead	mg/kg	104	100	104	80 - 120	W027327	08-Jul-10	
EPA 6010B	Magnesium	mg/kg	1990	2000	99.6	80 - 120	W027327	08-Jul-10	
EPA 6010B	Manganese	mg/kg	104	100	104	80 - 120	W027327	08-Jul-10	
EPA 6010B	Molybdenum	mg/kg	111	100	111	80 - 120	W027327	08-Jul-10	
EPA 6010B	Potassium	mg/kg	2110	2000	106	80 - 120	W027327	08-Jul-10	
EPA 6010B	Selenium	mg/kg	92.9	100	92.9	80 - 120	W027327	08-Jul-10	
EPA 6010B	Silver	mg/kg	5.05	5.00	101	80 - 120	W027327	08-Jul-10	
EPA 6010B	Sodium	mg/kg	1960	1900	103	80 - 120	W027327	08-Jul-10	
EPA 6010B	Zinc	mg/kg	103	100	103	80 - 120	W027327	08-Jul-10	
EPA 7471A	Mercury	mg/kg	0.903	0.833	108	80 - 120	W027267	06-Jul-10	



Tetra Tech EM, Inc. (Tucson)
3031 West Ina Road
Tucson, AZ 85741

Project Name: Rosemont
Work Order: **W0F0728**
Reported: 09-Jul-10 12:09

Quality Control - LABORATORY CONTROL SAMPLE Data (Continued)

Method	Analyte	Units	LCS Result	LCS True	% Rec.	Acceptance Limits	Batch ID	Analyzed	Notes
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Acid/Base Accounting & Sulfur Forms

Modified Sobek	ANP	TCaCO3/kT	21.8	24.9	87.6	80 - 120	W028034	07-Jul-10	
Modified Sobek	Total Sulfur	%	3.40	3.21	106	80 - 120	W028034	06-Jul-10	

Anions by Ion Chromatography

EPA 300.0	Fluoride	mg/kg	90.0	119	75.7	50 - 150	W027325	06-Jul-10	D2
EPA 300.0	Chloride	mg/kg	575	616	93.4	80 - 120	W027325	06-Jul-10	D2
EPA 300.0	Sulfate as SO4	mg/kg	449	518	86.6	80 - 120	W027325	06-Jul-10	D2

Meteoric Water Mobility Leachates (Metals by 200 Series)

EPA 200.7	Aluminum	mg/L Extract	0.970	1.00	97.0	85 - 115	W028001	06-Jul-10	
EPA 200.7	Antimony	mg/L Extract	0.965	1.00	96.5	85 - 115	W028001	06-Jul-10	
EPA 200.7	Arsenic	mg/L Extract	0.968	1.00	96.8	85 - 115	W028001	06-Jul-10	
EPA 200.7	Barium	mg/L Extract	0.979	1.00	97.9	85 - 115	W028001	06-Jul-10	
EPA 200.7	Cadmium	mg/L Extract	1.02	1.00	102	85 - 115	W028001	06-Jul-10	
EPA 200.7	Calcium	mg/L Extract	19.0	20.0	95.2	85 - 115	W028001	06-Jul-10	
EPA 200.7	Chromium	mg/L Extract	1.05	1.00	105	85 - 115	W028001	06-Jul-10	
EPA 200.7	Copper	mg/L Extract	1.03	1.00	103	85 - 115	W028001	06-Jul-10	
EPA 200.7	Iron	mg/L Extract	9.43	10.0	94.3	85 - 115	W028001	06-Jul-10	
EPA 200.7	Lead	mg/L Extract	1.05	1.00	105	85 - 115	W028001	06-Jul-10	
EPA 200.7	Magnesium	mg/L Extract	18.6	20.0	92.8	85 - 115	W028001	06-Jul-10	
EPA 200.7	Manganese	mg/L Extract	0.957	1.00	95.7	85 - 115	W028001	06-Jul-10	
EPA 200.7	Potassium	mg/L Extract	20.6	20.0	103	85 - 115	W028001	06-Jul-10	
EPA 200.7	Selenium	mg/L Extract	1.01	1.00	101	85 - 115	W028001	06-Jul-10	
EPA 200.7	Silver	mg/L Extract	0.0506	0.0500	101	85 - 115	W028001	06-Jul-10	
EPA 200.7	Sodium	mg/L Extract	18.4	19.0	97.0	85 - 115	W028001	06-Jul-10	
EPA 200.7	Zinc	mg/L Extract	1.04	1.00	104	85 - 115	W028001	06-Jul-10	
EPA 245.1	Mercury	mg/L Extract	0.00505	0.00500	101	85 - 115	W028061	08-Jul-10	

Meteoric Water Mobility Leachates (Classical)

EPA 353.2	Nitrate/Nitrite as N	mg/L Extract	2.03	2.00	101	90 - 110	W028055	06-Jul-10	
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Meteoric Water Mobility Leachates (Anions)

EPA 300.0	Fluoride	mg/L Extract	2.13	2.00	106	90 - 110	W028081	07-Jul-10	
EPA 300.0	Chloride	mg/L Extract	3.00	3.00	100	90 - 110	W028081	07-Jul-10	
EPA 300.0	Sulfate as SO4	mg/L Extract	10.1	10.0	101	90 - 110	W028081	07-Jul-10	

SPLP Leachates (Metals)

EPA 6010B	Aluminum	mg/L Extract	0.9	1.00	91.0	80 - 120	W028036	08-Jul-10	
EPA 6010B	Antimony	mg/L Extract	0.93	1.00	93.0	80 - 120	W028036	08-Jul-10	
EPA 6010B	Arsenic	mg/L Extract	0.9	1.00	92.8	80 - 120	W028036	08-Jul-10	
EPA 6010B	Barium	mg/L Extract	0.95	1.00	95.2	80 - 120	W028036	08-Jul-10	
EPA 6010B	Cadmium	mg/L Extract	0.947	1.00	94.7	80 - 120	W028036	08-Jul-10	
EPA 6010B	Calcium	mg/L Extract	19.8	20.0	98.8	80 - 120	W028036	08-Jul-10	
EPA 6010B	Chromium	mg/L Extract	1.03	1.00	103	80 - 120	W028036	08-Jul-10	
EPA 6010B	Copper	mg/L Extract	1.01	1.00	101	80 - 120	W028036	08-Jul-10	
EPA 6010B	Iron	mg/L Extract	9.6	10.0	95.9	80 - 120	W028036	08-Jul-10	
EPA 6010B	Lead	mg/L Extract	0.983	1.00	98.3	80 - 120	W028036	08-Jul-10	
EPA 6010B	Magnesium	mg/L Extract	18.7	20.0	93.7	80 - 120	W028036	08-Jul-10	
EPA 6010B	Manganese	mg/L Extract	0.96	1.00	96.5	80 - 120	W028036	08-Jul-10	
EPA 6010B	Potassium	mg/L Extract	19.3	20.0	96.4	80 - 120	W028036	08-Jul-10	
EPA 6010B	Selenium	mg/L Extract	0.900	1.00	90.0	80 - 120	W028036	08-Jul-10	
EPA 6010B	Silver	mg/L Extract	0.047	0.0500	94.5	80 - 120	W028036	08-Jul-10	
EPA 6010B	Sodium	mg/L Extract	18.7	19.0	98.5	80 - 120	W028036	08-Jul-10	
EPA 6010B	Zinc	mg/L Extract	0.97	1.00	96.8	80 - 120	W028036	08-Jul-10	
EPA 7470A	Mercury	mg/L Extract	0.0049	0.00500	97.6	80 - 120	W028062	08-Jul-10	

SPLP Leachates (Anions)

EPA 300.0	Fluoride	mg/L Extract	1.98	2.00	99.2	90 - 110	W028082	07-Jul-10	
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Tetra Tech EM, Inc. (Tucson)
3031 West Ina Road
Tucson, AZ 85741

Project Name: Rosemont
Work Order: **W0F0728**
Reported: 09-Jul-10 12:09

Quality Control - LABORATORY CONTROL SAMPLE Data (Continued)

Method	Analyte	Units	LCS Result	LCS True	% Rec.	Acceptance Limits	Batch ID	Analyzed	Notes
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SPLP Leachates (Anions) (Continued)

EPA 300.0	Chloride	mg/L Extract	3.08	3.00	103	90 - 110	W028082	07-Jul-10	
EPA 300.0	Sulfate as SO4	mg/L Extract	10.7	10.0	107	90 - 110	W028082	07-Jul-10	
EPA 300.0	Nitrate/Nitrite as N	mg/L Extract	4.62	4.50	103	90 - 110	W028082	07-Jul-10	

Quality Control - DUPLICATE Data

Method	Analyte	Units	Duplicate Result	Sample Result	RPD	RPD Limit	Batch ID	Analyzed	Notes
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Acid/Base Accounting & Sulfur Forms

Modified Sobek	ANP	TCaCO3/KT	116	108	7.3	20	W028034	07-Jul-10	
Modified Sobek	Non-Sulfate Sulfur	%	3.55	3.21	10.1	20	W028034	07-Jul-10	
Modified Sobek	Total Sulfur	%	3.68	3.71	0.8	20	W028034	06-Jul-10	
Modified Sobek	Non-extractable Sulfur	%	0.10	0.10	5.8	20	W028034	07-Jul-10	

Classical Chemistry Parameters

NAG	NAG pH	pH Units	9.60	9.34	2.8	20	W028028	07-Jul-10	
NAG	NAG@pH 4.5	kg H2SO4/T	0.00	0.00		20	W028028	07-Jul-10	
NAG	NAG@pH 7	kg H2SO4/T	0.00	0.00		20	W028028	07-Jul-10	

Anions by Ion Chromatography

EPA 300.0	Fluoride	mg/kg	1.12	1.31	15.8	20	W027325	06-Jul-10	
EPA 300.0	Chloride	mg/kg	2.73	3.03	10.5	20	W027325	06-Jul-10	
EPA 300.0	Sulfate as SO4	mg/kg	32.8	32.4	1.3	20	W027325	06-Jul-10	

Meteoric Water Mobility Leachates (Metals by 200 Series)

EPA 200.7	Aluminum	mg/L Extract	0.139	0.140	0.7	20	W028001	06-Jul-10	
EPA 200.7	Antimony	mg/L Extract	<0.020	<0.020	<RL	20	W028001	06-Jul-10	
EPA 200.7	Arsenic	mg/L Extract	<0.025	<0.025	<RL	20	W028001	06-Jul-10	
EPA 200.7	Barium	mg/L Extract	0.0760	0.0750	1.3	20	W028001	06-Jul-10	
EPA 200.7	Cadmium	mg/L Extract	0.0038	0.0038	0.6	20	W028001	06-Jul-10	
EPA 200.7	Calcium	mg/L Extract	510	533	4.5	20	W028001	06-Jul-10	
EPA 200.7	Chromium	mg/L Extract	0.0188	0.0188	0.3	20	W028001	06-Jul-10	
EPA 200.7	Copper	mg/L Extract	0.051	0.052	2.0	20	W028001	06-Jul-10	
EPA 200.7	Iron	mg/L Extract	0.818	0.826	0.9	20	W028001	06-Jul-10	
EPA 200.7	Lead	mg/L Extract	<0.008	<0.008	UDL	20	W028001	06-Jul-10	
EPA 200.7	Magnesium	mg/L Extract	0.218	0.219	0.5	20	W028001	06-Jul-10	
EPA 200.7	Manganese	mg/L Extract	<0.0040	0.0041	<RL	20	W028001	06-Jul-10	
EPA 200.7	Potassium	mg/L Extract	70.7	72.8	2.9	20	W028001	06-Jul-10	
EPA 200.7	Selenium	mg/L Extract	5.87	5.84	0.5	20	W028001	06-Jul-10	
EPA 200.7	Silver	mg/L Extract	0.0307	0.0317	3.2	20	W028001	06-Jul-10	
EPA 200.7	Sodium	mg/L Extract	694	723	4.1	20	W028001	06-Jul-10	
EPA 200.7	Zinc	mg/L Extract	0.289	0.284	1.8	20	W028001	06-Jul-10	
EPA 245.1	Mercury	mg/L Extract	<0.00020	<0.00020	UDL	20	W028061	08-Jul-10	

Meteoric Water Mobility Leachates (Classical)

EPA 353.2	Nitrate/Nitrite as N	mg/L Extract	1.85	1.92	3.4	20	W028055	06-Jul-10	N3a
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Meteoric Water Mobility Leachates (Anions)

EPA 300.0	Fluoride	mg/L Extract	6.05	6.49	7.1	20	W028081	07-Jul-10	D2
EPA 300.0	Chloride	mg/L Extract	6.01	6.27	4.4	20	W028081	07-Jul-10	
EPA 300.0	Sulfate as SO4	mg/L Extract	259	264	2.0	20	W028081	07-Jul-10	D2

SPLP Leachates (Anions)

EPA 300.0	Fluoride	mg/L Extract	1.14	1.12	1.8	20	W028082	07-Jul-10	
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Tetra Tech EM, Inc. (Tucson)
3031 West Ina Road
Tucson, AZ 85741

Project Name: Rosemont
Work Order: **W0F0728**
Reported: 09-Jul-10 12:09

Quality Control - DUPLICATE Data (Continued)

Method	Analyte	Units	Duplicate Result	Sample Result	RPD	RPD Limit	Batch ID	Analyzed	Notes
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SPLP Leachates (Anions) (Continued)

EPA 300.0	Chloride	mg/L Extract	0.337	0.425	22.9	20	W028082	07-Jul-10	R1
EPA 300.0	Sulfate as SO4	mg/L Extract	23.4	24.3	3.6	20	W028082	07-Jul-10	
EPA 300.0	Nitrate/Nitrite as N	mg/L Extract	0.130	0.120	7.9	20	W028082	07-Jul-10	

Quality Control - MATRIX SPIKE Data

Method	Analyte	Units	Spike Result	Sample Result (R)	Spike Level (S)	% Rec.	Acceptance Limits	Batch ID	Analyzed	Notes
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Metals (Total) by EPA 6000/7000 Methods

EPA 6010B	Aluminum	mg/kg	10300	9180	100	R > 4S	75 - 125	W027327	08-Jul-10	M3
EPA 6010B	Antimony	mg/kg	50.9	<2.0	100	50.9	75 - 125	W027327	08-Jul-10	M2
EPA 6010B	Arsenic	mg/kg	112	8.8	100	103	75 - 125	W027327	08-Jul-10	
EPA 6010B	Barium	mg/kg	120	22.0	100	97.8	75 - 125	W027327	08-Jul-10	
EPA 6010B	Cadmium	mg/kg	91.9	<0.20	100	91.7	75 - 125	W027327	08-Jul-10	
EPA 6010B	Calcium	mg/kg	110000	99900	2000	R > 4S	75 - 125	W027327	08-Jul-10	D2,M3
EPA 6010B	Chromium	mg/kg	127	23.9	100	103	75 - 125	W027327	08-Jul-10	
EPA 6010B	Copper	mg/kg	2600	2380	100	R > 4S	75 - 125	W027327	08-Jul-10	M3
EPA 6010B	Iron	mg/kg	28300	26100	1000	R > 4S	75 - 125	W027327	08-Jul-10	M3
EPA 6010B	Lead	mg/kg	101	4.92	100	96.0	75 - 125	W027327	08-Jul-10	
EPA 6010B	Magnesium	mg/kg	26000	24400	2000	83.7	75 - 125	W027327	08-Jul-10	
EPA 6010B	Manganese	mg/kg	2220	1990	100	R > 4S	75 - 125	W027327	08-Jul-10	M3
EPA 6010B	Molybdenum	mg/kg	222	109	100	112	75 - 125	W027327	08-Jul-10	
EPA 6010B	Potassium	mg/kg	3350	1120	2000	111	75 - 125	W027327	08-Jul-10	
EPA 6010B	Selenium	mg/kg	128	29.2	100	98.6	75 - 125	W027327	08-Jul-10	
EPA 6010B	Silver	mg/kg	7.38	1.92	5.00	109	75 - 125	W027327	08-Jul-10	
EPA 6010B	Sodium	mg/kg	2310	262	1900	108	75 - 125	W027327	08-Jul-10	
EPA 6010B	Zinc	mg/kg	231	146	100	85.3	75 - 125	W027327	08-Jul-10	
EPA 7471A	Mercury	mg/kg	80.3	93.2	0.167	R > 4S	70 - 130	W027267	06-Jul-10	D2,M3

Anions by Ion Chromatography

EPA 300.0	Fluoride	mg/kg	22.2	1.31	20.0	104	75 - 125	W027325	06-Jul-10	
EPA 300.0	Chloride	mg/kg	33.9	3.03	30.0	103	75 - 125	W027325	06-Jul-10	
EPA 300.0	Sulfate as SO4	mg/kg	134	32.4	100	102	75 - 125	W027325	06-Jul-10	

Meteoric Water Mobility Leachates (Metals by 200 Series)

EPA 200.7	Aluminum	mg/L Extract	1.31	0.140	1.00	117	70 - 130	W028001	06-Jul-10	
EPA 200.7	Aluminum	mg/L Extract	1.14	<0.080	1.00	109	70 - 130	W028001	06-Jul-10	
EPA 200.7	Antimony	mg/L Extract	1.07	<0.020	1.00	106	70 - 130	W028001	06-Jul-10	
EPA 200.7	Antimony	mg/L Extract	4.54	3.33	1.00	120	70 - 130	W028001	06-Jul-10	
EPA 200.7	Arsenic	mg/L Extract	1.11	<0.025	1.00	110	70 - 130	W028001	06-Jul-10	
EPA 200.7	Arsenic	mg/L Extract	1.64	0.565	1.00	107	70 - 130	W028001	06-Jul-10	
EPA 200.7	Barium	mg/L Extract	1.07	0.0750	1.00	100	70 - 130	W028001	06-Jul-10	
EPA 200.7	Barium	mg/L Extract	1.06	0.0255	1.00	104	70 - 130	W028001	06-Jul-10	
EPA 200.7	Cadmium	mg/L Extract	1.02	0.0038	1.00	101	70 - 130	W028001	06-Jul-10	
EPA 200.7	Cadmium	mg/L Extract	1.09	<0.0020	1.00	109	70 - 130	W028001	06-Jul-10	
EPA 200.7	Calcium	mg/L Extract	524	533	20.0	R > 4S	70 - 130	W028001	06-Jul-10	M3
EPA 200.7	Calcium	mg/L Extract	38.6	16.9	20.0	109	70 - 130	W028001	06-Jul-10	
EPA 200.7	Chromium	mg/L Extract	1.09	0.0188	1.00	107	70 - 130	W028001	06-Jul-10	
EPA 200.7	Chromium	mg/L Extract	1.12	<0.0060	1.00	112	70 - 130	W028001	06-Jul-10	
EPA 200.7	Copper	mg/L Extract	1.25	0.052	1.00	120	70 - 130	W028001	06-Jul-10	
EPA 200.7	Copper	mg/L Extract	1.23	0.048	1.00	118	70 - 130	W028001	06-Jul-10	
EPA 200.7	Iron	mg/L Extract	11.7	0.826	10.0	109	70 - 130	W028001	06-Jul-10	
EPA 200.7	Iron	mg/L Extract	10.6	<0.060	10.0	106	70 - 130	W028001	06-Jul-10	
EPA 200.7	Lead	mg/L Extract	1.04	<0.008	1.00	104	70 - 130	W028001	06-Jul-10	



Tetra Tech EM, Inc. (Tucson)
3031 West Ina Road
Tucson, AZ 85741

Project Name: Rosemont
Work Order: **W0F0728**
Reported: 09-Jul-10 12:09

Quality Control - MATRIX SPIKE Data (Continued)

Method	Analyte	Units	Spike Result	Sample Result (R)	Spike Level (S)	% Rec.	Acceptance Limits	Batch ID	Analyzed	Notes
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Meteoric Water Mobility Leachates (Metals by 200 Series) (Continued)

EPA 200.7	Lead	mg/L Extract	1.10	<0.008	1.00	110	70 - 130	W028001	06-Jul-10	
EPA 200.7	Magnesium	mg/L Extract	21.7	0.219	20.0	107	70 - 130	W028001	06-Jul-10	
EPA 200.7	Magnesium	mg/L Extract	21.5	0.502	20.0	105	70 - 130	W028001	06-Jul-10	
EPA 200.7	Manganese	mg/L Extract	1.13	0.0041	1.00	112	70 - 130	W028001	06-Jul-10	
EPA 200.7	Manganese	mg/L Extract	1.07	<0.0040	1.00	107	70 - 130	W028001	06-Jul-10	
EPA 200.7	Potassium	mg/L Extract	95.0	72.8	20.0	111	70 - 130	W028001	06-Jul-10	
EPA 200.7	Potassium	mg/L Extract	37.8	13.7	20.0	120	70 - 130	W028001	06-Jul-10	
EPA 200.7	Selenium	mg/L Extract	6.75	5.84	1.00	91.2	70 - 130	W028001	06-Jul-10	
EPA 200.7	Selenium	mg/L Extract	2.61	1.44	1.00	117	70 - 130	W028001	06-Jul-10	
EPA 200.7	Silver	mg/L Extract	0.0799	0.0317	0.0500	96.4	70 - 130	W028001	06-Jul-10	
EPA 200.7	Silver	mg/L Extract	0.0569	<0.0050	0.0500	114	70 - 130	W028001	06-Jul-10	
EPA 200.7	Sodium	mg/L Extract	717	723	19.0	R > 4S	70 - 130	W028001	06-Jul-10	M3
EPA 200.7	Sodium	mg/L Extract	414	399	19.0	81.4	70 - 130	W028001	06-Jul-10	
EPA 200.7	Zinc	mg/L Extract	1.34	0.284	1.00	106	70 - 130	W028001	06-Jul-10	
EPA 200.7	Zinc	mg/L Extract	1.15	<0.0100	1.00	115	70 - 130	W028001	06-Jul-10	
EPA 245.1	Mercury	mg/L Extract	0.00110	<0.00020	0.00100	110	70 - 130	W028061	08-Jul-10	

Meteoric Water Mobility Leachates (Classical)

EPA 353.2	Nitrate/Nitrite as N	mg/L Extract	2.76	1.92	1.00	84.4	90 - 110	W028055	06-Jul-10	M4,N3a
EPA 353.2	Nitrate/Nitrite as N	mg/L Extract	14.9	14.3	1.00	R > 4S	90 - 110	W028055	06-Jul-10	D2,M3

Meteoric Water Mobility Leachates (Anions)

EPA 300.0	Fluoride	mg/L Extract	8.65	6.49	2.00	108	80 - 120	W028081	07-Jul-10	D2,M3
EPA 300.0	Chloride	mg/L Extract	9.05	6.27	3.00	92.5	80 - 120	W028081	07-Jul-10	
EPA 300.0	Sulfate as SO4	mg/L Extract	275	264	10.0	108	80 - 120	W028081	07-Jul-10	D2

SPLP Leachates (Metals)

EPA 6010B	Aluminum	mg/L Extract	0.9	<0.08	1.00	90.1	75 - 125	W028036	08-Jul-10	
EPA 6010B	Antimony	mg/L Extract	0.94	<0.02	1.00	93.7	75 - 125	W028036	08-Jul-10	
EPA 6010B	Arsenic	mg/L Extract	0.9	<0.02	1.00	94.1	75 - 125	W028036	08-Jul-10	
EPA 6010B	Barium	mg/L Extract	0.97	0.02	1.00	95.0	75 - 125	W028036	08-Jul-10	
EPA 6010B	Cadmium	mg/L Extract	0.954	<0.002	1.00	95.4	75 - 125	W028036	08-Jul-10	
EPA 6010B	Calcium	mg/L Extract	30.0	10.5	20.0	97.6	75 - 125	W028036	08-Jul-10	
EPA 6010B	Chromium	mg/L Extract	1.03	<0.006	1.00	103	75 - 125	W028036	08-Jul-10	
EPA 6010B	Copper	mg/L Extract	1.02	<0.01	1.00	101	75 - 125	W028036	08-Jul-10	
EPA 6010B	Iron	mg/L Extract	9.5	<0.06	10.0	94.6	75 - 125	W028036	08-Jul-10	
EPA 6010B	Lead	mg/L Extract	0.986	<0.0075	1.00	98.6	75 - 125	W028036	08-Jul-10	
EPA 6010B	Magnesium	mg/L Extract	21.0	2.5	20.0	92.4	75 - 125	W028036	08-Jul-10	
EPA 6010B	Manganese	mg/L Extract	0.96	<0.004	1.00	95.6	75 - 125	W028036	08-Jul-10	
EPA 6010B	Potassium	mg/L Extract	20.2	1.05	20.0	95.7	75 - 125	W028036	08-Jul-10	
EPA 6010B	Selenium	mg/L Extract	0.905	<0.040	1.00	90.5	70 - 130	W028036	08-Jul-10	
EPA 6010B	Silver	mg/L Extract	0.047	<0.005	0.0500	94.6	75 - 125	W028036	08-Jul-10	
EPA 6010B	Sodium	mg/L Extract	21.8	3.2	19.0	97.9	75 - 125	W028036	08-Jul-10	
EPA 6010B	Zinc	mg/L Extract	0.97	<0.01	1.00	96.6	75 - 125	W028036	08-Jul-10	
EPA 7470A	Mercury	mg/L Extract	0.0010	<0.0002	0.00100	98.0	70 - 130	W028062	08-Jul-10	

SPLP Leachates (Anions)

EPA 300.0	Fluoride	mg/L Extract	3.21	1.12	2.00	105	80 - 120	W028082	07-Jul-10	
EPA 300.0	Chloride	mg/L Extract	3.86	0.425	3.00	114	80 - 120	W028082	07-Jul-10	
EPA 300.0	Sulfate as SO4	mg/L Extract	34.7	24.3	10.0	103	80 - 120	W028082	07-Jul-10	
EPA 300.0	Nitrate/Nitrite as N	mg/L Extract	4.65	0.120	4.00	113	80 - 120	W028082	07-Jul-10	



Tetra Tech EM, Inc. (Tucson)
3031 West Ina Road
Tucson, AZ 85741

Project Name: Rosemont
Work Order: **W0F0728**
Reported: 09-Jul-10 12:09

Quality Control - MATRIX SPIKE DUPLICATE Data

Method	Analyte	Units	MSD Result	Spike Result	Spike Level	RPD	RPD Limit	Batch ID	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010B	Aluminum	mg/kg	10100	10300	100	2.5	20	W027327	08-Jul-10	
EPA 6010B	Antimony	mg/kg	50.1	50.9	100	1.7	20	W027327	08-Jul-10	
EPA 6010B	Arsenic	mg/kg	109	112	100	3.0	20	W027327	08-Jul-10	
EPA 6010B	Barium	mg/kg	118	120	100	1.4	20	W027327	08-Jul-10	
EPA 6010B	Cadmium	mg/kg	90.1	91.9	100	2.0	20	W027327	08-Jul-10	
EPA 6010B	Calcium	mg/kg	103000	110000	2000	6.8	20	W027327	08-Jul-10	D2
EPA 6010B	Chromium	mg/kg	127	127	100	0.0	20	W027327	08-Jul-10	
EPA 6010B	Copper	mg/kg	2330	2600	100	11.2	20	W027327	08-Jul-10	
EPA 6010B	Iron	mg/kg	26700	28300	1000	5.8	20	W027327	08-Jul-10	
EPA 6010B	Lead	mg/kg	98.5	101	100	2.4	20	W027327	08-Jul-10	
EPA 6010B	Magnesium	mg/kg	29000	26000	2000	10.7	20	W027327	08-Jul-10	
EPA 6010B	Manganese	mg/kg	2210	2220	100	0.6	20	W027327	08-Jul-10	
EPA 6010B	Molybdenum	mg/kg	202	222	100	9.3	20	W027327	08-Jul-10	
EPA 6010B	Potassium	mg/kg	3340	3350	2000	0.3	20	W027327	08-Jul-10	
EPA 6010B	Selenium	mg/kg	125	128	100	2.3	20	W027327	08-Jul-10	
EPA 6010B	Silver	mg/kg	7.18	7.38	5.00	2.7	20	W027327	08-Jul-10	
EPA 6010B	Sodium	mg/kg	2280	2310	1900	1.5	20	W027327	08-Jul-10	
EPA 6010B	Zinc	mg/kg	253	231	100	9.0	20	W027327	08-Jul-10	
EPA 7471A	Mercury	mg/kg	108	80.3	0.167	29.2	20	W027267	06-Jul-10	D2,M3

SPL Leachates (Metals)

EPA 6010B	Aluminum	mg/L Extract	0.9	0.9	1.00	0.7	20	W028036	08-Jul-10	
EPA 6010B	Antimony	mg/L Extract	0.94	0.94	1.00	0.0	20	W028036	08-Jul-10	
EPA 6010B	Arsenic	mg/L Extract	0.9	0.9	1.00	0.2	20	W028036	08-Jul-10	
EPA 6010B	Barium	mg/L Extract	0.97	0.97	1.00	0.0	20	W028036	08-Jul-10	
EPA 6010B	Cadmium	mg/L Extract	0.949	0.954	1.00	0.5	20	W028036	08-Jul-10	
EPA 6010B	Calcium	mg/L Extract	29.9	30.0	20.0	0.4	20	W028036	08-Jul-10	
EPA 6010B	Chromium	mg/L Extract	1.03	1.03	1.00	0.4	20	W028036	08-Jul-10	
EPA 6010B	Copper	mg/L Extract	1.02	1.02	1.00	0.4	20	W028036	08-Jul-10	
EPA 6010B	Iron	mg/L Extract	9.6	9.5	10.0	0.7	20	W028036	08-Jul-10	
EPA 6010B	Lead	mg/L Extract	0.984	0.986	1.00	0.2	20	W028036	08-Jul-10	
EPA 6010B	Magnesium	mg/L Extract	21.1	21.0	20.0	0.5	20	W028036	08-Jul-10	
EPA 6010B	Manganese	mg/L Extract	0.96	0.96	1.00	0.4	20	W028036	08-Jul-10	
EPA 6010B	Potassium	mg/L Extract	20.2	20.2	20.0	0.0	20	W028036	08-Jul-10	
EPA 6010B	Selenium	mg/L Extract	0.907	0.905	1.00	0.1	20	W028036	08-Jul-10	
EPA 6010B	Silver	mg/L Extract	0.047	0.047	0.0500	0.2	20	W028036	08-Jul-10	
EPA 6010B	Sodium	mg/L Extract	21.7	21.8	19.0	0.8	20	W028036	08-Jul-10	
EPA 6010B	Zinc	mg/L Extract	0.97	0.97	1.00	0.3	20	W028036	08-Jul-10	
EPA 7470A	Mercury	mg/L Extract	0.0011	0.0010	0.00100	7.8	20	W028062	08-Jul-10	

Quality Control - POST DIGESTION SPIKE Data

Method	Analyte	Units	Spike Result	Sample Result (R)	Spike Level (S)	% Rec.	Acceptance Limits	Batch ID	Analyzed	Notes
EPA 6010B	Antimony	mg/kg	91.7	<2.0	100	91.7	75 - 125	W027327	08-Jul-10	

Metals (Total) by EPA 6000/7000 Methods

EPA 6010B Antimony mg/kg 91.7 <2.0 100 91.7 75 - 125 W027327 08-Jul-10



Tetra Tech EM, Inc. (Tucson)
3031 West Ina Road
Tucson, AZ 85741

Project Name: Rosemont
Work Order: **W0F0728**
Reported: 09-Jul-10 12:09

Notes and Definitions

- B7 Target analyte in method blank exceeded method QC limits, but concentrations in samples were at least 10x the blank concentration.
- D2 Sample required dilution due to high concentration of target analyte.
- M2 Matrix spike recovery was low, but the LCS recovery was acceptable.
- M3 The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to spike level. The LCS was acceptable.
- M4 The analysis of the spiked sample required a dilution such that the spike recovery calculation does not provide useful information. The LCS recovery was acceptable.
- N3 Sample analyzed at 10x dilution (below reporting limit) due to history of MWM matrix crashing coil.
- N3a Sample analyzed at 10x dilution due to history of MWM matrix crashing coil.
- R1 RPD exceeded the method acceptance limit.
- LCS Laboratory Control Sample (Blank Spike)
- RPD Relative Percent Difference
- UDL A result is less than the detection limit
- R > 4S % recovery not applicable, sample concentration more than four times greater than spike level
- <RL A result is less than the reporting limit
- MRL Method Reporting Limit
- MDL Method Detection Limit
- N/A Not Applicable



One Government Gulch - PO Box 929

Kellogg ID 83837-0929

(208) 784-1258

Fax (208) 783-0891

Tetra Tech EM, Inc. (Tucson)
3031 West Ina Road
Tucson, AZ 85741

Project Name: Rosemont
Work Order: **W0G0173**
Reported: 23-Jul-10 16:27

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Sampled By	Date Received
EPITAPH	W0G0173-01	Soil	01-Jul-10 17:00	JP	08-Jul-2010
EARP	W0G0173-02	Soil	01-Jul-10 17:00	JP	08-Jul-2010

Solid samples are analyzed on an as-received, wet-weight basis, unless otherwise requested.

Sample preparation is defined by the client as per their Data Quality Objectives.

This report supercedes any previous reports for this Work Order. The complete report includes pages for each sample, a full QC report, and a notes section.

The results presented in this report relate only to the samples, and meet all requirements of the NELAC Standards unless otherwise noted.



Tetra Tech EM, Inc. (Tucson)
3031 West Ina Road
Tucson, AZ 85741

Project Name: Rosemont
Work Order: W0G0173
Reported: 23-Jul-10 16:27

Client Sample ID: EPITAPH

SVL Sample ID: W0G0173-01 (Soil)

Sample Report Page 1 of 3

Sampled: 01-Jul-10 17:00
Received: 08-Jul-10
Sampled By: JP

Table with 11 columns: Method, Analyte, Result, Units, RL, MDL, Dilution, Batch, Analyst, Analyzed, Notes

Metals (Total) by EPA 6000/7000 Methods

Table listing various metals (Aluminum, Antimony, Arsenic, Barium, Cadmium, Calcium, Chromium, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Potassium, Selenium, Silver, Sodium, Zinc) with their respective results and units.

Acid/Base Accounting & Sulfur Forms

Table listing acid/base accounting and sulfur forms (ABA, AGP, ANP, Non-extractable Sulfur, Non-Sulfate Sulfur, Pyritic Sulfur, Sulfate Sulfur, Total Sulfur) with results and units.

Classical Chemistry Parameters

Table listing classical chemistry parameters (NAG pH, NAG@pH 4.5, NAG@pH 7) with results and units.

Anions by Ion Chromatography

Table listing anions by ion chromatography (Chloride, Fluoride, Sulfate as SO4) with results and units.

Percent Solids

Table listing Percent Solids with result 99.2%.

Meteoritic Water Mobility Extraction Parameters

Table listing meteoritic water mobility extraction parameters (Extraction Fluid pH, Extraction Time, Extraction Type, Feed Moisture, Final Fluid pH, Retained Moisture, Sample Weight) with results and units.



Tetra Tech EM, Inc. (Tucson)
3031 West Ina Road
Tucson, AZ 85741

Project Name: Rosemont
Work Order: **W0G0173**
Reported: 23-Jul-10 16:27

Client Sample ID: **EPITAPH**

SVL Sample ID: **W0G0173-01 (Soil)**

Sample Report Page 2 of 3

Sampled: 01-Jul-10 17:00
Received: 08-Jul-10
Sampled By: JP

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Meteoric Water Mobility Leachates (Metals by 200 Series)										
EPA 200.7	Aluminum	< 0.080	mg/L Extract	0.080	0.019		W029234	DG	07/23/10 14:14	
EPA 200.7	Antimony	< 0.020	mg/L Extract	0.020	0.005		W029234	DG	07/23/10 14:16	
EPA 200.7	Arsenic	< 0.025	mg/L Extract	0.025	0.005		W029234	DG	07/23/10 14:16	
EPA 200.7	Barium	0.0266	mg/L Extract	0.0020	0.0007		W029234	DG	07/23/10 14:16	
EPA 200.7	Cadmium	< 0.0020	mg/L Extract	0.0020	0.0005		W029234	DG	07/23/10 14:16	
EPA 200.7	Calcium	557	mg/L Extract	0.040	0.012		W029234	DG	07/23/10 14:14	
EPA 200.7	Chromium	< 0.0060	mg/L Extract	0.0060	0.0009		W029234	DG	07/23/10 14:16	
EPA 200.7	Copper	0.016	mg/L Extract	0.010	0.005		W029234	DG	07/23/10 14:15	
EPA 200.7	Iron	< 0.060	mg/L Extract	0.060	0.018		W029234	DG	07/23/10 14:14	
EPA 200.7	Lead	< 0.008	mg/L Extract	0.008	0.004		W029234	DG	07/23/10 14:16	
EPA 200.7	Magnesium	148	mg/L Extract	0.060	0.011		W029234	DG	07/23/10 14:14	
EPA 200.7	Manganese	0.0988	mg/L Extract	0.0040	0.0019		W029234	DG	07/23/10 14:14	
EPA 200.7	Potassium	17.9	mg/L Extract	0.50	0.06		W029234	DG	07/23/10 14:14	
EPA 200.7	Selenium	< 0.040	mg/L Extract	0.040	0.013		W029234	DG	07/23/10 14:16	
EPA 200.7	Silver	< 0.0050	mg/L Extract	0.0050	0.0012		W029234	DG	07/23/10 14:15	
EPA 200.7	Sodium	32.6	mg/L Extract	0.50	0.04		W029234	DG	07/23/10 14:14	
EPA 200.7	Zinc	< 0.0100	mg/L Extract	0.0100	0.0016		W029234	DG	07/23/10 14:16	
EPA 245.1	Mercury	< 0.00020	mg/L Extract	0.00020	0.000065		W029134	JAA	07/14/10 13:50	

Meteoric Water Mobility Leachates (Classical)

EPA 353.2	Nitrate/Nitrite as N	< 0.500	mg/L Extract	0.500	0.0440	10	W029325	TJK	07/19/10 15:29	N3
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Meteoric Water Mobility Leachates (Anions)

EPA 300.0	Chloride	< 1.00	mg/L Extract	1.00	0.165	5	W029273	FEH	07/15/10 17:20	D1
EPA 300.0	Fluoride	0.944	mg/L Extract	0.500	0.065	5	W029273	FEH	07/15/10 17:20	D1
EPA 300.0	Sulfate as SO4	1960	mg/L Extract	30.0	7.50	100	W029273	FEH	07/16/10 14:22	D2

SPLP Extraction Parameters

ASTM E2242-02	Final Fluid pH	7.85	pH Units				W029015	ESB	07/13/10 12:35	
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SPLP Leachates (Metals)

EPA 6010B	Aluminum	< 0.08	mg/L Extract	0.08	0.02		W029105	AS	07/21/10 19:04	
EPA 6010B	Antimony	< 0.02	mg/L Extract	0.02	0.005		W029105	AS	07/21/10 19:05	
EPA 6010B	Arsenic	< 0.02	mg/L Extract	0.02	0.005		W029105	AS	07/21/10 19:05	
EPA 6010B	Barium	0.02	mg/L Extract	0.002	0.0007		W029105	AS	07/21/10 19:05	
EPA 6010B	Cadmium	< 0.002	mg/L Extract	0.002	0.0005		W029105	AS	07/21/10 19:05	
EPA 6010B	Calcium	107	mg/L Extract	0.04	0.01		W029105	AS	07/21/10 19:04	
EPA 6010B	Chromium	< 0.006	mg/L Extract	0.006	0.0009		W029105	AS	07/21/10 19:05	
EPA 6010B	Copper	< 0.01	mg/L Extract	0.01	0.005		W029105	AS	07/21/10 19:05	
EPA 6010B	Iron	< 0.06	mg/L Extract	0.06	0.02		W029105	AS	07/21/10 19:04	
EPA 6010B	Lead	< 0.0075	mg/L Extract	0.0075	0.0040		W029105	AS	07/21/10 19:05	
EPA 6010B	Magnesium	8.5	mg/L Extract	0.06	0.01		W029105	AS	07/21/10 19:04	
EPA 6010B	Manganese	0.01	mg/L Extract	0.004	0.002		W029105	AS	07/21/10 19:04	
EPA 6010B	Potassium	1.04	mg/L Extract	0.50	0.06		W029105	AS	07/21/10 19:04	
EPA 6010B	Selenium	< 0.040	mg/L Extract	0.040	0.013		W029105	AS	07/21/10 19:05	
EPA 6010B	Silver	< 0.005	mg/L Extract	0.005	0.001		W029105	AS	07/21/10 19:05	
EPA 6010B	Sodium	3.3	mg/L Extract	0.5	0.04		W029105	AS	07/21/10 19:04	
EPA 6010B	Zinc	< 0.01	mg/L Extract	0.01	0.002		W029105	AS	07/21/10 19:05	
EPA 7470A	Mercury	< 0.0002	mg/L Extract	0.0002	0.00006		W029135	JAA	07/14/10 13:59	



One Government Gulch - PO Box 929

Kellogg ID 83837-0929

(208) 784-1258

Fax (208) 783-0891

Tetra Tech EM, Inc. (Tucson)
3031 West Ina Road
Tucson, AZ 85741

Project Name: Rosemont
Work Order: **W0G0173**
Reported: 23-Jul-10 16:27

Client Sample ID: **EPITAPH**

SVL Sample ID: **W0G0173-01 (Soil)**

Sample Report Page 3 of 3

Sampled: 01-Jul-10 17:00
Received: 08-Jul-10
Sampled By: JP

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
SPLP Leachates (Anions)										
EPA 300.0	Chloride	0.340	mg/L Extract	0.200	0.033		W029272	FEH	07/15/10 17:11	
EPA 300.0	Fluoride	0.846	mg/L Extract	0.100	0.013		W029272	FEH	07/15/10 17:11	
EPA 300.0	Nitrate/Nitrite as N	0.111	mg/L Extract	0.100	0.022		W029272	FEH	07/15/10 17:11	
EPA 300.0	Sulfate as SO4	278	mg/L Extract	3.00	0.75	10	W029272	FEH	07/16/10 12:18	D2

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern
Laboratory Director



Tetra Tech EM, Inc. (Tucson)
3031 West Ina Road
Tucson, AZ 85741

Project Name: Rosemont
Work Order: **W0G0173**
Reported: 23-Jul-10 16:27

Client Sample ID: **EARP**

SVL Sample ID: **W0G0173-02 (Soil)**

Sample Report Page 1 of 3

Sampled: 01-Jul-10 17:00
Received: 08-Jul-10
Sampled By: JP

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
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Metals (Total) by EPA 6000/7000 Methods

EPA 6010B	Aluminum	13700	mg/kg	8.0	1.9		W029026	DG	07/23/10 15:40	
EPA 6010B	Antimony	3.3	mg/kg	2.0	0.3		W029026	DG	07/23/10 15:42	
EPA 6010B	Arsenic	5.3	mg/kg	2.5	0.5		W029026	DG	07/23/10 15:42	
EPA 6010B	Barium	67.6	mg/kg	0.20	0.02		W029026	DG	07/23/10 15:42	
EPA 6010B	Cadmium	0.29	mg/kg	0.20	0.03		W029026	DG	07/23/10 15:42	
EPA 6010B	Calcium	62600	mg/kg	4.0	1.0		W029026	DG	07/23/10 15:40	
EPA 6010B	Chromium	30.7	mg/kg	0.60	0.07		W029026	DG	07/23/10 15:42	
EPA 6010B	Copper	2250	mg/kg	1.00	0.21		W029026	DG	07/23/10 15:42	
EPA 6010B	Iron	25900	mg/kg	6.0	1.0		W029026	DG	07/23/10 15:40	
EPA 6010B	Lead	14.8	mg/kg	0.75	0.36		W029026	DG	07/23/10 15:42	
EPA 6010B	Magnesium	16600	mg/kg	6.0	2.6		W029026	DG	07/23/10 15:40	
EPA 6010B	Manganese	1720	mg/kg	0.40	0.06		W029026	DG	07/23/10 15:40	
EPA 6010B	Molybdenum	78.9	mg/kg	0.80	0.13		W029026	DG	07/23/10 15:42	
EPA 6010B	Potassium	2020	mg/kg	50.0	8.70		W029026	DG	07/23/10 15:41	
EPA 6010B	Selenium	< 4.0	mg/kg	4.0	1.4		W029026	DG	07/23/10 15:42	
EPA 6010B	Silver	2.29	mg/kg	0.50	0.04		W029026	DG	07/23/10 15:42	
EPA 6010B	Sodium	579	mg/kg	50.0	5.7		W029026	DG	07/23/10 15:40	
EPA 6010B	Zinc	140	mg/kg	1.00	0.22		W029026	DG	07/23/10 15:42	
EPA 7471A	Mercury	0.053	mg/kg	0.033	0.010		W028187	JAA	07/12/10 13:33	

Acid/Base Accounting & Sulfur Forms

Modified Sobek	ABA	138	TCaCO3/kT	0.3			N/A		07/20/10 11:53	
Modified Sobek	AGP	6.1	TCaCO3/kT	0.3			N/A		07/20/10 11:53	
Modified Sobek	ANP	145	TCaCO3/kT	0.3	0.01		W029317	HJG	07/19/10 17:14	
Modified Sobek	Non-extractable Sulfur	0.01	%	0.01			W029317	HJG	07/20/10 11:14	
Modified Sobek	Non-Sulfate Sulfur	0.20	%	0.01			W029317	HJG	07/20/10 11:53	
Modified Sobek	Pyritic Sulfur	0.19	%	0.01			N/A		07/20/10 11:53	
Modified Sobek	Sulfate Sulfur	0.09	%	0.01			N/A		07/20/10 11:53	
Modified Sobek	Total Sulfur	0.29	%	0.01			W029317	HJG	07/17/10 22:11	

Classical Chemistry Parameters

NAG	NAG pH	8.88	pH Units				W029096	BJF	07/18/10 18:45	
NAG	NAG@pH 4.5	0.00	kg H2SO4/T				W029096	BJF	07/18/10 18:45	
NAG	NAG@pH 7	0.00	kg H2SO4/T				W029096	BJF	07/18/10 18:45	

Anions by Ion Chromatography

EPA 300.0	Chloride	5.62	mg/kg	2.00	0.33		W028138	FEH	07/20/10 14:39	
EPA 300.0	Fluoride	4.16	mg/kg	1.00	0.13		W028138	FEH	07/20/10 14:39	
EPA 300.0	Sulfate as SO4	351	mg/kg	3.00	0.75		W028138	FEH	07/20/10 14:39	

Percent Solids

Percent Solids	% Solids	98.3	%	0.1			W029029	DP	07/13/10 10:08	
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Meteoritic Water Mobility Extraction Parameters

ASTM E2242-02	Extraction Fluid pH	5.69	pH Units				W029331	ESB	07/19/10 14:24	
ASTM E2242-02	Extraction Time	24.0	Hrs				W029331	ESB	07/19/10 14:24	
ASTM E2242-02	Extraction Type	Rotation					W029331	ESB	07/19/10 14:24	
ASTM E2242-02	Feed Moisture	1.00	%				W029331	ESB	07/19/10 14:24	
ASTM E2242-02	Final Fluid pH	6.86	pH Units				W029331	ESB	07/19/10 14:24	
ASTM E2242-02	Retained Moisture	0.00	%				W029331	ESB	07/19/10 14:24	
ASTM E2242-02	Sample Weight	5000	g				W029331	ESB	07/19/10 14:24	



Tetra Tech EM, Inc. (Tucson)
3031 West Ina Road
Tucson, AZ 85741

Project Name: Rosemont
Work Order: **W0G0173**
Reported: 23-Jul-10 16:27

Client Sample ID: **EARP**

SVL Sample ID: **W0G0173-02 (Soil)**

Sample Report Page 2 of 3

Sampled: 01-Jul-10 17:00
Received: 08-Jul-10
Sampled By: JP

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Meteoric Water Mobility Leachates (Metals by 200 Series)										
EPA 200.7	Aluminum	< 0.080	mg/L Extract	0.080	0.019		W030065	DG	07/21/10 11:06	
EPA 200.7	Antimony	< 0.020	mg/L Extract	0.020	0.005		W030065	DG	07/21/10 11:08	
EPA 200.7	Arsenic	< 0.025	mg/L Extract	0.025	0.005		W030065	DG	07/21/10 11:08	
EPA 200.7	Barium	0.0297	mg/L Extract	0.0020	0.0007		W030065	DG	07/21/10 11:08	
EPA 200.7	Cadmium	< 0.0020	mg/L Extract	0.0020	0.0005		W030065	DG	07/21/10 11:08	
EPA 200.7	Calcium	151	mg/L Extract	0.040	0.012		W030065	DG	07/21/10 11:06	
EPA 200.7	Chromium	< 0.0060	mg/L Extract	0.0060	0.0009		W030065	DG	07/21/10 13:10	
EPA 200.7	Copper	0.010	mg/L Extract	0.010	0.005		W030065	DG	07/21/10 13:10	
EPA 200.7	Iron	< 0.060	mg/L Extract	0.060	0.018		W030065	DG	07/21/10 11:06	
EPA 200.7	Lead	< 0.008	mg/L Extract	0.008	0.004		W030065	DG	07/21/10 13:10	
EPA 200.7	Magnesium	11.4	mg/L Extract	0.060	0.011		W030065	DG	07/21/10 11:06	
EPA 200.7	Manganese	0.0372	mg/L Extract	0.0040	0.0019		W030065	DG	07/21/10 11:06	
EPA 200.7	Potassium	15.0	mg/L Extract	0.50	0.06		W030065	DG	07/21/10 11:06	
EPA 200.7	Selenium	< 0.040	mg/L Extract	0.040	0.013		W030065	DG	07/21/10 13:10	
EPA 200.7	Silver	< 0.0050	mg/L Extract	0.0050	0.0012		W030065	DG	07/21/10 13:10	
EPA 200.7	Sodium	33.9	mg/L Extract	0.50	0.04		W030065	DG	07/21/10 11:06	
EPA 200.7	Zinc	< 0.0100	mg/L Extract	0.0100	0.0016		W030065	DG	07/21/10 11:08	
EPA 245.1	Mercury	< 0.00020	mg/L Extract	0.00020	0.000065		W030070	JAA	07/20/10 13:03	

Meteoric Water Mobility Leachates (Classical)

EPA 353.2	Nitrate/Nitrite as N	< 0.500	mg/L Extract	0.500	0.0440	10	W029325	TJK	07/19/10 15:36	N3
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Meteoric Water Mobility Leachates (Anions)

EPA 300.0	Chloride	3.51	mg/L Extract	1.00	0.165	5	W029273	FEH	07/20/10 14:45	D1
EPA 300.0	Fluoride	1.25	mg/L Extract	0.500	0.065	5	W029273	FEH	07/20/10 14:45	D1
EPA 300.0	Sulfate as SO4	435	mg/L Extract	7.50	1.88	25	W029273	FEH	07/20/10 14:54	D2

SPLP Extraction Parameters

ASTM E2242-02	Final Fluid pH	8.74	pH Units				W029015	ESB	07/13/10 12:35	
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SPLP Leachates (Metals)

EPA 6010B	Aluminum	< 0.08	mg/L Extract	0.08	0.02		W029105	AS	07/21/10 19:21	
EPA 6010B	Antimony	< 0.02	mg/L Extract	0.02	0.005		W029105	AS	07/21/10 19:22	
EPA 6010B	Arsenic	< 0.02	mg/L Extract	0.02	0.005		W029105	AS	07/21/10 19:22	
EPA 6010B	Barium	0.05	mg/L Extract	0.002	0.0007		W029105	AS	07/21/10 19:22	
EPA 6010B	Cadmium	< 0.002	mg/L Extract	0.002	0.0005		W029105	AS	07/21/10 19:22	
EPA 6010B	Calcium	18.4	mg/L Extract	0.04	0.01		W029105	AS	07/21/10 19:20	
EPA 6010B	Chromium	< 0.006	mg/L Extract	0.006	0.0009		W029105	AS	07/21/10 19:22	
EPA 6010B	Copper	< 0.01	mg/L Extract	0.01	0.005		W029105	AS	07/21/10 19:21	
EPA 6010B	Iron	< 0.06	mg/L Extract	0.06	0.02		W029105	AS	07/21/10 19:21	
EPA 6010B	Lead	< 0.0075	mg/L Extract	0.0075	0.0040		W029105	AS	07/21/10 19:22	
EPA 6010B	Magnesium	1.0	mg/L Extract	0.06	0.01		W029105	AS	07/21/10 19:21	
EPA 6010B	Manganese	< 0.004	mg/L Extract	0.004	0.002		W029105	AS	07/21/10 19:21	
EPA 6010B	Potassium	1.97	mg/L Extract	0.50	0.06		W029105	AS	07/21/10 19:20	
EPA 6010B	Selenium	< 0.040	mg/L Extract	0.040	0.013		W029105	AS	07/21/10 19:22	
EPA 6010B	Silver	< 0.005	mg/L Extract	0.005	0.001		W029105	AS	07/21/10 19:22	
EPA 6010B	Sodium	3.3	mg/L Extract	0.5	0.04		W029105	AS	07/21/10 19:20	
EPA 6010B	Zinc	< 0.01	mg/L Extract	0.01	0.002		W029105	AS	07/21/10 19:22	
EPA 7470A	Mercury	< 0.0002	mg/L Extract	0.0002	0.00006		W029135	JAA	07/14/10 14:04	



One Government Gulch - PO Box 929

Kellogg ID 83837-0929

(208) 784-1258

Fax (208) 783-0891

Tetra Tech EM, Inc. (Tucson)
3031 West Ina Road
Tucson, AZ 85741

Project Name: Rosemont
Work Order: **W0G0173**
Reported: 23-Jul-10 16:27

Client Sample ID: **EARP**

SVL Sample ID: **W0G0173-02 (Soil)**

Sample Report Page 3 of 3

Sampled: 01-Jul-10 17:00
Received: 08-Jul-10
Sampled By: JP

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
SPLP Leachates (Anions)										
EPA 300.0	Chloride	0.628	mg/L Extract	0.200	0.033		W029272	FEH	07/15/10 17:29	
EPA 300.0	Fluoride	0.630	mg/L Extract	0.100	0.013		W029272	FEH	07/15/10 17:29	
EPA 300.0	Nitrate/Nitrite as N	< 0.100	mg/L Extract	0.100	0.022		W029272	FEH	07/15/10 17:29	
EPA 300.0	Sulfate as SO4	36.8	mg/L Extract	0.30	0.08		W029272	FEH	07/15/10 17:29	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern
Laboratory Director



Tetra Tech EM, Inc. (Tucson)
3031 West Ina Road
Tucson, AZ 85741

Project Name: Rosemont
Work Order: **W0G0173**
Reported: 23-Jul-10 16:27

Quality Control - BLANK Data

Method	Analyte	Units	Result	MDL	MRL	Batch ID	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods								
EPA 6010B	Aluminum	mg/kg	<8.0	1.9	8.0	W029026	23-Jul-10	
EPA 6010B	Antimony	mg/kg	<2.0	0.3	2.0	W029026	23-Jul-10	
EPA 6010B	Arsenic	mg/kg	<2.5	0.5	2.5	W029026	23-Jul-10	
EPA 6010B	Barium	mg/kg	<0.20	0.02	0.20	W029026	23-Jul-10	
EPA 6010B	Cadmium	mg/kg	<0.20	0.03	0.20	W029026	23-Jul-10	
EPA 6010B	Calcium	mg/kg	<4.0	1.0	4.0	W029026	23-Jul-10	B7
EPA 6010B	Chromium	mg/kg	0.98	0.07	0.60	W029026	23-Jul-10	B7
EPA 6010B	Copper	mg/kg	<1.00	0.21	1.00	W029026	23-Jul-10	
EPA 6010B	Iron	mg/kg	7.9	1.0	6.0	W029026	23-Jul-10	B7
EPA 6010B	Lead	mg/kg	<0.75	0.36	0.75	W029026	23-Jul-10	
EPA 6010B	Magnesium	mg/kg	<6.0	2.6	6.0	W029026	23-Jul-10	
EPA 6010B	Manganese	mg/kg	<0.40	0.06	0.40	W029026	23-Jul-10	
EPA 6010B	Molybdenum	mg/kg	<0.80	0.13	0.80	W029026	23-Jul-10	
EPA 6010B	Potassium	mg/kg	<50.0	8.70	50.0	W029026	23-Jul-10	
EPA 6010B	Selenium	mg/kg	<4.0	1.4	4.0	W029026	23-Jul-10	
EPA 6010B	Silver	mg/kg	<0.50	0.04	0.50	W029026	23-Jul-10	
EPA 6010B	Sodium	mg/kg	<50.0	5.7	50.0	W029026	23-Jul-10	
EPA 6010B	Zinc	mg/kg	<1.00	0.22	1.00	W029026	23-Jul-10	
EPA 7471A	Mercury	mg/kg	<0.033	0.010	0.033	W028187	12-Jul-10	

Acid/Base Accounting & Sulfur Forms

Modified Sobek	ANP	TCaCO3/kT	<0.3	0.01	0.3	W029317	19-Jul-10	
Modified Sobek	Non-Sulfate Sulfur	%	<0.01		0.01	W029317	20-Jul-10	
Modified Sobek	Total Sulfur	%	<0.01		0.01	W029317	17-Jul-10	
Modified Sobek	Non-extractable Sulfur	%	<0.01		0.01	W029317	20-Jul-10	

Anions by Ion Chromatography

EPA 300.0	Fluoride	mg/kg	<1.00	0.13	1.00	W028138	20-Jul-10	
EPA 300.0	Chloride	mg/kg	<2.00	0.33	2.00	W028138	20-Jul-10	
EPA 300.0	Sulfate as SO4	mg/kg	<3.00	0.75	3.00	W028138	20-Jul-10	

Meteoric Water Mobility Leachates (Metals by 200 Series)

EPA 200.7	Aluminum	mg/L Extract	<0.080	0.019	0.080	W029234	23-Jul-10	
EPA 200.7	Aluminum	mg/L Extract	<0.080	0.019	0.080	W030065	21-Jul-10	
EPA 200.7	Antimony	mg/L Extract	<0.020	0.005	0.020	W029234	23-Jul-10	
EPA 200.7	Antimony	mg/L Extract	<0.020	0.005	0.020	W030065	21-Jul-10	
EPA 200.7	Arsenic	mg/L Extract	<0.025	0.005	0.025	W029234	23-Jul-10	
EPA 200.7	Arsenic	mg/L Extract	<0.025	0.005	0.025	W030065	21-Jul-10	
EPA 200.7	Barium	mg/L Extract	<0.0020	0.0007	0.0020	W029234	23-Jul-10	
EPA 200.7	Barium	mg/L Extract	<0.0020	0.0007	0.0020	W030065	21-Jul-10	
EPA 200.7	Cadmium	mg/L Extract	<0.0020	0.0005	0.0020	W029234	23-Jul-10	
EPA 200.7	Cadmium	mg/L Extract	<0.0020	0.0005	0.0020	W030065	21-Jul-10	
EPA 200.7	Calcium	mg/L Extract	<0.040	0.012	0.040	W029234	23-Jul-10	
EPA 200.7	Calcium	mg/L Extract	<0.040	0.012	0.040	W030065	21-Jul-10	
EPA 200.7	Chromium	mg/L Extract	<0.0060	0.0009	0.0060	W029234	23-Jul-10	
EPA 200.7	Chromium	mg/L Extract	<0.0060	0.0009	0.0060	W030065	21-Jul-10	
EPA 200.7	Copper	mg/L Extract	<0.010	0.005	0.010	W029234	23-Jul-10	
EPA 200.7	Copper	mg/L Extract	<0.010	0.005	0.010	W030065	21-Jul-10	
EPA 200.7	Iron	mg/L Extract	<0.060	0.018	0.060	W029234	23-Jul-10	
EPA 200.7	Iron	mg/L Extract	<0.060	0.018	0.060	W030065	21-Jul-10	
EPA 200.7	Lead	mg/L Extract	<0.008	0.004	0.008	W029234	23-Jul-10	
EPA 200.7	Lead	mg/L Extract	<0.008	0.004	0.008	W030065	21-Jul-10	
EPA 200.7	Magnesium	mg/L Extract	<0.060	0.011	0.060	W029234	23-Jul-10	
EPA 200.7	Magnesium	mg/L Extract	<0.060	0.011	0.060	W030065	21-Jul-10	
EPA 200.7	Manganese	mg/L Extract	<0.0040	0.0019	0.0040	W029234	23-Jul-10	
EPA 200.7	Manganese	mg/L Extract	<0.0040	0.0019	0.0040	W030065	21-Jul-10	



Tetra Tech EM, Inc. (Tucson)
3031 West Ina Road
Tucson, AZ 85741

Project Name: Rosemont
Work Order: **W0G0173**
Reported: 23-Jul-10 16:27

Quality Control - BLANK Data (Continued)

Method	Analyte	Units	Result	MDL	MRL	Batch ID	Analyzed	Notes
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Meteoric Water Mobility Leachates (Metals by 200 Series) (Continued)

EPA 200.7	Potassium	mg/L Extract	<0.50	0.06	0.50	W029234	23-Jul-10	
EPA 200.7	Potassium	mg/L Extract	<0.50	0.06	0.50	W030065	21-Jul-10	
EPA 200.7	Selenium	mg/L Extract	<0.040	0.013	0.040	W029234	23-Jul-10	
EPA 200.7	Selenium	mg/L Extract	<0.040	0.013	0.040	W030065	21-Jul-10	
EPA 200.7	Silver	mg/L Extract	<0.0050	0.0012	0.0050	W029234	23-Jul-10	
EPA 200.7	Silver	mg/L Extract	<0.0050	0.0012	0.0050	W030065	21-Jul-10	
EPA 200.7	Sodium	mg/L Extract	<0.50	0.04	0.50	W029234	23-Jul-10	
EPA 200.7	Sodium	mg/L Extract	<0.50	0.04	0.50	W030065	21-Jul-10	
EPA 200.7	Zinc	mg/L Extract	<0.0100	0.0016	0.0100	W029234	23-Jul-10	
EPA 200.7	Zinc	mg/L Extract	<0.0100	0.0016	0.0100	W030065	21-Jul-10	
EPA 245.1	Mercury	mg/L Extract	<0.00020	0.000065	0.00020	W029134	14-Jul-10	
EPA 245.1	Mercury	mg/L Extract	<0.00020	0.000065	0.00020	W030070	20-Jul-10	

Meteoric Water Mobility Leachates (Classical)

EPA 353.2	Nitrate/Nitrite as N	mg/L Extract	<0.0500	0.0044	0.0500	W029325	19-Jul-10	
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Meteoric Water Mobility Leachates (Anions)

EPA 300.0	Fluoride	mg/L Extract	<0.100	0.013	0.100	W029273	15-Jul-10	
EPA 300.0	Chloride	mg/L Extract	<0.200	0.033	0.200	W029273	15-Jul-10	
EPA 300.0	Sulfate as SO4	mg/L Extract	<0.30	0.08	0.30	W029273	15-Jul-10	

SPLP Extraction Parameters

ASTM E2242-02	Final Fluid pH	pH Units	5.00			W029015	13-Jul-10	
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SPLP Leachates (Metals)

EPA 6010B	Aluminum	mg/L Extract	<0.08	0.02	0.08	W029105	21-Jul-10	
EPA 6010B	Antimony	mg/L Extract	<0.02	0.005	0.02	W029105	21-Jul-10	
EPA 6010B	Arsenic	mg/L Extract	<0.02	0.005	0.02	W029105	21-Jul-10	
EPA 6010B	Barium	mg/L Extract	<0.002	0.0007	0.002	W029105	21-Jul-10	
EPA 6010B	Cadmium	mg/L Extract	<0.002	0.0005	0.002	W029105	21-Jul-10	
EPA 6010B	Calcium	mg/L Extract	<0.04	0.01	0.04	W029105	21-Jul-10	
EPA 6010B	Chromium	mg/L Extract	<0.006	0.0009	0.006	W029105	21-Jul-10	
EPA 6010B	Copper	mg/L Extract	<0.01	0.005	0.01	W029105	21-Jul-10	
EPA 6010B	Iron	mg/L Extract	<0.06	0.02	0.06	W029105	21-Jul-10	
EPA 6010B	Lead	mg/L Extract	<0.0075	0.0040	0.0075	W029105	21-Jul-10	
EPA 6010B	Magnesium	mg/L Extract	<0.06	0.01	0.06	W029105	21-Jul-10	
EPA 6010B	Manganese	mg/L Extract	<0.004	0.002	0.004	W029105	21-Jul-10	
EPA 6010B	Potassium	mg/L Extract	<0.50	0.06	0.50	W029105	21-Jul-10	
EPA 6010B	Selenium	mg/L Extract	<0.040	0.013	0.040	W029105	21-Jul-10	
EPA 6010B	Silver	mg/L Extract	<0.005	0.001	0.005	W029105	21-Jul-10	
EPA 6010B	Sodium	mg/L Extract	<0.5	0.04	0.5	W029105	21-Jul-10	
EPA 6010B	Zinc	mg/L Extract	<0.01	0.002	0.01	W029105	21-Jul-10	
EPA 7470A	Mercury	mg/L Extract	<0.0002	0.00006	0.0002	W029135	14-Jul-10	

SPLP Leachates (Anions)

EPA 300.0	Fluoride	mg/L Extract	<0.100	0.013	0.100	W029272	15-Jul-10	
EPA 300.0	Chloride	mg/L Extract	<0.200	0.033	0.200	W029272	15-Jul-10	
EPA 300.0	Sulfate as SO4	mg/L Extract	<0.30	0.08	0.30	W029272	15-Jul-10	
EPA 300.0	Nitrate/Nitrite as N	mg/L Extract	<0.100	0.022	0.100	W029272	15-Jul-10	



Tetra Tech EM, Inc. (Tucson)
3031 West Ina Road
Tucson, AZ 85741

Project Name: Rosemont
Work Order: **W0G0173**
Reported: 23-Jul-10 16:27

Quality Control - LABORATORY CONTROL SAMPLE Data

Method	Analyte	Units	LCS Result	LCS True	% Rec.	Acceptance Limits	Batch ID	Analyzed	Notes
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Metals (Total) by EPA 6000/7000 Methods

EPA 6010B	Aluminum	mg/kg	91.0	100	91.0	80 - 120	W029026	23-Jul-10	
EPA 6010B	Antimony	mg/kg	96.2	100	96.2	80 - 120	W029026	23-Jul-10	
EPA 6010B	Arsenic	mg/kg	93.7	100	93.7	80 - 120	W029026	23-Jul-10	
EPA 6010B	Barium	mg/kg	93.6	100	93.6	80 - 120	W029026	23-Jul-10	
EPA 6010B	Cadmium	mg/kg	92.4	100	92.4	80 - 120	W029026	23-Jul-10	
EPA 6010B	Calcium	mg/kg	1960	2000	97.8	80 - 120	W029026	23-Jul-10	
EPA 6010B	Chromium	mg/kg	96.9	100	96.9	80 - 120	W029026	23-Jul-10	
EPA 6010B	Copper	mg/kg	100	100	100	80 - 120	W029026	23-Jul-10	
EPA 6010B	Iron	mg/kg	981	1000	98.1	80 - 120	W029026	23-Jul-10	
EPA 6010B	Lead	mg/kg	93.6	100	93.6	80 - 120	W029026	23-Jul-10	
EPA 6010B	Magnesium	mg/kg	1880	2000	94.1	80 - 120	W029026	23-Jul-10	
EPA 6010B	Manganese	mg/kg	97.5	100	97.5	80 - 120	W029026	23-Jul-10	
EPA 6010B	Molybdenum	mg/kg	101	100	101	80 - 120	W029026	23-Jul-10	
EPA 6010B	Potassium	mg/kg	1970	2000	98.3	80 - 120	W029026	23-Jul-10	
EPA 6010B	Selenium	mg/kg	85.6	100	85.6	80 - 120	W029026	23-Jul-10	
EPA 6010B	Silver	mg/kg	4.43	5.00	88.6	80 - 120	W029026	23-Jul-10	
EPA 6010B	Sodium	mg/kg	1880	1900	98.8	80 - 120	W029026	23-Jul-10	
EPA 6010B	Zinc	mg/kg	89.5	100	89.5	80 - 120	W029026	23-Jul-10	
EPA 7471A	Mercury	mg/kg	0.890	0.833	107	80 - 120	W028187	12-Jul-10	

Acid/Base Accounting & Sulfur Forms

Modified Sobek	ANP	TCaCO3/kT	23.6	24.9	94.8	80 - 120	W029317	19-Jul-10	
Modified Sobek	Total Sulfur	%	3.23	3.21	101	80 - 120	W029317	17-Jul-10	

Anions by Ion Chromatography

EPA 300.0	Fluoride	mg/kg	95.5	119	80.3	50 - 150	W028138	20-Jul-10	D2
EPA 300.0	Chloride	mg/kg	589	616	95.6	80 - 120	W028138	20-Jul-10	D2
EPA 300.0	Sulfate as SO4	mg/kg	492	518	94.9	80 - 120	W028138	20-Jul-10	D2

Meteoric Water Mobility Leachates (Metals by 200 Series)

EPA 200.7	Aluminum	mg/L Extract	1.01	1.00	101	85 - 115	W030065	21-Jul-10	
EPA 200.7	Aluminum	mg/L Extract	1.02	1.00	102	85 - 115	W029234	23-Jul-10	
EPA 200.7	Antimony	mg/L Extract	1.01	1.00	101	85 - 115	W030065	21-Jul-10	
EPA 200.7	Antimony	mg/L Extract	0.980	1.00	98.0	85 - 115	W029234	23-Jul-10	
EPA 200.7	Arsenic	mg/L Extract	1.02	1.00	102	85 - 115	W030065	21-Jul-10	
EPA 200.7	Arsenic	mg/L Extract	0.974	1.00	97.4	85 - 115	W029234	23-Jul-10	
EPA 200.7	Barium	mg/L Extract	1.08	1.00	108	85 - 115	W030065	21-Jul-10	
EPA 200.7	Barium	mg/L Extract	1.05	1.00	105	85 - 115	W029234	23-Jul-10	
EPA 200.7	Cadmium	mg/L Extract	0.983	1.00	98.3	85 - 115	W030065	21-Jul-10	
EPA 200.7	Cadmium	mg/L Extract	0.949	1.00	94.9	85 - 115	W029234	23-Jul-10	
EPA 200.7	Calcium	mg/L Extract	20.8	20.0	104	85 - 115	W030065	21-Jul-10	
EPA 200.7	Calcium	mg/L Extract	20.5	20.0	102	85 - 115	W029234	23-Jul-10	
EPA 200.7	Chromium	mg/L Extract	1.01	1.00	101	85 - 115	W030065	21-Jul-10	
EPA 200.7	Chromium	mg/L Extract	0.952	1.00	95.2	85 - 115	W029234	23-Jul-10	
EPA 200.7	Copper	mg/L Extract	0.986	1.00	98.6	85 - 115	W030065	21-Jul-10	
EPA 200.7	Copper	mg/L Extract	0.971	1.00	97.1	85 - 115	W029234	23-Jul-10	
EPA 200.7	Iron	mg/L Extract	10.0	10.0	100	85 - 115	W030065	21-Jul-10	
EPA 200.7	Iron	mg/L Extract	10.2	10.0	102	85 - 115	W029234	23-Jul-10	
EPA 200.7	Lead	mg/L Extract	0.953	1.00	95.3	85 - 115	W030065	21-Jul-10	
EPA 200.7	Lead	mg/L Extract	0.964	1.00	96.4	85 - 115	W029234	23-Jul-10	
EPA 200.7	Magnesium	mg/L Extract	19.9	20.0	99.7	85 - 115	W030065	21-Jul-10	
EPA 200.7	Magnesium	mg/L Extract	19.9	20.0	99.7	85 - 115	W029234	23-Jul-10	
EPA 200.7	Manganese	mg/L Extract	1.04	1.00	104	85 - 115	W030065	21-Jul-10	
EPA 200.7	Manganese	mg/L Extract	0.940	1.00	94.0	85 - 115	W029234	23-Jul-10	
EPA 200.7	Potassium	mg/L Extract	19.6	20.0	98.0	85 - 115	W030065	21-Jul-10	
EPA 200.7	Potassium	mg/L Extract	20.5	20.0	102	85 - 115	W029234	23-Jul-10	
EPA 200.7	Selenium	mg/L Extract	0.930	1.00	93.0	85 - 115	W030065	21-Jul-10	



Tetra Tech EM, Inc. (Tucson)
3031 West Ina Road
Tucson, AZ 85741

Project Name: Rosemont
Work Order: **W0G0173**
Reported: 23-Jul-10 16:27

Quality Control - LABORATORY CONTROL SAMPLE Data (Continued)

Method	Analyte	Units	LCS Result	LCS True	% Rec.	Acceptance Limits	Batch ID	Analyzed	Notes
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Meteoric Water Mobility Leachates (Metals by 200 Series) (Continued)

EPA 200.7	Selenium	mg/L Extract	0.949	1.00	94.9	85 - 115	W029234	23-Jul-10	
EPA 200.7	Silver	mg/L Extract	0.0493	0.0500	98.7	85 - 115	W030065	21-Jul-10	
EPA 200.7	Silver	mg/L Extract	0.0487	0.0500	97.4	85 - 115	W029234	23-Jul-10	
EPA 200.7	Sodium	mg/L Extract	18.7	19.0	98.6	85 - 115	W030065	21-Jul-10	
EPA 200.7	Sodium	mg/L Extract	19.5	19.0	102	85 - 115	W029234	23-Jul-10	
EPA 200.7	Zinc	mg/L Extract	0.972	1.00	97.2	85 - 115	W030065	21-Jul-10	
EPA 200.7	Zinc	mg/L Extract	0.937	1.00	93.7	85 - 115	W029234	23-Jul-10	
EPA 245.1	Mercury	mg/L Extract	0.00566	0.00500	113	85 - 115	W029134	14-Jul-10	
EPA 245.1	Mercury	mg/L Extract	0.00514	0.00500	103	85 - 115	W030070	20-Jul-10	

Meteoric Water Mobility Leachates (Classical)

EPA 353.2	Nitrate/Nitrite as N	mg/L Extract	1.97	2.00	98.6	90 - 110	W029325	19-Jul-10	
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Meteoric Water Mobility Leachates (Anions)

EPA 300.0	Fluoride	mg/L Extract	2.14	2.00	107	90 - 110	W029273	15-Jul-10	
EPA 300.0	Chloride	mg/L Extract	3.23	3.00	108	90 - 110	W029273	15-Jul-10	
EPA 300.0	Sulfate as SO4	mg/L Extract	10.9	10.0	109	90 - 110	W029273	15-Jul-10	

SPLP Leachates (Metals)

EPA 6010B	Aluminum	mg/L Extract	1.0	1.00	97.0	80 - 120	W029105	21-Jul-10	
EPA 6010B	Antimony	mg/L Extract	0.98	1.00	98.2	80 - 120	W029105	21-Jul-10	
EPA 6010B	Arsenic	mg/L Extract	0.9	1.00	94.0	80 - 120	W029105	21-Jul-10	
EPA 6010B	Barium	mg/L Extract	0.96	1.00	95.8	80 - 120	W029105	21-Jul-10	
EPA 6010B	Cadmium	mg/L Extract	1.03	1.00	103	80 - 120	W029105	21-Jul-10	
EPA 6010B	Calcium	mg/L Extract	21.4	20.0	107	80 - 120	W029105	21-Jul-10	
EPA 6010B	Chromium	mg/L Extract	1.03	1.00	103	80 - 120	W029105	21-Jul-10	
EPA 6010B	Copper	mg/L Extract	1.09	1.00	109	80 - 120	W029105	21-Jul-10	
EPA 6010B	Iron	mg/L Extract	10.3	10.0	103	80 - 120	W029105	21-Jul-10	
EPA 6010B	Lead	mg/L Extract	1.03	1.00	103	80 - 120	W029105	21-Jul-10	
EPA 6010B	Magnesium	mg/L Extract	19.8	20.0	99.2	80 - 120	W029105	21-Jul-10	
EPA 6010B	Manganese	mg/L Extract	1.02	1.00	102	80 - 120	W029105	21-Jul-10	
EPA 6010B	Potassium	mg/L Extract	20.3	20.0	102	80 - 120	W029105	21-Jul-10	
EPA 6010B	Selenium	mg/L Extract	0.839	1.00	83.9	80 - 120	W029105	21-Jul-10	
EPA 6010B	Silver	mg/L Extract	0.048	0.0500	96.5	80 - 120	W029105	21-Jul-10	
EPA 6010B	Sodium	mg/L Extract	20.4	19.0	107	80 - 120	W029105	21-Jul-10	
EPA 6010B	Zinc	mg/L Extract	0.96	1.00	96.2	80 - 120	W029105	21-Jul-10	
EPA 7470A	Mercury	mg/L Extract	0.0057	0.00500	114	80 - 120	W029135	14-Jul-10	

SPLP Leachates (Anions)

EPA 300.0	Fluoride	mg/L Extract	2.17	2.00	108	90 - 110	W029272	15-Jul-10	
EPA 300.0	Chloride	mg/L Extract	3.22	3.00	107	90 - 110	W029272	15-Jul-10	
EPA 300.0	Sulfate as SO4	mg/L Extract	10.8	10.0	108	90 - 110	W029272	15-Jul-10	
EPA 300.0	Nitrate/Nitrite as N	mg/L Extract	4.83	4.50	107	90 - 110	W029272	15-Jul-10	



Tetra Tech EM, Inc. (Tucson)
3031 West Ina Road
Tucson, AZ 85741

Project Name: Rosemont
Work Order: **W0G0173**
Reported: 23-Jul-10 16:27

Quality Control - DUPLICATE Data

Method	Analyte	Units	Duplicate Result	Sample Result	RPD	RPD Limit	Batch ID	Analyzed	Notes
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Acid/Base Accounting & Sulfur Forms

Modified Sobek	ANP	TCaCO3/kT	<0.3	<0.3	UDL	20	W029317	19-Jul-10	
Modified Sobek	Non-Sulfate Sulfur	%	4.03	4.01	0.5	20	W029317	20-Jul-10	
Modified Sobek	Total Sulfur	%	4.14	4.20	1.4	20	W029317	17-Jul-10	
Modified Sobek	Non-extractable Sulfur	%	3.64	3.67	0.8	20	W029317	20-Jul-10	

Classical Chemistry Parameters

NAG	NAG pH	pH Units	4.01	4.06	1.2	20	W029096	18-Jul-10	
NAG	NAG@pH 4.5	kg H2SO4/T	0.00	0.00		20	W029096	18-Jul-10	
NAG	NAG@pH 7	kg H2SO4/T	0.00	0.00		20	W029096	18-Jul-10	

Anions by Ion Chromatography

EPA 300.0	Fluoride	mg/kg	5.44	5.78		20	W028138	20-Jul-10	
EPA 300.0	Chloride	mg/kg	11.9	12.8	7.4	20	W028138	20-Jul-10	
EPA 300.0	Sulfate as SO4	mg/kg	128	129	0.9	20	W028138	20-Jul-10	

Meteoric Water Mobility Leachates (Metals by 200 Series)

EPA 200.7	Aluminum	mg/L Extract	<0.080	<0.080	UDL	20	W029234	23-Jul-10	
EPA 200.7	Aluminum	mg/L Extract	<0.080	<0.080	UDL	20	W030065	21-Jul-10	
EPA 200.7	Antimony	mg/L Extract	<0.020	<0.020	<RL	20	W029234	23-Jul-10	
EPA 200.7	Antimony	mg/L Extract	<0.020	<0.020	UDL	20	W030065	21-Jul-10	
EPA 200.7	Arsenic	mg/L Extract	<0.025	<0.025	UDL	20	W029234	23-Jul-10	
EPA 200.7	Arsenic	mg/L Extract	<0.025	<0.025	UDL	20	W030065	21-Jul-10	
EPA 200.7	Barium	mg/L Extract	0.0272	0.0266	2.2	20	W029234	23-Jul-10	
EPA 200.7	Barium	mg/L Extract	0.0295	0.0297	0.8	20	W030065	21-Jul-10	
EPA 200.7	Cadmium	mg/L Extract	<0.0020	<0.0020	UDL	20	W029234	23-Jul-10	
EPA 200.7	Cadmium	mg/L Extract	<0.0020	<0.0020	UDL	20	W030065	21-Jul-10	
EPA 200.7	Calcium	mg/L Extract	151	151	0.5	20	W030065	21-Jul-10	
EPA 200.7	Calcium	mg/L Extract	554	557	0.5	20	W029234	23-Jul-10	
EPA 200.7	Chromium	mg/L Extract	<0.0060	<0.0060	UDL	20	W029234	23-Jul-10	
EPA 200.7	Chromium	mg/L Extract	<0.0060	<0.0060	UDL	20	W030065	21-Jul-10	
EPA 200.7	Copper	mg/L Extract	<0.010	0.010	<RL	20	W030065	21-Jul-10	
EPA 200.7	Copper	mg/L Extract	0.016	0.016	3.7	20	W029234	23-Jul-10	
EPA 200.7	Iron	mg/L Extract	<0.060	<0.060	UDL	20	W029234	23-Jul-10	
EPA 200.7	Iron	mg/L Extract	<0.060	<0.060	UDL	20	W030065	21-Jul-10	
EPA 200.7	Lead	mg/L Extract	<0.008	<0.008	UDL	20	W029234	23-Jul-10	
EPA 200.7	Lead	mg/L Extract	<0.008	<0.008	UDL	20	W030065	21-Jul-10	
EPA 200.7	Magnesium	mg/L Extract	11.5	11.4	0.4	20	W030065	21-Jul-10	
EPA 200.7	Magnesium	mg/L Extract	150	148	1.4	20	W029234	23-Jul-10	
EPA 200.7	Manganese	mg/L Extract	0.0371	0.0372	0.2	20	W030065	21-Jul-10	
EPA 200.7	Manganese	mg/L Extract	0.0999	0.0988	1.2	20	W029234	23-Jul-10	
EPA 200.7	Potassium	mg/L Extract	14.9	15.0	0.6	20	W030065	21-Jul-10	
EPA 200.7	Potassium	mg/L Extract	18.2	17.9	1.6	20	W029234	23-Jul-10	
EPA 200.7	Selenium	mg/L Extract	<0.040	<0.040	UDL	20	W029234	23-Jul-10	
EPA 200.7	Selenium	mg/L Extract	<0.040	<0.040	UDL	20	W030065	21-Jul-10	
EPA 200.7	Silver	mg/L Extract	<0.0050	<0.0050	UDL	20	W029234	23-Jul-10	
EPA 200.7	Silver	mg/L Extract	<0.0050	<0.0050	UDL	20	W030065	21-Jul-10	
EPA 200.7	Sodium	mg/L Extract	32.8	32.6	0.6	20	W029234	23-Jul-10	
EPA 200.7	Sodium	mg/L Extract	33.6	33.9	0.9	20	W030065	21-Jul-10	
EPA 200.7	Zinc	mg/L Extract	<0.0100	<0.0100	UDL	20	W029234	23-Jul-10	
EPA 200.7	Zinc	mg/L Extract	<0.0100	<0.0100	UDL	20	W030065	21-Jul-10	
EPA 245.1	Mercury	mg/L Extract	<0.00020	<0.00020	UDL	20	W029134	14-Jul-10	
EPA 245.1	Mercury	mg/L Extract	<0.00020	<0.00020	UDL	20	W030070	20-Jul-10	

Meteoric Water Mobility Leachates (Classical)

EPA 353.2	Nitrate/Nitrite as N	mg/L Extract	1.34	1.41	4.7	20	W029325	19-Jul-10	N3a
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Tetra Tech EM, Inc. (Tucson)
3031 West Ina Road
Tucson, AZ 85741

Project Name: Rosemont
Work Order: **W0G0173**
Reported: 23-Jul-10 16:27

Quality Control - DUPLICATE Data (Continued)

Method	Analyte	Units	Duplicate Result	Sample Result	RPD	RPD Limit	Batch ID	Analyzed	Notes
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Meteoric Water Mobility Leachates (Anions)

EPA 300.0	Fluoride	mg/L Extract	3.93	3.93	0.1	20	W029273	15-Jul-10	
EPA 300.0	Chloride	mg/L Extract	10.3	10.3	0.1	20	W029273	15-Jul-10	
EPA 300.0	Sulfate as SO4	mg/L Extract	161	162	0.0	20	W029273	15-Jul-10	D2

SPLP Leachates (Anions)

EPA 300.0	Fluoride	mg/L Extract	0.627	0.630	0.5	20	W029272	15-Jul-10	
EPA 300.0	Chloride	mg/L Extract	<0.200	0.628	<RL	20	W029272	15-Jul-10	R1
EPA 300.0	Sulfate as SO4	mg/L Extract	36.9	36.8	0.3	20	W029272	15-Jul-10	
EPA 300.0	Nitrate/Nitrite as N	mg/L Extract	<0.100	<0.100	<RL	20	W029272	15-Jul-10	

Quality Control - MATRIX SPIKE Data

Method	Analyte	Units	Spike Result	Sample Result (R)	Spike Level (S)	% Rec.	Acceptance Limits	Batch ID	Analyzed	Notes
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Metals (Total) by EPA 6000/7000 Methods

EPA 6010B	Aluminum	mg/kg	6460	5500	100	R > 4S	75 - 125	W029026	23-Jul-10	M3
EPA 6010B	Antimony	mg/kg	49.0	4.6	100	44.4	75 - 125	W029026	23-Jul-10	M2
EPA 6010B	Arsenic	mg/kg	126	28.7	100	97.4	75 - 125	W029026	23-Jul-10	
EPA 6010B	Barium	mg/kg	106	13.6	100	92.9	75 - 125	W029026	23-Jul-10	
EPA 6010B	Cadmium	mg/kg	85.8	0.64	100	85.2	75 - 125	W029026	23-Jul-10	
EPA 6010B	Calcium	mg/kg	171000	155000	2000	R > 4S	75 - 125	W029026	23-Jul-10	D2,M3
EPA 6010B	Chromium	mg/kg	107	11.8	100	95.1	75 - 125	W029026	23-Jul-10	
EPA 6010B	Copper	mg/kg	1900	1780	100	124	75 - 125	W029026	23-Jul-10	
EPA 6010B	Iron	mg/kg	37500	37700	1000	R > 4S	75 - 125	W029026	23-Jul-10	M3
EPA 6010B	Lead	mg/kg	92.8	11.9	100	80.9	75 - 125	W029026	23-Jul-10	
EPA 6010B	Magnesium	mg/kg	42100	35800	2000	R > 4S	75 - 125	W029026	23-Jul-10	M3
EPA 6010B	Manganese	mg/kg	2200	1980	100	R > 4S	75 - 125	W029026	23-Jul-10	M3
EPA 6010B	Molybdenum	mg/kg	217	122	100	94.7	75 - 125	W029026	23-Jul-10	
EPA 6010B	Potassium	mg/kg	2980	799	2000	109	75 - 125	W029026	23-Jul-10	
EPA 6010B	Selenium	mg/kg	89.4	<4.0	100	89.4	75 - 125	W029026	23-Jul-10	
EPA 6010B	Silver	mg/kg	7.45	2.22	5.00	105	75 - 125	W029026	23-Jul-10	
EPA 6010B	Sodium	mg/kg	2090	94.2	1900	105	75 - 125	W029026	23-Jul-10	
EPA 6010B	Zinc	mg/kg	217	141	100	76.0	75 - 125	W029026	23-Jul-10	
EPA 7471A	Mercury	mg/kg	0.513	0.337	0.167	106	70 - 130	W028187	12-Jul-10	

Anions by Ion Chromatography

EPA 300.0	Fluoride	mg/kg	24.4	5.78	20.0	93.1	75 - 125	W028138	20-Jul-10	
EPA 300.0	Chloride	mg/kg	39.8	12.8	30.0	90.2	75 - 125	W028138	20-Jul-10	
EPA 300.0	Sulfate as SO4	mg/kg	222	129	100	93.6	75 - 125	W028138	20-Jul-10	

Meteoric Water Mobility Leachates (Metals by 200 Series)

EPA 200.7	Aluminum	mg/L Extract	1.01	<0.080	1.00	101	70 - 130	W030065	21-Jul-10	
EPA 200.7	Aluminum	mg/L Extract	1.06	<0.080	1.00	106	70 - 130	W029234	23-Jul-10	
EPA 200.7	Antimony	mg/L Extract	1.06	<0.020	1.00	106	70 - 130	W030065	21-Jul-10	
EPA 200.7	Antimony	mg/L Extract	1.06	<0.020	1.00	105	70 - 130	W029234	23-Jul-10	
EPA 200.7	Arsenic	mg/L Extract	1.08	<0.025	1.00	108	70 - 130	W030065	21-Jul-10	
EPA 200.7	Arsenic	mg/L Extract	1.05	<0.025	1.00	105	70 - 130	W029234	23-Jul-10	
EPA 200.7	Barium	mg/L Extract	1.11	0.0297	1.00	108	70 - 130	W030065	21-Jul-10	
EPA 200.7	Barium	mg/L Extract	1.09	0.0266	1.00	107	70 - 130	W029234	23-Jul-10	
EPA 200.7	Cadmium	mg/L Extract	0.977	<0.0020	1.00	97.7	70 - 130	W030065	21-Jul-10	
EPA 200.7	Cadmium	mg/L Extract	0.935	<0.0020	1.00	93.5	70 - 130	W029234	23-Jul-10	
EPA 200.7	Calcium	mg/L Extract	165	151	20.0	72.5	70 - 130	W030065	21-Jul-10	M3
EPA 200.7	Calcium	mg/L Extract	563	557	20.0	R > 4S	70 - 130	W029234	23-Jul-10	M3
EPA 200.7	Chromium	mg/L Extract	1.03	<0.0060	1.00	103	70 - 130	W030065	21-Jul-10	
EPA 200.7	Chromium	mg/L Extract	0.953	<0.0060	1.00	95.3	70 - 130	W029234	23-Jul-10	



Tetra Tech EM, Inc. (Tucson)
3031 West Ina Road
Tucson, AZ 85741

Project Name: Rosemont
Work Order: **W0G0173**
Reported: 23-Jul-10 16:27

Quality Control - MATRIX SPIKE Data (Continued)

Method	Analyte	Units	Spike Result	Sample Result (R)	Spike Level (S)	% Rec.	Acceptance Limits	Batch ID	Analyzed	Notes
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Meteoric Water Mobility Leachates (Metals by 200 Series) (Continued)

EPA 200.7	Copper	mg/L Extract	1.05	0.010	1.00	104	70 - 130	W030065	21-Jul-10	
EPA 200.7	Copper	mg/L Extract	1.08	0.016	1.00	107	70 - 130	W029234	23-Jul-10	
EPA 200.7	Iron	mg/L Extract	10.1	<0.060	10.0	101	70 - 130	W030065	21-Jul-10	
EPA 200.7	Iron	mg/L Extract	10.2	<0.060	10.0	102	70 - 130	W029234	23-Jul-10	
EPA 200.7	Lead	mg/L Extract	1.01	<0.008	1.00	101	70 - 130	W030065	21-Jul-10	
EPA 200.7	Lead	mg/L Extract	0.955	<0.008	1.00	95.5	70 - 130	W029234	23-Jul-10	
EPA 200.7	Magnesium	mg/L Extract	31.0	11.4	20.0	98.0	70 - 130	W030065	21-Jul-10	
EPA 200.7	Magnesium	mg/L Extract	168	148	20.0	100	70 - 130	W029234	23-Jul-10	M3
EPA 200.7	Manganese	mg/L Extract	1.06	0.0372	1.00	102	70 - 130	W030065	21-Jul-10	
EPA 200.7	Manganese	mg/L Extract	1.06	0.0988	1.00	96.6	70 - 130	W029234	23-Jul-10	
EPA 200.7	Potassium	mg/L Extract	35.1	15.0	20.0	100	70 - 130	W030065	21-Jul-10	
EPA 200.7	Potassium	mg/L Extract	39.6	17.9	20.0	109	70 - 130	W029234	23-Jul-10	
EPA 200.7	Selenium	mg/L Extract	0.974	<0.040	1.00	97.4	70 - 130	W030065	21-Jul-10	
EPA 200.7	Selenium	mg/L Extract	1.03	<0.040	1.00	103	70 - 130	W029234	23-Jul-10	
EPA 200.7	Silver	mg/L Extract	0.0506	<0.0050	0.0500	101	70 - 130	W030065	21-Jul-10	
EPA 200.7	Silver	mg/L Extract	0.0541	<0.0050	0.0500	108	70 - 130	W029234	23-Jul-10	
EPA 200.7	Sodium	mg/L Extract	51.7	33.9	19.0	93.9	70 - 130	W030065	21-Jul-10	
EPA 200.7	Sodium	mg/L Extract	53.1	32.6	19.0	108	70 - 130	W029234	23-Jul-10	
EPA 200.7	Zinc	mg/L Extract	0.967	<0.0100	1.00	96.7	70 - 130	W030065	21-Jul-10	
EPA 200.7	Zinc	mg/L Extract	0.916	<0.0100	1.00	91.6	70 - 130	W029234	23-Jul-10	
EPA 245.1	Mercury	mg/L Extract	0.00115	<0.00020	0.00100	115	70 - 130	W029134	14-Jul-10	
EPA 245.1	Mercury	mg/L Extract	0.00091	<0.00020	0.00100	91.0	70 - 130	W030070	20-Jul-10	

Meteoric Water Mobility Leachates (Classical)

EPA 353.2	Nitrate/Nitrite as N	mg/L Extract	2.32	1.41	1.00	91.7	90 - 110	W029325	19-Jul-10	N3a
EPA 353.2	Nitrate/Nitrite as N	mg/L Extract	1.32	<0.500	1.00	100	90 - 110	W029325	19-Jul-10	N3a

Meteoric Water Mobility Leachates (Anions)

EPA 300.0	Fluoride	mg/L Extract	5.77	3.93	2.00	91.7	80 - 120	W029273	15-Jul-10	
EPA 300.0	Chloride	mg/L Extract	14.0	10.3	3.00	122	80 - 120	W029273	15-Jul-10	D2,M3
EPA 300.0	Sulfate as SO4	mg/L Extract	172	162	10.0	107	80 - 120	W029273	15-Jul-10	D2

SPLP Leachates (Metals)

EPA 6010B	Aluminum	mg/L Extract	1.0	<0.08	1.00	97.6	75 - 125	W029105	21-Jul-10	
EPA 6010B	Antimony	mg/L Extract	0.98	<0.02	1.00	97.2	75 - 125	W029105	21-Jul-10	
EPA 6010B	Arsenic	mg/L Extract	0.9	<0.02	1.00	94.1	75 - 125	W029105	21-Jul-10	
EPA 6010B	Barium	mg/L Extract	0.96	0.02	1.00	93.6	75 - 125	W029105	21-Jul-10	
EPA 6010B	Cadmium	mg/L Extract	1.02	<0.002	1.00	102	75 - 125	W029105	21-Jul-10	
EPA 6010B	Calcium	mg/L Extract	128	107	20.0	104	75 - 125	W029105	21-Jul-10	M3
EPA 6010B	Chromium	mg/L Extract	1.03	<0.006	1.00	102	75 - 125	W029105	21-Jul-10	
EPA 6010B	Copper	mg/L Extract	1.09	<0.01	1.00	109	75 - 125	W029105	21-Jul-10	
EPA 6010B	Iron	mg/L Extract	10.2	<0.06	10.0	102	75 - 125	W029105	21-Jul-10	
EPA 6010B	Lead	mg/L Extract	1.06	<0.0075	1.00	106	75 - 125	W029105	21-Jul-10	
EPA 6010B	Magnesium	mg/L Extract	28.3	8.5	20.0	99.2	75 - 125	W029105	21-Jul-10	
EPA 6010B	Manganese	mg/L Extract	1.03	0.01	1.00	102	75 - 125	W029105	21-Jul-10	
EPA 6010B	Potassium	mg/L Extract	21.5	1.04	20.0	102	75 - 125	W029105	21-Jul-10	
EPA 6010B	Selenium	mg/L Extract	0.873	<0.040	1.00	87.3	70 - 130	W029105	21-Jul-10	
EPA 6010B	Silver	mg/L Extract	0.048	<0.005	0.0500	96.5	75 - 125	W029105	21-Jul-10	
EPA 6010B	Sodium	mg/L Extract	23.8	3.3	19.0	108	75 - 125	W029105	21-Jul-10	
EPA 6010B	Zinc	mg/L Extract	0.94	<0.01	1.00	93.6	75 - 125	W029105	21-Jul-10	
EPA 7470A	Mercury	mg/L Extract	0.0011	<0.0002	0.00100	107	70 - 130	W029135	14-Jul-10	

SPLP Leachates (Anions)

EPA 300.0	Fluoride	mg/L Extract	2.77	0.630	2.00	107	80 - 120	W029272	15-Jul-10	
EPA 300.0	Chloride	mg/L Extract	3.60	0.628	3.00	99.0	80 - 120	W029272	15-Jul-10	
EPA 300.0	Sulfate as SO4	mg/L Extract	46.9	36.8	10.0	101	80 - 120	W029272	15-Jul-10	
EPA 300.0	Nitrate/Nitrite as N	mg/L Extract	4.55	<0.100	4.00	112	80 - 120	W029272	15-Jul-10	



Tetra Tech EM, Inc. (Tucson)
3031 West Ina Road
Tucson, AZ 85741

Project Name: Rosemont
Work Order: **W0G0173**
Reported: 23-Jul-10 16:27

Quality Control - MATRIX SPIKE DUPLICATE Data

Method	Analyte	Units	MSD Result	Spike Result	Spike Level	RPD	RPD Limit	Batch ID	Analyzed	Notes
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Metals (Total) by EPA 6000/7000 Methods

EPA 6010B	Aluminum	mg/kg	6260	6460	100	3.1	20	W029026	23-Jul-10	
EPA 6010B	Antimony	mg/kg	50.7	49.0	100	3.3	20	W029026	23-Jul-10	
EPA 6010B	Arsenic	mg/kg	128	126	100	1.2	20	W029026	23-Jul-10	
EPA 6010B	Barium	mg/kg	105	106	100	1.4	20	W029026	23-Jul-10	
EPA 6010B	Cadmium	mg/kg	85.6	85.8	100	0.3	20	W029026	23-Jul-10	
EPA 6010B	Calcium	mg/kg	167000	171000	2000	2.2	20	W029026	23-Jul-10	D2
EPA 6010B	Chromium	mg/kg	107	107	100	0.4	20	W029026	23-Jul-10	
EPA 6010B	Copper	mg/kg	1880	1900	100	1.3	20	W029026	23-Jul-10	
EPA 6010B	Iron	mg/kg	36600	37500	1000	2.4	20	W029026	23-Jul-10	
EPA 6010B	Lead	mg/kg	94.2	92.8	100	1.4	20	W029026	23-Jul-10	
EPA 6010B	Magnesium	mg/kg	41200	42100	2000	2.1	20	W029026	23-Jul-10	
EPA 6010B	Manganese	mg/kg	2170	2200	100	1.6	20	W029026	23-Jul-10	
EPA 6010B	Molybdenum	mg/kg	225	217	100	3.5	20	W029026	23-Jul-10	
EPA 6010B	Potassium	mg/kg	2980	2980	2000	0.1	20	W029026	23-Jul-10	
EPA 6010B	Selenium	mg/kg	90.1	89.4	100	0.7	20	W029026	23-Jul-10	
EPA 6010B	Silver	mg/kg	7.32	7.45	5.00	1.7	20	W029026	23-Jul-10	
EPA 6010B	Sodium	mg/kg	2100	2090	1900	0.8	20	W029026	23-Jul-10	
EPA 6010B	Zinc	mg/kg	226	217	100	3.8	20	W029026	23-Jul-10	
EPA 7471A	Mercury	mg/kg	0.502	0.513	0.167	2.3	20	W028187	12-Jul-10	

SPLP Leachates (Metals)

EPA 6010B	Aluminum	mg/L Extract	1.0	1.0	1.00	0.7	20	W029105	21-Jul-10	
EPA 6010B	Antimony	mg/L Extract	0.95	0.98	1.00	3.0	20	W029105	21-Jul-10	
EPA 6010B	Arsenic	mg/L Extract	0.9	0.9	1.00	3.7	20	W029105	21-Jul-10	
EPA 6010B	Barium	mg/L Extract	0.96	0.96	1.00	0.4	20	W029105	21-Jul-10	
EPA 6010B	Cadmium	mg/L Extract	1.01	1.02	1.00	0.7	20	W029105	21-Jul-10	
EPA 6010B	Calcium	mg/L Extract	127	128	20.0	0.8	20	W029105	21-Jul-10	
EPA 6010B	Chromium	mg/L Extract	1.02	1.03	1.00	0.7	20	W029105	21-Jul-10	
EPA 6010B	Copper	mg/L Extract	1.09	1.09	1.00	0.5	20	W029105	21-Jul-10	
EPA 6010B	Iron	mg/L Extract	10.2	10.2	10.0	0.2	20	W029105	21-Jul-10	
EPA 6010B	Lead	mg/L Extract	1.02	1.06	1.00	3.5	20	W029105	21-Jul-10	
EPA 6010B	Magnesium	mg/L Extract	28.5	28.3	20.0	0.7	20	W029105	21-Jul-10	
EPA 6010B	Manganese	mg/L Extract	1.02	1.03	1.00	0.4	20	W029105	21-Jul-10	
EPA 6010B	Potassium	mg/L Extract	21.6	21.5	20.0	0.7	20	W029105	21-Jul-10	
EPA 6010B	Selenium	mg/L Extract	0.837	0.873	1.00	4.2	20	W029105	21-Jul-10	
EPA 6010B	Silver	mg/L Extract	0.049	0.048	0.0500	1.6	20	W029105	21-Jul-10	
EPA 6010B	Sodium	mg/L Extract	24.1	23.8	19.0	1.3	20	W029105	21-Jul-10	
EPA 6010B	Zinc	mg/L Extract	0.93	0.94	1.00	1.2	20	W029105	21-Jul-10	
EPA 7470A	Mercury	mg/L Extract	0.0011	0.0011	0.00100	0.9	20	W029135	14-Jul-10	

Quality Control - POST DIGESTION SPIKE Data

Method	Analyte	Units	Spike Result	Sample Result (R)	Spike Level (S)	% Rec.	Acceptance Limits	Batch ID	Analyzed	Notes
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Metals (Total) by EPA 6000/7000 Methods

EPA 6010B	Antimony	mg/kg	98.6	4.6	100	94.0	75 - 125	W029026	23-Jul-10	
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Tetra Tech EM, Inc. (Tucson)
3031 West Ina Road
Tucson, AZ 85741

Project Name: Rosemont
Work Order: **W0G0173**
Reported: 23-Jul-10 16:27

Notes and Definitions

B7	Target analyte in method blank exceeded method QC limits, but concentrations in samples were at least 10x the blank concentration.
D1	Sample required dilution due to matrix.
D2	Sample required dilution due to high concentration of target analyte.
M2	Matrix spike recovery was low, but the LCS recovery was acceptable.
M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to spike level. The LCS was acceptable.
N3	Sample analyzed at 10x dilution (below reporting limit) due to history of MWM matrix crashing coil.
N3a	Sample analyzed at 10x dilution due to history of MWM matrix crashing coil.
R1	RPD exceeded the method acceptance limit.
LCS	Laboratory Control Sample (Blank Spike)
RPD	Relative Percent Difference
UDL	A result is less than the detection limit
R > 4S	% recovery not applicable, sample concentration more than four times greater than spike level
<RL	A result is less than the reporting limit
MRL	Method Reporting Limit
MDL	Method Detection Limit
N/A	Not Applicable



One Government Gulch - PO Box 929

Kellogg ID 83837-0929

(208) 784-1258

Fax (208) 783-0891

Tetra Tech EM, Inc. (Tucson)
3031 West Ina Road
Tucson, AZ 85741

Project Name: Rosemont
Work Order: **W0G0359**
Reported: 22-Jul-10 15:17

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Sampled By	Date Received
HORQUILLA	W0G0359-01	Soil	08-Jul-10 17:00	JP	14-Jul-2010
COLINA	W0G0359-02	Soil	08-Jul-10 17:00	JP	14-Jul-2010

Solid samples are analyzed on an as-received, wet-weight basis, unless otherwise requested.

Sample preparation is defined by the client as per their Data Quality Objectives.

This report supercedes any previous reports for this Work Order. The complete report includes pages for each sample, a full QC report, and a notes section.

The results presented in this report relate only to the samples, and meet all requirements of the NELAC Standards unless otherwise noted.



Tetra Tech EM, Inc. (Tucson)
3031 West Ina Road
Tucson, AZ 85741

Project Name: Rosemont
Work Order: W0G0359
Reported: 22-Jul-10 15:17

Client Sample ID: HORQUILLA
SVL Sample ID: W0G0359-01 (Soil)

Sample Report Page 1 of 3

Sampled: 08-Jul-10 17:00
Received: 14-Jul-10
Sampled By: JP

Table with 11 columns: Method, Analyte, Result, Units, RL, MDL, Dilution, Batch, Analyst, Analyzed, Notes

Metals (Total) by EPA 6000/7000 Methods

Table listing metal analysis results for EPA 6000/7000 methods, including Aluminum, Antimony, Arsenic, Barium, Cadmium, Calcium, Chromium, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Potassium, Selenium, Silver, Sodium, and Zinc.

Acid/Base Accounting & Sulfur Forms

Table listing acid/base accounting and sulfur form results, including ABA, AGP, ANP, Non-extractable Sulfur, Non-Sulfate Sulfur, Pyritic Sulfur, Sulfate Sulfur, and Total Sulfur.

Classical Chemistry Parameters

Table listing classical chemistry parameters: NAG pH, NAG@pH 4.5, and NAG@pH 7.

Anions by Ion Chromatography

Table listing anion results by ion chromatography: Chloride, Fluoride, and Sulfate as SO4.

Percent Solids

Table listing percent solids result: 85.5%.

Meteoritic Water Mobility Extraction Parameters

Table listing meteoritic water mobility extraction parameters: Extraction Fluid pH, Extraction Time, Extraction Type, Feed Moisture, Final Fluid pH, Retained Moisture, and Sample Weight.



Tetra Tech EM, Inc. (Tucson)
3031 West Ina Road
Tucson, AZ 85741

Project Name: Rosemont
Work Order: **W0G0359**
Reported: 22-Jul-10 15:17

Client Sample ID: **HORQUILLA**
SVL Sample ID: **W0G0359-01 (Soil)**

Sampled: 08-Jul-10 17:00
Received: 14-Jul-10
Sampled By: JP
Sample Report Page 2 of 3

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Meteoric Water Mobility Leachates (Metals by 200 Series)										
EPA 200.7	Aluminum	< 0.080	mg/L Extract	0.080	0.019		W030065	DG	07/21/10 11:23	
EPA 200.7	Antimony	< 0.020	mg/L Extract	0.020	0.005		W030065	DG	07/21/10 11:24	
EPA 200.7	Arsenic	< 0.025	mg/L Extract	0.025	0.005		W030065	DG	07/21/10 11:24	
EPA 200.7	Barium	0.0080	mg/L Extract	0.0020	0.0007		W030065	DG	07/21/10 11:24	
EPA 200.7	Cadmium	< 0.0020	mg/L Extract	0.0020	0.0005		W030065	DG	07/21/10 11:24	
EPA 200.7	Calcium	29.4	mg/L Extract	0.040	0.012		W030065	DG	07/21/10 11:23	
EPA 200.7	Chromium	< 0.0060	mg/L Extract	0.0060	0.0009		W030065	DG	07/21/10 13:28	
EPA 200.7	Copper	< 0.010	mg/L Extract	0.010	0.005		W030065	DG	07/21/10 13:27	
EPA 200.7	Iron	< 0.060	mg/L Extract	0.060	0.018		W030065	DG	07/21/10 11:23	
EPA 200.7	Lead	< 0.008	mg/L Extract	0.008	0.004		W030065	DG	07/21/10 13:28	
EPA 200.7	Magnesium	0.535	mg/L Extract	0.060	0.011		W030065	DG	07/21/10 11:23	
EPA 200.7	Manganese	< 0.0040	mg/L Extract	0.0040	0.0019		W030065	DG	07/21/10 11:23	
EPA 200.7	Potassium	4.97	mg/L Extract	0.50	0.06		W030065	DG	07/21/10 11:23	
EPA 200.7	Selenium	< 0.040	mg/L Extract	0.040	0.013		W030065	DG	07/21/10 13:28	
EPA 200.7	Silver	< 0.0050	mg/L Extract	0.0050	0.0012		W030065	DG	07/21/10 13:27	
EPA 200.7	Sodium	19.3	mg/L Extract	0.50	0.04		W030065	DG	07/21/10 11:23	
EPA 200.7	Zinc	< 0.0100	mg/L Extract	0.0100	0.0016		W030065	DG	07/21/10 11:24	
EPA 245.1	Mercury	< 0.00020	mg/L Extract	0.00020	0.000065		W030070	JAA	07/20/10 13:08	

Meteoric Water Mobility Leachates (Classical)

EPA 353.2	Nitrate/Nitrite as N	< 0.500	mg/L Extract	0.500	0.0440	10	W029325	TJK	07/19/10 15:37	N3
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Meteoric Water Mobility Leachates (Anions)

EPA 300.0	Chloride	3.56	mg/L Extract	0.200	0.033		W030131	FEH	07/21/10 11:10	
EPA 300.0	Fluoride	1.05	mg/L Extract	0.100	0.013		W030131	FEH	07/21/10 11:10	
EPA 300.0	Sulfate as SO4	91.1	mg/L Extract	1.50	0.38	5	W030131	FEH	07/21/10 11:20	D2

SPLP Extraction Parameters

ASTM E2242-02	Final Fluid pH	9.48	pH Units				W029222	ESB	07/19/10 14:21	
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SPLP Leachates (Metals)

EPA 6010B	Aluminum	0.7	mg/L Extract	0.08	0.02		W030041	AS	07/20/10 17:28	
EPA 6010B	Antimony	< 0.02	mg/L Extract	0.02	0.005		W030041	AS	07/20/10 17:30	
EPA 6010B	Arsenic	< 0.02	mg/L Extract	0.02	0.005		W030041	AS	07/20/10 17:30	
EPA 6010B	Barium	0.005	mg/L Extract	0.002	0.0007		W030041	AS	07/20/10 17:30	
EPA 6010B	Cadmium	< 0.002	mg/L Extract	0.002	0.0005		W030041	AS	07/20/10 17:30	
EPA 6010B	Calcium	9.8	mg/L Extract	0.04	0.01		W030041	AS	07/20/10 17:28	
EPA 6010B	Chromium	< 0.006	mg/L Extract	0.006	0.0009		W030041	AS	07/20/10 17:30	
EPA 6010B	Copper	0.17	mg/L Extract	0.01	0.005		W030041	AS	07/20/10 17:30	
EPA 6010B	Iron	1.2	mg/L Extract	0.06	0.02		W030041	AS	07/20/10 17:28	
EPA 6010B	Lead	< 0.0075	mg/L Extract	0.0075	0.0040		W030041	AS	07/20/10 17:30	
EPA 6010B	Magnesium	1.9	mg/L Extract	0.06	0.01		W030041	AS	07/20/10 17:28	
EPA 6010B	Manganese	0.10	mg/L Extract	0.004	0.002		W030041	AS	07/20/10 17:28	
EPA 6010B	Potassium	0.84	mg/L Extract	0.50	0.06		W030041	AS	07/20/10 17:28	
EPA 6010B	Selenium	< 0.040	mg/L Extract	0.040	0.013		W030041	AS	07/20/10 17:30	
EPA 6010B	Silver	< 0.005	mg/L Extract	0.005	0.001		W030041	AS	07/20/10 17:30	
EPA 6010B	Sodium	2.4	mg/L Extract	0.5	0.04		W030041	AS	07/20/10 17:28	
EPA 6010B	Zinc	0.05	mg/L Extract	0.01	0.002		W030041	AS	07/20/10 17:30	
EPA 7470A	Mercury	< 0.0002	mg/L Extract	0.0002	0.00006		W030071	JAA	07/20/10 13:19	



One Government Gulch - PO Box 929

Kellogg ID 83837-0929

(208) 784-1258

Fax (208) 783-0891

Tetra Tech EM, Inc. (Tucson)
3031 West Ina Road
Tucson, AZ 85741

Project Name: Rosemont
Work Order: **W0G0359**
Reported: 22-Jul-10 15:17

Client Sample ID: **HORQUILLA**

SVL Sample ID: **W0G0359-01 (Soil)**

Sample Report Page 3 of 3

Sampled: 08-Jul-10 17:00
Received: 14-Jul-10
Sampled By: JP

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
SPLP Leachates (Anions)										
EPA 300.0	Chloride	< 0.200	mg/L Extract	0.200	0.033		W030048	FEH	07/19/10 12:26	
EPA 300.0	Fluoride	0.694	mg/L Extract	0.100	0.013		W030048	FEH	07/19/10 12:26	
EPA 300.0	Nitrate/Nitrite as N	< 0.100	mg/L Extract	0.100	0.022		W030048	FEH	07/19/10 12:26	
EPA 300.0	Sulfate as SO4	6.88	mg/L Extract	0.30	0.08		W030048	FEH	07/19/10 12:26	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern
Laboratory Director



Tetra Tech EM, Inc. (Tucson)
3031 West Ina Road
Tucson, AZ 85741

Project Name: Rosemont
Work Order: W0G0359
Reported: 22-Jul-10 15:17

Client Sample ID: COLINA

SVL Sample ID: W0G0359-02 (Soil)

Sample Report Page 1 of 3

Sampled: 08-Jul-10 17:00
Received: 14-Jul-10
Sampled By: JP

Table with 11 columns: Method, Analyte, Result, Units, RL, MDL, Dilution, Batch, Analyst, Analyzed, Notes

Metals (Total) by EPA 6000/7000 Methods

Table listing metal analysis results for EPA 6000/7000 methods, including Aluminum, Antimony, Arsenic, Barium, Cadmium, Calcium, Chromium, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Potassium, Selenium, Silver, Sodium, Zinc, and Mercury.

Acid/Base Accounting & Sulfur Forms

Table listing acid/base accounting and sulfur form results, including ABA, AGP, ANP, Non-extractable Sulfur, Non-Sulfate Sulfur, Pyritic Sulfur, Sulfate Sulfur, and Total Sulfur.

Classical Chemistry Parameters

Table listing classical chemistry parameters: NAG pH, NAG@pH 4.5, and NAG@pH 7.

Anions by Ion Chromatography

Table listing anion results by ion chromatography: Chloride, Fluoride, and Sulfate as SO4.

Percent Solids

Table listing percent solids result: 85.2%.

Meteoritic Water Mobility Extraction Parameters

Table listing meteoritic water mobility extraction parameters: Extraction Fluid pH, Extraction Time, Extraction Type, Feed Moisture, Final Fluid pH, Retained Moisture, and Sample Weight.



Tetra Tech EM, Inc. (Tucson)
3031 West Ina Road
Tucson, AZ 85741

Project Name: Rosemont
Work Order: **W0G0359**
Reported: 22-Jul-10 15:17

Client Sample ID: **COLINA**

SVL Sample ID: **W0G0359-02 (Soil)**

Sample Report Page 2 of 3

Sampled: 08-Jul-10 17:00
Received: 14-Jul-10
Sampled By: JP

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Meteoric Water Mobility Leachates (Metals by 200 Series)										
EPA 200.7	Aluminum	< 0.080	mg/L Extract	0.080	0.019		W030065	DG	07/21/10 11:29	
EPA 200.7	Antimony	< 0.020	mg/L Extract	0.020	0.005		W030065	DG	07/21/10 11:30	
EPA 200.7	Arsenic	< 0.025	mg/L Extract	0.025	0.005		W030065	DG	07/21/10 11:30	
EPA 200.7	Barium	0.0346	mg/L Extract	0.0020	0.0007		W030065	DG	07/21/10 11:30	
EPA 200.7	Cadmium	< 0.0020	mg/L Extract	0.0020	0.0005		W030065	DG	07/21/10 11:30	
EPA 200.7	Calcium	658	mg/L Extract	0.040	0.012		W030065	DG	07/21/10 11:28	
EPA 200.7	Chromium	< 0.0060	mg/L Extract	0.0060	0.0009		W030065	DG	07/21/10 13:33	
EPA 200.7	Copper	0.011	mg/L Extract	0.010	0.005		W030065	DG	07/21/10 13:33	
EPA 200.7	Iron	< 0.060	mg/L Extract	0.060	0.018		W030065	DG	07/21/10 11:29	
EPA 200.7	Lead	< 0.008	mg/L Extract	0.008	0.004		W030065	DG	07/21/10 13:33	
EPA 200.7	Magnesium	15.5	mg/L Extract	0.060	0.011		W030065	DG	07/21/10 11:29	
EPA 200.7	Manganese	< 0.0040	mg/L Extract	0.0040	0.0019		W030065	DG	07/21/10 11:29	
EPA 200.7	Potassium	5.53	mg/L Extract	0.50	0.06		W030065	DG	07/21/10 11:29	
EPA 200.7	Selenium	0.048	mg/L Extract	0.040	0.013		W030065	DG	07/21/10 13:33	
EPA 200.7	Silver	< 0.0050	mg/L Extract	0.0050	0.0012		W030065	DG	07/21/10 13:33	
EPA 200.7	Sodium	15.4	mg/L Extract	0.50	0.04		W030065	DG	07/21/10 11:29	
EPA 200.7	Zinc	< 0.0100	mg/L Extract	0.0100	0.0016		W030065	DG	07/21/10 11:30	
EPA 245.1	Mercury	< 0.00020	mg/L Extract	0.00020	0.000065		W030070	JAA	07/20/10 13:09	

Meteoric Water Mobility Leachates (Classical)

EPA 353.2	Nitrate/Nitrite as N	< 0.500	mg/L Extract	0.500	0.0440	10	W029325	TJK	07/19/10 15:38	N3
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Meteoric Water Mobility Leachates (Anions)

EPA 300.0	Chloride	4.14	mg/L Extract	1.00	0.165	5	W030131	FEH	07/21/10 12:06	D1
EPA 300.0	Fluoride	2.76	mg/L Extract	0.500	0.065	5	W030131	FEH	07/21/10 12:06	D1
EPA 300.0	Sulfate as SO4	1560	mg/L Extract	15.0	3.75	50	W030131	FEH	07/21/10 12:33	D2

SPLP Extraction Parameters

ASTM E2242-02	Final Fluid pH	9.48	pH Units				W029222	ESB	07/19/10 14:21	
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SPLP Leachates (Metals)

EPA 6010B	Aluminum	< 0.08	mg/L Extract	0.08	0.02		W030041	AS	07/20/10 17:46	
EPA 6010B	Antimony	< 0.02	mg/L Extract	0.02	0.005		W030041	AS	07/20/10 17:47	
EPA 6010B	Arsenic	< 0.02	mg/L Extract	0.02	0.005		W030041	AS	07/20/10 17:47	
EPA 6010B	Barium	0.02	mg/L Extract	0.002	0.0007		W030041	AS	07/20/10 17:47	
EPA 6010B	Cadmium	< 0.002	mg/L Extract	0.002	0.0005		W030041	AS	07/20/10 17:47	
EPA 6010B	Calcium	193	mg/L Extract	0.04	0.01		W030041	AS	07/20/10 17:45	
EPA 6010B	Chromium	< 0.006	mg/L Extract	0.006	0.0009		W030041	AS	07/20/10 17:47	
EPA 6010B	Copper	< 0.01	mg/L Extract	0.01	0.005		W030041	AS	07/20/10 17:47	
EPA 6010B	Iron	< 0.06	mg/L Extract	0.06	0.02		W030041	AS	07/20/10 17:46	
EPA 6010B	Lead	< 0.0075	mg/L Extract	0.0075	0.0040		W030041	AS	07/20/10 17:47	
EPA 6010B	Magnesium	3.7	mg/L Extract	0.06	0.01		W030041	AS	07/20/10 17:46	
EPA 6010B	Manganese	< 0.004	mg/L Extract	0.004	0.002		W030041	AS	07/20/10 17:46	
EPA 6010B	Potassium	1.27	mg/L Extract	0.50	0.06		W030041	AS	07/20/10 17:45	
EPA 6010B	Selenium	< 0.040	mg/L Extract	0.040	0.013		W030041	AS	07/20/10 17:47	
EPA 6010B	Silver	< 0.005	mg/L Extract	0.005	0.001		W030041	AS	07/20/10 17:47	
EPA 6010B	Sodium	1.4	mg/L Extract	0.5	0.04		W030041	AS	07/20/10 17:45	
EPA 6010B	Zinc	< 0.01	mg/L Extract	0.01	0.002		W030041	AS	07/20/10 17:47	
EPA 7470A	Mercury	< 0.0002	mg/L Extract	0.0002	0.00006		W030071	JAA	07/20/10 13:24	



One Government Gulch - PO Box 929

Kellogg ID 83837-0929

(208) 784-1258

Fax (208) 783-0891

Tetra Tech EM, Inc. (Tucson)
3031 West Ina Road
Tucson, AZ 85741

Project Name: Rosemont
Work Order: **W0G0359**
Reported: 22-Jul-10 15:17

Client Sample ID: **COLINA**

SVL Sample ID: **W0G0359-02 (Soil)**

Sample Report Page 3 of 3

Sampled: 08-Jul-10 17:00
Received: 14-Jul-10
Sampled By: JP

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
SPLP Leachates (Anions)										
EPA 300.0	Chloride	0.218	mg/L Extract	0.200	0.033		W030048	FEH	07/19/10 13:11	
EPA 300.0	Fluoride	0.844	mg/L Extract	0.100	0.013		W030048	FEH	07/19/10 13:11	
EPA 300.0	Nitrate/Nitrite as N	< 0.100	mg/L Extract	0.100	0.022		W030048	FEH	07/19/10 13:11	
EPA 300.0	Sulfate as SO4	432	mg/L Extract	3.00	0.75	10	W030048	FEH	07/19/10 13:20	D2

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern
Laboratory Director



Tetra Tech EM, Inc. (Tucson)
3031 West Ina Road
Tucson, AZ 85741

Project Name: Rosemont
Work Order: **W0G0359**
Reported: 22-Jul-10 15:17

Quality Control - BLANK Data

Method	Analyte	Units	Result	MDL	MRL	Batch ID	Analyzed	Notes
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Metals (Total) by EPA 6000/7000 Methods

EPA 6010B	Aluminum	mg/kg	<8.0	1.9	8.0	W030038	21-Jul-10	
EPA 6010B	Antimony	mg/kg	<2.0	0.3	2.0	W030038	21-Jul-10	
EPA 6010B	Arsenic	mg/kg	<2.5	0.5	2.5	W030038	21-Jul-10	
EPA 6010B	Barium	mg/kg	<0.20	0.02	0.20	W030038	21-Jul-10	
EPA 6010B	Cadmium	mg/kg	<0.20	0.03	0.20	W030038	21-Jul-10	
EPA 6010B	Calcium	mg/kg	<4.0	1.0	4.0	W030038	21-Jul-10	B7
EPA 6010B	Chromium	mg/kg	<0.60	0.07	0.60	W030038	21-Jul-10	
EPA 6010B	Copper	mg/kg	<1.00	0.21	1.00	W030038	21-Jul-10	
EPA 6010B	Iron	mg/kg	<6.0	1.0	6.0	W030038	21-Jul-10	B7
EPA 6010B	Lead	mg/kg	<0.75	0.36	0.75	W030038	21-Jul-10	
EPA 6010B	Magnesium	mg/kg	<6.0	2.6	6.0	W030038	21-Jul-10	
EPA 6010B	Manganese	mg/kg	<0.40	0.06	0.40	W030038	21-Jul-10	
EPA 6010B	Molybdenum	mg/kg	<0.80	0.13	0.80	W030038	21-Jul-10	
EPA 6010B	Potassium	mg/kg	<50.0	8.70	50.0	W030038	21-Jul-10	
EPA 6010B	Selenium	mg/kg	<4.0	1.4	4.0	W030038	21-Jul-10	
EPA 6010B	Silver	mg/kg	<0.50	0.04	0.50	W030038	21-Jul-10	
EPA 6010B	Sodium	mg/kg	<50.0	5.7	50.0	W030038	21-Jul-10	
EPA 6010B	Zinc	mg/kg	<1.00	0.22	1.00	W030038	21-Jul-10	
EPA 7471A	Mercury	mg/kg	<0.033	0.010	0.033	W029248	19-Jul-10	

Acid/Base Accounting & Sulfur Forms

Modified Sobek	ANP	TCaCO3/kT	<0.3	0.01	0.3	W029317	19-Jul-10	
Modified Sobek	Non-Sulfate Sulfur	%	<0.01		0.01	W029317	20-Jul-10	
Modified Sobek	Total Sulfur	%	<0.01		0.01	W029317	17-Jul-10	
Modified Sobek	Non-extractable Sulfur	%	<0.01		0.01	W029317	20-Jul-10	

Anions by Ion Chromatography

EPA 300.0	Fluoride	mg/kg	<1.00	0.13	1.00	W028138	20-Jul-10	
EPA 300.0	Chloride	mg/kg	<2.00	0.33	2.00	W028138	20-Jul-10	
EPA 300.0	Sulfate as SO4	mg/kg	<3.00	0.75	3.00	W028138	20-Jul-10	

Meteoritic Water Mobility Leachates (Metals by 200 Series)

EPA 200.7	Aluminum	mg/L Extract	<0.080	0.019	0.080	W030065	21-Jul-10	
EPA 200.7	Antimony	mg/L Extract	<0.020	0.005	0.020	W030065	21-Jul-10	
EPA 200.7	Arsenic	mg/L Extract	<0.025	0.005	0.025	W030065	21-Jul-10	
EPA 200.7	Barium	mg/L Extract	<0.0020	0.0007	0.0020	W030065	21-Jul-10	
EPA 200.7	Cadmium	mg/L Extract	<0.0020	0.0005	0.0020	W030065	21-Jul-10	
EPA 200.7	Calcium	mg/L Extract	<0.040	0.012	0.040	W030065	21-Jul-10	
EPA 200.7	Chromium	mg/L Extract	<0.0060	0.0009	0.0060	W030065	21-Jul-10	
EPA 200.7	Copper	mg/L Extract	<0.010	0.005	0.010	W030065	21-Jul-10	
EPA 200.7	Iron	mg/L Extract	<0.060	0.018	0.060	W030065	21-Jul-10	
EPA 200.7	Lead	mg/L Extract	<0.008	0.004	0.008	W030065	21-Jul-10	
EPA 200.7	Magnesium	mg/L Extract	<0.060	0.011	0.060	W030065	21-Jul-10	
EPA 200.7	Manganese	mg/L Extract	<0.0040	0.0019	0.0040	W030065	21-Jul-10	
EPA 200.7	Potassium	mg/L Extract	<0.50	0.06	0.50	W030065	21-Jul-10	
EPA 200.7	Selenium	mg/L Extract	<0.040	0.013	0.040	W030065	21-Jul-10	
EPA 200.7	Silver	mg/L Extract	<0.0050	0.0012	0.0050	W030065	21-Jul-10	
EPA 200.7	Sodium	mg/L Extract	<0.50	0.04	0.50	W030065	21-Jul-10	
EPA 200.7	Zinc	mg/L Extract	<0.0100	0.0016	0.0100	W030065	21-Jul-10	
EPA 245.1	Mercury	mg/L Extract	<0.00020	0.000065	0.00020	W030070	20-Jul-10	

Meteoritic Water Mobility Leachates (Classical)

EPA 353.2	Nitrate/Nitrite as N	mg/L Extract	<0.0500	0.0044	0.0500	W029325	19-Jul-10	
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Meteoritic Water Mobility Leachates (Anions)

EPA 300.0	Fluoride	mg/L Extract	<0.100	0.013	0.100	W030131	21-Jul-10	
EPA 300.0	Chloride	mg/L Extract	<0.200	0.033	0.200	W030131	21-Jul-10	



Tetra Tech EM, Inc. (Tucson)
3031 West Ina Road
Tucson, AZ 85741

Project Name: Rosemont
Work Order: **W0G0359**
Reported: 22-Jul-10 15:17

Quality Control - BLANK Data (Continued)

Method	Analyte	Units	Result	MDL	MRL	Batch ID	Analyzed	Notes
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Meteoric Water Mobility Leachates (Anions) (Continued)

EPA 300.0	Sulfate as SO4	mg/L Extract	<0.30	0.08	0.30	W030131	21-Jul-10	
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SPLP Extraction Parameters

ASTM E2242-02	Final Fluid pH	pH Units	5.00			W029222	19-Jul-10	
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SPLP Leachates (Metals)

EPA 6010B	Aluminum	mg/L Extract	<0.08	0.02	0.08	W030041	20-Jul-10	
EPA 6010B	Antimony	mg/L Extract	<0.02	0.005	0.02	W030041	20-Jul-10	
EPA 6010B	Arsenic	mg/L Extract	<0.02	0.005	0.02	W030041	20-Jul-10	
EPA 6010B	Barium	mg/L Extract	<0.002	0.0007	0.002	W030041	20-Jul-10	
EPA 6010B	Cadmium	mg/L Extract	<0.002	0.0005	0.002	W030041	20-Jul-10	
EPA 6010B	Calcium	mg/L Extract	<0.04	0.01	0.04	W030041	20-Jul-10	B7
EPA 6010B	Chromium	mg/L Extract	<0.006	0.0009	0.006	W030041	20-Jul-10	
EPA 6010B	Copper	mg/L Extract	<0.01	0.005	0.01	W030041	20-Jul-10	
EPA 6010B	Iron	mg/L Extract	<0.06	0.02	0.06	W030041	20-Jul-10	
EPA 6010B	Lead	mg/L Extract	<0.0075	0.0040	0.0075	W030041	20-Jul-10	
EPA 6010B	Magnesium	mg/L Extract	<0.06	0.01	0.06	W030041	20-Jul-10	
EPA 6010B	Manganese	mg/L Extract	<0.004	0.002	0.004	W030041	20-Jul-10	
EPA 6010B	Potassium	mg/L Extract	<0.50	0.06	0.50	W030041	20-Jul-10	
EPA 6010B	Selenium	mg/L Extract	<0.040	0.013	0.040	W030041	20-Jul-10	
EPA 6010B	Silver	mg/L Extract	<0.005	0.001	0.005	W030041	20-Jul-10	
EPA 6010B	Sodium	mg/L Extract	<0.5	0.04	0.5	W030041	20-Jul-10	
EPA 6010B	Zinc	mg/L Extract	<0.01	0.002	0.01	W030041	20-Jul-10	
EPA 7470A	Mercury	mg/L Extract	<0.0002	0.00006	0.0002	W030071	20-Jul-10	

SPLP Leachates (Anions)

EPA 300.0	Fluoride	mg/L Extract	<0.100	0.013	0.100	W030048	19-Jul-10	
EPA 300.0	Chloride	mg/L Extract	<0.200	0.033	0.200	W030048	19-Jul-10	
EPA 300.0	Sulfate as SO4	mg/L Extract	<0.30	0.08	0.30	W030048	19-Jul-10	
EPA 300.0	Nitrate/Nitrite as N	mg/L Extract	<0.100	0.022	0.100	W030048	19-Jul-10	

Quality Control - LABORATORY CONTROL SAMPLE Data

Method	Analyte	Units	LCS Result	LCS True	% Rec.	Acceptance Limits	Batch ID	Analyzed	Notes
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Metals (Total) by EPA 6000/7000 Methods

EPA 6010B	Aluminum	mg/kg	98.7	100	98.7	80 - 120	W030038	21-Jul-10	
EPA 6010B	Antimony	mg/kg	97.1	100	97.1	80 - 120	W030038	21-Jul-10	
EPA 6010B	Arsenic	mg/kg	95.0	100	95.0	80 - 120	W030038	21-Jul-10	
EPA 6010B	Barium	mg/kg	101	100	101	80 - 120	W030038	21-Jul-10	
EPA 6010B	Cadmium	mg/kg	99.1	100	99.1	80 - 120	W030038	21-Jul-10	
EPA 6010B	Calcium	mg/kg	2160	2000	108	80 - 120	W030038	21-Jul-10	
EPA 6010B	Chromium	mg/kg	110	100	110	80 - 120	W030038	21-Jul-10	
EPA 6010B	Copper	mg/kg	109	100	109	80 - 120	W030038	21-Jul-10	
EPA 6010B	Iron	mg/kg	1030	1000	103	80 - 120	W030038	21-Jul-10	
EPA 6010B	Lead	mg/kg	104	100	104	80 - 120	W030038	21-Jul-10	
EPA 6010B	Magnesium	mg/kg	2060	2000	103	80 - 120	W030038	21-Jul-10	
EPA 6010B	Manganese	mg/kg	103	100	103	80 - 120	W030038	21-Jul-10	
EPA 6010B	Molybdenum	mg/kg	109	100	109	80 - 120	W030038	21-Jul-10	
EPA 6010B	Potassium	mg/kg	2080	2000	104	80 - 120	W030038	21-Jul-10	
EPA 6010B	Selenium	mg/kg	93.0	100	93.0	80 - 120	W030038	21-Jul-10	
EPA 6010B	Silver	mg/kg	4.99	5.00	99.8	80 - 120	W030038	21-Jul-10	
EPA 6010B	Sodium	mg/kg	2100	1900	110	80 - 120	W030038	21-Jul-10	
EPA 6010B	Zinc	mg/kg	101	100	101	80 - 120	W030038	21-Jul-10	
EPA 7471A	Mercury	mg/kg	0.893	0.833	107	80 - 120	W029248	19-Jul-10	



Tetra Tech EM, Inc. (Tucson)
3031 West Ina Road
Tucson, AZ 85741

Project Name: Rosemont
Work Order: **W0G0359**
Reported: 22-Jul-10 15:17

Quality Control - LABORATORY CONTROL SAMPLE Data**(Continued)**

Method	Analyte	Units	LCS Result	LCS True	% Rec.	Acceptance Limits	Batch ID	Analyzed	Notes
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Acid/Base Accounting & Sulfur Forms

Modified Sobek	ANP	TCaCO3/kT	23.6	24.9	94.8	80 - 120	W029317	19-Jul-10	
Modified Sobek	Total Sulfur	%	3.23	3.21	101	80 - 120	W029317	17-Jul-10	

Anions by Ion Chromatography

EPA 300.0	Fluoride	mg/kg	95.5	119	80.3	50 - 150	W028138	20-Jul-10	D2
EPA 300.0	Chloride	mg/kg	589	616	95.6	80 - 120	W028138	20-Jul-10	D2
EPA 300.0	Sulfate as SO4	mg/kg	492	518	94.9	80 - 120	W028138	20-Jul-10	D2

Meteoritic Water Mobility Leachates (Metals by 200 Series)

EPA 200.7	Aluminum	mg/L Extract	1.01	1.00	101	85 - 115	W030065	21-Jul-10	
EPA 200.7	Antimony	mg/L Extract	1.01	1.00	101	85 - 115	W030065	21-Jul-10	
EPA 200.7	Arsenic	mg/L Extract	1.02	1.00	102	85 - 115	W030065	21-Jul-10	
EPA 200.7	Barium	mg/L Extract	1.08	1.00	108	85 - 115	W030065	21-Jul-10	
EPA 200.7	Cadmium	mg/L Extract	0.983	1.00	98.3	85 - 115	W030065	21-Jul-10	
EPA 200.7	Calcium	mg/L Extract	20.8	20.0	104	85 - 115	W030065	21-Jul-10	
EPA 200.7	Chromium	mg/L Extract	1.01	1.00	101	85 - 115	W030065	21-Jul-10	
EPA 200.7	Copper	mg/L Extract	0.986	1.00	98.6	85 - 115	W030065	21-Jul-10	
EPA 200.7	Iron	mg/L Extract	10.0	10.0	100	85 - 115	W030065	21-Jul-10	
EPA 200.7	Lead	mg/L Extract	0.953	1.00	95.3	85 - 115	W030065	21-Jul-10	
EPA 200.7	Magnesium	mg/L Extract	19.9	20.0	99.7	85 - 115	W030065	21-Jul-10	
EPA 200.7	Manganese	mg/L Extract	1.04	1.00	104	85 - 115	W030065	21-Jul-10	
EPA 200.7	Potassium	mg/L Extract	19.6	20.0	98.0	85 - 115	W030065	21-Jul-10	
EPA 200.7	Selenium	mg/L Extract	0.930	1.00	93.0	85 - 115	W030065	21-Jul-10	
EPA 200.7	Silver	mg/L Extract	0.0493	0.0500	98.7	85 - 115	W030065	21-Jul-10	
EPA 200.7	Sodium	mg/L Extract	18.7	19.0	98.6	85 - 115	W030065	21-Jul-10	
EPA 200.7	Zinc	mg/L Extract	0.972	1.00	97.2	85 - 115	W030065	21-Jul-10	
EPA 245.1	Mercury	mg/L Extract	0.00514	0.00500	103	85 - 115	W030070	20-Jul-10	

Meteoritic Water Mobility Leachates (Classical)

EPA 353.2	Nitrate/Nitrite as N	mg/L Extract	1.97	2.00	98.6	90 - 110	W029325	19-Jul-10	
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Meteoritic Water Mobility Leachates (Anions)

EPA 300.0	Fluoride	mg/L Extract	1.98	2.00	99.0	90 - 110	W030131	21-Jul-10	
EPA 300.0	Chloride	mg/L Extract	2.95	3.00	98.4	90 - 110	W030131	21-Jul-10	
EPA 300.0	Sulfate as SO4	mg/L Extract	10.1	10.0	101	90 - 110	W030131	21-Jul-10	

SPLP Leachates (Metals)

EPA 6010B	Aluminum	mg/L Extract	1.0	1.00	95.2	80 - 120	W030041	20-Jul-10	
EPA 6010B	Antimony	mg/L Extract	1.02	1.00	102	80 - 120	W030041	20-Jul-10	
EPA 6010B	Arsenic	mg/L Extract	1.0	1.00	102	80 - 120	W030041	20-Jul-10	
EPA 6010B	Barium	mg/L Extract	0.97	1.00	96.8	80 - 120	W030041	20-Jul-10	
EPA 6010B	Cadmium	mg/L Extract	1.02	1.00	102	80 - 120	W030041	20-Jul-10	
EPA 6010B	Calcium	mg/L Extract	21.2	20.0	106	80 - 120	W030041	20-Jul-10	
EPA 6010B	Chromium	mg/L Extract	1.04	1.00	104	80 - 120	W030041	20-Jul-10	
EPA 6010B	Copper	mg/L Extract	1.07	1.00	107	80 - 120	W030041	20-Jul-10	
EPA 6010B	Iron	mg/L Extract	10.0	10.0	100	80 - 120	W030041	20-Jul-10	
EPA 6010B	Lead	mg/L Extract	1.01	1.00	101	80 - 120	W030041	20-Jul-10	
EPA 6010B	Magnesium	mg/L Extract	19.9	20.0	99.3	80 - 120	W030041	20-Jul-10	
EPA 6010B	Manganese	mg/L Extract	1.01	1.00	101	80 - 120	W030041	20-Jul-10	
EPA 6010B	Potassium	mg/L Extract	20.4	20.0	102	80 - 120	W030041	20-Jul-10	
EPA 6010B	Selenium	mg/L Extract	0.945	1.00	94.5	80 - 120	W030041	20-Jul-10	
EPA 6010B	Silver	mg/L Extract	0.050	0.0500	99.0	80 - 120	W030041	20-Jul-10	
EPA 6010B	Sodium	mg/L Extract	18.7	19.0	98.4	80 - 120	W030041	20-Jul-10	
EPA 6010B	Zinc	mg/L Extract	1.00	1.00	99.7	80 - 120	W030041	20-Jul-10	
EPA 7470A	Mercury	mg/L Extract	0.0045	0.00500	90.8	80 - 120	W030071	20-Jul-10	

SPLP Leachates (Anions)

EPA 300.0	Fluoride	mg/L Extract	1.95	2.00	97.6	90 - 110	W030048	19-Jul-10	
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SVL holds the following certifications: AZ:0538, CA:2080, CO:ID00019, FL(NELAC):E87993, ID:ID00019 & ID00965 (Microbiology),

NV:ID000192007A, WA:1268, WY:ID00019



Tetra Tech EM, Inc. (Tucson)
3031 West Ina Road
Tucson, AZ 85741

Project Name: Rosemont
Work Order: **W0G0359**
Reported: 22-Jul-10 15:17

Quality Control - LABORATORY CONTROL SAMPLE Data (Continued)

Method	Analyte	Units	LCS Result	LCS True	% Rec.	Acceptance Limits	Batch ID	Analyzed	Notes
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SPLP Leachates (Anions) (Continued)

EPA 300.0	Chloride	mg/L Extract	2.96	3.00	98.5	90 - 110	W030048	19-Jul-10	
EPA 300.0	Sulfate as SO4	mg/L Extract	9.78	10.0	97.8	90 - 110	W030048	19-Jul-10	
EPA 300.0	Nitrate/Nitrite as N	mg/L Extract	4.54	4.50	101	90 - 110	W030048	19-Jul-10	

Quality Control - DUPLICATE Data

Method	Analyte	Units	Duplicate Result	Sample Result	RPD	RPD Limit	Batch ID	Analyzed	Notes
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Acid/Base Accounting & Sulfur Forms

Modified Sobek	ANP	TCaCO3/KT	<0.3	<0.3	UDL	20	W029317	19-Jul-10	
Modified Sobek	Non-Sulfate Sulfur	%	4.03	4.01	0.5	20	W029317	20-Jul-10	
Modified Sobek	Total Sulfur	%	4.14	4.20	1.4	20	W029317	17-Jul-10	
Modified Sobek	Non-extractable Sulfur	%	3.64	3.67	0.8	20	W029317	20-Jul-10	

Classical Chemistry Parameters

NAG	NAG pH	pH Units	4.80	4.94	2.9	20	W030053	20-Jul-10	
NAG	NAG@pH 4.5	kg H2SO4/T	0.00	0.00		20	W030053	20-Jul-10	
NAG	NAG@pH 7	kg H2SO4/T	0.00	0.00		20	W030053	20-Jul-10	

Anions by Ion Chromatography

EPA 300.0	Fluoride	mg/kg	5.44	5.78	5.9	20	W028138	20-Jul-10	
EPA 300.0	Chloride	mg/kg	11.9	12.8	7.4	20	W028138	20-Jul-10	
EPA 300.0	Sulfate as SO4	mg/kg	128	129	0.9	20	W028138	20-Jul-10	

Meteoric Water Mobility Leachates (Metals by 200 Series)

EPA 200.7	Aluminum	mg/L Extract	<0.080	<0.080	UDL	20	W030065	21-Jul-10	
EPA 200.7	Antimony	mg/L Extract	<0.020	<0.020	UDL	20	W030065	21-Jul-10	
EPA 200.7	Arsenic	mg/L Extract	<0.025	<0.025	UDL	20	W030065	21-Jul-10	
EPA 200.7	Barium	mg/L Extract	0.0295	0.0297	0.8	20	W030065	21-Jul-10	
EPA 200.7	Cadmium	mg/L Extract	<0.0020	<0.0020	UDL	20	W030065	21-Jul-10	
EPA 200.7	Calcium	mg/L Extract	151	151	0.5	20	W030065	21-Jul-10	
EPA 200.7	Chromium	mg/L Extract	<0.0060	<0.0060	UDL	20	W030065	21-Jul-10	
EPA 200.7	Copper	mg/L Extract	<0.010	0.010	<RL	20	W030065	21-Jul-10	
EPA 200.7	Iron	mg/L Extract	<0.060	<0.060	UDL	20	W030065	21-Jul-10	
EPA 200.7	Lead	mg/L Extract	<0.008	<0.008	UDL	20	W030065	21-Jul-10	
EPA 200.7	Magnesium	mg/L Extract	11.5	11.4	0.4	20	W030065	21-Jul-10	
EPA 200.7	Manganese	mg/L Extract	0.0371	0.0372	0.2	20	W030065	21-Jul-10	
EPA 200.7	Potassium	mg/L Extract	14.9	15.0	0.6	20	W030065	21-Jul-10	
EPA 200.7	Selenium	mg/L Extract	<0.040	<0.040	UDL	20	W030065	21-Jul-10	
EPA 200.7	Silver	mg/L Extract	<0.0050	<0.0050	UDL	20	W030065	21-Jul-10	
EPA 200.7	Sodium	mg/L Extract	33.6	33.9	0.9	20	W030065	21-Jul-10	
EPA 200.7	Zinc	mg/L Extract	<0.0100	<0.0100	UDL	20	W030065	21-Jul-10	
EPA 245.1	Mercury	mg/L Extract	<0.00020	<0.00020	UDL	20	W030070	20-Jul-10	

Meteoric Water Mobility Leachates (Classical)

EPA 353.2	Nitrate/Nitrite as N	mg/L Extract	1.34	1.41	4.7	20	W029325	19-Jul-10	N3a
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Meteoric Water Mobility Leachates (Anions)

EPA 300.0	Fluoride	mg/L Extract	1.05	1.05	0.5	20	W030131	21-Jul-10	
EPA 300.0	Chloride	mg/L Extract	3.46	3.56	2.7	20	W030131	21-Jul-10	
EPA 300.0	Sulfate as SO4	mg/L Extract	90.3	91.1	1.0	20	W030131	21-Jul-10	D2

SPLP Leachates (Anions)

EPA 300.0	Fluoride	mg/L Extract	0.690	0.694	0.6	20	W030048	19-Jul-10	
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Tetra Tech EM, Inc. (Tucson)
3031 West Ina Road
Tucson, AZ 85741

Project Name: Rosemont
Work Order: **W0G0359**
Reported: 22-Jul-10 15:17

Quality Control - DUPLICATE Data (Continued)

Method	Analyte	Units	Duplicate Result	Sample Result	RPD	RPD Limit	Batch ID	Analyzed	Notes
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SPLP Leachates (Anions) (Continued)

EPA 300.0	Chloride	mg/L Extract	<0.200	<0.200	<RL	20	W030048	19-Jul-10	
EPA 300.0	Sulfate as SO4	mg/L Extract	6.90	6.88	0.3	20	W030048	19-Jul-10	
EPA 300.0	Nitrate/Nitrite as N	mg/L Extract	<0.100	<0.100	<RL	20	W030048	19-Jul-10	

Quality Control - MATRIX SPIKE Data

Method	Analyte	Units	Spike Result	Sample Result (R)	Spike Level (S)	% Rec.	Acceptance Limits	Batch ID	Analyzed	Notes
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Metals (Total) by EPA 6000/7000 Methods

EPA 6010B	Aluminum	mg/kg	10100	7110	100	R > 4S	75 - 125	W030038	21-Jul-10	M3
EPA 6010B	Antimony	mg/kg	29.0	<2.0	100	29.0	75 - 125	W030038	21-Jul-10	M2
EPA 6010B	Arsenic	mg/kg	105	13.5	100	91.9	75 - 125	W030038	21-Jul-10	
EPA 6010B	Barium	mg/kg	100	5.17	100	95.1	75 - 125	W030038	21-Jul-10	
EPA 6010B	Cadmium	mg/kg	87.4	0.24	100	87.1	75 - 125	W030038	21-Jul-10	
EPA 6010B	Calcium	mg/kg	108000	84600	2000	R > 4S	75 - 125	W030038	21-Jul-10	D2,M3
EPA 6010B	Chromium	mg/kg	118	14.3	100	104	75 - 125	W030038	21-Jul-10	
EPA 6010B	Copper	mg/kg	1330	1030	100	R > 4S	75 - 125	W030038	21-Jul-10	M3
EPA 6010B	Iron	mg/kg	41700	33800	1000	R > 4S	75 - 125	W030038	21-Jul-10	M3
EPA 6010B	Lead	mg/kg	125	30.4	100	95.0	75 - 125	W030038	21-Jul-10	
EPA 6010B	Magnesium	mg/kg	10400	6010	2000	221	75 - 125	W030038	21-Jul-10	M1
EPA 6010B	Manganese	mg/kg	2540	1950	100	R > 4S	75 - 125	W030038	21-Jul-10	M3
EPA 6010B	Molybdenum	mg/kg	143	53.3	100	89.6	75 - 125	W030038	21-Jul-10	
EPA 6010B	Potassium	mg/kg	2600	435	2000	108	75 - 125	W030038	21-Jul-10	
EPA 6010B	Selenium	mg/kg	99.7	5.5	100	94.2	75 - 125	W030038	21-Jul-10	
EPA 6010B	Silver	mg/kg	5.57	0.56	5.00	100	75 - 125	W030038	21-Jul-10	
EPA 6010B	Sodium	mg/kg	2200	102	1900	110	75 - 125	W030038	21-Jul-10	
EPA 6010B	Zinc	mg/kg	322	184	100	139	75 - 125	W030038	21-Jul-10	M1
EPA 7471A	Mercury	mg/kg	0.337	0.130	0.167	124	75 - 125	W029248	19-Jul-10	

Anions by Ion Chromatography

EPA 300.0	Fluoride	mg/kg	24.4	5.78	20.0	93.1	75 - 125	W028138	20-Jul-10	
EPA 300.0	Chloride	mg/kg	39.8	12.8	30.0	90.2	75 - 125	W028138	20-Jul-10	
EPA 300.0	Sulfate as SO4	mg/kg	222	129	100	93.6	75 - 125	W028138	20-Jul-10	

Meteoric Water Mobility Leachates (Metals by 200 Series)

EPA 200.7	Aluminum	mg/L Extract	1.01	<0.080	1.00	101	70 - 130	W030065	21-Jul-10	
EPA 200.7	Antimony	mg/L Extract	1.06	<0.020	1.00	106	70 - 130	W030065	21-Jul-10	
EPA 200.7	Arsenic	mg/L Extract	1.08	<0.025	1.00	108	70 - 130	W030065	21-Jul-10	
EPA 200.7	Barium	mg/L Extract	1.11	0.0297	1.00	108	70 - 130	W030065	21-Jul-10	
EPA 200.7	Cadmium	mg/L Extract	0.977	<0.0020	1.00	97.7	70 - 130	W030065	21-Jul-10	
EPA 200.7	Calcium	mg/L Extract	165	151	20.0	72.5	70 - 130	W030065	21-Jul-10	M3
EPA 200.7	Chromium	mg/L Extract	1.03	<0.0060	1.00	103	70 - 130	W030065	21-Jul-10	
EPA 200.7	Copper	mg/L Extract	1.05	0.010	1.00	104	70 - 130	W030065	21-Jul-10	
EPA 200.7	Iron	mg/L Extract	10.1	<0.060	10.0	101	70 - 130	W030065	21-Jul-10	
EPA 200.7	Lead	mg/L Extract	1.01	<0.008	1.00	101	70 - 130	W030065	21-Jul-10	
EPA 200.7	Magnesium	mg/L Extract	31.0	11.4	20.0	98.0	70 - 130	W030065	21-Jul-10	
EPA 200.7	Manganese	mg/L Extract	1.06	0.0372	1.00	102	70 - 130	W030065	21-Jul-10	
EPA 200.7	Potassium	mg/L Extract	35.1	15.0	20.0	100	70 - 130	W030065	21-Jul-10	
EPA 200.7	Selenium	mg/L Extract	0.974	<0.040	1.00	97.4	70 - 130	W030065	21-Jul-10	
EPA 200.7	Silver	mg/L Extract	0.0506	<0.0050	0.0500	101	70 - 130	W030065	21-Jul-10	
EPA 200.7	Sodium	mg/L Extract	51.7	33.9	19.0	93.9	70 - 130	W030065	21-Jul-10	
EPA 200.7	Zinc	mg/L Extract	0.967	<0.0100	1.00	96.7	70 - 130	W030065	21-Jul-10	
EPA 245.1	Mercury	mg/L Extract	0.00091	<0.00020	0.00100	91.0	70 - 130	W030070	20-Jul-10	



Tetra Tech EM, Inc. (Tucson)
3031 West Ina Road
Tucson, AZ 85741

Project Name: Rosemont
Work Order: **W0G0359**
Reported: 22-Jul-10 15:17

Quality Control - MATRIX SPIKE Data (Continued)

Method	Analyte	Units	Spike Result	Sample Result (R)	Spike Level (S)	% Rec.	Acceptance Limits	Batch ID	Analyzed	Notes
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Meteoric Water Mobility Leachates (Classical)

EPA 353.2	Nitrate/Nitrite as N	mg/L Extract	2.32	1.41	1.00	91.7	90 - 110	W029325	19-Jul-10	N3a
EPA 353.2	Nitrate/Nitrite as N	mg/L Extract	1.32	<0.500	1.00	100	90 - 110	W029325	19-Jul-10	N3a

Meteoric Water Mobility Leachates (Anions)

EPA 300.0	Fluoride	mg/L Extract	3.07	1.05	2.00	101	80 - 120	W030131	21-Jul-10	
EPA 300.0	Chloride	mg/L Extract	6.43	3.56	3.00	95.8	80 - 120	W030131	21-Jul-10	
EPA 300.0	Sulfate as SO4	mg/L Extract	101	91.1	10.0	102	80 - 120	W030131	21-Jul-10	D2

SPLP Leachates (Metals)

EPA 6010B	Aluminum	mg/L Extract	1.7	0.7	1.00	99.0	75 - 125	W030041	20-Jul-10	
EPA 6010B	Antimony	mg/L Extract	1.03	<0.02	1.00	103	75 - 125	W030041	20-Jul-10	
EPA 6010B	Arsenic	mg/L Extract	1.0	<0.02	1.00	104	75 - 125	W030041	20-Jul-10	
EPA 6010B	Barium	mg/L Extract	0.98	0.005	1.00	97.3	75 - 125	W030041	20-Jul-10	
EPA 6010B	Cadmium	mg/L Extract	1.03	<0.002	1.00	103	75 - 125	W030041	20-Jul-10	
EPA 6010B	Calcium	mg/L Extract	31.2	9.8	20.0	107	75 - 125	W030041	20-Jul-10	
EPA 6010B	Chromium	mg/L Extract	1.04	<0.006	1.00	104	75 - 125	W030041	20-Jul-10	
EPA 6010B	Copper	mg/L Extract	1.24	0.17	1.00	107	75 - 125	W030041	20-Jul-10	
EPA 6010B	Iron	mg/L Extract	11.4	1.2	10.0	102	75 - 125	W030041	20-Jul-10	
EPA 6010B	Lead	mg/L Extract	1.02	<0.0075	1.00	102	75 - 125	W030041	20-Jul-10	
EPA 6010B	Magnesium	mg/L Extract	22.1	1.9	20.0	101	75 - 125	W030041	20-Jul-10	
EPA 6010B	Manganese	mg/L Extract	1.14	0.10	1.00	104	75 - 125	W030041	20-Jul-10	
EPA 6010B	Potassium	mg/L Extract	21.4	0.84	20.0	103	75 - 125	W030041	20-Jul-10	
EPA 6010B	Selenium	mg/L Extract	0.937	<0.040	1.00	93.7	70 - 130	W030041	20-Jul-10	
EPA 6010B	Silver	mg/L Extract	0.050	<0.005	0.0500	99.1	75 - 125	W030041	20-Jul-10	
EPA 6010B	Sodium	mg/L Extract	20.9	2.4	19.0	97.4	75 - 125	W030041	20-Jul-10	
EPA 6010B	Zinc	mg/L Extract	1.06	0.05	1.00	101	75 - 125	W030041	20-Jul-10	
EPA 7470A	Mercury	mg/L Extract	0.0008	<0.0002	0.00100	76.0	70 - 130	W030071	20-Jul-10	

SPLP Leachates (Anions)

EPA 300.0	Fluoride	mg/L Extract	2.68	0.694	2.00	99.2	80 - 120	W030048	19-Jul-10	
EPA 300.0	Chloride	mg/L Extract	3.21	<0.200	3.00	102	80 - 120	W030048	19-Jul-10	
EPA 300.0	Sulfate as SO4	mg/L Extract	16.9	6.88	10.0	99.8	80 - 120	W030048	19-Jul-10	
EPA 300.0	Nitrate/Nitrite as N	mg/L Extract	4.17	<0.100	4.00	103	80 - 120	W030048	19-Jul-10	

Quality Control - MATRIX SPIKE DUPLICATE Data

Method	Analyte	Units	MSD Result	Spike Result	Spike Level	RPD	RPD Limit	Batch ID	Analyzed	Notes
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Metals (Total) by EPA 6000/7000 Methods

EPA 6010B	Aluminum	mg/kg	9370	10100	100	7.6	20	W030038	21-Jul-10	
EPA 6010B	Antimony	mg/kg	28.5	29.0	100	1.9	20	W030038	21-Jul-10	
EPA 6010B	Arsenic	mg/kg	105	105	100	0.8	20	W030038	21-Jul-10	
EPA 6010B	Barium	mg/kg	99.0	100	100	1.3	20	W030038	21-Jul-10	
EPA 6010B	Cadmium	mg/kg	87.1	87.4	100	0.3	20	W030038	21-Jul-10	
EPA 6010B	Calcium	mg/kg	105000	108000	2000	2.5	20	W030038	21-Jul-10	D2
EPA 6010B	Chromium	mg/kg	117	118	100	1.3	20	W030038	21-Jul-10	
EPA 6010B	Copper	mg/kg	1190	1330	100	11.1	20	W030038	21-Jul-10	
EPA 6010B	Iron	mg/kg	40400	41700	1000	3.3	20	W030038	21-Jul-10	
EPA 6010B	Lead	mg/kg	121	125	100	3.9	20	W030038	21-Jul-10	
EPA 6010B	Magnesium	mg/kg	8640	10400	2000	18.7	20	W030038	21-Jul-10	
EPA 6010B	Manganese	mg/kg	2350	2540	100	7.8	20	W030038	21-Jul-10	
EPA 6010B	Molybdenum	mg/kg	158	143	100	10.0	20	W030038	21-Jul-10	
EPA 6010B	Potassium	mg/kg	2550	2600	2000	2.0	20	W030038	21-Jul-10	
EPA 6010B	Selenium	mg/kg	97.8	99.7	100	1.9	20	W030038	21-Jul-10	
EPA 6010B	Silver	mg/kg	5.51	5.57	5.00	1.0	20	W030038	21-Jul-10	



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Project Name: Rosemont
 Work Order: **W0G0359**
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Quality Control - MATRIX SPIKE DUPLICATE Data (Continued)

Method	Analyte	Units	MSD Result	Spike Result	Spike Level	RPD	RPD Limit	Batch ID	Analyzed	Notes
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Metals (Total) by EPA 6000/7000 Methods (Continued)

EPA 6010B	Sodium	mg/kg	2240	2200	1900	2.0	20	W030038	21-Jul-10	
EPA 6010B	Zinc	mg/kg	270	322	100	17.5	20	W030038	21-Jul-10	
EPA 7471A	Mercury	mg/kg	0.338	0.337	0.167	0.5	20	W029248	19-Jul-10	

SPLP Leachates (Metals)

EPA 6010B	Aluminum	mg/L Extract	1.6	1.7	1.00	2.4	20	W030041	20-Jul-10	
EPA 6010B	Antimony	mg/L Extract	1.02	1.03	1.00	1.6	20	W030041	20-Jul-10	
EPA 6010B	Arsenic	mg/L Extract	1.0	1.0	1.00	0.8	20	W030041	20-Jul-10	
EPA 6010B	Barium	mg/L Extract	0.96	0.98	1.00	1.5	20	W030041	20-Jul-10	
EPA 6010B	Cadmium	mg/L Extract	1.02	1.03	1.00	1.1	20	W030041	20-Jul-10	
EPA 6010B	Calcium	mg/L Extract	30.8	31.2	20.0	1.4	20	W030041	20-Jul-10	
EPA 6010B	Chromium	mg/L Extract	1.03	1.04	1.00	1.3	20	W030041	20-Jul-10	
EPA 6010B	Copper	mg/L Extract	1.23	1.24	1.00	1.5	20	W030041	20-Jul-10	
EPA 6010B	Iron	mg/L Extract	11.2	11.4	10.0	1.8	20	W030041	20-Jul-10	
EPA 6010B	Lead	mg/L Extract	1.00	1.02	1.00	1.3	20	W030041	20-Jul-10	
EPA 6010B	Magnesium	mg/L Extract	21.6	22.1	20.0	2.3	20	W030041	20-Jul-10	
EPA 6010B	Manganese	mg/L Extract	1.11	1.14	1.00	2.4	20	W030041	20-Jul-10	
EPA 6010B	Potassium	mg/L Extract	21.1	21.4	20.0	1.2	20	W030041	20-Jul-10	
EPA 6010B	Selenium	mg/L Extract	0.934	0.937	1.00	0.3	20	W030041	20-Jul-10	
EPA 6010B	Silver	mg/L Extract	0.049	0.050	0.0500	0.7	20	W030041	20-Jul-10	
EPA 6010B	Sodium	mg/L Extract	20.8	20.9	19.0	0.6	20	W030041	20-Jul-10	
EPA 6010B	Zinc	mg/L Extract	1.05	1.06	1.00	1.0	20	W030041	20-Jul-10	
EPA 7470A	Mercury	mg/L Extract	0.0010	0.0008	0.00100	26.3	20	W030071	20-Jul-10	R1

Quality Control - POST DIGESTION SPIKE Data

Method	Analyte	Units	Spike Result	Sample Result (R)	Spike Level (S)	% Rec.	Acceptance Limits	Batch ID	Analyzed	Notes
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Metals (Total) by EPA 6000/7000 Methods

EPA 6010B	Antimony	mg/kg	90.1	<2.0	100	90.1	75 - 125	W030038	21-Jul-10	
EPA 6010B	Magnesium	mg/kg	7800	6010	2000	89.6	75 - 125	W030038	21-Jul-10	
EPA 6010B	Zinc	mg/kg	266	184	100	82.3	75 - 125	W030038	21-Jul-10	



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Work Order: **W0G0359**
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Notes and Definitions

- B7 Target analyte in method blank exceeded method QC limits, but concentrations in samples were at least 10x the blank concentration.
 - D1 Sample required dilution due to matrix.
 - D2 Sample required dilution due to high concentration of target analyte.
 - M1 Matrix spike recovery was high, but the LCS recovery was acceptable.
 - M2 Matrix spike recovery was low, but the LCS recovery was acceptable.
 - M3 The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to spike level. The LCS was acceptable.
 - N3 Sample analyzed at 10x dilution (below reporting limit) due to history of MWM matrix crashing coil.
 - N3a Sample analyzed at 10x dilution due to history of MWM matrix crashing coil.
 - R1 RPD exceeded the method acceptance limit.
 - LCS Laboratory Control Sample (Blank Spike)
 - RPD Relative Percent Difference
 - UDL A result is less than the detection limit
 - R > 4S % recovery not applicable, sample concentration more than four times greater than spike level
 - <RL A result is less than the reporting limit
 - MRL Method Reporting Limit
 - MDL Method Detection Limit
 - N/A Not Applicable
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