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Project No. 9103C

Report I.D.: KCA0170006_ODA01_01

File: 9103

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20 November 2017

ODAS/Stratex Project Report of Metallurgical Test Work

1.0 Summary of Metallurgical Test Work

On 21 February 2017, the laboratory facility of KCA in Reno, Nevada received sixteen (16) small drums of $\frac{1}{4}$ split HQ core material from the ODAS Project in Turkey. The received material represented three (3) individual samples (Oxide, Transition and Sulfide). These samples were utilized for metallurgical test work.

On 04 May 2017, the KCA laboratory facility received four (4) small drums of material from the ODAS Project. These drums represented two (2) individual samples (Oxide and Transition). These samples were utilized for metallurgical test work.

All preparation, assaying and metallurgical studies were performed utilizing accepted industry standard procedures.

1.1 Sample Receipt and Preparation

Upon receipt, each individual sample was blended and assigned a unique sample number (KCA Sample Nos. 77548 through 77550, 78319 and 78320). These samples were utilized for head analyses and bottle roll leach test work. The Oxide and Transition samples were also utilized for head screen analyses with assays by size fraction, agglomeration test work and column leach test work.

1.2 Head Analyses

Portions of the head material were ring and puck pulverized and analyzed for gold and silver by standard fire assay and wet chemistry methods. Head material was also assayed semi-quantitatively for an additional series of elements and for whole rock constituents. In addition to these semi-quantitative analyses, the head material was assayed by quantitative methods for carbon, sulfur and mercury. A cyanide shake test was also conducted on a portion of the pulverized head material.

In addition to the analyses on pulverized head material, portions of material crushed to 100% passing 19 and 8 millimeters from the oxide and transition samples were utilized for head screen analyses with assays by size fraction.

Portions of the head material from three (3) samples were submitted to Hazen Research, Inc. for comminution test work.

The results of the head analyses for gold and silver are summarized in Table 1-1.

Table 1-1.
ODAS/Stratex Project
Summary of Head Analyses – Gold and Silver

KCA Sample No.	Description	Average Assay, gms Au/MT	Average Assay, gms Ag/MT	Weighted Avg. Head Assay, gms Au/MT	Weighted Avg. Head Assay, gms Ag/MT
77548 B	Oksitli (oxide) zona ait cevher	0.606	7.51	0.602	6.87
77549 B	Geçiş (transition) zonuna ait cevher	0.581	5.21	0.527	4.30
77550 B	Sülfürlü (sulphide) zona ait cevher	0.389	0.99	--	--
78319 A	Oksitli (oxide) zona ait cevher	0.524	4.30	0.760	5.12
78320 A	Geçiş (transition) zonuna ait cevher	0.759	5.90	0.780	5.68

1.3 Bottle Roll Leach Test Work

Bottle roll leach testing was conducted on portions of sample material. A 10,000 gram portion of head material was crushed to a target size of 80% passing 12.5 millimeters and utilized for leach testing. Additionally, a 1,000 gram portion of head material was ring and puck pulverized to a target size of 80% passing 0.075 millimeters and utilized for leach testing.

The results of the bottle roll leach test work are summarized in Table 1-2.

Table 1-2.
ODAS/Stratex Project
Summary of Bottle Roll Leach Test Work

KCA Sample No.	KCA Test No.	Description	Target p80 Size, mm	Calculated Head, gms Au/MT	Au Extracted, %	Leach Time, hours	Consumption NaCN, kg/MT	Addition Ca(OH) ₂ , kg/MT
77548 B	77586 A	Oksitli (oxide) zona ait cevher	12.5	0.573	63%	144	0.10	1.00
77548 B	77579 A	Oksitli (oxide) zona ait cevher	Pulv	0.583	63%	96	0.46	1.75
77549 B	77586 B	Geçiş (transition) zonuna ait cevher	12.5	0.760	34%	144	0.30	1.00
77549 B	77579 B	Geçiş (transition) zonuna ait cevher	Pulv	0.681	47%	96	0.87	2.00
77550 B	77586 C	Sülfürlü (sulphide) zona ait cevher	12.5	0.367	10%	144	0.13	0.75
77550 B	77579 C	Sülfürlü (sulphide) zona ait cevher	Pulv	0.354	14%	96	0.62	1.25
78319 A	78359 A	Oksitli (oxide) zona ait cevher	Pulv	0.489	60%	96	0.29	1.25
78320 A	78359 B	Geçiş (transition) zonuna ait cevher	Pulv	0.723	47%	96	0.59	1.75

KCA Sample No.	KCA Test No.	Description	Target p80 Size, mm	Calculated Head, gms Ag/MT	Ag Extracted, %	Leach Time, hours	Consumption NaCN, kg/MT	Addition Ca(OH) ₂ , kg/MT
77548 B	77586 A	Oksitli (oxide) zona ait cevher	12.5	7.47	21%	144	0.10	1.00
77548 B	77579 A	Oksitli (oxide) zona ait cevher	Pulv	7.77	70%	96	0.46	1.75
77549 B	77586 B	Geçiş (transition) zonuna ait cevher	12.5	5.36	27%	144	0.30	1.00
77549 B	77579 B	Geçiş (transition) zonuna ait cevher	Pulv	5.22	60%	96	0.87	2.00
77550 B	77586 C	Sülfürlü (sulphide) zona ait cevher	12.5	0.94	16%	144	0.13	0.75
77550 B	77579 C	Sülfürlü (sulphide) zona ait cevher	Pulv	1.00	38%	96	0.62	1.25
78319 A	78359 A	Oksitli (oxide) zona ait cevher	Pulv	4.44	46%	96	0.29	1.25
78320 A	78359 B	Geçiş (transition) zonuna ait cevher	Pulv	6.07	57%	96	0.59	1.75

1.4 Agglomeration Test Work

Agglomeration tests were conducted utilizing 2 kilogram portions of the material at a crushed size of 100% passing 19 and 8 millimeters and agglomerated with 0, 2, 4 and 8 kilograms of cement per tonne of material.

The purpose of the percolation tests was to examine the permeability of the material under various cement agglomeration levels. The percolation tests were conducted in small (75 millimeter inside diameter) columns at a range of cement levels with no compressive load applied.

All tests passed the criteria utilized by KCA.

1.5 Column Leach Test Work

Two (2) column leach tests were conducted utilizing material crushed to 100% passing 19 millimeters. During testing, this material was leached for 61 days with a sodium cyanide solution.

Two (2) column leach tests were also conducted utilizing material crushed to 100% passing 8 millimeters. During testing, this material was leached for 98 days with a sodium cyanide solution.

The results of the column leach test work are summarized in Table 1-3.

Table 1-3.
ODAS/Stratex Project
Summary of Column Leach Test Work

KCA Sample No.	KCA Test No.	Description	Crush Size, mm	Calculated Head, gms Au/MT	Extracted, % Au	Calculated Tail p80 Size, mm	Days of Leach	Consumption NaCN, kg/MT	Addition Hydrated Lime, kg/MT
77548 B	78301	Oksitli(oxide) zona ait cevher	19	0.684	52%	12.9	61	0.66	2.05
78319 A	78353	Oksitli(oxide) zona ait cevher	8	0.513	65%	6.4	98	1.30	2.05
77549 B	78304	Geçiş(transition) zonuna ait cevher	19	0.873	31%	13.0	61	0.77	2.03
78320 A	78356	Geçiş(transition) zonuna ait cevher	8	0.805	51%	6.4	98	1.52	2.03

KCA Sample No.	KCA Test No.	Description	Crush Size, mm	Calculated Head, gms Ag/MT	Extracted, % Ag	Calculated Tail p80 Size, mm	Days of Leach	Consumption NaCN, kg/MT	Addition Hydrated Lime, kg/MT
77548 B	78301	Oksitli(oxide) zona ait cevher	19	5.49	25%	12.9	61	0.66	2.05
78319 A	78353	Oksitli(oxide) zona ait cevher	8	5.15	34%	6.4	98	1.30	2.05
77549 B	78304	Geçiş(transition) zonuna ait cevher	19	4.27	35%	13.0	61	0.77	2.03
78320 A	78356	Geçiş(transition) zonuna ait cevher	8	6.20	37%	6.4	98	1.52	2.03

1.6 Discussion

For the bottle roll leach tests, gold extractions ranged from 10% to 63% based on calculated heads which ranged from 0.354 to 0.723 grams per metric tonne. The sodium cyanide consumptions ranged from 0.40 to 0.87 kilograms per metric tonne. The material utilized in leaching was blended with 1.00 or 2.00 kilograms per metric tonne hydrated lime.

For the column leach tests, gold extractions ranged from 31% to 65% based on calculated heads which ranged from 0.513 to 0.873 grams per metric tonne. The sodium cyanide consumptions ranged from 0.66 to 1.52 kilograms per metric tonne. The material utilized in leaching was blended with 2.03 or 2.05 kilograms per metric tonne hydrated lime.

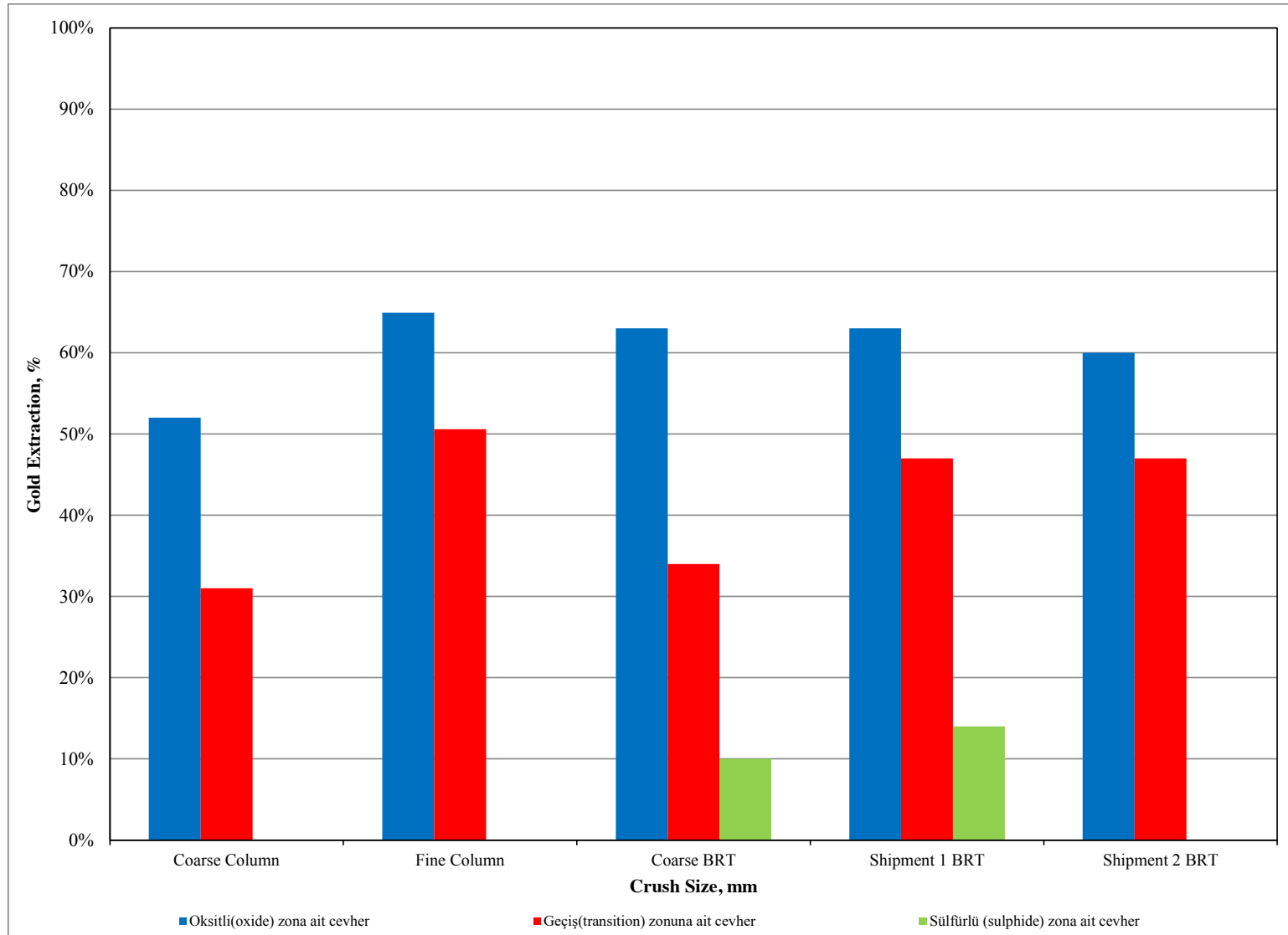
A comparison of the gold extractions based on test work performed is presented in Figure 1-1.

Column test extraction results contained in the body of this report were based upon carbon assays vs. the calculated head (carbon assays + tail assays). Extraction results contained in the attached appendix were based upon the daily solution assays vs. the calculated head (solution assays + tailings assays).

When an outside party submits samples, KCA can estimate gold extraction for an ore body based upon the assumption that the ore to be mined will be similar to the samples tested. For feasibility study purposes, KCA normally discounts laboratory gold extractions by three percentage points when estimating field extractions. KCA normally discounts laboratory silver extractions by five percentage points when estimating field recoveries. This assumes a well-managed heap leach operation, and if agglomeration is required, it is assumed that this process is completed correctly.

Based upon KCA's experience with mostly clean non-reactive ores, cyanide consumption in production heaps would be only 25 to 33 percent of the laboratory column test consumptions. For ores containing high amounts of leachable copper, higher factors should be utilized.

Figure 1-1.
ODAS/Stratex Project
Extractions Based on Test Work



2.0 Sample Receipt and Preparation

On 21 February 2017, the laboratory facility of KCA in Reno, Nevada received sixteen (16) small drums of $\frac{1}{4}$ split HQ core material from the ODAS Project in Turkey. The received material represented three (3) individual samples (Oxide, Transition and Sulfide). These samples were utilized for head analyses and bottle roll leach test work. The Oxide and Transition samples were also utilized for head screen analyses with assays by size fraction, agglomeration test work and column leach test work.

On 04 May 2017, the KCA laboratory facility received four (4) small drums of material from the ODAS Project. These drums represented two (2) individual samples (Oxide and Transition). These samples were utilized for head analyses, head screen analyses with assays by size fraction, bottle roll leach test work, agglomeration test work and column leach test work.

2.1 Sample Receipt

Upon receipt, each individual sample was blended and assigned a unique sample number (KCA Sample Nos. 77548 through 77550, 78319 and 78320).

The sample receipt is presented in Table 2-1.

Table 2-1.
ODAS/Stratex Project
Sample Receipt

KCA Sample No.	Sample I.D.	Zone	No. of Drums	Estimated Wt., kg	Received Wt., kg
77548 A	Oksitli (oxide) zona ait cevher	Oxide	6	145.61	144.15
77549 A	Geçiş (transition) zonuna ait cevher	Transition	7	145.16	143.65
77550 A	Sülfürlü (sulphide) zona ait cevher	Sulfide	3	63.30	61.75
78319 A	Oksitli (oxide) zona ait cevher	Oxide	2	--	49.08
78320 A	Geçiş (transition) zonuna ait cevher	Transition	2	--	50.07

2.2 Sample Preparation

The Oksitli (oxide) zona ait cevher sample (KCA Sample No. 77548) and the Geçiş (transition) zonuna ait cevher sample (KCA Sample No. 77549) were prepared separately but identically as follows:

1. The as-received sample material was coned three (3) times and quartered.
2. Two (2) opposite quarters were combined, coned three (3) times and quartered. One quarter was labeled (*I*) and set aside. The remaining three (3) quarters were combined and submitted to Hazen Research, Inc. for comminution test work.

3. The remaining two (2) portions were combined with the previously labeled material (*I*) and stage crushed to 100% passing 19 millimeters. The stage crushed material was then size adjusted to a target size of 80% passing 12.5 millimeters. The size adjusted material was recombined, coned three (3) times and quartered.
4. One quarter was weighed and oven dried for moisture content. The dry material was utilized for a head screen analysis with assays by size fraction. The material was dry screened at 19, 12.5, 6.3, 1.70 and 0.212 millimeters. Each separate size fraction was then weighed and the weights reported. Each size fraction was then crushed to a nominal size of 1.70 millimeters, as necessary. From each size fraction, two (2) portions were split out and individually ring and puck pulverized to a target size of 80% passing 0.075 millimeters. The portions were then assayed using standard fire assaying methods for gold with FAAS finish and wet chemistry methods for silver.
5. The remaining three (3) quarters were combined, coned three (3) times and quartered.
6. Two (2) opposite quarters were combined, labeled (*II*) and set aside.
7. One quarter was labeled (*III*) and set aside.
8. The final quarter was coned three (3) times and quartered.
9. Two (2) opposite quarters were combined with a portion of the previously labeled material (*II*) and utilized for a column leach test.
10. The remaining two (2) quarters were combined with the remaining previously labeled material (*III*). The combined material was weighed and oven dried for moisture content.
11. From the dry material, four (4) 2 kilogram portions were split out and utilized for preliminary agglomeration test work.
12. From the dry material, a 10 kilogram portion was split out and utilized for a coarse bottle roll leach test.
13. The remaining dry material was crushed to 100% passing 1.70 millimeters.
14. From the minus 1.70 millimeter material, two (2) 500 gram portions were split out and ring and puck pulverized to a target size of 80% passing 0.075 millimeters. The pulverized portions were utilized for head analyses.
15. From the minus 1.70 millimeter material, a 1,200 gram portion was split out and ring and puck pulverized to a target size of 80% passing 0.075 millimeters. From the pulverized material, 1,000 grams were utilized for a bottle roll leach test.

The Sulfürlü (sulphide) zona ait cevher (KCA Sample No. 77550) was prepared as follows:

1. The as-received material was coned three (3) times and quartered.
2. Three (3) quarters were combined and submitted to Hazen Research, Inc. for comminution test work.
3. The remaining quarter was stage crushed to 100% passing 19 millimeters. The stage crushed material was then size adjusted to a target size of 80% passing 12.5 millimeters. The size adjusted material was weighed and oven dried for moisture content.
4. From the dry material, a 10 kilogram portion was split out and utilized for a coarse bottle roll leach test.
5. The remaining dry material was crushed to 100% passing 1.70 millimeters.
6. From the minus 1.70 millimeter material, two (2) 500 gram portions were split out and ring and puck pulverized to a target size of 80% passing 0.075 millimeters. The pulverized portions were utilized for head analyses.
7. From the minus 1.70 millimeter material, a 1,200 gram portion was split out and ring and puck pulverized to a target size of 80% passing 0.075 millimeters. From the pulverized material, 1,000 grams were utilized for a bottle roll leach test.

The additional Oksitli (oxide) zona ait cevher sample (KCA Sample No. 78319) and the additional Geçiş (transition) zonuna ait cevher sample (KCA Sample No. 78320) were prepared separately but identically as follows:

1. The entire sample was stage crushed to 100% passing 8 millimeters. The stage crushed material was size adjusted to a target size of 80% passing 6.3 millimeters. The size adjusted material was recombined, coned three (3) times and quartered.
2. Two (2) opposite quarters were combined and utilized for a column leach test.
3. One quarter was weighed and oven dried for moisture content. The dry material was utilized for a head screen analysis with assays by size fraction. The material was dry screened at 8, 6.3, 4.75, 3.35, 1.70 and 0.212 millimeters. Each separate size fraction was then weighed and the weights reported. Each size fraction was then crushed to a nominal size of 1.70 millimeters, as necessary. From each size fraction, two (2) portions were split out and individually ring and puck pulverized to a target size of 80% passing 0.075 millimeters. The portions were then assayed using standard fire assaying methods for gold with FAAS finish and wet chemistry methods for silver.

4. The remaining quarter was weighed and oven dried for moisture content.
5. From the dry material, four (4) 2 kilogram portions were split out and utilized for preliminary agglomeration test work.
6. The remaining dry material was crushed to 100% passing 1.70 millimeters.
7. From the minus 1.70 millimeter material, two (2) 500 gram portions were split out and ring and puck pulverized to a target size of 80% passing 0.075 millimeters. The pulverized portions were utilized for head analyses.
8. From the minus 1.70 millimeter material, a 1,200 gram portion was split out and ring and puck pulverized to a target size of 80% passing 0.075 millimeters. From the pulverized material, 1,000 grams were utilized for a bottle roll leach test.

Flow sheets depicting the sample preparation procedures for each sample are presented in Figures 2-1 through 2-9.

Figure 2-1.
ODAS/Stratex Project
KCA Sample No. 77548
Oksitli (oxide) zona ait cevher
Sample Preparation Procedure

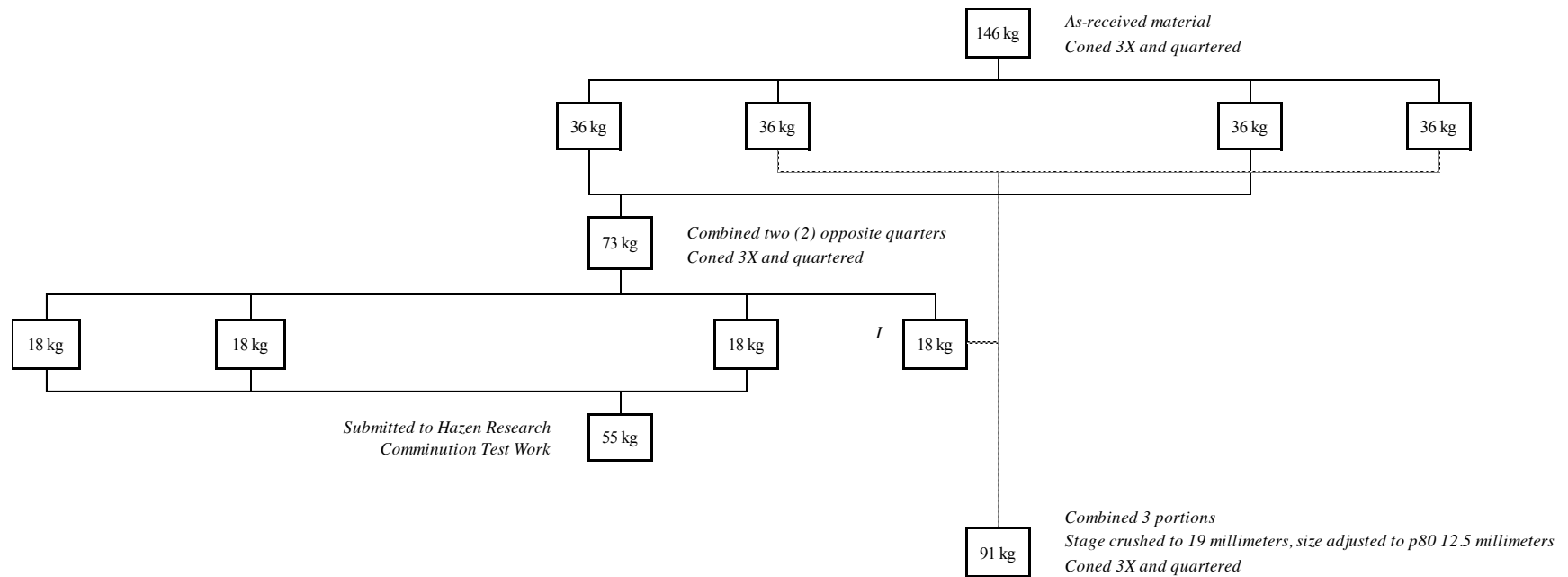


Figure 2-2.
ODAS/Stratex Project
KCA Sample No. 77548
Oksitli (oxide) zona ait cevher
Sample Preparation Procedure (continued)

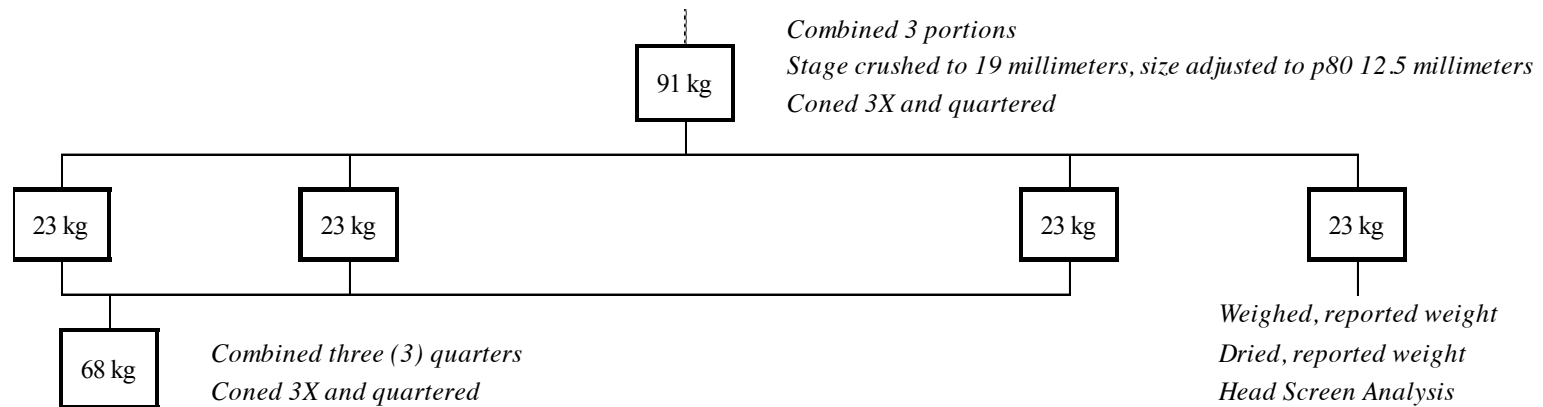


Figure 2-3.
ODAS/Stratex Project
KCA Sample No. 77548
Oksitli (oxide) zona ait cevher
Sample Preparation Procedure (continued)

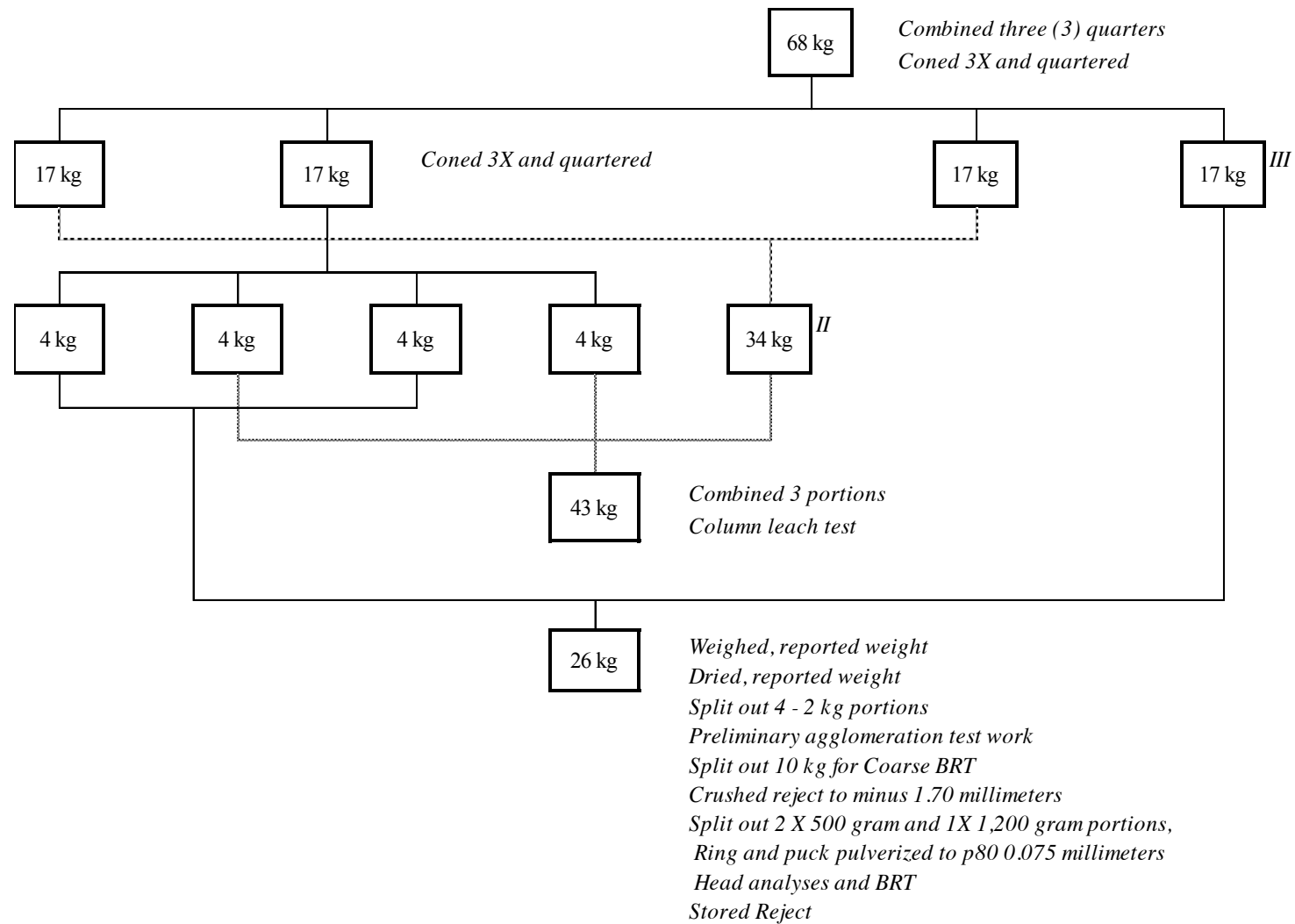


Figure 2-4.
ODAS/Stratex Project
KCA Sample No. 77549
Geçiş (transition) zonuna ait cevher
Sample Preparation Procedure

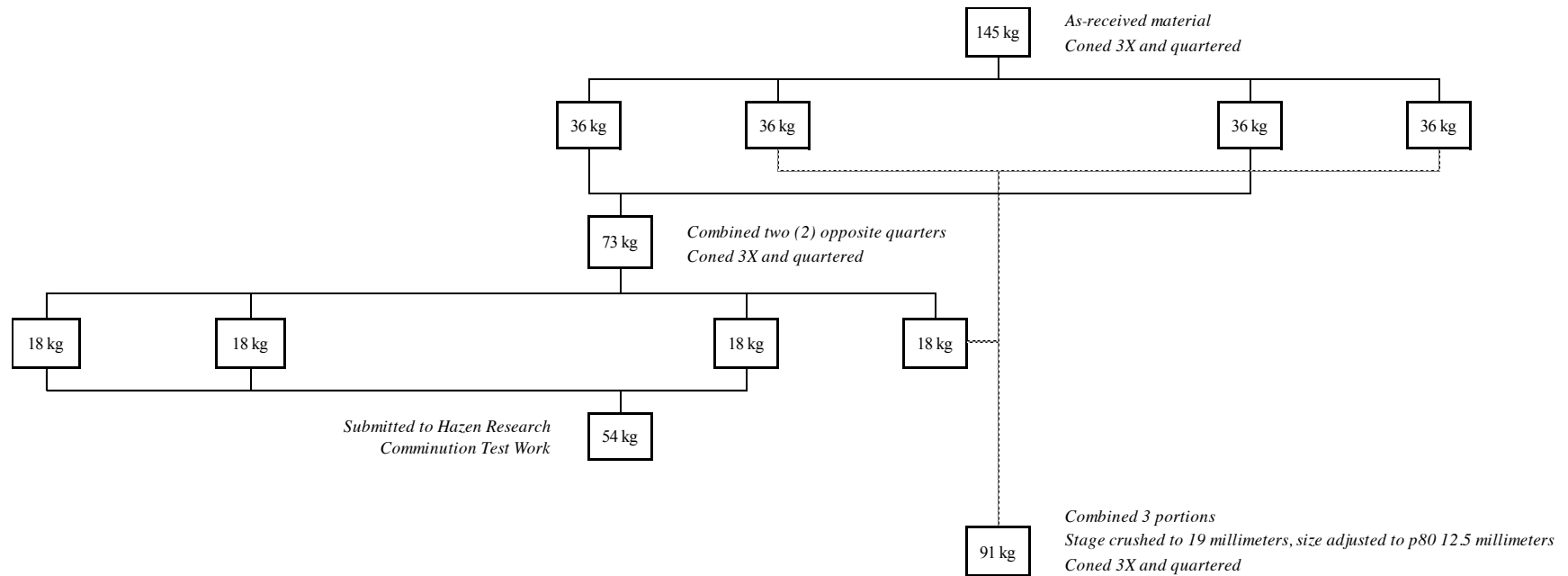


Figure 2-5.
ODAS/Stratex Project
KCA Sample No. 77549
Geçiş (transition) zonuna ait cevher
Sample Preparation Procedure (continued)

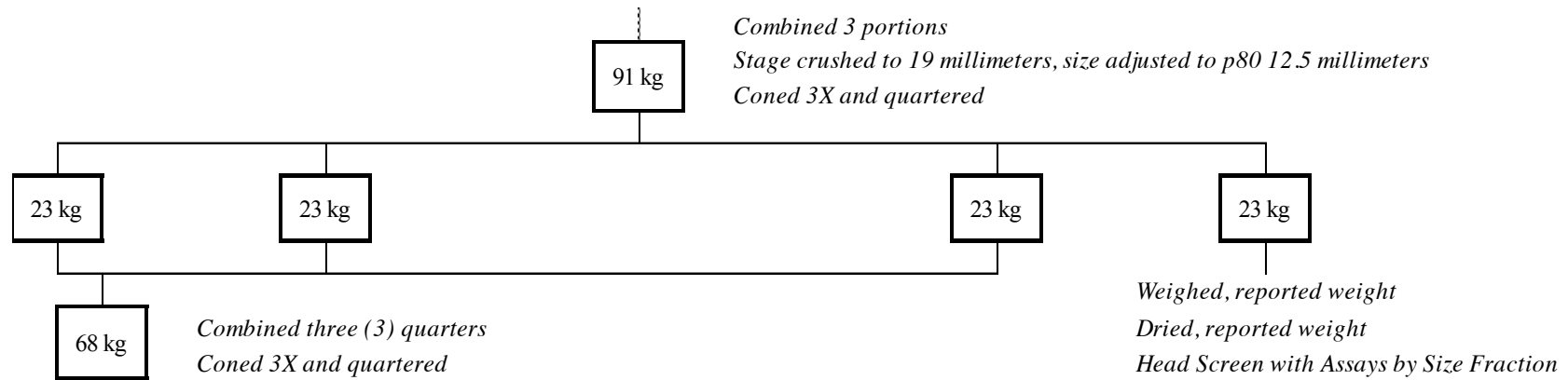


Figure 2-6.
ODAS/Stratex Project
KCA Sample No. 77549
Geçiş (transition) zonuna ait cevher
Sample Preparation Procedure (continued)

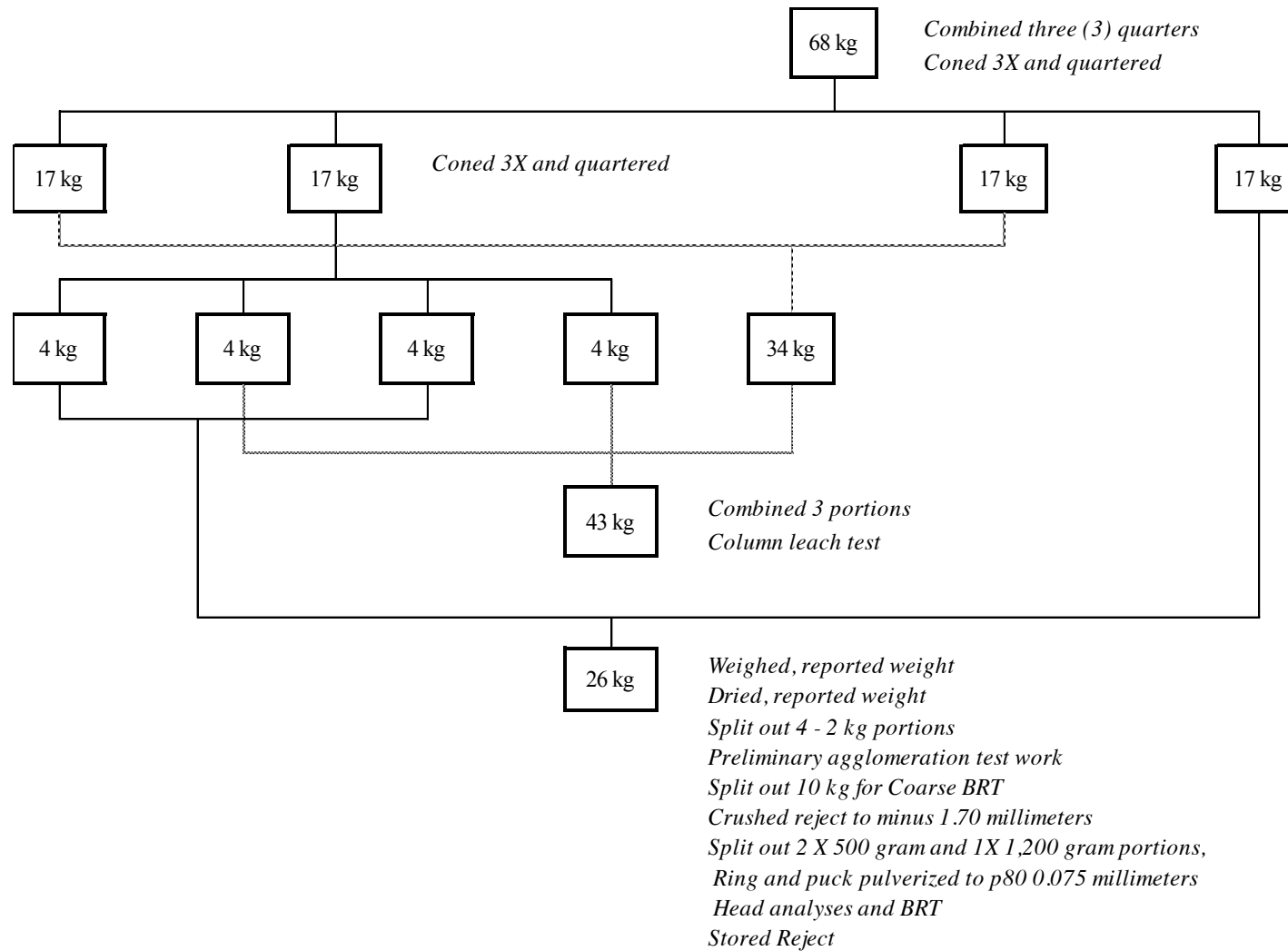


Figure 2-7.
ODAS/Stratex Project
KCA Sample No. 77549
Sülfürlü (sulphide) zona ait cevher
Sample Preparation Procedure

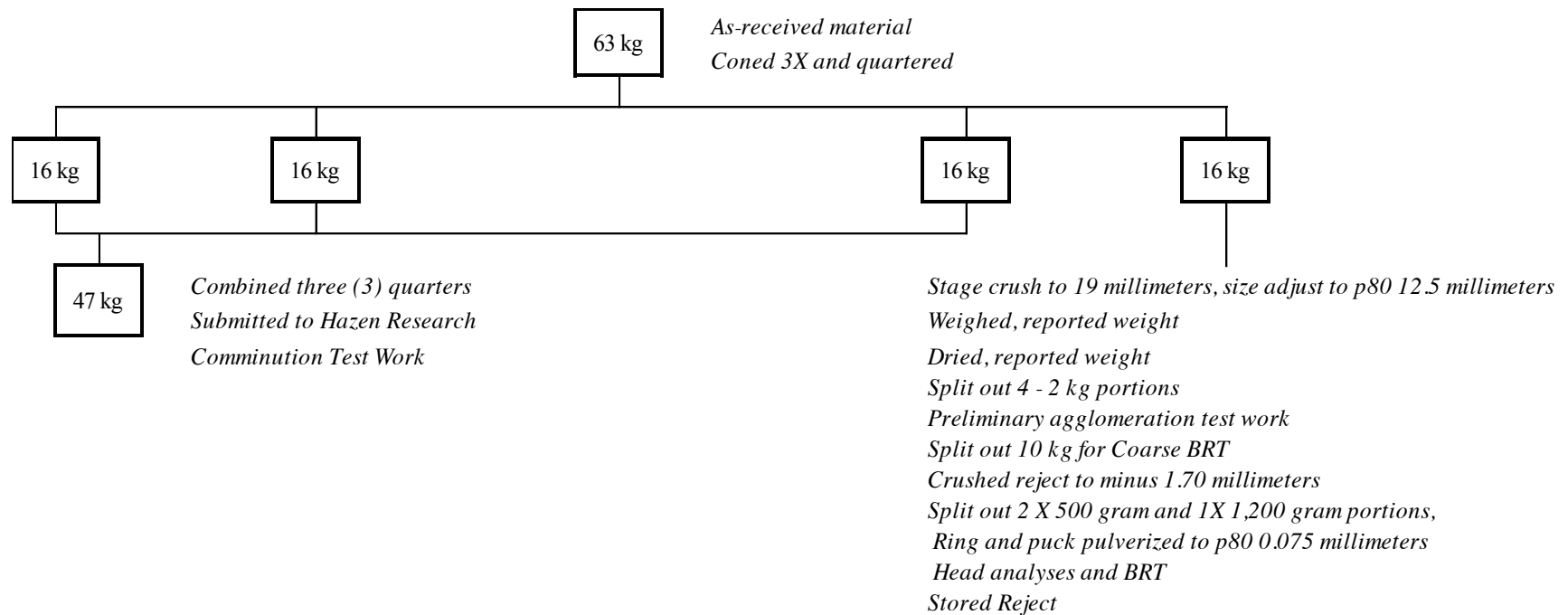


Figure 2-8.
ODAS/Stratex Project
KCA Sample No. 78319
Oksitli (oxide) zona ait cevher
Sample Preparation Procedure

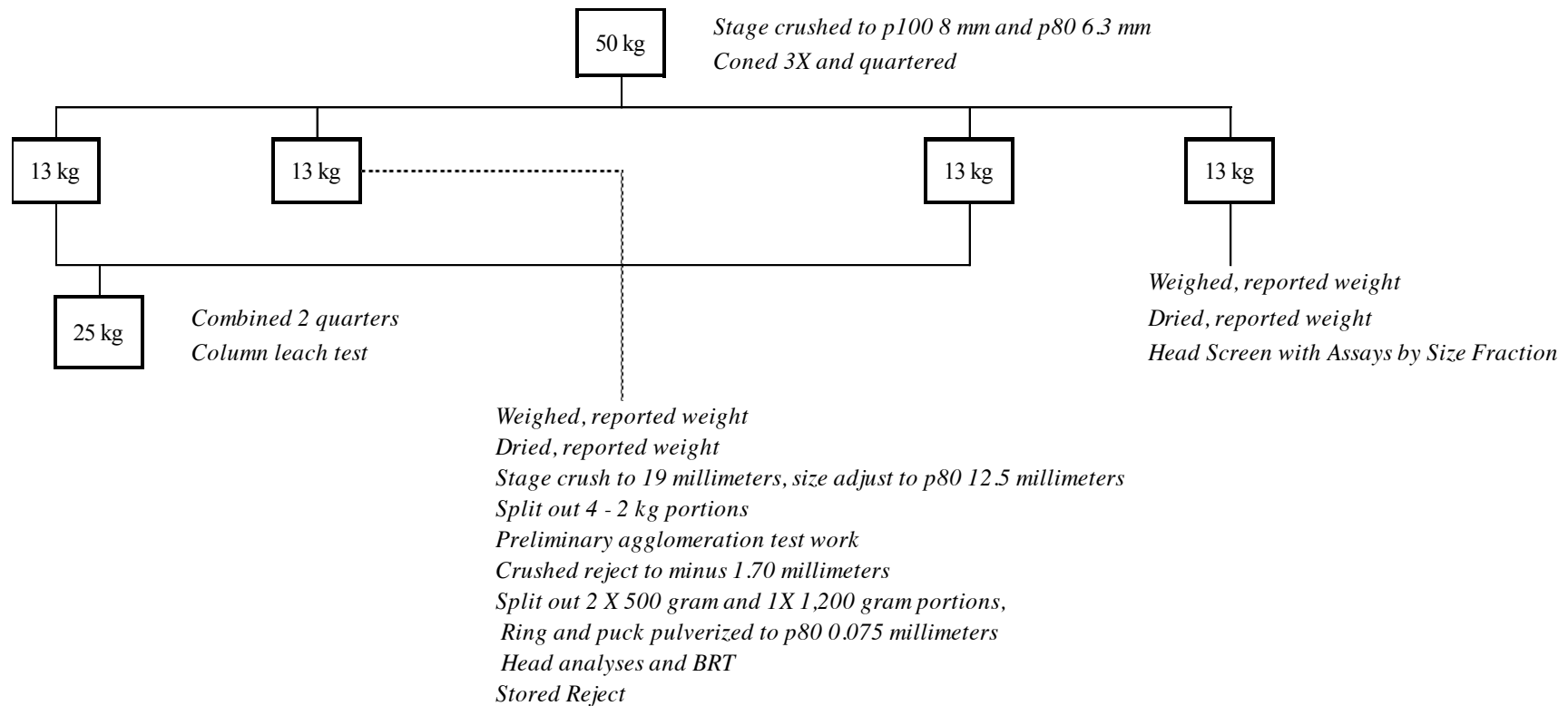
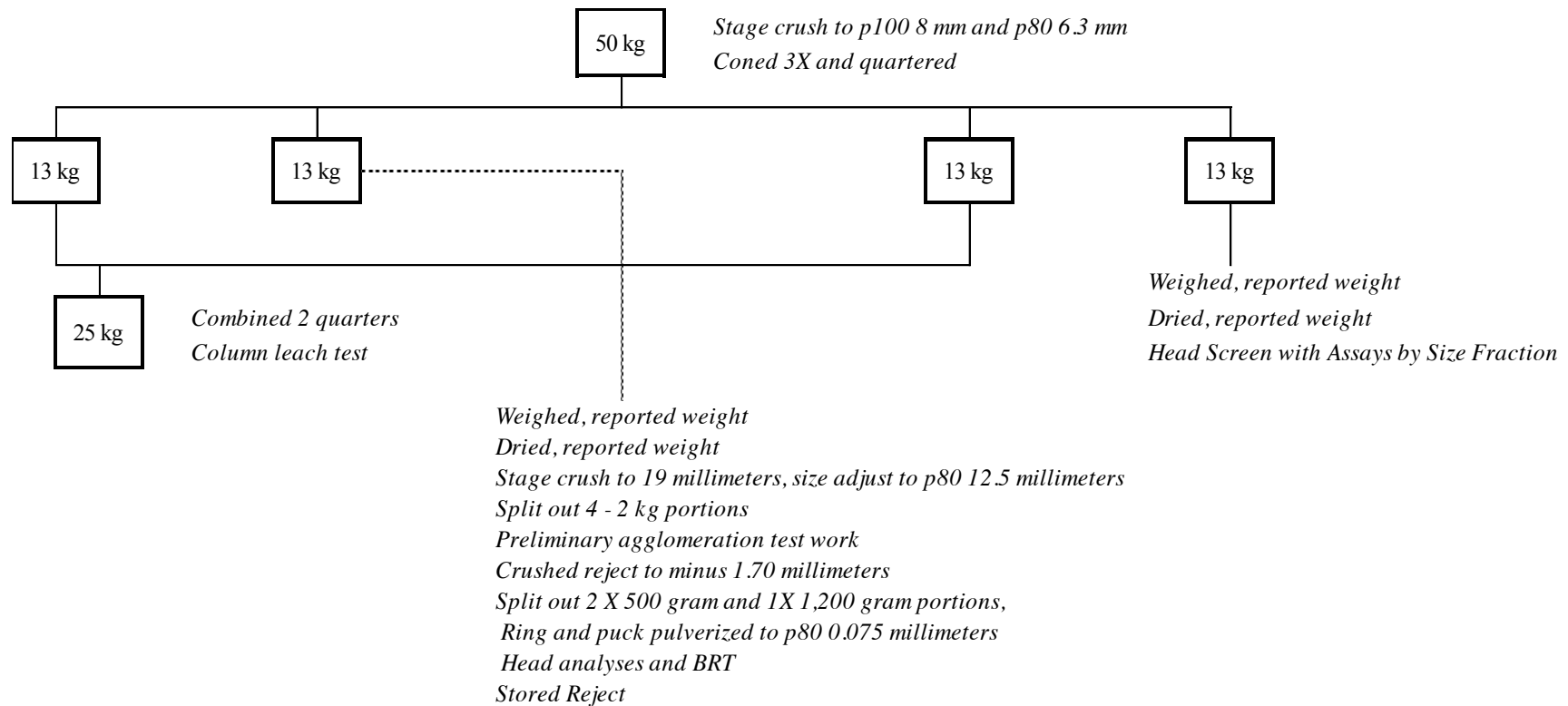


Figure 2-9.
ODAS/Stratex Project
KCA Sample No. 78320
Geçiş (transition) zonuna ait cevher
Sample Preparation Procedure



3.0 Head Analyses

Portions of the head material were ring and puck pulverized and analyzed for gold and silver by standard fire assay and wet chemistry methods. Head material was also assayed semi-quantitatively for an additional series of elements and for whole rock constituents. In addition to these semi-quantitative analyses, the head material was assayed by quantitative methods for carbon, sulfur and mercury. A cyanide shake test was also conducted on a portion of the pulverized head material.

Portions of material crushed to 100% passing 19 and 8 millimeters from the oxide and transition samples were utilized for head screen analyses with assays by size fraction.

Head material from three (3) samples were also submitted to Hazen Research, Inc. for comminution test work.

3.1 Head Analyses for Gold and Silver

Head analyses for gold and silver were conducted on the sample material. A portion of the head material was crushed to 100% passing 1.70 millimeters. From the blended minus 1.70 millimeter material, duplicate 500 gram splits were ring and puck pulverized to a target size of 80% passing 0.075 millimeters. Gold content was determined using standard fire assay methods with flame atomic absorption spectrophotometric (FAAS) finish. Silver content was determined using wet chemistry methods (4-acid digestion) with FAAS finish.

The results of the head analyses for gold and silver are presented in Table 3-1.

Table 3-1.
ODAS/Stratex Project
Head Analyses – Gold and Silver

KCA Sample No.	Description	Assay 1, gms Au/MT	Assay 2, gms Au/MT	Average Assay, gms Au/MT
77548 B	Oksitli (oxide) zona ait cevher	0.605	0.607	0.606
77549 B	Geçiş (transition) zonuna ait cevher	0.586	0.576	0.581
77550 B	Sülfürlü (sulphide) zona ait cevher	0.391	0.387	0.389
78319 A	Oksitli (oxide) zona ait cevher	0.530	0.518	0.524
78320 A	Geçiş (transition) zonuna ait cevher	0.754	0.765	0.759

KCA Sample No.	Description	Assay 1, gms Ag/MT	Assay 2, gms Ag/MT	Average Assay, gms Ag/MT
77548 B	Oksitli (oxide) zona ait cevher	7.61	7.41	7.51
77549 B	Geçiş (transition) zonuna ait cevher	5.21	5.21	5.21
77550 B	Sülfürlü (sulphide) zona ait cevher	0.99	0.99	0.99
78319 A	Oksitli (oxide) zona ait cevher	4.39	4.22	4.30
78320 A	Geçiş (transition) zonuna ait cevher	6.00	5.79	5.90

3.2 Head Analyses for Carbon and Sulfur

Head analyses for carbon and sulfur were conducted utilizing a LECO CS 230 unit. In addition to total carbon and sulfur analyses, speciation for organic and inorganic carbon and speciation for sulfide and sulfate sulfur were conducted.

The results of the carbon and sulfur analyses are presented in Table 3-2.

Table 3-2.
ODAS/Stratex Project
Head Analyses – Carbon and Sulfur

KCA Sample No.	Description	Total Carbon, %	Organic Carbon, %	Inorganic Carbon, %	Total Sulfur, %	Sulfide Sulfur, %	Sulfate Sulfur, %
77548 B	Oksitli (oxide) zona ait cevher	5.62	0.26	5.36	0.15	<0.01	0.15
77549 B	Geçiş (transition) zonuna ait cevher	5.49	0.20	5.29	0.84	0.55	0.29
77550 B	Sülfürlü (sulphide) zona ait cevher	4.78	0.21	4.56	1.29	1.14	0.15
78319 A	Oksitli (oxide) zona ait cevher	5.15	0.25	4.90	0.13	0.02	0.11
78320 A	Geçiş (transition) zonuna ait cevher	5.27	0.09	5.18	0.92	0.58	0.34

3.3 Head Analyses for Mercury and Copper

Head analyses for mercury were conducted utilizing cold vapor/atomic absorption methods. Total copper analyses were conducted utilizing inductively coupled argon plasma – optical emission spectrophotometer (ICAP-OES) as well as by FAAS methods.

The results of the mercury and copper analyses are presented in Table 3-3.

Table 3-3.
ODAS/Stratex Project
Head Analyses – Mercury and Copper

KCA Sample No.	Description	Total Mercury, mg/kg	Total Copper, mg/kg	Cyanide Soluble Copper ¹ , mg/kg	Cyanide Soluble Copper, %
77548 B	Oksitli (oxide) zona ait cevher	0.80	37	11.88	32%
77549 B	Geçiş (transition) zonuna ait cevher	0.55	42	20.75	49%
77550 B	Sülfürlü (sulphide) zona ait cevher	0.32	41	19.91	49%
78319 A	Oksitli (oxide) zona ait cevher	0.24	21	4.83	23%
78320 A	Geçiş (transition) zonuna ait cevher	0.13	16	3.03	19%

Note (1): Average of two (2) cyanide shake tests

3.4 Head Analyses for Multi-elements

Semi-quantitative analyses were conducted by means of an ICAP-OES for a series of individual elements and whole rock constituents (lithium metaborate fusion/ICAP).

The results of the multi-element analyses are presented in Table 3-4. The results of the whole rock analyses are presented in Table 3-5.

Table 3-4.
ODAS/Stratex Project
Head Analyses – Multi-element Analyses

Constituent	Unit	Oksitli (oxide) zona ait cevher KCA Sample No. 77548 B	Geçiş (transition) zonuna ait cevher KCA Sample No. 77549 B	Sülfürlü (sulphide) zona ait cevher KCA Sample No. 77550 B	Oksitli (oxide) zona ait cevher KCA Sample No. 78319 A	Geçiş (transition) zonuna ait cevher KCA Sample No. 78320 A
Al	%	0.94	0.59	3.04	1.09	0.47
As	mg/kg	2380	3270	2330	2283	3793
Ba	mg/kg	799	112	146	567	90
Bi	mg/kg	<2	<2	<2	<2	<2
C _(total)	%	5.62	5.49	4.78	5.15	5.27
C _(organic)	%	0.26	0.20	0.21	0.25	0.09
C _(inorganic)	%	5.36	5.29	4.56	4.90	5.18
Ca	%	8.92	8.66	7.62	7.81	7.96
Cd	mg/kg	9	6	3	7	5
Co	mg/kg	45	52	19	34	46
Cr	mg/kg	816	849	347	648	810
Cu _(total)	mg/kg	37	42	41	21	16
Cu _(cyanide soluble) ¹	mg/kg	11.88	20.75	19.91	4.83	3.03
Fe	%	3.04	2.96	2.67	2.83	2.93
Hg	mg/kg	0.80	0.55	0.32	0.24	0.13
K	%	0.39	0.23	1.48	0.48	0.18
Mg	%	5.17	4.82	4.29	5.30	5.23
Mn	mg/kg	989	900	827	826	776
Mo	mg/kg	<1	<1	<1	<1	<1
Na	%	0.02	0.02	0.03	0.03	0.03
Ni	mg/kg	1050	978	330	810	930
Pb	mg/kg	241	154	22	211	155
S _(total)	%	0.15	0.84	1.29	0.13	0.92
S _(sulfide)	%	<0.01	0.55	1.14	0.02	0.58
S _(sulfate)	%	0.15	0.29	0.15	0.11	0.34
Sb	mg/kg	482	304	283	551	373
Se	mg/kg	7	11	10	7	12
Sr	mg/kg	147	117	96	102	94
Te	mg/kg	8	7	8	8	9
Ti	%	0.02	0.01	0.08	0.04	0.01
V	mg/kg	37	28	65	32	20
W	mg/kg	17	<10	<10	<10	<10
Zn	mg/kg	995	519	208	774	419

Note (1): Average of two (2) cyanide shake tests

Table 3-5.
ODAS/Stratex Project
Head Analyses – Lithium Metaborate Fusion – Whole Rock Analyses

Constituent	Unit	Oksitli (oxide) zona ait cevher KCA Sample No. 77548 B		Geçiş (transition) zonuna ait cevher KCA Sample No. 77549 B		Sülfürlü (sulphide) zona ait cevher KCA Sample No. 77550 B		Oksitli (oxide) zona ait cevher KCA Sample No. 78319 A		Geçiş (transition) zonuna ait cevher KCA Sample No. 78320 A	
SiO ₂	%	50.9		54.5		53.0		53.4		55.6	
Si	%		23.80		25.48		24.78		24.96		25.99
Al ₂ O ₃	%	1.81		1.13		5.73		2.01		0.89	
Al	%		0.96		0.60		3.03		1.06		0.47
Fe ₂ O ₃	%	4.39		4.41		3.91		4.02		4.28	
Fe	%		3.07		3.08		2.73		2.81		2.99
CaO	%	12.6		12.3		11.1		11.16		11.28	
Ca	%		9.01		8.79		7.93		7.98		8.06
MgO	%	8.30		8.29		7.58		8.51		9.07	
Mg	%		5.01		5.00		4.57		5.13		5.47
Na ₂ O	%	0.03		0.02		0.05		0.02		0.02	
Na	%		0.02		0.01		0.04		0.01		0.01
K ₂ O	%	0.44		0.26		1.80		0.57		0.20	
K	%		0.37		0.22		1.49		0.47		0.17
TiO ₂	%	0.08		0.04		0.27		0.09		0.03	
Ti	%		0.05		0.02		0.16		0.05		0.02
MnO	%	0.12		0.12		0.11		0.11		0.10	
Mn	%		0.09		0.09		0.09		0.09		0.08
SrO	%	0.01		0.01		<0.01		0.01		0.01	
Sr	%		0.01		0.01		0.00		0.01		0.01
BaO	%	0.09		<0.01		0.01		0.07		<0.01	
Ba	%		0.08		0.00		0.01		0.06		0.00
Cr ₂ O ₃	%	0.19		0.20		0.06		0.16		0.20	
Cr	%		0.13		0.14		0.04		0.11		0.14
P ₂ O ₅	%	0.04		0.03		0.07		0.04		0.03	
P	%		0.02		0.01		0.03		0.02		0.01
LOI _{1090°C}	%	21.0		18.9		16.3		19.7		18.3	
SUM	%	100.00		100.21		99.99		99.9		100.0	

Note: The SUM is the total of the oxide constituents and the loss on ignition.

3.5 Cyanide Soluble Analyses

Cyanide shake tests were conducted utilizing portions of the pulverized head material. These tests provided preliminary indications of cyanide soluble metal extractions from pulverized material.

The cyanide shake tests were conducted as follows:

1. A 15 gram portion of the pulverized material was placed into a 50 milliliter centrifuge tube with a screw cap.
2. A volume equivalent to 30 milliliters of 5 gram per liter sodium cyanide (gpL NaCN) solution at ambient temperature was then added.
3. The pulp and cyanide solution were mixed well by shaking.
4. The slurry was then agitated on a table action shaker for a 24 hour leach test at room temperature.
5. The slurry was then centrifuged and the resulting clear solution was analyzed for pH and gold, silver and copper utilizing FAAS methods.
6. If the pH of the solution was less than pH 9.0 the test was re-run with the addition of 0.1 grams of hydrated lime ($\text{Ca}(\text{OH})_2$).
7. The residue was discarded.

The results of individual cyanide shake tests are presented in Table 3-6.

Table 3-6.
ODAS/Stratex Project
Head Analyses – Cyanide Shake Tests

KCA Sample No.	Description	Head Assay, gms Au/MT	Head Assay, gms Ag/MT	Leach Results								
				Final pH	Au, mg/L	Ag, mg/L	Cu, mg/L	Extraction, gms Au/MT	Extraction, gms Ag/MT	Extraction, mg Cu/kg	Est. Ext., Au, %	Est. Ext., Ag, %
77548 B	Oksitli (oxide) zona ait cevher	0.605	7.61	10.1	0.20	2.60	5.92	0.400	5.20	11.84	66%	68%
77548 B	Oksitli (oxide) zona ait cevher	0.607	7.41	10.1	0.19	2.59	5.96	0.380	5.18	11.92	63%	70%
	Average:	0.606	7.51	--	--	--	--	0.390	5.19	11.88	64%	69%
77549 B	Geçiş (transition) zonuna ait cevher	0.586	5.21	10.2	0.14	1.65	10.45	0.280	3.30	20.90	48%	63%
77549 B	Geçiş (transition) zonuna ait cevher	0.576	5.21	10.2	0.14	1.67	10.30	0.280	3.34	20.60	49%	64%
	Average:	0.581	5.21	--	--	--	--	0.280	3.32	20.75	48%	64%
77550 B	Sülfürlü (sulphide) zona ait cevher	0.391	0.99	10.2	0.04	0.2	9.94	0.080	0.40	19.88	20%	40%
77550 B	Sülfürlü (sulphide) zona ait cevher	0.387	0.99	10.2	0.04	0.2	9.97	0.080	0.40	19.94	21%	40%
	Average:	0.389	0.99	--	--	--	--	0.080	0.40	19.91	21%	40%
78319 A Sp. A	Oksitli (oxide) zona ait cevher	0.530	4.39	10.4	0.15	1.12	2.43	0.300	2.24	4.86	57%	51%
78319 A Sp. B	Oksitli (oxide) zona ait cevher	0.518	4.22	10.4	0.15	1.10	2.40	0.300	2.20	4.80	58%	52%
	Average:	0.524	4.30					0.300	2.22	4.83	57%	52%
78320 A Sp. A	Geçiş (transition) zonuna ait cevher	0.754	6.00	10.3	0.18	1.65	1.51	0.360	3.30	3.02	48%	55%
78320 A Sp. B	Geçiş (transition) zonuna ait cevher	0.765	5.79	10.3	0.17	1.62	1.52	0.340	3.24	3.04	44%	56%
	Average:	0.759	5.90					0.350	3.27	3.03	46%	55%

3.6 Head Screen Analyses with Assays by Size Fraction

The material apportioned for the head screen was weighed and oven dried for moisture content. The dry material was then utilized for head screen analyses with assays by size fraction.

The dry material crushed to 100% passing 19 millimeters was screened at 19, 12.5, 6.3, 1.70 and 0.212 millimeters.

The dry material crushed to 100% passing 8 millimeters was screened at 8, 6.3, 4.75, 3.35, 1.70 and 0.212 millimeters.

Each separate size fraction was then weighed and the weights reported. Each size fraction was then crushed to a nominal size of 1.70 millimeters.

From each size fraction two (2) portions were split out and individually ring and puck pulverized to a target size of 80% passing 0.075 millimeters. The portions were then assayed using standard fire assaying methods for gold with FAAS finish and wet chemistry methods for silver.

A summary of the head screen analyses is presented in Table 3-7. The head screen analyses is presented graphically in Figure 3-1 and the detailed results are presented in Tables 3-8 through 3-11.

Table 3-7.
ODAS/Stratex Project
Summary of Head Screen Analyses

KCA Sample No.	Description	Calc. p80 Size, mm	Weighted Avg. Head Assay, gms Au/MT	Weighted Avg. Head Assay, gms Ag/MT
77548 B	Oksitli (oxide) zona ait cevher	12.3	0.602	6.87
78319 A	Oksitli (oxide) zona ait cevher	6.5	0.527	4.30
77549 B	Geçiş (transition) zonuna ait cevher	13.0	0.760	5.12
78320 A	Geçiş (transition) zonuna ait cevher	6.3	0.780	5.68

Figure 3-1.
ODAS/Stratex Project
Head Screen Analyses

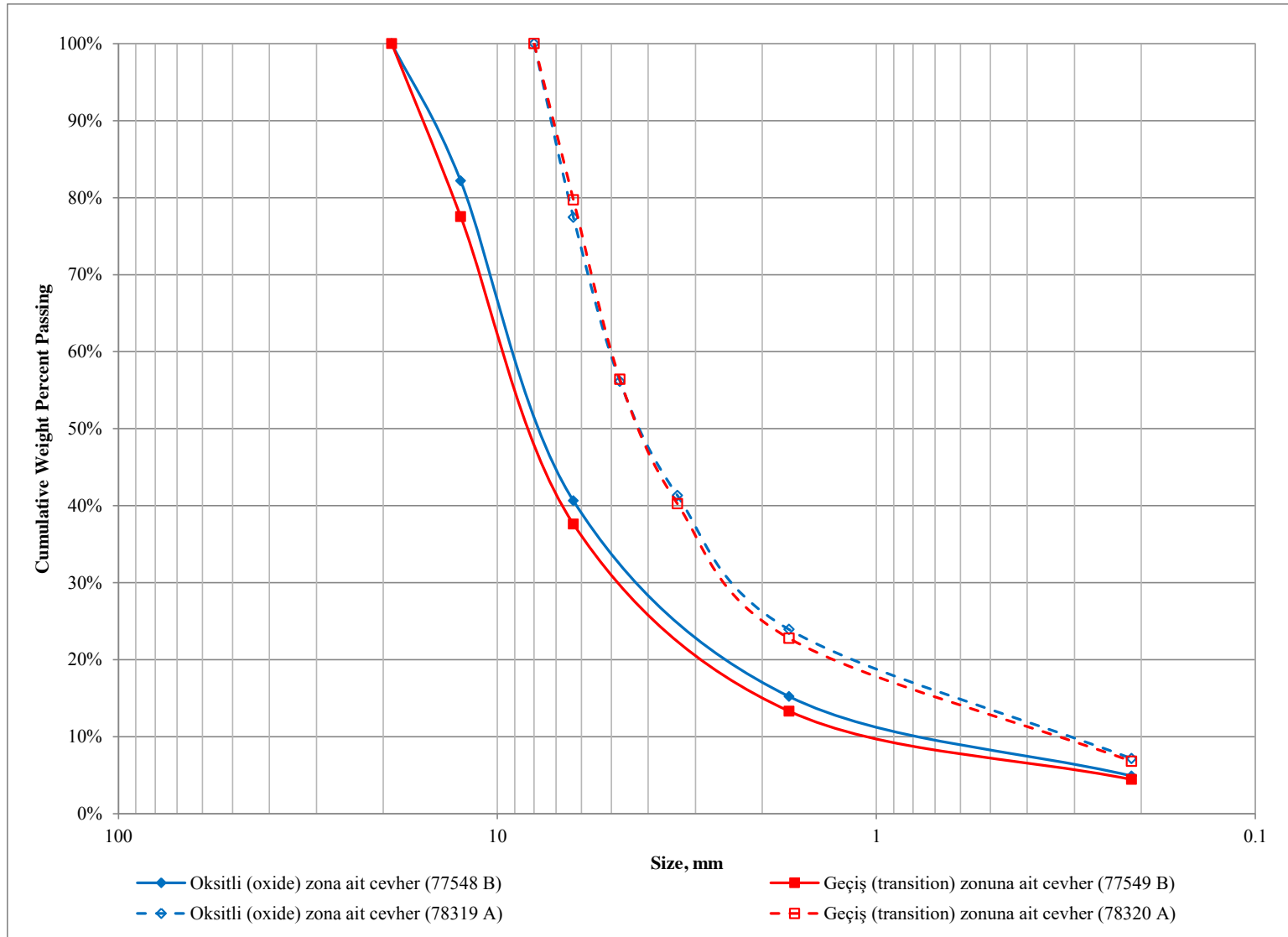


Table 3-8.
ODAS/Stratex Project
Oksitli (oxide) zona ait cevher
KCA Sample No. 77548 B
Crushed Material, Calculated 80% passing 12.3 millimeters
Head Screen Analysis with Assays by Size Fraction

KCA Sample No.	Passing, mm	Retained, mm	Dry Screen Analysis				Analysis of Gold Content			
			Sample Weight, kg	Weight Distribution, %	Cumulative Weight Retained, %	Cumulative Weight Passing, %	Assay 1, gms Au/MT	Assay 2, gms Au/MT	Average Assay, gms Au/MT	Weight Au, %
77548 B		19	0.00				---	---	---	---
	19	12.5	4.04	17.8%	17.8%	100.0%	0.590	0.617	0.603	17.9%
	12.5	6.3	9.42	41.6%	59.4%	82.2%	0.583	0.598	0.591	40.7%
	6.3	1.70	5.76	25.4%	84.8%	40.6%	0.627	0.627	0.627	26.5%
	1.70	0.212	2.34	10.3%	95.1%	15.2%	0.566	0.562	0.564	9.7%
	0.212	Pan	1.11	4.9%	100.0%	4.9%	0.658	0.641	0.650	5.3%
Total -			22.67	100.0%			0.597	0.607	0.602	100.0%
Detection -							0.006	0.006		

KCA Sample No.	Passing, mm	Retained, mm	Dry Screen Analysis				Analysis of Silver Content			
			Sample Weight, kg	Weight Distribution, %	Cumulative Weight Retained, %	Cumulative Weight Passing, %	Assay 1, gms Ag/MT	Assay 2, gms Ag/MT	Average Assay, gms Ag/MT	Weight Ag, %
77548 B		19	0.00				---	---	---	---
	19	12.5	4.04	17.8%	17.8%	100.0%	5.11	5.21	5.16	13.4%
	12.5	6.3	9.42	41.6%	59.4%	82.2%	6.62	6.41	6.51	39.4%
	6.3	1.70	5.76	25.4%	84.8%	40.6%	7.61	7.82	7.71	28.5%
	1.70	0.212	2.34	10.3%	95.1%	15.2%	8.40	8.61	8.50	12.8%
	0.212	Pan	1.11	4.9%	100.0%	4.9%	8.19	8.19	8.19	5.8%
Total -			22.67	100.0%			6.86	6.87	6.87	100.0%
Detection -							0.21	0.21		

Table 3-9.
ODAS/Stratex Project
Oksitli (oxide) zona ait cevher
KCA Sample No. 78319 A
Crushed Material, Calculated 80 % passing 6.5 millimeters
Head Screen Analysis with Assays by Size Fraction

KCA Sample No.	Passing, mm	Retained, mm	Dry Screen Analysis				Analysis of Gold Content			
			Sample Weight, kg	Weight Distribution, %	Cumulative Weight Retained, %	Cumulative Weight Passing, %	Assay 1, gms Au/MT	Assay 2, gms Au/MT	Average Assay, gms Au/MT	Weight Au, %
78319 A		8.0	0.00				---	---	---	---
	8.0	6.3	2.10	22.6%	22.6%	100.0%	0.487	0.494	0.490	21.0%
	6.3	4.75	1.98	21.3%	43.8%	77.4%	0.559	0.552	0.555	22.4%
	4.75	3.35	1.38	14.8%	58.7%	56.2%	0.501	0.497	0.499	14.1%
	3.35	1.70	1.62	17.4%	76.1%	41.3%	0.538	0.531	0.535	17.7%
	1.70	0.212	1.56	16.8%	92.8%	23.9%	0.525	0.535	0.530	16.9%
	0.212	Pan	0.67	7.2%	100.0%	7.2%	0.590	0.579	0.585	7.9%
Total -			9.31	100.0%			0.527	0.526	0.527	100.0%
Detection -							0.006	0.006		

KCA Sample No.	Passing, mm	Retained, mm	Dry Screen Analysis				Analysis of Silver Content			
			Sample Weight, kg	Weight Distribution, %	Cumulative Weight Retained, %	Cumulative Weight Passing, %	Assay 1, gms Ag/MT	Assay 2, gms Ag/MT	Average Assay, gms Ag/MT	Weight Ag, %
78319 A		8.0	0.00				---	---	---	---
	8.0	6.3	2.10	22.6%	22.6%	100.0%	4.70	5.01	4.85	25.5%
	6.3	4.75	1.98	21.3%	43.8%	77.4%	4.59	4.59	4.59	22.7%
	4.75	3.35	1.38	14.8%	58.7%	56.2%	4.01	4.22	4.11	14.2%
	3.35	1.70	1.62	17.4%	76.1%	41.3%	4.01	3.81	3.91	15.8%
	1.70	0.212	1.56	16.8%	92.8%	23.9%	3.60	3.81	3.70	14.4%
	0.212	Pan	0.67	7.2%	100.0%	7.2%	4.39	4.39	4.39	7.3%
Total -			9.31	100.0%			4.25	4.35	4.30	100.0%
Detection -							0.21	0.21		

Table 3-10.
ODAS/Stratex Project
Geçiş (transition) zonuna ait cevher
KCA Sample No. 77549 B
Crushed Material, Calculated 80% passing 13.0 millimeters
Head Screen Analysis with Assays by Size Fraction

KCA Sample No.	Passing, mm	Retained, mm	Dry Screen Analysis				Analysis of Gold Content			
			Sample Weight, kg	Weight Distribution, %	Cumulative Weight Retained, %	Cumulative Weight Passing, %	Assay 1, gms Au/MT	Assay 2, gms Au/MT	Average Assay, gms Au/MT	Weight Au, %
77549 B		19	0.00				---	---	---	---
	19	12.5	4.88	22.5%	22.5%	100.0%	0.799	0.823	0.811	24.0%
	12.5	6.3	8.68	39.9%	62.4%	77.5%	0.747	0.751	0.749	39.4%
	6.3	1.70	5.28	24.3%	86.7%	37.6%	0.713	0.720	0.717	22.9%
	1.70	0.212	1.93	8.9%	95.6%	13.3%	0.717	0.703	0.710	8.3%
	0.212	Pan	0.96	4.4%	100.0%	4.4%	0.933	0.941	0.937	5.5%
Total -			21.73	100.0%			0.756	0.764	0.760	100.0%
Detection -							0.006	0.006		

KCA Sample No.	Passing, mm	Retained, mm	Dry Screen Analysis				Analysis of Silver Content			
			Sample Weight, kg	Weight Distribution, %	Cumulative Weight Retained, %	Cumulative Weight Passing, %	Assay 1, gms Ag/MT	Assay 2, gms Ag/MT	Average Assay, gms Ag/MT	Weight Ag, %
77549 B		19	0.00				---	---	---	---
	19	12.5	4.88	22.5%	22.5%	100.0%	4.59	4.39	4.49	19.7%
	12.5	6.3	8.68	39.9%	62.4%	77.5%	5.01	5.01	5.01	39.0%
	6.3	1.70	5.28	24.3%	86.7%	37.6%	5.42	5.21	5.31	25.2%
	1.70	0.212	1.93	8.9%	95.6%	13.3%	6.21	6.41	6.31	10.9%
	0.212	Pan	0.96	4.4%	100.0%	4.4%	6.00	5.79	5.90	5.1%
Total -			21.73	100.0%			5.16	5.08	5.12	100.0%
Detection -							0.21	0.21		

Table 3-11.
ODAS/Stratex Project
Geçiş (transition) zonuna ait cevher
KCA Sample No. 77548 B
Crushed Material, Calculated 80 % passing 6.3 millimeters
Head Screen Analysis with Assays by Size Fraction

KCA Sample No.	Passing, mm	Retained, mm	Dry Screen Analysis				Analysis of Gold Content			
			Sample Weight, kg	Weight Distribution, %	Cumulative Weight Retained, %	Cumulative Weight Passing, %	Assay 1, gms Au/MT	Assay 2, gms Au/MT	Average Assay, gms Au/MT	Weight Au, %
78320 A		8.0	0.00				---	---	---	---
	8.0	6.3	2.16	20.3%	20.3%	100.0%	0.765	0.771	0.768	20.0%
	6.3	4.75	2.48	23.3%	43.6%	79.7%	0.823	0.806	0.814	24.3%
	4.75	3.35	1.72	16.2%	59.8%	56.4%	0.723	0.711	0.717	14.9%
	3.35	1.70	1.86	17.5%	77.2%	40.2%	0.744	0.737	0.741	16.6%
	1.70	0.212	1.70	16.0%	93.2%	22.8%	0.775	0.782	0.778	15.9%
	0.212	Pan	0.72	6.8%	100.0%	6.8%	0.957	0.957	0.957	8.3%
Total -			10.64	100.0%			0.783	0.778	0.780	100.0%
Detection -							0.006	0.006		

KCA Sample No.	Passing, mm	Retained, mm	Dry Screen Analysis				Analysis of Silver Content			
			Sample Weight, kg	Weight Distribution, %	Cumulative Weight Retained, %	Cumulative Weight Passing, %	Assay 1, gms Ag/MT	Assay 2, gms Ag/MT	Average Assay, gms Ag/MT	Weight Ag, %
78320 A		8.0	0.00				---	---	---	---
	8.0	6.3	2.16	20.3%	20.3%	100.0%	5.21	5.42	5.31	19.0%
	6.3	4.75	2.48	23.3%	43.6%	79.7%	5.59	5.79	5.69	23.3%
	4.75	3.35	1.72	16.2%	59.8%	56.4%	5.01	4.80	4.90	13.9%
	3.35	1.70	1.86	17.5%	77.2%	40.2%	5.79	5.59	5.69	17.5%
	1.70	0.212	1.70	16.0%	93.2%	22.8%	6.41	6.41	6.41	18.0%
	0.212	Pan	0.72	6.8%	100.0%	6.8%	6.89	6.79	6.84	8.2%
Total -			10.64	100.0%			5.67	5.69	5.68	100.0%
Detection -							0.21	0.21		

3.7 Comminution Test Work

A portion of the head material was submitted to Hazen Research, Inc. in Golden, Colorado for comminution testing. Test work was completed to provide Bond Ball Mill Work indices and an abrasion index for each sample.

The limiting screen for the ball mill grindability tests was 0.150 millimeters.

The results are summarized in Table 3-12. The complete report and detailed results are attached in Appendix B.

Table 3-12.
ODAS/Stratex Project
Bond Ball Mill Work Index and Abrasion Index

KCA Sample No.	Description	Bond Ball Work Index, kw hr/MT	Abrasion Index
77548 B	Oksitli (oxide) zona ait cevher	15.4	0.5971
77549 B	Geçiş (transition) zonuna ait cevher	16.4	0.9206
77550 B	Sülfürlü (sulphide) zona ait cevher	14.3	0.3837

4.0 Bottle Roll Leach Test Work

Bottle roll leach testing was conducted on portions of sample material. A 10,000 gram portion of head material was crushed to a target size of 80% passing 12.5 millimeters and utilized for leach testing. Additionally, a 1,000 gram portion of head material was ring and puck pulverized to a target size of 80% passing 0.075 millimeters and utilized for leach testing.

The bottle roll test procedure for coarse material is outlined in the following:

For coarse crushed bottle roll leach tests, particle size reduction can be a problem. To minimize attrition due to rolling, these carboys were allowed to roll for only two (2) minutes out of every hour during the leaching period. This intermittent agitation reduced the amount of attrition that a continuously rolled bottle test would have had and made the results of this type of test more reliable with respect to determining the effect of crush size on precious metal extraction.

1. One 10,000 gram split of crushed material was placed into a 20 liter bottle and slurried with 15,000 milliliters of crushed water.
2. The slurry was mixed thoroughly and the pH of the slurry checked. The pH of the slurry was adjusted, as required, to 10.5 to 11.0 with hydrated lime.
3. Sodium cyanide was added to the slurry to a target amount of 1.0 grams per liter sodium cyanide. The bottle was then placed onto a set of laboratory rolls. Intermittent rolling throughout the duration of the test mixed the slurry.
4. The slurry was checked at 2, 4, 8, 24, 48, 72, 96, 120 and 144 hours for pH, dissolved oxygen (DO), NaCN, Au, Ag and Cu.
5. Additional hydrated lime and sodium cyanide were added after each sample period, if required, to adjust the slurry to the target levels.
6. After completion of the leach period, the slurry was filtered, washed and dried.

From the dry tailings, duplicate portions were split out and individually ring and puck pulverized to 80% passing 0.075 millimeters. The pulverized portions were then assayed for residual gold and silver content. The reject material was stored.

The bottle roll test procedure for pulverized material is outlined in the following:

1. One 1,000 gram split of pulverized material was placed into a 3.5 liter bottle and slurried with 1,500 milliliters of crushed water.
2. The slurry was mixed thoroughly and the pH of the slurry checked. The pH of the slurry was adjusted, as required, to 10.5 to 11.0 with hydrated lime.
3. Sodium cyanide was added to the slurry to a target amount of 1.0 grams per liter sodium cyanide. The bottle was then placed onto a set of laboratory rolls. Rolling throughout the duration of the test mixed the slurry.
4. The slurry was checked at 2, 4, 8, 24, 48, 72 and 96 hours for pH, dissolved oxygen (DO), NaCN, Au, Ag and Cu.
5. Additional hydrated lime and sodium cyanide were added after each sample period, if required, to adjust the slurry to the target levels.
6. After completion of the leach period, the slurry was filtered, washed and dried.

From the dry tailings, duplicate portions were split out and individually ring and puck pulverized to 80% passing 0.075 millimeters. The pulverized portions were then assayed for residual gold and silver content. The reject material was stored.

These laboratory tests were conducted with hydrated lime for pH control. A discussion regarding the available lime index for the hydrated lime ($\text{Ca}(\text{OH})_2$) and lime (CaO) utilized by KCA is presented in Section 7 of this report.

The gold and silver extraction results of the bottle roll test are summarized in Tables 4-1 and 4-2, respectively. The detailed results are presented in Tables 4-3 through 4-10.

Table 4-1.
ODAS/Stratex Project
Cyanide Bottle Roll Leach Test Work
Gold Extraction Summary

KCA Sample No.	KCA Test No.	Description	Target p80 Size, mm	Calculated Head, gms Au/MT	Extracted, gms Au/MT	Avg. Tails, gms Au/MT	Au Extracted, %	Leach Time, hours	Consumption NaCN, kg/MT	Addition Ca(OH) ₂ , kg/MT
77548 B	77586 A	Oksitli (oxide) zona ait cevher	12.5	0.573	0.361	0.213	63%	144	0.10	1.00
77548 B	77579 A	Oksitli (oxide) zona ait cevher	Pulv	0.583	0.367	0.216	63%	96	0.46	1.75
77549 B	77586 B	Geçiş (transition) zonuna ait cevher	12.5	0.760	0.256	0.504	34%	144	0.30	1.00
77549 B	77579 B	Geçiş (transition) zonuna ait cevher	Pulv	0.681	0.321	0.360	47%	96	0.87	2.00
77550 B	77586 C	Sülfürlü (sulphide) zona ait cevher	12.5	0.367	0.038	0.328	10%	144	0.13	0.75
77550 B	77579 C	Sülfürlü (sulphide) zona ait cevher	Pulv	0.354	0.050	0.303	14%	96	0.62	1.25
78319 A	78359 A	Oksitli (oxide) zona ait cevher	Pulv	0.489	0.291	0.198	60%	96	0.29	1.25
78320 A	78359 B	Geçiş (transition) zonuna ait cevher	Pulv	0.723	0.341	0.382	47%	96	0.59	1.75

Table 4-2.
ODAS/Stratex Project
Cyanide Bottle Roll Leach Test Work
Silver Extraction Summary

KCA Sample No.	KCA Test No.	Description	Target p80 Size, mm	Calculated Head, gms Ag/MT	Extracted, gms Ag/MT	Avg. Tails, gms Ag/MT	Ag Extracted, %	Leach Time, hours	Consumption NaCN, kg/MT	Addition Ca(OH) ₂ , kg/MT
77548 B	77586 A	Oksitli (oxide) zona ait cevher	12.5	7.47	1.57	5.90	21%	144	0.10	1.00
77548 B	77579 A	Oksitli (oxide) zona ait cevher	Pulv	7.77	5.47	2.30	70%	96	0.46	1.75
77549 B	77586 B	Geçiş (transition) zonuna ait cevher	12.5	5.36	1.45	3.91	27%	144	0.30	1.00
77549 B	77579 B	Geçiş (transition) zonuna ait cevher	Pulv	5.22	3.13	2.09	60%	96	0.87	2.00
77550 B	77586 C	Sülfürlü (sulphide) zona ait cevher	12.5	0.94	0.15	0.79	16%	144	0.13	0.75
77550 B	77579 C	Sülfürlü (sulphide) zona ait cevher	Pulv	1.00	0.38	0.62	38%	96	0.62	1.25
78319 A	78359 A	Oksitli (oxide) zona ait cevher	Pulv	4.44	2.04	2.40	46%	96	0.29	1.25
78320 A	78359 B	Geçiş (transition) zonuna ait cevher	Pulv	6.07	3.46	2.61	57%	96	0.59	1.75

Table 4-3.
ODAS/Stratex Project
Oksitli (oxide) zona ail cevher
KCA Sample No. 77548 B
KCA Test No. 77586 A
Cyanide Bottle Roll Leach Test, Target 1.0 grams per liter NaCN
Crushed Material, Target 80% passing 12.5 millimeters
(10,000 grams solids + 15,000 milliliters solution)

KCA Sample No.	KCA Test No.	Period, hours	pH*	Dissolved Oxygen, mg/L**	Free NaCN, gpL*	Total NaCN, gpL*	Added NaCN, grams	Added Ca(OH) ₂ , grams	Volume Out, mLs***	Volume In, mLs***	Feed Ore Wt., grams	Total Solution Volume, mLs	Solution AAS, mg Au/L	Solution AAS, mg Cu/L	Extracted, gms Au/MT	Cumulative Au Extraction, %
77548 B	77586 A	0	8.1	--	--	--	15.00	5.00	--	--	10,000	15,000	--	--	--	0%
		2	10.8	6.0	1.00	1.00	0.00	0.00	20	20	10,000	15,000	0.10	0.31	0.150	26%
		4	10.6	6.2	1.00	1.00	0.00	0.00	20	20	10,000	15,000	0.12	0.39	0.180	31%
		8	10.5	6.3	0.95	0.99	0.00	0.00	20	20	10,000	15,000	0.15	0.47	0.225	39%
		24	10.2	6.4	0.91	0.99	0.00	2.50	20	20	10,000	15,000	0.18	0.63	0.271	47%
		48	10.5	6.3	0.92	0.96	0.00	0.00	20	20	10,000	15,000	0.20	0.71	0.301	53%
		72	10.5	6.4	0.89	0.96	1.65	0.00	20	20	10,000	15,000	0.21	0.74	0.317	55%
		96	10.4	6.4	1.00	1.07	0.00	2.50	20	20	10,000	15,000	0.19	1.09	0.287	50%
		120	10.9	6.4	1.02	1.06	0.00	0.00	20	20	10,000	15,000	0.21	1.46	0.317	55%
		144	10.7	6.2	1.03	1.06	--	--	20	20	10,000	15,000	0.20	0.87	0.303	53%
Filtrate + Wash:											10,000	18,820	0.19	0.82	0.361	63%
Chemical Consumptions													Tail Assay, gms/MT:		0.211	
Sodium Cyanide, kilograms NaCN per dry tonne of ore:												0.10	Avg. Tails, gms/MT:		0.213	
Hydrated lime, kilograms Ca(OH) ₂ per dry tonne of ore:												1.00	Calc. Head, gms/MT:		0.573	
													Extracted, %:		63%	

Notes: (*) - Before chemical additions. (**) - Sparged with oxygen when below 4. (***) - 20 mLs removed at each sampling interval and replaced with fresh water.

KCA Sample No.	KCA Test No.	Period, hours	pH*	Dissolved Oxygen, mg/L**	Free NaCN, gpL*	Total NaCN, gpL*	Added NaCN, grams	Added Ca(OH) ₂ , grams	Volume Out, mLs***	Volume In, mLs***	Feed Ore Wt., grams	Total Solution Volume, mLs	Solution AAS, mg Ag/L	Solution AAS, mg Cu/L	Extracted, gms Ag/MT	Cumulative Ag Extraction, %
77548 B	77586 A	0	8.1	--	--	--	15.00	5.00	--	--	10,000	15,000	--	--	--	0%
		2	10.8	6.0	1.00	1.00	0.00	0.00	20	20	10,000	15,000	0.22	0.31	0.33	4%
		4	10.6	6.2	1.00	1.00	0.00	0.00	20	20	10,000	15,000	0.30	0.39	0.45	6%
		8	10.5	6.3	0.95	0.99	0.00	0.00	20	20	10,000	15,000	0.39	0.47	0.59	8%
		24	10.2	6.4	0.91	0.99	0.00	2.50	20	20	10,000	15,000	0.59	0.63	0.89	12%
		48	10.5	6.3	0.92	0.96	0.00	0.00	20	20	10,000	15,000	0.71	0.71	1.07	14%
		72	10.5	6.4	0.89	0.96	1.65	0.00	20	20	10,000	15,000	0.74	0.74	1.11	15%
		96	10.4	6.4	1.00	1.07	0.00	2.50	20	20	10,000	15,000	0.78	1.09	1.18	16%
		120	10.9	6.4	1.02	1.06	0.00	0.00	20	20	10,000	15,000	0.86	1.46	1.30	17%
		144	10.7	6.2	1.03	1.06	--	--	20	20	10,000	15,000	0.87	0.87	1.31	18%
Filtrate + Wash:											10,000	18,820	0.83	0.82	1.57	21%
Chemical Consumptions													Tail Assay, gms/MT:		5.79	
Sodium Cyanide, kilograms NaCN per dry tonne of ore:												0.10	Avg. Tails, gms/MT:		5.90	
Hydrated lime, kilograms Ca(OH) ₂ per dry tonne of ore:												1.00	Calc. Head, gms/MT:		7.47	
													Extracted, %:		21%	

Notes: (*) - Before chemical additions. (**) - Sparged with oxygen when below 4. (***) - 20 mLs removed at each sampling interval and replaced with fresh water.

Table 4-4.
ODAS/Stratex Project
Oksitli (oxide) zona ail cevher
KCA Sample No. 77548 B
KCA Test No. 77579 A
Cyanide Bottle Roll Leach Test, Target 1.0 grams per liter NaCN
Pulverized Material, Target 80% passing 0.075 millimeters
(1,000 grams solids + 1,500 milliliters solution)

KCA Sample No.	KCA Test No.	Period, hours	pH*	Dissolved Oxygen, mg/L**	Free NaCN, gpL*	Total NaCN, gpL*	Added NaCN, grams	Added Ca(OH) ₂ , grams	Volume Out, mLs***	Volume In, mLs***	Feed Ore Wt., grams	Total Solution Volume, mLs	Solution AAS, mg Au/L	Solution AAS, mg Cu/L	Extracted, gms Au/MT	Cumulative Au Extraction, %
77548 B	77579 A	0	8.7	--	--	--	1.50	0.50	--	--	1,000	1,500	--	--	--	0%
		2	10.0	6.2	0.74	0.85	0.23	0.25	20	20	1,000	1,500	0.21	8.12	0.315	54%
		4	10.1	6.4	0.87	0.98	0.00	0.25	20	20	1,000	1,500	0.22	8.18	0.334	57%
		8	10.2	6.4	0.86	0.95	0.00	0.25	20	20	1,000	1,500	0.24	8.05	0.369	63%
		24	10.2	6.3	0.83	0.93	0.00	0.25	20	20	1,000	1,500	0.24	8.40	0.373	64%
		48	10.4	6.4	0.83	0.88	0.18	0.25	20	20	1,000	1,500	0.24	8.65	0.378	65%
		72	10.6	6.4	0.90	0.96	0.00	0.00	20	20	1,000	1,500	0.24	8.53	0.383	66%
		96	10.4	6.4	0.90	0.95	--	--	20	20	1,000	1,500	0.23	8.42	0.373	64%
Filtrate + Wash:											1,000	2,230	0.15	--	0.367	63%
													Tail Assay, gms/MT:		0.219	
Chemical Consumptions															0.213	
Sodium Cyanide, kilograms NaCN per dry tonne of ore:												0.46	Avg. Tails, gms/MT:		0.216	
Hydrated lime, kilograms Ca(OH) ₂ per dry tonne of ore:												1.75	Calc. Head, gms/MT:		0.583	
													Extracted, %:		63%	

Notes: (*) - Before chemical additions. (**) - Sparged with oxygen when below 4. (***) - 20 mLs removed at each sampling interval and replaced with fresh water.

KCA Sample No.	KCA Test No.	Period, hours	pH*	Dissolved Oxygen, mg/L**	Free NaCN, gpL*	Total NaCN, gpL*	Added NaCN, grams	Added Ca(OH) ₂ , grams	Volume Out, mLs***	Volume In, mLs***	Feed Ore Wt., grams	Total Solution Volume, mLs	Solution AAS, mg Ag/L	Solution AAS, mg Cu/L	Extracted, gms Ag/MT	Cumulative Ag Extraction, %
77548 B	77579 A	0	8.7	--	--	--	1.50	0.50	--	--	1,000	1,500	--	--	--	0%
		2	10.0	6.2	0.74	0.85	0.23	0.25	20	20	1,000	1,500	2.51	8.12	3.77	48%
		4	10.1	6.4	0.87	0.98	0.00	0.25	20	20	1,000	1,500	2.80	8.18	4.25	55%
		8	10.2	6.4	0.86	0.95	0.00	0.25	20	20	1,000	1,500	2.95	8.05	4.53	58%
		24	10.2	6.3	0.83	0.93	0.00	0.25	20	20	1,000	1,500	3.30	8.40	5.12	66%
		48	10.4	6.4	0.83	0.88	0.18	0.25	20	20	1,000	1,500	3.35	8.65	5.26	68%
		72	10.6	6.4	0.90	0.96	0.00	0.00	20	20	1,000	1,500	3.36	8.53	5.34	69%
		96	10.4	6.4	0.90	0.95	--	--	20	20	1,000	1,500	3.32	8.42	5.35	69%
Filtrate + Wash:											1,000	2,230	2.26	--	5.47	70%
													Tail Assay, gms/MT:		2.40	
Chemical Consumptions															2.19	
Sodium Cyanide, kilograms NaCN per dry tonne of ore:												0.46	Avg. Tails, gms/MT:		2.30	
Hydrated lime, kilograms Ca(OH) ₂ per dry tonne of ore:												1.75	Calc. Head, gms/MT:		7.77	
													Extracted, %:		70%	

Notes: (*) - Before chemical additions. (**) - Sparged with oxygen when below 4. (***) - 20 mLs removed at each sampling interval and replaced with fresh water.

Table 4-5.
ODAS/Stratex Project
Geçiş (transition) zonuna ait cevher
KCA Sample No. 77549 B
KCA Test No. 77586 B
Cyanide Bottle Roll Leach Test, Target 1.0 grams per liter NaCN
Crushed Material, Target 80% passing 12.5 millimeters
(10,000 grams solids + 15,000 milliliters solution)

KCA Sample No.	KCA Test No.	Period, hours	pH*	Dissolved Oxygen, mg/L**	Free NaCN, gpL*	Total NaCN, gpL*	Added NaCN, grams	Added Ca(OH) ₂ , grams	Volume Out, mLs***	Volume In, mLs***	Feed Ore Wt., grams	Total Solution Volume, mLs	Solution AAS, mg Au/L	Solution AAS, mg Cu/L	Extracted, gms Au/MT	Cumulative Au Extraction, %
77549 B	77586 B	0	7.3	--	--	--	15.00	5.00	--	--	10,000	15,000	--	--	--	0%
		2	10.3	5.3	0.92	0.95	0.00	2.50	20	20	10,000	15,000	0.07	1.07	0.105	14%
		4	10.9	5.6	0.94	0.94	0.00	0.00	20	20	10,000	15,000	0.08	1.13	0.120	16%
		8	10.7	5.6	0.92	0.92	0.00	0.00	20	20	10,000	15,000	0.10	1.26	0.150	20%
		24	10.3	6.0	0.85	0.89	1.65	2.50	20	20	10,000	15,000	0.14	1.46	0.211	28%
		48	10.8	5.9	0.97	0.97	0.00	0.00	20	20	10,000	15,000	0.15	1.64	0.226	30%
		72	10.8	6.3	0.96	0.97	0.00	0.00	20	20	10,000	15,000	0.15	1.61	0.226	30%
		96	10.6	6.1	0.96	0.96	0.00	0.00	20	20	10,000	15,000	0.15	1.71	0.226	30%
		120	10.6	6.2	0.93	0.93	0.00	0.00	20	20	10,000	15,000	0.16	1.80	0.242	32%
		144	10.5	5.9	0.90	0.93	--	--	20	20	10,000	15,000	0.17	1.85	0.257	34%
Filtrate + Wash:											10,000	19,500	0.13	1.56	0.256	34%
Chemical Consumptions													Tail Assay, gms/MT:		0.506	
Sodium Cyanide, kilograms NaCN per dry tonne of ore:													Avg. Tails, gms/MT:		0.504	
Hydrated lime, kilograms Ca(OH) ₂ per dry tonne of ore:													Calc. Head, gms/MT:		0.760	
													Extracted, %:		34%	

Notes: (*) - Before chemical additions. (**) - Sparged with oxygen when below 4. (***) - 20 mLs removed at each sampling interval and replaced with fresh water.

KCA Sample No.	KCA Test No.	Period, hours	pH*	Dissolved Oxygen, mg/L**	Free NaCN, gpL*	Total NaCN, gpL*	Added NaCN, grams	Added Ca(OH) ₂ , grams	Volume Out, mLs***	Volume In, mLs***	Feed Ore Wt., grams	Total Solution Volume, mLs	Solution AAS, mg Ag/L	Solution AAS, mg Cu/L	Extracted, gms Ag/MT	Cumulative Ag Extraction, %
77549 B	77586 B	0	7.3	--	--	--	15.00	5.00	--	--	10,000	15,000	--	--	--	0%
		2	10.3	5.3	0.92	0.95	0.00	2.50	20	20	10,000	15,000	0.31	1.07	0.47	9%
		4	10.9	5.6	0.94	0.94	0.00	0.00	20	20	10,000	15,000	0.36	1.13	0.54	10%
		8	10.7	5.6	0.92	0.92	0.00	0.00	20	20	10,000	15,000	0.44	1.26	0.66	12%
		24	10.3	6.0	0.85	0.89	1.65	2.50	20	20	10,000	15,000	0.60	1.46	0.90	17%
		48	10.8	5.9	0.97	0.97	0.00	0.00	20	20	10,000	15,000	0.75	1.64	1.13	21%
		72	10.8	6.3	0.96	0.97	0.00	0.00	20	20	10,000	15,000	0.75	1.61	1.13	21%
		96	10.6	6.1	0.96	0.96	0.00	0.00	20	20	10,000	15,000	0.80	1.71	1.21	22%
		120	10.6	6.2	0.93	0.93	0.00	0.00	20	20	10,000	15,000	0.85	1.80	1.28	24%
		144	10.5	5.9	0.90	0.93	--	--	20	20	10,000	15,000	0.92	1.85	1.39	26%
Filtrate + Wash:											10,000	19,500	0.74	1.56	1.45	27%
Chemical Consumptions													Tail Assay, gms/MT:		4.01	
Sodium Cyanide, kilograms NaCN per dry tonne of ore:													Avg. Tails, gms/MT:		3.91	
Hydrated lime, kilograms Ca(OH) ₂ per dry tonne of ore:													Calc. Head, gms/MT:		5.36	
													Extracted, %:		27%	

Notes: (*) - Before chemical additions. (**) - Sparged with oxygen when below 4. (***) - 20 mLs removed at each sampling interval and replaced with fresh water.

Table 4-6.
ODAS/Stratex Project
Geçiş (transition) zonuna ait cevher
KCA Sample No. 77549 B
KCA Test No. 77579 B
Cyanide Bottle Roll Leach Test, Target 1.0 grams per liter NaCN
Pulverized Material, Target 80% passing 0.075 millimeters
(1,000 grams solids + 1,500 milliliters solution)

KCA Sample No.	KCA Test No.	Period, hours	pH*	Dissolved Oxygen, mg/L**	Free NaCN, gpL*	Total NaCN, gpL*	Added NaCN, grams	Added Ca(OH) ₂ , grams	Volume Out, mLs***	Volume In, mLs***	Feed Ore Wt., grams	Total Solution Volume, mLs	Solution AAS, mg Au/L	Solution AAS, mg Cu/L	Extracted, gms Au/MT	Cumulative Au Extraction, %
77549 B	77579 B	0	8.2	--	--	--	1.50	0.50	--	--	1,000	1,500	--	--	--	0%
		2	9.7	6.1	0.62	0.80	0.30	0.25	20	20	1,000	1,500	0.17	17.5	0.255	37%
		4	9.9	6.2	0.79	0.92	0.00	0.25	20	20	1,000	1,500	0.18	16.8	0.273	40%
		8	10.0	6.2	0.76	0.88	0.18	0.25	20	20	1,000	1,500	0.18	17.0	0.277	41%
		24	10.0	6.3	0.80	0.90	0.00	0.25	20	20	1,000	1,500	0.19	17.6	0.296	43%
		48	10.2	6.4	0.78	0.83	0.26	0.25	20	20	1,000	1,500	0.18	17.7	0.284	42%
		72	10.4	6.2	0.87	0.91	0.00	0.25	20	20	1,000	1,500	0.17	17.5	0.273	40%
		96	10.5	6.2	0.85	0.86	--	--	20	20	1,000	1,500	0.17	16.8	0.276	41%
Filtrate + Wash:											1,000	2,280	0.13	--	0.321	47%
													Tail Assay, gms/MT:		0.357	
Chemical Consumptions															0.363	
Sodium Cyanide, kilograms NaCN per dry tonne of ore:												0.87	Avg. Tails, gms/MT:		0.360	
Hydrated lime, kilograms Ca(OH) ₂ per dry tonne of ore:												2.00	Calc. Head, gms/MT:		0.681	
													Extracted, %:		47%	

Notes: (*) - Before chemical additions. (**) - Sparged with oxygen when below 4. (***) - 20 mLs removed at each sampling interval and replaced with fresh water.

KCA Sample No.	KCA Test No.	Period, hours	pH*	Dissolved Oxygen, mg/L**	Free NaCN, gpL*	Total NaCN, gpL*	Added NaCN, grams	Added Ca(OH) ₂ , grams	Volume Out, mLs***	Volume In, mLs***	Feed Ore Wt., grams	Total Solution Volume, mLs	Solution AAS, mg Ag/L	Solution AAS, mg Cu/L	Extracted, gms Ag/MT	Cumulative Ag Extraction, %
77549 B	77579 B	0	8.2	--	--	--	1.50	0.50	--	--	1,000	1,500	--	--	--	0%
		2	9.7	6.1	0.62	0.80	0.30	0.25	20	20	1,000	1,500	1.67	17.5	2.51	48%
		4	9.9	6.2	0.79	0.92	0.00	0.25	20	20	1,000	1,500	1.71	16.8	2.60	50%
		8	10.0	6.2	0.76	0.88	0.18	0.25	20	20	1,000	1,500	1.76	17.0	2.71	52%
		24	10.0	6.3	0.80	0.90	0.00	0.25	20	20	1,000	1,500	1.88	17.6	2.92	56%
		48	10.2	6.4	0.78	0.83	0.26	0.25	20	20	1,000	1,500	1.95	17.7	3.07	59%
		72	10.4	6.2	0.87	0.91	0.00	0.25	20	20	1,000	1,500	1.84	17.5	2.94	56%
		96	10.5	6.2	0.85	0.86	--	--	20	20	1,000	1,500	1.81	16.8	2.93	56%
Filtrate + Wash:											1,000	2,280	1.26	--	3.13	60%
													Tail Assay, gms/MT:		2.19	
Chemical Consumptions															1.99	
Sodium Cyanide, kilograms NaCN per dry tonne of ore:												0.87	Avg. Tails, gms/MT:		2.09	
Hydrated lime, kilograms Ca(OH) ₂ per dry tonne of ore:												2.00	Calc. Head, gms/MT:		5.22	
													Extracted, %:		60%	

Notes: (*) - Before chemical additions. (**) - Sparged with oxygen when below 4. (***) - 20 mLs removed at each sampling interval and replaced with fresh water.

Table 4-7.
ODAS/Stratex Project
Sülfürlü (sulphide) zona ait cevher
KCA Sample No. 77550 B
KCA Test No. 77586 C
Cyanide Bottle Roll Leach Test, Target 1.0 grams per liter NaCN
Crushed Material, Target 80% passing 12.5 millimeters
(10,000 grams solids + 15,000 milliliters solution)

KCA Sample No.	KCA Test No.	Period, hours	pH*	Dissolved Oxygen, mg/L**	Free NaCN, gpL*	Total NaCN, gpL*	Added NaCN, grams	Added Ca(OH) ₂ , grams	Volume Out, mLs***	Volume In, mLs***	Feed Ore Wt., grams	Total Solution Volume, mLs	Solution AAS, mg Au/L	Solution AAS, mg Cu/L	Extracted, gms Au/MT	Cumulative Au Extraction, %
77550 B	77586 C	0	7.9	--	--	--	15.00	5.00	--	--	10,000	15,000	--	--	--	0%
		2	11.0	5.4	1.01	1.01	0.00	0.00	20	20	10,000	15,000	0.02	1.11	0.030	8%
		4	10.9	5.6	0.99	0.99	0.00	0.00	20	20	10,000	15,000	0.02	1.39	0.030	8%
		8	10.8	5.8	0.98	0.98	0.00	0.00	20	20	10,000	15,000	0.02	1.73	0.030	8%
		24	10.4	6.1	0.95	0.95	0.00	2.50	20	20	10,000	15,000	0.03	2.27	0.045	12%
		48	11.1	6.1	0.95	0.95	0.00	0.00	20	20	10,000	15,000	0.03	2.71	0.045	12%
		72	11.1	6.2	0.94	0.94	0.00	0.00	20	20	10,000	15,000	0.02	2.80	0.030	8%
		96	10.9	6.0	0.94	0.94	0.00	0.00	20	20	10,000	15,000	0.03	2.88	0.045	12%
		120	10.8	5.9	0.94	0.94	0.00	0.00	20	20	10,000	15,000	0.03	3.05	0.045	12%
		144	10.7	5.9	0.90	0.90	--	--	20	20	10,000	15,000	0.02	3.27	0.030	8%
Filtrate + Wash:											10,000	19,000	0.02	2.97	0.038	10%
Chemical Consumptions													Tail Assay, gms/MT:		0.324	
Sodium Cyanide, kilograms NaCN per dry tonne of ore:												0.13	Avg. Tails, gms/MT:		0.328	
Hydrated lime, kilograms Ca(OH) ₂ per dry tonne of ore:												0.75	Calc. Head, gms/MT:		0.367	
													Extracted, %:		10%	

Notes: (*) - Before chemical additions. (**) - Sparged with oxygen when below 4. (***) - 20 mLs removed at each sampling interval and replaced with fresh water.

KCA Sample No.	KCA Test No.	Period, hours	pH*	Dissolved Oxygen, mg/L**	Free NaCN, gpL*	Total NaCN, gpL*	Added NaCN, grams	Added Ca(OH) ₂ , grams	Volume Out, mLs***	Volume In, mLs***	Feed Ore Wt., grams	Total Solution Volume, mLs	Solution AAS, mg Ag/L	Solution AAS, mg Cu/L	Extracted, gms Ag/MT	Cumulative Ag Extraction, %
77550 B	77586 C	0	7.9	--	--	--	15.00	5.00	--	--	10,000	15,000	--	--	--	0%
		2	11.0	5.4	1.01	1.01	0.00	0.00	20	20	10,000	15,000	0.04	1.11	0.06	6%
		4	10.9	5.6	0.99	0.99	0.00	0.00	20	20	10,000	15,000	0.05	1.39	0.08	8%
		8	10.8	5.8	0.98	0.98	0.00	0.00	20	20	10,000	15,000	0.06	1.73	0.09	10%
		24	10.4	6.1	0.95	0.95	0.00	2.50	20	20	10,000	15,000	0.08	2.27	0.12	13%
		48	11.1	6.1	0.95	0.95	0.00	0.00	20	20	10,000	15,000	0.08	2.71	0.12	13%
		72	11.1	6.2	0.94	0.94	0.00	0.00	20	20	10,000	15,000	0.08	2.80	0.12	13%
		96	10.9	6.0	0.94	0.94	0.00	0.00	20	20	10,000	15,000	0.10	2.88	0.15	16%
		120	10.8	5.9	0.94	0.94	0.00	0.00	20	20	10,000	15,000	0.09	3.05	0.14	14%
		144	10.7	5.9	0.90	0.90	--	--	20	20	10,000	15,000	0.09	3.27	0.14	14%
Filtrate + Wash:											10,000	19,000	0.08	2.97	0.15	16%
Chemical Consumptions													Tail Assay, gms/MT:		0.79	
Sodium Cyanide, kilograms NaCN per dry tonne of ore:												0.13	Avg. Tails, gms/MT:		0.79	
Hydrated lime, kilograms Ca(OH) ₂ per dry tonne of ore:												0.75	Calc. Head, gms/MT:		0.94	
													Extracted, %:		16%	

Notes: (*) - Before chemical additions. (**) - Sparged with oxygen when below 4. (***) - 20 mLs removed at each sampling interval and replaced with fresh water.

Table 4-8.
ODAS/Stratex Project
Sülfürlü (sulphide) zona ait cevher
KCA Sample No. 77550 B
KCA Test No. 77579 C
Cyanide Bottle Roll Leach Test, Target 1.0 grams per liter NaCN
Pulverized Material, Target 80% passing 0.075 millimeters
(1,000 grams solids + 1,500 milliliters solution)

KCA Sample No.	KCA Test No.	Period, hours	pH*	Dissolved Oxygen, mg/L**	Free NaCN, gpL*	Total NaCN, gpL*	Added NaCN, grams	Added Ca(OH) ₂ , grams	Volume Out, mLs***	Volume In, mLs***	Feed Ore Wt., grams	Total Solution Volume, mLs	Solution AAS, mg Au/L	Solution AAS, mg Cu/L	Extracted, gms Au/MT	Cumulative Au Extraction, %
77550 B	77579 C	0	8.9	--	--	--	1.50	0.50	--	--	1,000	1,500	--	--	--	0%
		2	9.9	6.3	0.75	0.86	0.21	0.25	20	20	1,000	1,500	0.04	13.1	0.060	17%
		4	10.2	6.3	0.90	0.95	0.00	0.25	20	20	1,000	1,500	0.05	13.2	0.076	21%
		8	10.4	6.2	0.91	0.92	0.00	0.25	20	20	1,000	1,500	0.05	13.4	0.077	22%
		24	10.6	6.1	0.88	0.88	0.18	0.00	20	20	1,000	1,500	0.05	13.8	0.078	22%
		48	10.5	6.2	0.93	0.93	0.00	0.00	20	20	1,000	1,500	0.04	14.9	0.064	18%
		72	10.5	6.2	0.83	0.85	0.26	0.00	20	20	1,000	1,500	0.04	14.6	0.065	18%
		96	10.4	6.3	0.95	0.98	--	--	20	20	1,000	1,500	0.04	15.3	0.065	18%
Filtrate + Wash:											1,000	2,200	0.02	--	0.050	14%
													Tail Assay, gms/MT:		0.302	
Chemical Consumptions															0.305	
Sodium Cyanide, kilograms NaCN per dry tonne of ore:												0.62	Avg. Tails, gms/MT:		0.303	
Hydrated lime, kilograms Ca(OH) ₂ per dry tonne of ore:												1.25	Calc. Head, gms/MT:		0.354	
													Extracted, %:		14%	

Notes: (*) - Before chemical additions. (**) - Sparged with oxygen when below 4. (***) - 20 mLs removed at each sampling interval and replaced with fresh water.

KCA Sample No.	KCA Test No.	Period, hours	pH*	Dissolved Oxygen, mg/L**	Free NaCN, gpL*	Total NaCN, gpL*	Added NaCN, grams	Added Ca(OH) ₂ , grams	Volume Out, mLs***	Volume In, mLs***	Feed Ore Wt., grams	Total Solution Volume, mLs	Solution AAS, mg Ag/L	Solution AAS, mg Cu/L	Extracted, gms Ag/MT	Cumulative Ag Extraction, %
77550 B	77579 C	0	8.9	--	--	--	1.50	0.50	--	--	1,000	1,500	--	--	--	0%
		2	9.9	6.3	0.75	0.86	0.21	0.25	20	20	1,000	1,500	0.18	13.1	0.27	27%
		4	10.2	6.3	0.90	0.95	0.00	0.25	20	20	1,000	1,500	0.19	13.2	0.29	29%
		8	10.4	6.2	0.91	0.92	0.00	0.25	20	20	1,000	1,500	0.20	13.4	0.31	31%
		24	10.6	6.1	0.88	0.88	0.18	0.00	20	20	1,000	1,500	0.22	13.8	0.34	34%
		48	10.5	6.2	0.93	0.93	0.00	0.00	20	20	1,000	1,500	0.23	14.9	0.36	36%
		72	10.5	6.2	0.83	0.85	0.26	0.00	20	20	1,000	1,500	0.23	14.6	0.37	37%
		96	10.4	6.3	0.95	0.98	--	--	20	20	1,000	1,500	0.23	15.3	0.37	37%
Filtrate + Wash:											1,000	2,200	0.16	--	0.38	38%
													Tail Assay, gms/MT:		0.62	
Chemical Consumptions															0.62	
Sodium Cyanide, kilograms NaCN per dry tonne of ore:												0.62	Avg. Tails, gms/MT:		0.62	
Hydrated lime, kilograms Ca(OH) ₂ per dry tonne of ore:												1.25	Calc. Head, gms/MT:		1.00	
													Extracted, %:		38%	

Notes: (*) - Before chemical additions. (**) - Sparged with oxygen when below 4. (***) - 20 mLs removed at each sampling interval and replaced with fresh water.

Table 4-9.
ODAS/Stratex Project
Oksitli (oxide) zona ail cevher
KCA Sample No. 78319 A
KCA Test No. 78359 A
Cyanide Bottle Roll Leach Test, Target 1.0 grams per liter NaCN
Pulverized Material, Target 80% passing 0.075 millimeters
(1,000 grams solids + 1,500 milliliters solution)

KCA Sample No.	KCA Test No.	Period, hours	pH*	Dissolved Oxygen, mg/L**	Free NaCN, gpL*	Total NaCN, gpL*	Added NaCN, grams	Added Ca(OH) ₂ , grams	Volume Out, mLs***	Volume In, mLs***	Feed Ore Wt., grams	Total Solution Volume, mLs	Solution AAS, mg Au/L	Solution AAS, mg Cu/L	Extracted, gms Au/MT	Cumulative Au Extraction, %
78319 A	78359 A	0	8.6	--	--	--	1.50	0.50	--	--	1,000	1,500	--	--	--	0%
		2	10.0	6.3	0.84	0.96	0.00	0.25	20	20	1,000	1,500	0.17	1.35	0.255	52%
		4	10.2	6.4	0.87	0.95	0.00	0.25	20	20	1,000	1,500	0.18	1.41	0.273	56%
		8	10.4	6.3	0.86	0.93	0.00	0.25	20	20	1,000	1,500	0.19	1.49	0.292	60%
		24	10.6	6.4	0.85	0.92	0.23	0.00	20	20	1,000	1,500	0.19	1.63	0.296	60%
		48	10.6	6.5	0.95	1.02	0.00	0.00	20	20	1,000	1,500	0.19	1.67	0.300	61%
		72	10.5	6.4	0.89	0.99	0.17	0.00	20	20	1,000	1,500	0.19	1.72	0.303	62%
		96	10.5	6.4	1.00	1.08	--	--	20	20	1,000	1,500	0.19	1.78	0.307	63%
Filtrate + Wash:											1,000	2,650	0.10	--	0.291	60%
Tail Assay, gms/MT:													0.201			
Chemical Consumptions													0.195			
Sodium Cyanide, kilograms NaCN per dry tonne of ore:												0.29	Avg. Tails, gms/MT:		0.198	
Hydrated lime, kilograms Ca(OH) ₂ per dry tonne of ore:												1.25	Calc. Head, gms/MT:		0.489	
Extracted, %:													60%			

Notes: (*) - Before chemical additions. (**) - Sparged with oxygen when below 4. (***) - 20 mLs removed at each sampling interval and replaced with fresh water.

KCA Sample No.	KCA Test No.	Period, hours	pH*	Dissolved Oxygen, mg/L**	Free NaCN, gpL*	Total NaCN, gpL*	Added NaCN, grams	Added Ca(OH) ₂ , grams	Volume Out, mLs***	Volume In, mLs***	Feed Ore Wt., grams	Total Solution Volume, mLs	Solution AAS, mg Ag/L	Solution AAS, mg Cu/L	Extracted, gms Ag/MT	Cumulative Ag Extraction, %
78319 A	78359 A	0	8.6	--	--	--	1.50	0.50	--	--	1,000	1,500	--	--	--	0%
		2	10.0	6.3	0.84	0.96	0.00	0.25	20	20	1,000	1,500	0.92	1.35	1.38	31%
		4	10.2	6.4	0.87	0.95	0.00	0.25	20	20	1,000	1,500	0.99	1.41	1.50	34%
		8	10.4	6.3	0.86	0.93	0.00	0.25	20	20	1,000	1,500	1.05	1.49	1.61	36%
		24	10.6	6.4	0.85	0.92	0.23	0.00	20	20	1,000	1,500	1.15	1.63	1.78	40%
		48	10.6	6.5	0.95	1.02	0.00	0.00	20	20	1,000	1,500	1.17	1.67	1.84	41%
		72	10.5	6.4	0.89	0.99	0.17	0.00	20	20	1,000	1,500	1.20	1.72	1.91	43%
		96	10.5	6.4	1.00	1.08	--	--	20	20	1,000	1,500	1.25	1.78	2.00	45%
Filtrate + Wash:											1,000	2,650	0.71	--	2.04	46%
Tail Assay, gms/MT:													2.40			
Chemical Consumptions													2.40			
Sodium Cyanide, kilograms NaCN per dry tonne of ore:												0.29	Avg. Tails, gms/MT:		2.40	
Hydrated lime, kilograms Ca(OH) ₂ per dry tonne of ore:												1.25	Calc. Head, gms/MT:		4.44	
Extracted, %:													46%			

Notes: (*) - Before chemical additions. (**) - Sparged with oxygen when below 4. (***) - 20 mLs removed at each sampling interval and replaced with fresh water.

Table 4-10.
ODAS/Stratex Project
Geçiş (transition) zonuna ait cevher
KCA Sample No. 78320 A
KCA Test No. 77559 B
Cyanide Bottle Roll Leach Test, Target 1.0 grams per liter NaCN
Pulverized Material, Target 80% passing 0.075 millimeters
(1,000 grams solids + 1,500 milliliters solution)

KCA Sample No.	KCA Test No.	Period, hours	pH*	Dissolved Oxygen, mg/L**	Free NaCN, gpL*	Total NaCN, gpL*	Added NaCN, grams	Added Ca(OH) ₂ , grams	Volume Out, mLs***	Volume In, mLs***	Feed Ore Wt., grams	Total Solution Volume, mLs	Solution AAS, mg Au/L	Solution AAS, mg Cu/L	Extracted, gms Au/MT	Cumulative Au Extraction, %
78320 A	78359 B	0	8.0	--	--	--	1.50	0.50	--	--	1,000	1,500	--	--	--	0%
		2	9.8	6.3	0.71	0.90	0.00	0.25	20	20	1,000	1,500	0.21	2.11	0.315	44%
		4	10.0	6.4	0.61	0.85	0.23	0.25	20	20	1,000	1,500	0.22	2.18	0.334	46%
		8	10.0	6.3	0.86	0.95	0.00	0.25	20	20	1,000	1,500	0.22	2.18	0.339	47%
		24	10.2	6.3	0.83	0.88	0.18	0.25	20	20	1,000	1,500	0.23	2.35	0.358	49%
		48	10.4	6.3	0.90	0.94	0.00	0.25	20	20	1,000	1,500	0.22	2.43	0.348	48%
		72	10.7	6.3	0.87	0.89	0.20	0.00	20	20	1,000	1,500	0.22	2.41	0.352	49%
		96	10.6	6.4	0.95	0.95	--	--	20	20	1,000	1,500	0.22	2.48	0.356	49%
Filtrate + Wash:											1,000	2,820	0.11	--	0.341	47%
													Tail Assay, gms/MT:		0.387	
Chemical Consumptions															0.377	
Sodium Cyanide, kilograms NaCN per dry tonne of ore:												0.59	Avg. Tails, gms/MT:		0.382	
Hydrated lime, kilograms Ca(OH) ₂ per dry tonne of ore:												1.75	Calc. Head, gms/MT:		0.723	
													Extracted, %:		47%	

Notes: (*) - Before chemical additions. (**) - Sparged with oxygen when below 4. (***) - 20 mLs removed at each sampling interval and replaced with fresh water.

KCA Sample No.	KCA Test No.	Period, hours	pH*	Dissolved Oxygen, mg/L**	Free NaCN, gpL*	Total NaCN, gpL*	Added NaCN, grams	Added Ca(OH) ₂ , grams	Volume Out, mLs***	Volume In, mLs***	Feed Ore Wt., grams	Total Solution Volume, mLs	Solution AAS, mg Ag/L	Solution AAS, mg Cu/L	Extracted, gms Ag/MT	Cumulative Ag Extraction, %
78320 A	78359 B	0	8.0	--	--	--	1.50	0.50	--	--	1,000	1,500	--	--	--	0%
		2	9.8	6.3	0.71	0.90	0.00	0.25	20	20	1,000	1,500	1.72	2.11	2.58	43%
		4	10.0	6.4	0.61	0.85	0.23	0.25	20	20	1,000	1,500	1.85	2.18	2.81	46%
		8	10.0	6.3	0.86	0.95	0.00	0.25	20	20	1,000	1,500	1.84	2.18	2.83	47%
		24	10.2	6.3	0.83	0.88	0.18	0.25	20	20	1,000	1,500	2.03	2.35	3.15	52%
		48	10.4	6.3	0.90	0.94	0.00	0.25	20	20	1,000	1,500	2.10	2.43	3.30	54%
		72	10.7	6.3	0.87	0.89	0.20	0.00	20	20	1,000	1,500	2.07	2.41	3.30	54%
		96	10.6	6.4	0.95	0.95	--	--	20	20	1,000	1,500	2.14	2.48	3.44	57%
Filtrate + Wash:											1,000	2,820	1.13	--	3.46	57%
													Tail Assay, gms/MT:		2.61	
Chemical Consumptions															2.61	
Sodium Cyanide, kilograms NaCN per dry tonne of ore:												0.59	Avg. Tails, gms/MT:		2.61	
Hydrated lime, kilograms Ca(OH) ₂ per dry tonne of ore:												1.75	Calc. Head, gms/MT:		6.07	
													Extracted, %:		57%	

Notes: (*) - Before chemical additions. (**) - Sparged with oxygen when below 4. (***) - 20 mLs removed at each sampling interval and replaced with fresh water.

5.0 Agglomeration Test Work

Preliminary agglomeration test work was conducted on portions of the crushed material.

For the test work, the material was agglomerated with various additions of cement. In the preliminary agglomeration testing, the agglomerated material was placed in a column with no compressive load and then tested for permeability.

The purpose of the percolation tests was to examine the permeability of the material under various cement agglomeration levels. The percolation tests were conducted in small (75 millimeter inside diameter) columns at a range of cement levels with no compressive load applied.

5.1 Preliminary Agglomeration Test Procedure

Agglomeration tests were conducted utilizing 2 kilogram portions of the material at crushed sizes of 100% passing 19 and 8 millimeters and agglomerated with 0, 2, 4 and 8 kilograms of cement per tonne of material.

The procedure used for these tests was as follows:

1. A 2 kilogram split of material was placed into the agglomerating drum and a specified amount of cement was added.
2. The drum was rotated for several minutes to mix the material and cement thoroughly.
3. The material was sprayed with tap water to form the agglomerates and the amount of water required was recorded.
4. The agglomerates were then placed into a 75 millimeter inside diameter column and the initial material height was recorded. The agglomerates were allowed to cure for a period of 24 hours.
5. Solution was applied to the column at a rate of 10 to 12 liters per hour per square meter of column surface area for 72 hours. Changes in the height of the material in the column, agglomerate stability and percolation problems were recorded.
6. After 72 hours of solution application, the sides of the column were tapped sharply until the material height within the column remained stable. The final material height was then recorded.
7. The exit line from the column was clamped off and the column was flooded with solution to a level equal to 75 millimeters above the material surface.

8. The clamp was removed and while the solution level above the material was maintained, the solution flow rate from the bottom of the column was measured.

5.2 Discussion of Preliminary Agglomeration Test Work

This type of agglomeration test work is very preliminary but does serve to provide an indication of whether or not agglomeration will be required for the processing of the material at the tested crushed sizes. These specific tests should be indicative of cement requirements for a single lift heap having an overall height of not more than 8 meters.

If a multiple lift heap leach operation is being developed then additional agglomeration test work will be required and this test work should include test work that examines the material under a static load (this test work is described as compacted permeability test work).

For agglomeration test work conducted by KCA, the parameters that are typically examined are slump, maximum flow rate, agglomerate pellet break down (when material is agglomerated) and discharge solution color and clarity (or the “visual” turbidity of the solution). Guidelines that KCA utilizes when reviewing the results from this type of test are presented in the following:

1. In KCA’s non-compacted agglomeration tests, a slump of over 10% is generally an indication of failure. One item also examined is the consistency of results with regard to slump. If things worked perfectly, a lower slump with higher cement levels could be expected.
2. A typical heap leach solution application rate of 10 to 12 liters per hour per square meter is utilized when examining the agglomeration data. When examining results from this type of agglomeration test a measured flow of one hundred times (100X) the heap design rate is considered a “pass”. A measured flow less than 100X the heap design flow is not necessarily a failure. If there are enough tests with enough consistency between tests, and all other points indicate a “pass,” and then sometimes a test will pass with less than the 100X flow. However, a test will not likely pass at 10X and probably not at 40X.
3. In examining the Pellet Breakdown, about 10% is marginally acceptable and anything higher is a failure. In general, a higher range is allowable in Pellet Breakdown as this is a subjective value based on the visual observation of the pellets after the test by the technicians performing the test. When the samples tested are not agglomerated using cement, this test is not applicable.
4. Solution color and clarity typically is an indicator of agglomerate failure and fines migration. This information is utilized in coordination with both slump as well as Pellet Breakdown to determine if the test passes.

All tests passed the criteria utilized by KCA.

The complete results of this phase of the agglomeration test program (including a pass/fail analysis) are shown in Table 5-1.

Table 5-1.
ODAS/Stratex Project
Summary of Preliminary Agglomeration Test Work

KCA Sample No.	KCA Test No.	Description	Top Size of Material, mm	Dry Ore, kg	Cement, kg/MT _{dry ore}	Water Added, mLs	Column Area, m ²	Initial Height, cm	Final Height, cm	pH on Day 3	pH Comment	% Slump	Slump Result	Apparent Bulk Density, MT _{dry} /M ³	Flow Out, LpHr/m ²	Flow Result	Visual Estimate of % Pellet Breakdown	Pellet Result	Out Flow Solution, Color and Clarity	Solution Result	Overall Test Result
77548 B	77584 A	Oksitli(oxide) zona ait cevher	19	2	0	0.0	0.005	30.48	30.48	7.5	Low	0%	Pass	1.44	50,499	Pass	N/A	N/A	Brown & Cloudy	Fail	Pass
77548 B	77584 B	Oksitli(oxide) zona ait cevher	19	2	2	64.0	0.005	26.04	26.04	11.1	Good	0%	Pass	1.68	53,313	Pass	3	Pass	Light Brown & Cloudy	Fail	Pass
77548 B	77584 C	Oksitli(oxide) zona ait cevher	19	2	4	68.5	0.005	29.21	29.21	11.4	Good	0%	Pass	1.50	54,280	Pass	<3	Pass	Colorless & Clear	Pass	Pass
77548 B	77584 D	Oksitli(oxide) zona ait cevher	19	2	8	82.0	0.005	30.48	30.48	11.8	High	0%	Pass	1.44	49,972	Pass	<3	Pass	Colorless & Clear	Pass	Pass
78319 A	78344 A	Oksitli(oxide) zona ait cevher	8	2	0	0.0	0.005	25.40	25.40	8.2	Low	0%	Pass	1.73	3,837	Pass	N/A	N/A	Brown & Cloudy	Fail	Pass
78319 A	78344 B	Oksitli(oxide) zona ait cevher	8	2	2	158.0	0.005	29.85	29.85	11.1	Good	0%	Pass	1.47	25,332	Pass	5	Pass	Brown & Cloudy	Fail	Pass
78319 A	78344 C	Oksitli(oxide) zona ait cevher	8	2	4	158.0	0.005	29.85	29.85	11.6	High	0%	Pass	1.47	29,970	Pass	<3	Pass	Colorless & Clear	Pass	Pass
78319 A	78344 D	Oksitli(oxide) zona ait cevher	8	2	8	164.5	0.005	29.21	29.21	12.2	High	0%	Pass	1.50	28,166	Pass	<3	Pass	Colorless & Clear	Pass	Pass
77549 B	77584 E	Geçiş(transition) zonuna ait cevher	19	2	0	0.0	0.005	26.67	26.67	7.7	Low	0%	Pass	1.64	36,745	Pass	N/A	N/A	Dark Brown & Cloudy	Fail	Pass
77549 B	77584 F	Geçiş(transition) zonuna ait cevher	19	2	2	58.0	0.005	29.21	29.21	10.6	Good	0%	Pass	1.50	54,615	Pass	5	Pass	Light Brown & Cloudy	Fail	Pass
77549 B	77584 G	Geçiş(transition) zonuna ait cevher	19	2	4	64.0	0.005	29.85	29.85	11.7	High	0%	Pass	1.47	56,231	Pass	<3	Pass	Colorless & Clear	Pass	Pass
77549 B	77584 H	Geçiş(transition) zonuna ait cevher	19	2	8	68.0	0.005	29.85	29.85	12.0	High	0%	Pass	1.47	55,781	Pass	<3	Pass	Brown & Clear	Pass	Pass
78320 A	78344 E	Geçiş(transition) zonuna ait cevher	8	2	0	0.0	0.005	26.67	26.04	8.1	Low	2%	Pass	1.64	8,187	Pass	N/A	N/A	Brown & Cloudy	Fail	Pass
78320 A	78344 F	Geçiş(transition) zonuna ait cevher	8	2	2	161.5	0.005	26.04	26.04	9.0	Low	0%	Pass	1.68	30,472	Pass	15	Fail	Dark Brown & Cloudy	Fail	Pass
78320 A	78344 G	Geçiş(transition) zonuna ait cevher	8	2	4	161.5	0.005	29.85	29.21	11.2	Good	2%	Pass	1.47	32,999	Pass	10	Pass	Dark Brown & Cloudy	Fail	Pass
78320 A	78344 H	Geçiş(transition) zonuna ait cevher	8	2	8	159.0	0.005	28.58	27.94	12.2	High	2%	Pass	1.53	28,917	Pass	5	Pass	Light Brown & Cloudy	Fail	Pass

6.0 Column Leach Test Work

Two (2) column leach tests were conducted utilizing material crushed to 100% passing 19 millimeters. During testing, this material was leached for 61 days with a sodium cyanide solution.

Two (2) column leach tests were also conducted utilizing material crushed to 100% passing 8 millimeters. During testing, this material was leached for 98 days with a sodium cyanide solution.

The column leach test parameters are presented in Table 6-1.

Table 6-1.
ODAS/Stratex Project
Column Leach Test Parameters

KCA Sample No.	KCA Test No.	Description	Crush Size, mm	Column Diameter, meters	Initial Charge Height, meters	Charge Weight, kilograms
77548 B	78301	Oksitli(oxide) zona ait cevher	19	0.152	1.610	41.97
78319 A	78353	Oksitli(oxide) zona ait cevher	8	0.102	2.153	25.40
77549 B	78304	Geçiş(transition) zonuna ait cevher	19	0.152	1.584	42.39
78320 A	78356	Geçiş(transition) zonuna ait cevher	8	0.102	2.140	25.67

6.1 Column Leach Test Extractions

Gold extractions ranged from 31% to 65% based on calculated heads which ranged from 0.513 to 0.873 grams per metric tonne. The sodium cyanide consumptions ranged from 0.66 to 1.52 kilograms per metric tonne. The material utilized in leaching was blended with 2.03 or 2.05 kilograms per metric tonne hydrated lime.

Column test extraction results contained in the body of this report were based upon carbon assays vs. the calculated head (carbon assays + tail assays). Extraction results contained in the attached appendix were based upon the daily solution assays vs. the calculated head (solution assays + tailings assays).

When an outside party submits samples, KCA can estimate gold extraction for an ore body based upon the assumption that the ore to be mined will be similar to the samples tested. For feasibility study purposes, KCA normally discounts laboratory gold extractions by three percentage points when estimating field extractions. KCA normally discounts laboratory silver extractions by five percentage points when estimating field recoveries. This assumes a well-managed heap leach operation, and if agglomeration is required, it is assumed that this process is completed correctly.

Based upon KCA's experience with mostly clean non-reactive ores, cyanide consumption in production heaps would be only 25 to 33 percent of the laboratory column test

consumptions. For ores containing high amounts of leachable copper, higher factors should be utilized.

The metal extractions are summarized in Table 6-2 and presented graphically in Figure 6-1. The metal extraction data for the individual tests are presented in Tables 6-3 through 6-6.

Table 6-2.
ODAS/Stratex Project
Cyanide Column Leach Test Work
Extraction of Metal onto Granular Activated Carbon
Summary of Metal Extractions and Chemical Consumptions

KCA Sample No.	KCA Test No.	Description	Crush Size, mm	Calculated Head, gms Au/MT	Extracted, gms Au/MT	Weighted Avg. Tail Screen, gms Au/MT	Extracted, % Au	Calculated Tail p80 Size, mm	Days of Leach	Consumption NaCN, kg/MT	Addition Hydrated Lime, kg/MT
77548 B	78301	Oksitli(oxide) zona ait cevher	19	0.684	0.355	0.329	52%	12.9	61	0.66	2.05
78319 A	78353	Oksitli(oxide) zona ait cevher	8	0.513	0.333	0.180	65%	6.4	98	1.30	2.05
77549 B	78304	Geçiş(transition) zonuna ait cevher	19	0.873	0.269	0.604	31%	13.0	61	0.77	2.03
78320 A	78356	Geçiş(transition) zonuna ait cevher	8	0.805	0.407	0.398	51%	6.4	98	1.52	2.03

KCA Sample No.	KCA Test No.	Description	Crush Size, mm	Calculated Head, gms Ag/MT	Extracted, gms Ag/MT	Weighted Avg. Tail Screen, gms Ag/MT	Extracted, % Ag	Calculated Tail p80 Size, mm	Days of Leach	Consumption NaCN, kg/MT	Addition Hydrated Lime, kg/MT
77548 B	78301	Oksitli(oxide) zona ait cevher	19	5.49	1.40	4.09	25%	12.9	61	0.66	2.05
78319 A	78353	Oksitli(oxide) zona ait cevher	8	5.15	1.75	3.40	34%	6.4	98	1.30	2.05
77549 B	78304	Geçiş(transition) zonuna ait cevher	19	4.27	1.48	2.79	35%	13.0	61	0.77	2.03
78320 A	78356	Geçiş(transition) zonuna ait cevher	8	6.20	2.30	3.90	37%	6.4	98	1.52	2.03

Figure 6-1.
ODAS/Stratex Project
Cyanide Column Leach Test Work
Gold Extraction versus Days of Leach

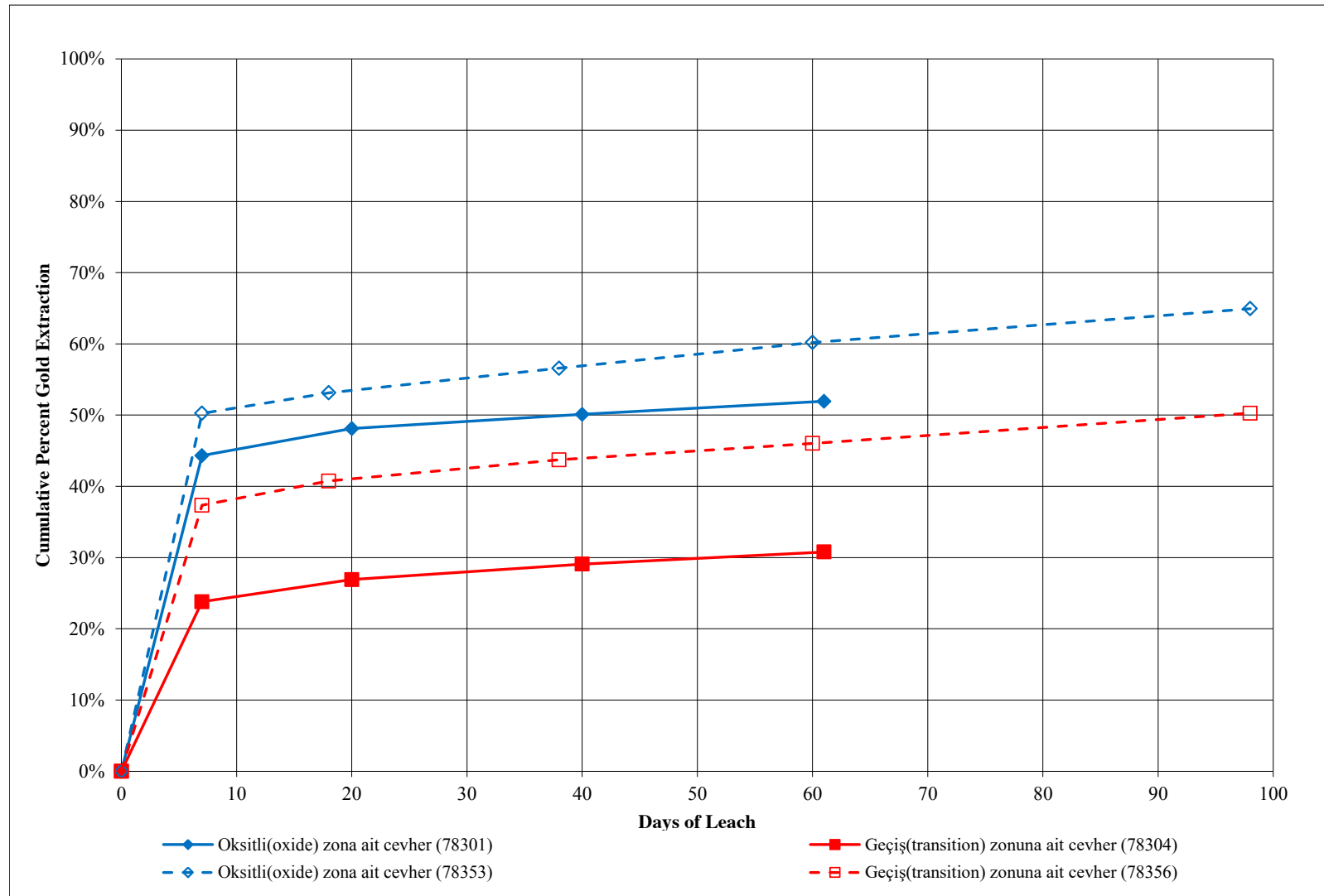


Table 6-3.
ODAS/Stratex Project
Oksitli(oxide) zona ait cevher
KCA Sample No. 77548 B
KCA Test No. 78301
Crushed Material, 100 % passing 19 millimeters
Metal Extractions and Chemical Consumptions

Days Leaching	Cumulative, t_s/t_o	Solution Extraction, gms Au/MT	Carbon Weight, grams	Metal on Carbon Extraction, gms Au/MT	Extraction, % Au	Cumulative Extraction, % Au	NaCN Consumed, kg/MT	Ca(OH) ₂ Added, kg/MT
0-7	0.78	0.295	250.27	0.303	44%	44%	0.15	2.05
8-20	1.99	0.014	179.91	0.026	4%	48%	0.00	0.00
21-40	3.53	0.010	140.97	0.014	2%	50%	0.26	0.00
41-61	5.20	0.003	145.12	0.013	2%	52%	0.26	0.00
	Total:	0.323		0.355			0.66	2.05
	Tail:	0.329		0.329				
	Calc. Head:	0.652		0.684				

t_s/t_o = Tonnes of solution effluent per tonne of dry ore leached.

Days Leaching	Cumulative, t_s/t_o	Solution Extraction, gms Ag/MT	Carbon Weight, grams	Metal on Carbon Extraction, gms Ag/MT	Extraction, % Ag	Cumulative Extraction, % Ag	NaCN Consumed, kg/MT	Ca(OH) ₂ Added, kg/MT
0-7	0.78	0.92	250.27	0.93	17%	17%	0.15	2.05
8-20	1.99	0.22	179.91	0.22	4%	21%	0.00	0.00
21-40	3.53	0.13	140.97	0.14	3%	23%	0.26	0.00
41-61	5.20	0.10	145.12	0.11	2%	25%	0.26	0.00
	Total:	1.37		1.40			0.66	2.05
	Tail:	4.09		4.09				
	Calc. Head:	5.46		5.49				

t_s/t_o = Tonnes of solution effluent per tonne of dry ore leached.

Column Parameters

KCA Sample No.	77548 B	KCA Test No.	78301
Dry Weight Ore, kg:	41.97	Column Area, m ² :	0.018
Initial Ore Height, m:	1.610	Column Volume (initial), m ³ :	0.029
Final Ore Height, m:	1.591	Column Volume (final), m ³ :	0.029
Slump, %:	1.2%	Apparent Bulk Density (final), MT _{dry} /m ³ :	1.446
Cement Addition, kg/MT:	0.00	Retained Moisture, L/MT _{dry} :	94.8
Agglom. Water Added, liters (1 gpL NaCN):	0.00	Mercury on C-1 Carbon, mg/kg:	0.30
Hydrated lime added during loading, kg/MT:	2.05	Final Percolation Rate, L/Hr/m ² :	11,610

Table 6-4.
ODAS/Stratex Project
Oksitli(oxide) zona ait cevher
KCA Sample No. 78319 A
KCA Test No. 78353
Crushed Material, 100% passing 8 millimeters
Metal Extractions and Chemical Consumptions

Days Leaching	Cumulative, t_s/t_o	Solution Extraction, gms Au/MT	Carbon Weight, grams	Metal on Carbon Extraction, gms Au/MT	Extraction, % Au	Cumulative Extraction, % Au	NaCN Consumed, kg/MT	Ca(OH) ₂ Added, kg/MT
0-7	0.54	0.238	244.56	0.258	50%	50%	0.13	2.05
8-18	1.24	0.006	168.45	0.015	3%	53%	0.04	0.00
19-38	2.30	0.011	154.26	0.018	3%	57%	0.26	0.00
39-60	3.34	0.011	145.20	0.019	4%	60%	0.31	0.00
61-98	5.43	0.019	122.01	0.024	5%	65%	0.55	0.00
	Total:	0.285		0.333			1.30	2.05
	Tail:	0.180		0.180				
	Calc. Head:	0.465		0.513				

t_s/t_o = Tonnes of solution effluent per tonne of dry ore leached.

Days Leaching	Cumulative, t_s/t_o	Solution Extraction, gms Ag/MT	Carbon Weight, grams	Metal on Carbon Extraction, gms Ag/MT	Extraction, % Ag	Cumulative Extraction, % Ag	NaCN Consumed, kg/MT	Ca(OH) ₂ Added, kg/MT
0-7	0.54	1.08	244.56	1.01	20%	20%	0.13	2.05
8-18	1.24	0.23	168.45	0.12	2%	22%	0.04	0.00
19-38	2.30	0.19	154.26	0.28	5%	27%	0.26	0.00
39-60	3.34	0.15	145.20	0.13	3%	30%	0.31	0.00
61-98	5.43	0.20	122.01	0.21	4%	34%	0.55	0.00
	Total:	1.86		1.75			1.30	2.05
	Tail:	3.40		3.40				
	Calc. Head:	5.26		5.15				

t_s/t_o = Tonnes of solution effluent per tonne of dry ore leached.

Column Parameters

KCA Sample No.	78319 A	KCA Test No.	78353
Dry Weight Ore, kg:	25.40	Column Area, m ² :	0.008
Initial Ore Height, m:	2.153	Column Volume (initial), m ³ :	0.017
Final Ore Height, m:	2.115	Column Volume (final), m ³ :	0.017
Slump, %:	1.8%	Apparent Bulk Density (final), MT _{dry} /m ³ :	1.482
Cement Addition, kg/MT:	0.00	Retained Moisture, L/MT _{dry} :	92.9
Agglom. Water Added, liters (1 gpL NaCN):	0.00	Mercury on C-1 Carbon, mg/kg:	0.35
Hydrated lime added during loading, kg/MT:	2.05	Final Percolation Rate, L/Hr/m ² :	16,280

Table 6-5.
ODAS/Stratex Project
Geçiş(transition) zonuna ait cevher
KCA Sample No. 77549 B
KCA Test No. 78304
Crushed Material, 100 % passing 19 millimeters
Metal Extractions and Chemical Consumptions

Days Leaching	Cumulative, t_s/t_0	Solution Extraction, gms Au/MT	Carbon Weight, grams	Metal on Carbon Extraction, gms Au/MT	Extraction, % Au	Cumulative Extraction, % Au	NaCN Consumed, kg/MT	Ca(OH) ₂ Added, kg/MT
0-7	0.79	0.212	234.78	0.208	24%	24%	0.19	2.03
8-20	1.94	0.016	176.14	0.027	3%	27%	0.09	0.00
21-40	3.55	0.008	145.57	0.019	2%	29%	0.28	0.00
41-61	5.16	0.001	137.05	0.015	2%	31%	0.21	0.00
	Total:	0.237		0.269			0.77	2.03
	Tail:	0.604		0.604				
	Calc. Head:	0.841		0.873				

t_s/t_0 = Tonnes of solution effluent per tonne of dry ore leached.

Days Leaching	Cumulative, t_s/t_0	Solution Extraction, gms Ag/MT	Carbon Weight, grams	Metal on Carbon Extraction, gms Ag/MT	Extraction, % Ag	Cumulative Extraction, % Ag	NaCN Consumed, kg/MT	Ca(OH) ₂ Added, kg/MT
0-7	0.79	0.89	234.78	0.82	19%	19%	0.19	2.03
8-20	1.94	0.27	176.14	0.29	7%	26%	0.09	0.00
21-40	3.55	0.24	145.57	0.22	5%	31%	0.28	0.00
41-61	5.16	0.17	137.05	0.15	4%	35%	0.21	0.00
	Total:	1.57		1.48			0.77	2.03
	Tail:	2.79		2.79				
	Calc. Head:	4.36		4.27				

t_s/t_0 = Tonnes of solution effluent per tonne of dry ore leached.

Column Parameters

KCA Sample No.	77549 B	KCA Test No.	78304
Dry Weight Ore, kg:	42.39	Column Area, m ² :	0.018
Initial Ore Height, m:	1.584	Column Volume (initial), m ³ :	0.029
Final Ore Height, m:	1.575	Column Volume (final), m ³ :	0.029
Slump, %:	0.6%	Apparent Bulk Density (final), MT _{dry} /m ³ :	1.476
Cement Addition, kg/MT:	0.00	Retained Moisture, L/MT _{dry} :	55.7
Agglom. Water Added, liters (1 gpL NaCN):	0.00	Mercury on C-1 Carbon, mg/kg:	0.07
Hydrated lime added during loading, kg/MT:	2.03	Final Percolation Rate, L/Hr/m ² :	10,000

Table 6-6.
ODAS/Stratex Project
Geçiş(transition) zonuna ait cevher
KCA Sample No. 78320 A
KCA Test No. 78356
Crushed Material, 100% passing 8 millimeters
Metal Extractions and Chemical Consumptions

Days Leaching	Cumulative, t_s/t_0	Solution Extraction, gms Au/MT	Carbon Weight, grams	Metal on Carbon Extraction, gms Au/MT	Extraction, % Au	Cumulative Extraction, % Au	NaCN Consumed, kg/MT	Ca(OH) ₂ Added, kg/MT
0-7	0.55	0.269	243.35	0.303	38%	38%	0.25	2.03
8-18	1.28	0.020	164.48	0.028	3%	41%	0.14	0.00
19-38	2.35	0.016	145.05	0.024	3%	44%	0.27	0.00
39-60	3.35	0.004	140.27	0.019	2%	46%	0.30	0.00
61-98	5.50	0.024	128.82	0.034	4%	51%	0.56	0.00
	Total:	0.333		0.407			1.52	2.03
	Tail:	0.398		0.398				
	Calc. Head:	0.731		0.805				

t_s/t_0 = Tonnes of solution effluent per tonne of dry ore leached.

Days Leaching	Cumulative, t_s/t_0	Solution Extraction, gms Ag/MT	Carbon Weight, grams	Metal on Carbon Extraction, gms Ag/MT	Extraction, % Ag	Cumulative Extraction, % Ag	NaCN Consumed, kg/MT	Ca(OH) ₂ Added, kg/MT
0-7	0.55	1.32	243.35	1.20	19%	19%	0.25	2.03
8-18	1.28	0.39	164.48	0.31	5%	24%	0.14	0.00
19-38	2.35	0.32	145.05	0.33	5%	30%	0.27	0.00
39-60	3.35	0.21	140.27	0.18	3%	33%	0.30	0.00
61-98	5.50	0.26	128.82	0.28	5%	37%	0.56	0.00
	Total:	2.50		2.30			1.52	2.03
	Tail:	3.90		3.90				
	Calc. Head:	6.40		6.20				

t_s/t_0 = Tonnes of solution effluent per tonne of dry ore leached.

Column Parameters

KCA Sample No.	78320 A	KCA Test No.	78356
Dry Weight Ore, kg:	25.67	Column Area, m ² :	0.008
Initial Ore Height, m:	2.140	Column Volume (initial), m ³ :	0.017
Final Ore Height, m:	2.115	Column Volume (final), m ³ :	0.017
Slump, %:	1.2%	Apparent Bulk Density (final), MT _{dry} /m ³ :	1.497
Cement Addition, kg/MT:	0.00	Retained Moisture, L/MT _{dry} :	51.8
Agglom. Water Added, liters (1 gpL NaCN):	0.00	Mercury on C-1 Carbon, mg/kg:	0.09
Hydrated lime added during loading, kg/MT:	2.03	Final Percolation Rate, L/Hr/m ² :	14,060

6.2 Cyanide Column Leach Tests, Description of Apparatus

6.2.1 Drip Leach Test Apparatus

The column tests were run as a continuously drained drip leach tests. It is believed by KCA that this type of test most accurately reflects actual heap leach conditions and is normally run when the material contains enough fines to prevent channeling of solution down individual rock faces.

The apparatus used for this test is shown schematically in Figure 6-2.

6.2.2 Column Test Setup

The crushed material split out for column test work was blended with lime or agglomerated with cement as necessary and then loaded into a 100 or 150 diameter plastic column. Alkaline cyanide solution was continuously distributed onto the material through Tygon tubing. The flow rate of solution dripping onto the material was controlled with a peristaltic pump to 10 to 12 liters per hour per square meter of column surface area.

The solution exiting each leach column was collected in the bottom (floor - PLS) tank. Leach solution was checked each cycle for pH, NaCN, Au and Ag. Copper was checked periodically. The solution was then passed through a bottle of granular activated carbon over a period of 24 hours to extract the gold and silver in solution. After passing through the bottle of activated carbon, the solution was re-assayed for pH, NaCN, Au and Ag. Sodium cyanide was then added, if necessary, to maintain the solution at "target" levels (discussed in the Test History section). The leach solution was then recycled to the material for another 24 hour leach period. Two (2) batches of leach solution were used so that while one batch was applied to each column, the other was run through carbon.

6.3 History of Cyanide Column Leach Test

6.3.1 Start-up of Test

The initial leach solution applied to the column contained 1.0 grams sodium cyanide per liter of solution.

6.3.2 Solution Color and Clarity

The initial and final solution color and clarity were monitored.

The solution color and clarity for the column test are presented in Table 6-7.

Figure 6-2.
ODAS/Stratex Project
Column Leach Test Apparatus

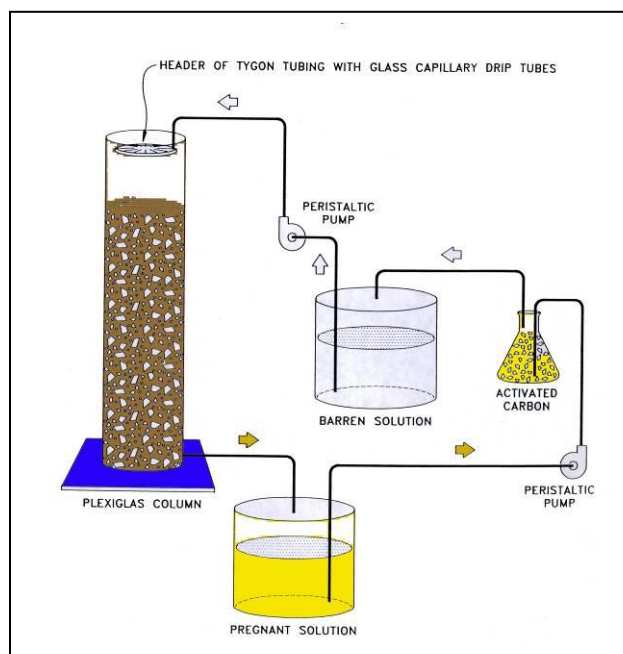


Table 6-7.
ODAS/Stratex Project
Effluent Solutions, Color and Clarity

KCA Sample No.	KCA Test No.	Description	Color and Clarity of Initial Column Effluent	Color and Clarity of Final Column Effluent
77548 B	78301	Oksitli(oxide) zona ait cevher	Colorless and Clear	Colorless and Clear
78319 A	78353	Oksitli(oxide) zona ait cevher	Colorless and Clear	Colorless and Clear
77549 B	78304	Geçiş(transition) zonuna ait cevher	Colorless and Clear	Colorless and Clear
78320 A	78356	Geçiş(transition) zonuna ait cevher	Colorless and Clear	Colorless and Clear

A “colorless and clear” solution exiting the columns is indicative of the fact that no fines migrated within the column material. Metal buildup is usually denoted by a significant color change in the solution.

6.3.3 Copper Analyses in Solutions

Interim pregnant (effluent) cyanide leach solutions were assayed (FAAS) periodically for copper content.

The lowest and highest copper values in solution data obtained over the leach period are summarized in Table 6-8.

Table 6-8.
ODAS/Stratex Project
Copper Concentration in Column Leach Solutions

KCA Sample No.	KCA Test No.	Description	Low Copper, mg/L	High Copper, mg/L
77548 B	78301	Oksitli(oxide) zona ait cevher	1.09	2.84
78319 A	78353	Oksitli(oxide) zona ait cevher	1.27	3.83
77549 B	78304	Geçiş(transition) zonuna ait cevher	2.01	6.40
78320 A	78356	Geçiş(transition) zonuna ait cevher	2.99	7.55

6.3.4 Cyanide Strength and Alkalinity

The initial leach solution for each column test contained 1.0 grams sodium cyanide per liter of leach solution. The cyanide strength of the on-flow solution was maintained at a target level of 0.5 grams of sodium cyanide per liter. Protective alkalinity in the test was maintained by the initial addition of hydrated lime during column setup. The leach solution was monitored to ensure that a high pH range was maintained throughout testing.

These laboratory tests were conducted with hydrated lime for pH control. A discussion regarding the available lime index for the hydrated lime ($\text{Ca}(\text{OH})_2$) and lime (CaO) utilized by KCA is presented in Section 7 of this report.

Reagent consumption data for the column leach test are summarized in Table 6-9.

Table 6-9.
ODAS/Stratex Project
Column Leach Tests, Reagent Consumptions

KCA Sample No.	KCA Test No.	Description	NaCN Consumed, kg/MT	Hydrated Lime Added, kg/MT
77548 B	78301	Oksitli(oxide) zona ait cevher	0.66	2.05
78319 A	78353	Oksitli(oxide) zona ait cevher	1.30	2.05
77549 B	78304	Geçiş(transition) zonuna ait cevher	0.77	2.03
78320 A	78356	Geçiş(transition) zonuna ait cevher	1.52	2.03

6.3.5 Mercury Analyses

The carbon samples from the column tests were dried at 32°C and assayed for mercury content.

The results of the mercury analyses are summarized in Table 6-10.

In this table, the carbon loading of mercury was compared to the carbon loading of gold during the leach cycle. The mercury loaded onto carbon was calculated as an overall extraction of mercury from the column material.

6.3.6 Percent Slump and Final Apparent Bulk Density

The height of material in each column was measured before and after leaching. This height was utilized to calculate the “slump” during leaching as well as to calculate the final apparent bulk density for the material in the column. The percent slump of a column gives an indication of potential permeability problems in production heaps. KCA typically classifies slumps larger than 10% as high.

The height, slump and final apparent bulk density from the column leach tests are presented in Table 6-11.

Table 6-10.
ODAS/Stratex Project
Mercury Concentration and Extraction

KCA Sample No.	KCA Test No.	Description	Carbon Period	Carbon Weight, grams	Carbon Assay, gms Au/MT	Carbon Assay, gms Hg/MT	Extracted to Carbon, mg Hg/kg _{ore}	Ratio Au : Hg
77548 B	78301	Oksitli(oxide) zona ait cevher	C-1	250.27	50.85	0.30	0.00	172
			C-2	179.91	6.06	1.38	0.01	4
			C-3	140.97	4.06	0.64	0.00	6
			C-4	145.12	3.63	0.14	0.00	26
Total Extracted							0.01	--
Column Feed Head Assay							0.80	--

KCA Sample No.	KCA Test No.	Description	Carbon Period	Carbon Weight, grams	Carbon Assay, gms Au/MT	Carbon Assay, gms Hg/MT	Extracted to Carbon, mg Hg/kg _{ore}	Ratio Au : Hg
78319 A	78353	Oksitli(oxide) zona ait cevher	C-1	244.56	26.79	0.35	0.00	77
			C-2	168.45	2.23	0.25	0.00	9
			C-3	154.26	2.91	0.68	0.00	4
			C-4	145.20	3.24	0.23	0.00	14
			C-5	122.01	5.07	0.52	0.00	10
Total Extracted							0.01	--
Column Feed Head Assay							0.24	--

KCA Sample No.	KCA Test No.	Description	Carbon Period	Carbon Weight, grams	Carbon Assay, gms Au/MT	Carbon Assay, gms Hg/MT	Extracted to Carbon, mg Hg/kg _{ore}	Ratio Au : Hg
77549 B	78304	Geçiş(transition) zonuna ait cevher	C-1	234.78	37.49	0.07	0.00	536
			C-2	176.14	6.53	1.54	0.01	4
			C-3	145.57	5.51	4.20	0.01	1
			C-4	137.05	4.59	3.07	0.01	1
Total Extracted							0.03	--
Column Feed Head Assay							0.55	--

KCA Sample No.	KCA Test No.	Description	Carbon Period	Carbon Weight, grams	Carbon Assay, gms Au/MT	Carbon Assay, gms Hg/MT	Extracted to Carbon, mg Hg/kg _{ore}	Ratio Au : Hg
78320 A	78356	Geçiş(transition) zonuna ait cevher	C-1	243.35	31.92	0.09	0.00	355
			C-2	164.48	4.31	1.82	0.01	2
			C-3	145.05	4.27	17.12	0.10	0
			C-4	140.27	3.43	1.78	0.01	2
			C-5	128.82	6.82	1.08	0.01	6
Total Extracted							0.12	--
Column Feed Head Assay							0.13	--

Table 6-11.
ODAS/Stratex Project
Percent Slump and Final Apparent Bulk Density

KCA Sample No.	KCA Test No.	Description	Crush Size, mm	Initial Ht., meters	Final Ht., meters	Slump, %	Final Apparent Bulk Density, MTdry/m ³
77548 B	78301	Oksitli(oxide) zona ait cevher	19	1.610	1.591	1.2%	1.446
78319 A	78353	Oksitli(oxide) zona ait cevher	8	2.153	2.115	1.8%	1.482
77549 B	78304	Geçiş(transition) zonuna ait cevher	19	1.584	1.575	0.6%	1.476
78320 A	78356	Geçiş(transition) zonuna ait cevher	8	2.140	2.115	1.2%	1.497

6.4 Drain Down Test Work

At the conclusion of leaching, drain down tests were conducted on the column. The procedure utilized for the drain down test was as follows:

1. A known volume of solution was continuously recycled through the column for 24 hours. The rate of application to the column was held between 10 and 12 liters per hour per square meter of column surface area.
2. Following the 24 hour solution application period, the bottom collection bucket (recycling/effluent) was removed.
3. The solution draining from the column was collected over the next 96 hours. The drain down solution was weighed every 24 hours.

The drain down results are presented in Table 6-12.

At the conclusion of the drain down test, a maximum percolation test was conducted on each column test and then the columns were allowed to drain for an additional 96 hours before being dumped. The procedure utilized for the percolation test was as follows:

1. Following the drain down procedure, water was added (up-flow) to the column until a solution head of 75 millimeters was achieved. The exit line was then clamped off.
2. As additional solution was applied at the top of the column to maintain a constant head, the clamp at the bottom of the column was removed. The flow rate discharging from the column was measured over a known period and this value was recorded (i.e. milliliters per minute).

The maximum percolation results are presented in Table 6-13.

Table 6-12.
ODAS/Stratex Project
Summary of Drain Down Test Results

KCA Sample No.	KCA Test No.	Description	Sample Weight, kg	Liters H ₂ O/MT _{dry ore}			
				24 hour	48 hour	72 hour	96 hour
77548 B	78301	Oksitli(oxide) zona ait cevher	41.97	27.2	31.2	32.9	34.1
78319 A	78353	Oksitli(oxide) zona ait cevher	25.4	33.9	41.3	43.3	45.3
77549 B	78304	Geçiş(transition) zonuna ait cevher	42.39	28.8	32.1	33.0	34.2
78320 A	78356	Geçiş(transition) zonuna ait cevher	25.67	37.0	43.2	44.8	46.4

Table 6-13.
ODAS/Stratex Project
Summary of Percolation Test Results

KCA Sample No.	KCA Test No.	Description	Days Leached	Crush Size, mm	Maximum Percolate Rate, L/hr/m ² of Surface
77548 B	78301	Oksitli(oxide) zona ait cevher	61	19	11,610
78319 A	78353	Oksitli(oxide) zona ait cevher	98	8	16,280
77549 B	78304	Geçiş(transition) zonuna ait cevher	61	19	10,000
78320 A	78356	Geçiş(transition) zonuna ait cevher	98	8	14,060

6.5 Tailings Analyses

6.5.1 Drain Down and Tail Screen Analyses

After completion of the drain down tests, the columns were dumped, dried and weighed. The dry material was then utilized for a tail screen analysis with assays by size fraction.

The dry material crushed to 100% passing 19 millimeters was screened at 19, 12.5, 6.3, 1.70 and 0.212 millimeters.

The dry material crushed to 100% passing 8 millimeters was screened at 8, 6.3, 4.75, 3.35, 1.70 and 0.212 millimeters.

Each separate size fraction was then weighed and the weights reported. Each size fraction was then crushed to a nominal size of 1.70 millimeters.

From each size fraction two (2) portions were split out and individually ring and puck pulverized to a target size of 80% passing 0.075 millimeters. The portions were then assayed using standard fire assaying methods for gold with FAAS finish and wet chemistry methods for silver.

The calculated retained moistures are presented in Table 6-14. The weighted average tailings assays are summarized in Table 6-15. The results are presented graphically in Figure 6-3 and the individual tail screen results are presented in Tables 6-16 through 6-19.

Table 6-14.
ODAS/Stratex Project
Summary of Retained Moisture

KCA Sample No.	KCA Test No.	Description	Days Leached	Crush Size, mm	Retained Solution, L/MT _{dryore}
77548 B	78301	Oksitli(oxide) zona ait cevher	61	19	94.8
78319 A	78353	Oksitli(oxide) zona ait cevher	98	8	92.9
77549 B	78304	Geçiş (transition) zonuna ait cevher	61	19	55.7
78320 A	78356	Geçiş (transition) zonuna ait cevher	98	8	51.8

Table 6-15.
ODAS/Stratex Project
Summary of Tailings Screen Analyses

KCA Sample No.	KCA Test No.	Description	Calc. p80 Size, mm	Weighted Avg. Tail Assay, gms Au/MT	Weighted Avg. Tail Assay, gms Ag/MT
77548 B	78301	Oksitli (oxide) zona ait cevher	12.9	0.329	4.09
78319 A	78353	Oksitli (oxide) zona ait cevher	6.4	0.180	3.40
77549 B	78304	Geçiş (transition) zonuna ait cevher	13.0	0.604	2.79
78320 A	78356	Geçiş (transition) zonuna ait cevher	6.4	0.398	3.90

Figure 6-3.
ODAS/Stratex Project
Tail Screen Analyses

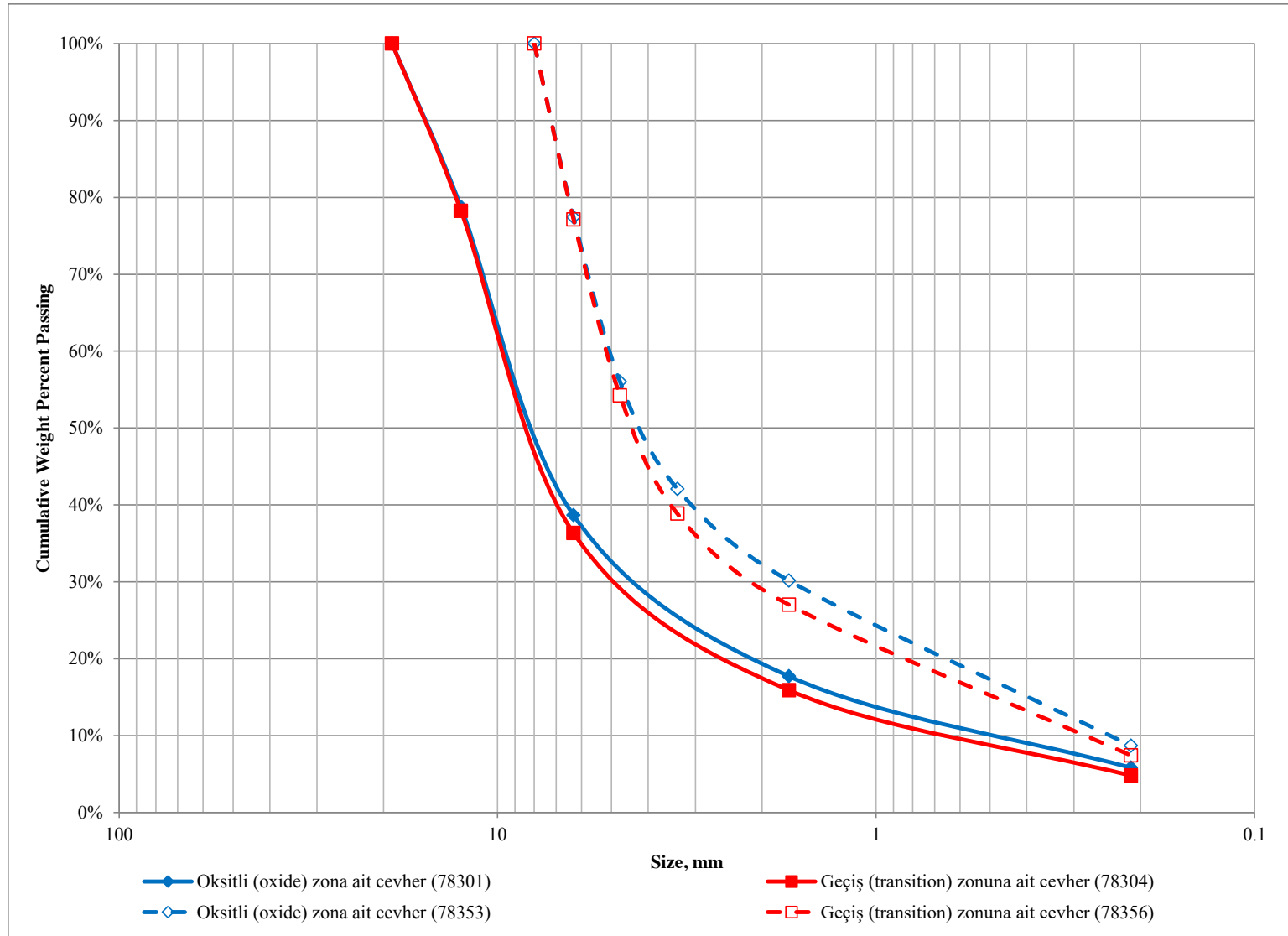


Table 6-16.
ODAS/Stratex Project
Oksitli(oxide) zona ait cevher
KCA Sample No. 77548 B
KCA Test No. 78301
Crushed Material, Calculated 80% passing 12.9 millimeters
Tailings Screen Analysis with Assays by Size Fraction

KCA Test No.	Passing, mm	Retained, mm	Dry Screen Analysis				Analysis of Gold Content			
			Sample Weight, kg	Weight Distribution, %	Cumulative Weight Retained, %	Cumulative Weight Passing, %	Assay 1, gms Au/MT	Assay 2, gms Au/MT	Average Assay, gms Au/MT	Weight Au, %
78301		19	0.00				---	---	---	---
	19	12.5	4.46	21.2%	21.2%	100.0%	0.298	0.305	0.302	19.4%
	12.5	6.3	8.43	40.1%	61.3%	78.8%	0.261	0.257	0.259	31.5%
	6.3	1.70	4.40	20.9%	82.3%	38.7%	0.483	0.494	0.489	31.1%
	1.70	0.212	2.50	11.9%	94.2%	17.7%	0.189	0.185	0.187	6.7%
	0.212	Pan	1.22	5.8%	100.0%	5.8%	0.641	0.631	0.636	11.2%
Total -			21.01	100.0%			0.329	0.330	0.329	100.0%
Detection -							0.006	0.006		

KCA Test No.	Passing, mm	Retained, mm	Dry Screen Analysis				Analysis of Silver Content			
			Sample Weight, kg	Weight Distribution, %	Cumulative Weight Retained, %	Cumulative Weight Passing, %	Assay 1, gms Ag/MT	Assay 2, gms Ag/MT	Average Assay, gms Ag/MT	Weight Ag, %
78301		19	0.00				---	---	---	---
	19	12.5	4.46	21.2%	21.2%	100.0%	4.11	4.22	4.17	21.6%
	12.5	6.3	8.43	40.1%	61.3%	78.8%	4.39	4.39	4.39	43.1%
	6.3	1.70	4.40	20.9%	82.3%	38.7%	4.22	4.01	4.11	21.1%
	1.70	0.212	2.50	11.9%	94.2%	17.7%	3.60	3.81	3.70	10.8%
	0.212	Pan	1.22	5.8%	100.0%	5.8%	2.40	2.40	2.40	3.4%
Total -			21.01	100.0%			4.08	4.09	4.09	100.0%
Detection -							0.21	0.21		

Table 6-17.
ODAS/Stratex Project
Oksitli(oxide) zona ait cevher
KCA Sample No. 78319 A
KCA Test No. 78353
Crushed Material, Calculated 80 % passing 6.4 millimeters
Tailings Screen Analysis with Assays by Size Fraction

KCA Test No.	Passing, mm	Retained, mm	Dry Screen Analysis				Analysis of Gold Content			
			Sample Weight, kg	Weight Distribution, %	Cumulative Weight Retained, %	Cumulative Weight Passing, %	Assay 1, gms Au/MT	Assay 2, gms Au/MT	Average Assay, gms Au/MT	Weight Au, %
78353		8.0	0.00				---	---	---	---
	8.0	6.3	2.46	22.6%	22.6%	100.0%	0.204	0.199	0.201	25.2%
	6.3	4.75	2.33	21.4%	44.0%	77.4%	0.192	0.192	0.192	22.8%
	4.75	3.35	1.52	14.0%	57.9%	56.0%	0.189	0.185	0.187	14.5%
	3.35	1.70	1.30	11.9%	69.8%	42.1%	0.182	0.185	0.183	12.1%
	1.70	0.212	2.34	21.5%	91.3%	30.2%	0.154	0.158	0.156	18.6%
	0.212	Pan	0.95	8.7%	100.0%	8.7%	0.147	0.134	0.141	6.8%
Total -			10.90	100.0%			0.181	0.179	0.180	100.0%
Detection -							0.010	0.010		

KCA Test No.	Passing, mm	Retained, mm	Dry Screen Analysis				Analysis of Silver Content			
			Sample Weight, kg	Weight Distribution, %	Cumulative Weight Retained, %	Cumulative Weight Passing, %	Assay 1, gms Ag/MT	Assay 2, gms Ag/MT	Average Assay, gms Ag/MT	Weight Ag, %
78353		8.0	0.00				---	---	---	---
	8.0	6.3	2.46	22.6%	22.6%	100.0%	4.39	4.39	4.39	29.1%
	6.3	4.75	2.33	21.4%	44.0%	77.4%	4.01	3.81	3.91	24.6%
	4.75	3.35	1.52	14.0%	57.9%	56.0%	3.02	3.19	3.10	12.7%
	3.35	1.70	1.30	11.9%	69.8%	42.1%	2.81	2.81	2.81	9.9%
	1.70	0.212	2.34	21.5%	91.3%	30.2%	2.81	2.61	2.71	17.1%
	0.212	Pan	0.95	8.7%	100.0%	8.7%	2.61	2.61	2.61	6.6%
Total -			10.90	100.0%			3.43	3.37	3.40	100.0%
Detection -							0.21	0.21		

Table 6-18.
ODAS/Stratex Project
Geçiş(transition) zonuna ait cevher
KCA Sample No. 77549 B
KCA Test No. 78304
Crushed Material, Calculated 80% passing 13.0 millimeters
Tailings Screen Analysis with Assays by Size Fraction

KCA Test No.	Passing, mm	Retained, mm	Dry Screen Analysis				Analysis of Gold Content			
			Sample Weight, kg	Weight Distribution, %	Cumulative Weight Retained, %	Cumulative Weight Passing, %	Assay 1, gms Au/MT	Assay 2, gms Au/MT	Average Assay, gms Au/MT	Weight Au, %
78304		19	0.00				---	---	---	---
	19	12.5	4.62	21.8%	21.8%	100.0%	0.648	0.634	0.641	23.1%
	12.5	6.3	8.90	41.9%	63.7%	78.2%	0.634	0.645	0.639	44.4%
	6.3	1.70	4.34	20.4%	84.1%	36.3%	0.418	0.429	0.423	14.3%
	1.70	0.212	2.36	11.1%	95.2%	15.9%	0.593	0.603	0.598	11.0%
	0.212	Pan	1.02	4.8%	100.0%	4.8%	0.905	0.919	0.912	7.2%
Total -			21.24	100.0%			0.602	0.607	0.604	100.0%
Detection -							0.006	0.006		

KCA Test No.	Passing, mm	Retained, mm	Dry Screen Analysis				Analysis of Silver Content			
			Sample Weight, kg	Weight Distribution, %	Cumulative Weight Retained, %	Cumulative Weight Passing, %	Assay 1, gms Ag/MT	Assay 2, gms Ag/MT	Average Assay, gms Ag/MT	Weight Ag, %
78304		19	0.00				---	---	---	---
	19	12.5	4.62	21.8%	21.8%	100.0%	3.19	3.02	3.10	24.2%
	12.5	6.3	8.90	41.9%	63.7%	78.2%	3.19	3.19	3.19	47.8%
	6.3	1.70	4.34	20.4%	84.1%	36.3%	2.40	2.40	2.40	17.5%
	1.70	0.212	2.36	11.1%	95.2%	15.9%	1.99	1.99	1.99	7.9%
	0.212	Pan	1.02	4.8%	100.0%	4.8%	1.61	1.41	1.51	2.6%
Total -			21.24	100.0%			2.82	2.77	2.79	100.0%
Detection -							0.21	0.21		

Table 6-19.
ODAS/Stratex Project
Geçiş(transition) zonuna ait cevher
KCA Sample No. 78320 A
KCA Test No. 78356
Crushed Material, Calculated 80 % passing 6.4 millimeters
Tailings Screen Analysis with Assays by Size Fraction

KCA Test No.	Passing, mm	Retained, mm	Dry Screen Analysis				Analysis of Gold Content			
			Sample Weight, kg	Weight Distribution, %	Cumulative Weight Retained, %	Cumulative Weight Passing, %	Assay 1, gms Au/MT	Assay 2, gms Au/MT	Average Assay, gms Au/MT	Weight Au, %
78356		8.0	0.00				---	---	---	---
	8.0	6.3	2.59	22.9%	22.9%	100.0%	0.456	0.449	0.453	26.0%
	6.3	4.75	2.59	22.9%	45.8%	77.1%	0.401	0.411	0.406	23.4%
	4.75	3.35	1.74	15.4%	61.1%	54.2%	0.391	0.401	0.396	15.3%
	3.35	1.70	1.34	11.8%	73.0%	38.9%	0.377	0.370	0.374	11.1%
	1.70	0.212	2.22	19.6%	92.6%	27.0%	0.350	0.360	0.355	17.5%
	0.212	Pan	0.84	7.4%	100.0%	7.4%	0.365	0.360	0.363	6.7%
Total -			11.32	100.0%			0.397	0.400	0.398	100.0%
Detection -							0.010	0.010		

KCA Test No.	Passing, mm	Retained, mm	Dry Screen Analysis				Analysis of Silver Content			
			Sample Weight, kg	Weight Distribution, %	Cumulative Weight Retained, %	Cumulative Weight Passing, %	Assay 1, gms Ag/MT	Assay 2, gms Ag/MT	Average Assay, gms Ag/MT	Weight Ag, %
78356		8.0	0.00				---	---	---	---
	8.0	6.3	2.59	22.9%	22.9%	100.0%	4.59	4.39	4.49	26.4%
	6.3	4.75	2.59	22.9%	45.8%	77.1%	4.22	4.22	4.22	24.8%
	4.75	3.35	1.74	15.4%	61.1%	54.2%	3.19	3.39	3.29	13.0%
	3.35	1.70	1.34	11.8%	73.0%	38.9%	3.39	3.39	3.39	10.3%
	1.70	0.212	2.22	19.6%	92.6%	27.0%	3.60	3.81	3.70	18.6%
	0.212	Pan	0.84	7.4%	100.0%	7.4%	3.70	3.60	3.65	6.9%
Total -			11.32	100.0%			3.89	3.91	3.90	100.0%
Detection -							0.21	0.21		

6.5.2 Head Screens versus Tail Screens Analyses

An analysis of gold extraction versus crush size can be utilized to determine the approximate extractions that may be generated by crushing the material finer than the size actually tested in the program. The analysis, however, cannot be utilized to generate information for extractions at crush sizes larger than what was tested in the program.

The cumulative percent gold extraction reported was determined as follows:

1. The percent gold extraction for each size fraction was calculated. This value was calculated as a percent difference between the head assay and the tail assay for each size fraction considered.
2. The total gold content of the head material prior to leaching was determined as the head assay multiplied by the weight of material retained in the tail screen analysis for each size fraction. The extracted gold content was determined by multiplying the percent gold extracted for each size fraction by the total gold content of that size fraction.
3. The values determined in step (2) were summed for the size fractions equal to and less than the specific fraction considered.
4. The theoretical cumulative percent gold extracted value was then determined by dividing the sum of the extracted gold content by the sum of the total gold content for each size fraction equal to or less than the fraction considered.

In order to clarify these calculations, a sample calculation is outlined in Table 6-20.

The value contained in cell J1 was obtained by dividing the sum of I1 through I9 by the sum of G1 through G9.

The value contained in cell J5 was obtained by dividing the sum of I5 through I9 by the sum of G5 through G9.

Table 6-20.
Head Screen versus Tail Screen (Sample Calculation)

	A	B	C	D	E	F	G	H	I	J
	Size Fraction	Weight Retained	Tail Wt., %	Cum. Pass Wt., %	Head, gms Au/MT	Tail, gms Au/MT	Product of B x E	Percent Gold Extracted	Product of G x H	Theoretical Cumulative Extracted, %
1	+16.00	7.31	7.31%	100.00%	0.874	0.257	6.389	70.6%	4.510	72.5%
2	-16.00 +12.50	19.45	19.45%	92.69%	0.874	0.223	16.999	74.5%	12.662	72.6%
3	-12.50 +9.50	9.79	9.79%	73.24%	0.823	0.240	8.057	70.8%	5.708	72.2%
4	-9.50 +8.00	8.83	8.83%	63.45%	0.994	0.240	8.777	75.9%	6.658	72.3%
5	-8.00 +6.30	20.83	20.83%	54.62%	0.874	0.223	18.205	74.5%	13.560	71.8%
6	-6.00 +3.35	13.1	13.10%	33.79%	0.823	0.223	10.781	72.9%	7.860	70.5%
7	-3.35 +1.70	10.76	10.76%	20.69%	0.891	0.291	9.587	67.3%	6.456	69.5%
8	-1.70 +0.60	5.52	5.52%	9.93%	1.200	0.360	6.624	70.0%	4.637	70.6%
9	-0.60 +0.212	4.41	4.41%	4.41%	2.486	0.720	10.963	71.0%	7.788	71.0%

Extractions by size fraction are calculated from the tail screen assays and the head screen assays for each size fraction, and the theoretical extractions for crush sizes smaller than that of the test material are based on these calculated extractions by size fraction. Column leach test extractions are calculated from the extracted gold based on granulated carbon assays and the tail assays. Since these methods of calculation are different, the column extractions observed in test work may not equal the theoretical extractions calculated in this section.

General extraction trends may be observed from these theoretical values; however, the theoretical values are sensitive to variations in the gold distributions and assays. Therefore, the theoretical values are intended only for estimation purposes and are not intended to replace actual test work.

The theoretical extractions are presented in Tables 6-21 through 6-24 and presented graphically in Figures 6-4 through 6-7.

Table 6-21.
ODAS/Stratex Project
Oksitli(oxide) zona ait cevher
KCA Sample No. 77548 B
KCA Test No. 78301
Crushed Material, Calculated 80% passing 12.9 millimeters
Head Screen versus Tail Screen Analyses by Size Fraction

Tail Screen Analysis								Analysis of Gold Content			
KCA Sample No.	KCA Test No.	Passing, mm	Retained, mm	Sample Weight, kg	Weight Distribution, %	Cumulative Weight Retained, %	Cumulative Weight Passing, %	Head Screen Assays, gms Au/MT	Tail Screen Assays, gms Au/MT	Extraction by Fraction, %	Theoretical Extraction, %
77548 B	78301		19	0.00	--	--	--	--	--	--	--
		19	12.5	4.46	21.2%	21.2%	100.0%	0.603	0.302	50%	45%
		12.5	6.3	8.43	40.1%	61.3%	78.8%	0.591	0.259	56%	44%
		6.3	1.70	4.40	20.9%	82.3%	38.7%	0.627	0.489	22%	32%
		1.70	0.212	2.50	11.9%	94.2%	17.7%	0.564	0.187	67%	44%
		0.212	Pan	1.22	5.8%	100.0%	5.8%	0.650	0.636	2%	2%
Total -				21.01	100.0%	--	--	--	--	--	--

Figure 6-4.
ODAS/Stratex Project
Oksitli(oxide) zona ait cevher
KCA Sample No. 77548 B
KCA Test No. 78301
Crushed Material, Calculated 80% passing 12.9 millimeters
Head Screen versus Tail Screen Analyses by Size Fraction

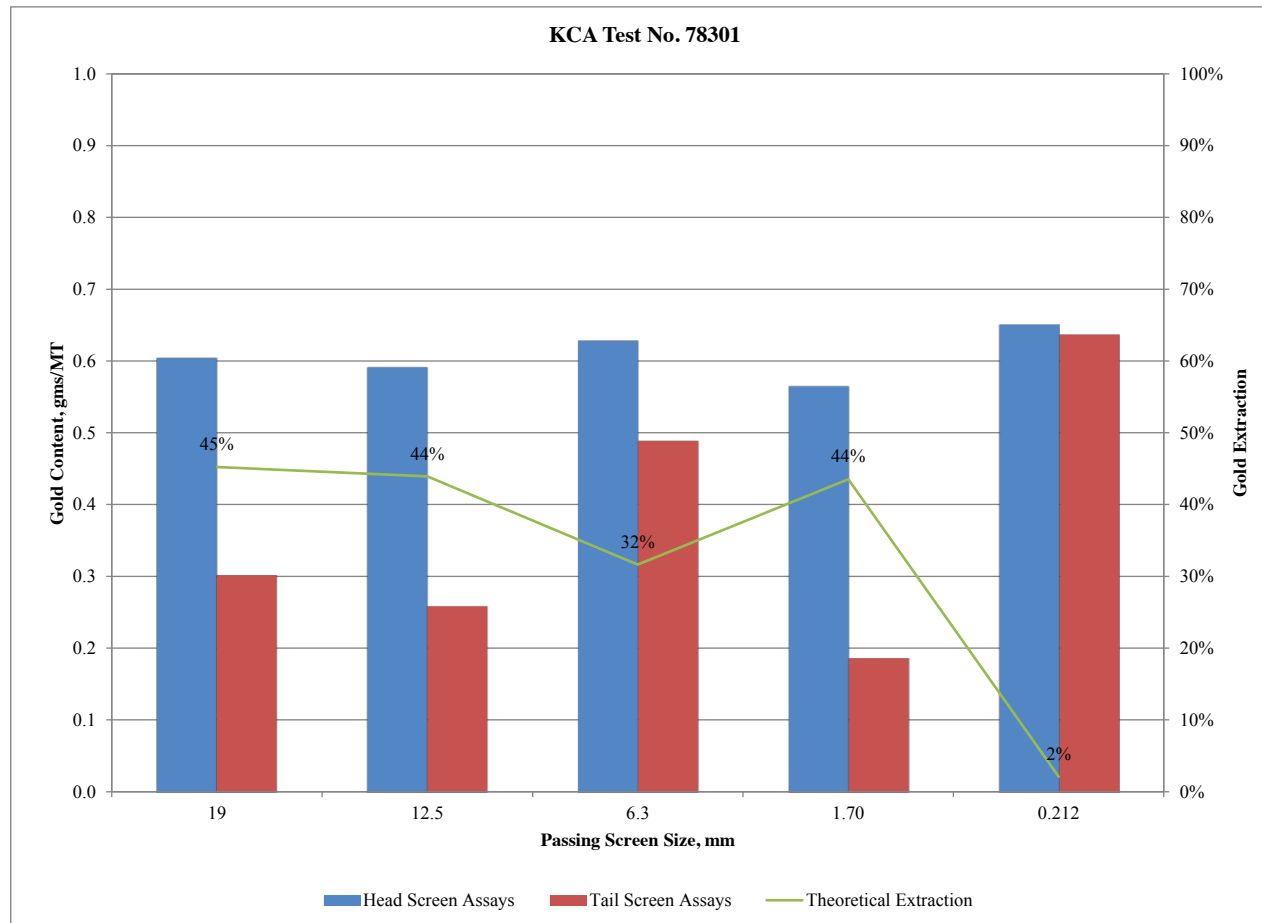


Table 6-22.
ODAS/Stratex Project
Oksitli(oxide) zona ait cevher
KCA Sample No. 78319 A
KCA Test No. 78353
Crushed Material, Calculated 80 % passing 6.4 millimeters
Head Screen versus Tail Screen Analyses by Size Fraction

Tail Screen Analysis								Analysis of Gold Content			
KCA Sample No.	KCA Test No.	Passing, mm	Retained, mm	Sample Weight, kg	Weight Distribution, %	Cumulative Weight Retained, %	Cumulative Weight Passing, %	Head Screen Assays, gms Au/MT	Tail Screen Assays, gms Au/MT	Extraction by Fraction, %	Theoretical Extraction, %
78319 A	78353		8.0	0.00	--	--	--	--	--	--	--
		8.0	6.3	2.46	22.6%	22.6%	100.0%	0.490	0.201	59%	66%
		6.3	4.75	2.33	21.4%	44.0%	77.4%	0.555	0.192	65%	68%
		4.75	3.35	1.52	14.0%	57.9%	56.0%	0.499	0.187	63%	69%
		3.35	1.70	1.30	11.9%	69.8%	42.1%	0.535	0.183	66%	70%
		1.70	0.212	2.34	21.5%	91.3%	30.2%	0.530	0.156	71%	72%
		0.212	Pan	0.95	8.7%	100.0%	8.7%	0.585	0.141	76%	76%
Total -				10.90	100.0%	--	--	--	--	--	--

Figure 6-5.
ODAS/Stratex Project
Oksitli(oxide) zona ait cevher
KCA Sample No. 78319 A
KCA Test No. 78353
Crushed Material, Calculated 80 % passing 6.4 millimeters
Head Screen versus Tail Screen Analyses by Size Fraction

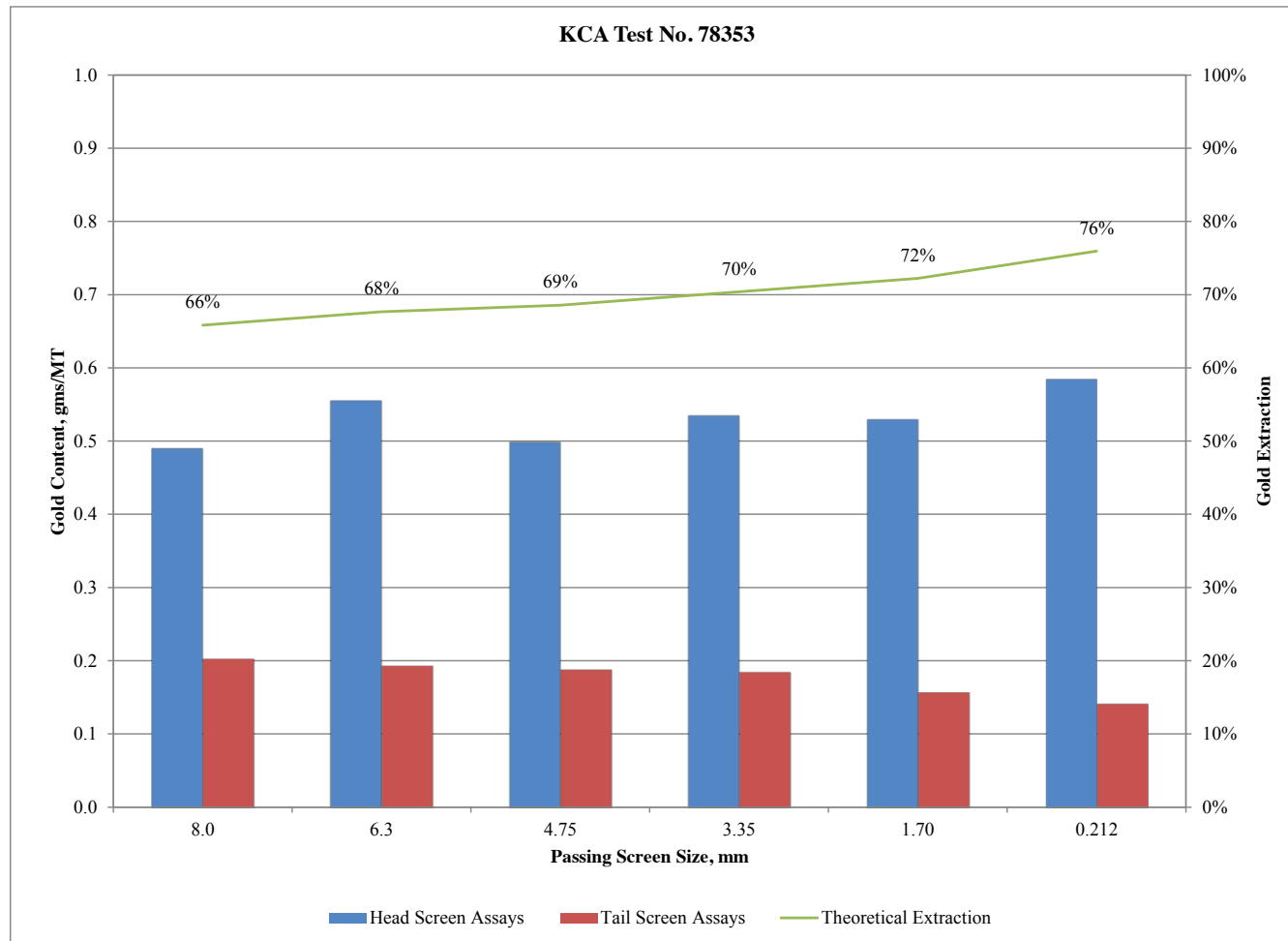


Table 6-23.
ODAS/Stratex Project
Geçiş(transition) zonuna ait cevher
KCA Sample No. 77549 B
KCA Test No. 78304
Crushed Material, Calculated 80% passing 13.0 millimeters
Head Screen versus Tail Screen Analyses by Size Fraction

Tail Screen Analysis								Analysis of Gold Content			
KCA Sample No.	KCA Test No.	Passing, mm	Retained, mm	Sample Weight, kg	Weight Distribution, %	Cumulative Weight Retained, %	Cumulative Weight Passing, %	Head Screen Assays, gms Au/MT	Tail Screen Assays, gms Au/MT	Extraction by Fraction, %	Theoretical Extraction, %
77549 B	78304		19	0.00	--	--	--	--	--	--	--
		19	12.5	4.62	21.8%	21.8%	100.0%	0.811	0.641	21%	21%
		12.5	6.3	8.90	41.9%	63.7%	78.2%	0.749	0.639	15%	20%
		6.3	1.70	4.34	20.4%	84.1%	36.3%	0.717	0.423	41%	27%
		1.70	0.212	2.36	11.1%	95.2%	15.9%	0.710	0.598	16%	11%
		0.212	Pan	1.02	4.8%	100.0%	4.8%	0.937	0.912	3%	3%
Total -				21.24	100.0%	--	--	--	--	--	--

Figure 6-6.
ODAS/Stratex Project
Geçiş(transition) zonuna ait cevher
KCA Sample No. 77549 B
KCA Test No. 78304
Crushed Material, Calculated 80% passing 13.0 millimeters
Head Screen versus Tail Screen Analyses by Size Fraction

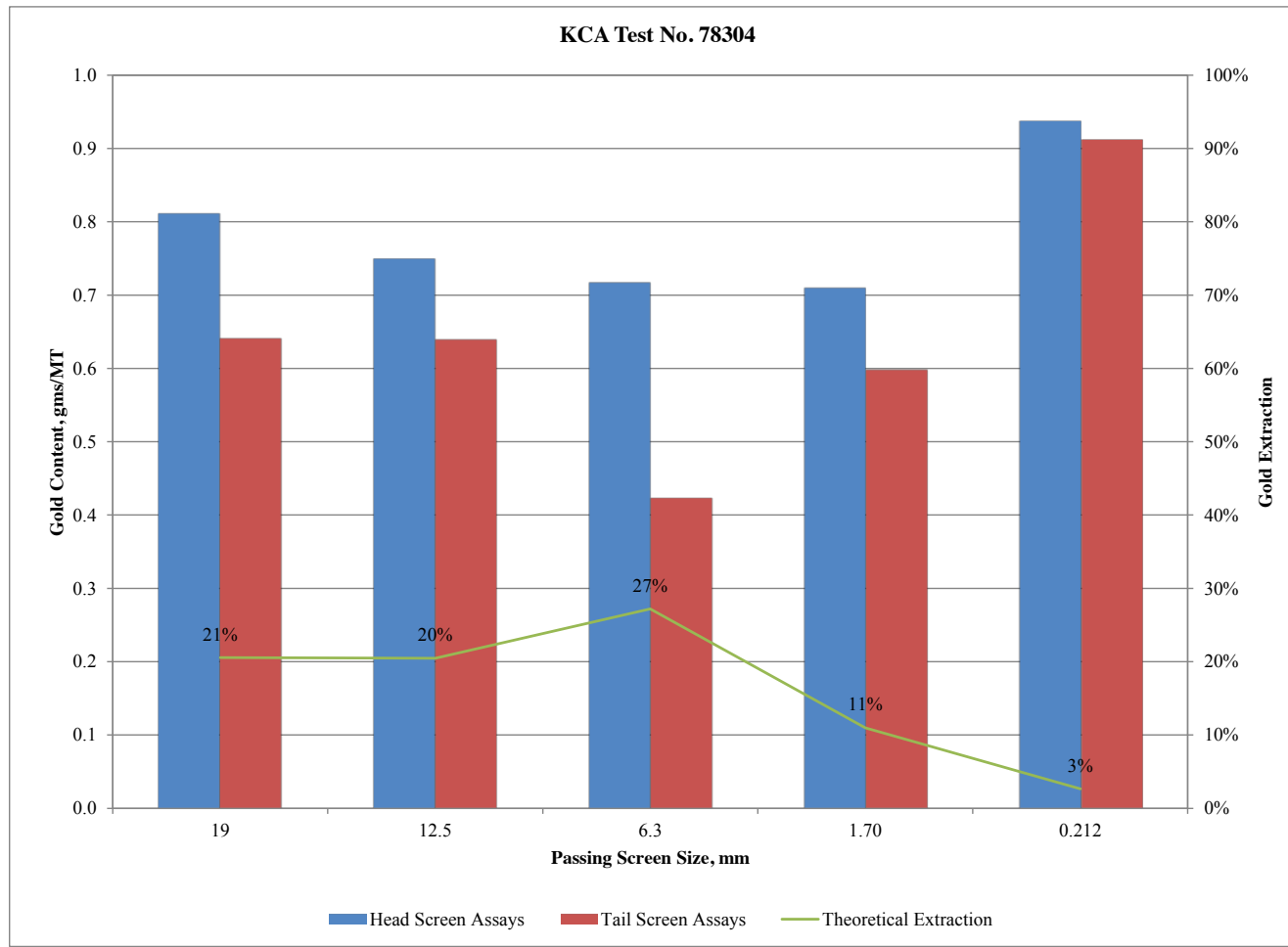
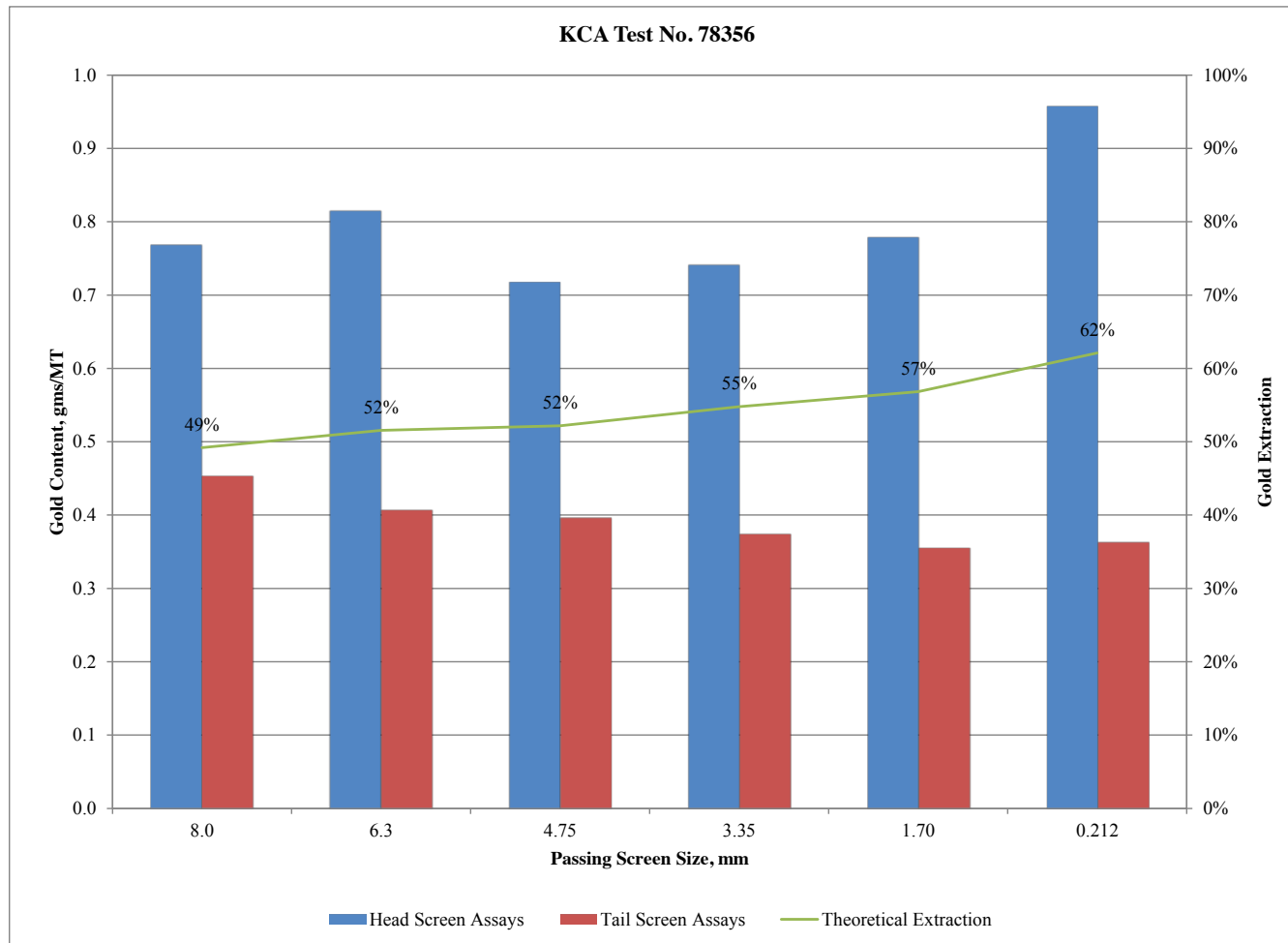


Table 6-24.
ODAS/Stratex Project
Geçiş(transition) zonuna ait cevher
KCA Sample No. 78320 A
KCA Test No. 78356
Crushed Material, Calculated 80 % passing 6.4 millimeters
Head Screen versus Tail Screen Analyses by Size Fraction

Tail Screen Analysis								Analysis of Gold Content			
KCA Sample No.	KCA Test No.	Passing, mm	Retained, mm	Sample Weight, kg	Weight Distribution, %	Cumulative Weight Retained, %	Cumulative Weight Passing, %	Head Screen Assays, gms Au/MT	Tail Screen Assays, gms Au/MT	Extraction by Fraction, %	Theoretical Extraction, %
78320 A	78356		8.0	0.00	--	--	--	--	--	--	--
		8.0	6.3	2.59	22.9%	22.9%	100.0%	0.768	0.453	41%	49%
		6.3	4.75	2.59	22.9%	45.8%	77.1%	0.814	0.406	50%	52%
		4.75	3.35	1.74	15.4%	61.1%	54.2%	0.717	0.396	45%	52%
		3.35	1.70	1.34	11.8%	73.0%	38.9%	0.741	0.374	50%	55%
		1.70	0.212	2.22	19.6%	92.6%	27.0%	0.778	0.355	54%	57%
		0.212	Pan	0.84	7.4%	100.0%	7.4%	0.957	0.363	62%	62%
Total -				11.32	100.0%	--	--	--	--	--	--

Figure 6-7.
ODAS/Stratex Project
Geçiş(transition) zonuna ait cevher
KCA Sample No. 78320 A
KCA Test No. 78356
Crushed Material, Calculated 80 % passing 6.4 millimeters
Head Screen versus Tail Screen Analyses by Size Fraction



7.0 Assaying Procedures

7.1 Heads and Tails

Head and tail assays for gold were run as one assay ton (1AT) fire assays by standard fire assay methods with flame atomic absorption spectrophotometric (FAAS) finish. Head and tail assays for silver were run as a four (4) acid digestion of a 0.2 gram sample with FAAS finish.

7.2 Carbon Assays

The loaded granular activated carbon was dried and weighed. Carbon was split out for assay, roasted to convert it to ash and then conventionally fire assayed (ASTM method: Standard Test Method for Determination of Gold in Activated Carbon by Fire Assay Gravimetry, designation: E 1568-03, modified for silver analysis).

7.3 Solution Assays

Solution assays were made by FAAS methods using certified gold and silver standards. For column leach test work, the solution assays were used merely to check on the progress of the column tests, since actual extractions were based on fire assays of the activated carbon.

7.4 Cyanide Assays

Sodium cyanide concentrations in leach solutions were determined using a colorimetric titration using a silver nitrate titrant and 5-[p-(Dimethylamino)-benzylidene]-rhodanine as the indicator. Free cyanide was determined by titrating 25 mL of the leach solution to the colorimetric end point. A few drops of 1N sodium hydroxide solution were then added to break up any base metal cyanide complexes and the titration continued until the end point was reached again to determine the “total” cyanide in solution.

7.5 Multi-Element and Whole Rock Assays

Material for a multi-element analysis was digested using a four (4) acid digestion. This digestion provided a total digestion. The resulting solution was then assayed semi-quantitatively by means of a Perkin-Elmer 2000 DV ICAP-OES. Whole rock analysis was conducted using a lithium metaborate fusion followed by ICAP-OES analysis. Certified standards were utilized for both types of analyses.

7.6 Carbon and Sulfur Assays

Carbon and sulfur analyses are conducted utilizing a LECO® CS 230 carbon/sulfur with an induction furnace (approximately 1,350°C) and infrared (IR) detectors. The LECO® method consists of burning the carbon and sulfur to SO₂ and CO₂, respectively, and analyzing the off-gas in a sequential IR detector system.

The method employed by Kappes, Cassiday & Associates (KCA) to determine organic carbon is to roast a sample of the material at 510°C followed by an analysis of the roasted residue in the LECO® to determine carbon present as inorganic carbon (organic carbon having been burned off). The difference between the total carbon and the carbon present as inorganic carbon is then calculated as the organic carbon.

The method employed by Kappes, Cassiday & Associates (KCA) to determine sulfate sulfur is to roast a sample of the material at 650°C followed by an analysis of the roasted residue in the LECO® to determine sulfur present as sulfate sulfur (sulfides have been burned off). The difference between the total sulfur and the sulfur present as sulfate sulfur is then calculated as the sulfide sulfur.

7.7 Available Lime Index

The available lime index for the reagent grade hydrated lime (Ca(OH)_2) or lime (CaO) utilized by Kappes, Cassiday & Associates (KCA) for this test program was determined using a modified procedure developed from ASTM C25-99, Standard Test Methods for Chemical Analysis of Limestone, Quicklime and Hydrated Lime. This test is otherwise known as the “rapid sugar test method”.

For the Available Lime Index test method, a sample of the reagent grade lime material is slaked and dispersed with water. The lime is solubilized by reaction with sugar to form calcium sucate which is then determined by titration against a standard acid (hydrochloric acid) using phenolphthalein as the indicator.

Analysis of the reagent grade hydrated lime (Ca(OH)_2) or lime (CaO) utilized by KCA is conducted periodically and the average results are reported below:

Reagent Grade Product	Available Lime Index, % CaO
Lime, CaO	95.4%
Hydrated Lime, Ca(OH)_2	73.1%

Appendix A
Column Leach Test Logs

Key to Column Leach Test Logs

Daily log sheets for the leach tests are included in this appendix. The extractions are based on solution assays determined by atomic absorption spectrophotometry. The extractions in the body of the report are based on carbon fire assays completed on the granular activated carbon used during the test program.

The data given in the tables alternate daily between pregnant and barren solutions. The gold and silver values not recovered by the carbon are recorded as negative extractions. Each log sheet contains the following daily information:

Column	Description of Data
1	Activity Date
2	pH levels, units
3	Free NaCN Concentration, gms/L
4	Total NaCN Concentration, gms/L
5	Lime Addition, grams
6	Cumulative Lime Added, kg/MT
7	NaCN Addition, grams
8	Cumulative NaCN Consumed, kg/MT
9	Days Run - Days of Leach
10	Water Added to the System, grams or mLs
11	Carbon Bottle Identification (C - placement, XC - removal)
12	Gold Solution Assay (FAAS), mg/L
13	Silver Solution Assay (FAAS), mg/L
14	Copper Solution Assay (FAAS), mg/L
15	Cycling Solution Volume, mLs
16	Flow Rate Pregnant Leach Solution, L/Hour/Square Meter of Column Surface
17	Cumulative Tonnes of Pregnant Leach Solution per Tonne of Ore Under Leach
18	Daily Gold Extraction Based upon Solution Assays, gms Au/MT
19	Cumulative Gold Extraction Based Upon Solution Assays, gms Au/MT
20	Daily Percent Gold Extracted
21	Cumulative Percent Gold Extracted
22	Percent of Total Gold Extracted
23	Daily Silver Extraction Based upon Solution Assays, gms Ag/MT
24	Cumulative Silver Extraction Based Upon Solution Assays, gms Ag/MT
25	Daily Percent Silver Extracted
26	Cumulative Percent Silver Extracted

ODAS - Stratex Project
Summary of Column Leach Test Logs with Extractions Based on Solution Assays

KCA Sample No.	KCA Test No.	Description	Crush Size, mm	Calculated Head, gms Au/MT	Extracted, gms Au/MT	Weighted Avg. Tails, gms Au/MT	Extracted, % Au	Calculated Tail p80 Size, mm	Days of Leach	Consumption NaCN, kg/MT	Addition Ca(OH) ₂ , kg/MT
77548 B	78301	Oksitli(oxide) zona ait cevher	19	0.652	0.323	0.329	50%	12.9	61	0.66	2.05
78319 A	78353	Oksitli(oxide) zona ait cevher	8	0.465	0.285	0.180	61%	6.4	98	1.30	2.05
77549 B	78304	Geçiş(transition) zonuna ait cevher	19	0.841	0.237	0.604	28%	13.0	61	0.77	2.03
78320 A	78356	Geçiş(transition) zonuna ait cevher	8	0.731	0.333	0.398	46%	6.4	98	1.52	2.03

KCA Sample No.	KCA Test No.	Description	Crush Size, mm	Calculated Head, gms Ag/MT	Extracted, gms Ag/MT	Weighted Avg. Tails, gms Ag/MT	Extracted, % Ag	Calculated Tail p80 Size, mm	Days of Leach	Consumption NaCN, kg/MT	Addition Ca(OH) ₂ , kg/MT
77548 B	78301	Oksitli(oxide) zona ait cevher	19	5.46	1.37	4.09	25%	12.9	61	0.66	2.05
78319 A	78353	Oksitli(oxide) zona ait cevher	8	5.26	1.86	3.40	35%	6.4	98	1.30	2.05
77549 B	78304	Geçiş(transition) zonuna ait cevher	19	4.36	1.57	2.79	36%	13.0	61	0.77	2.03
78320 A	78356	Geçiş(transition) zonuna ait cevher	8	6.40	2.50	3.90	39%	6.4	98	1.52	2.03

date: 11/20/2017

Project:	ODAS-Stratex	Head Screen, gms Au/MT:	0.602	gms Ag/MT:	6.87
Sample Description:	Oksitli(oxide) zona ait cevher	Head Assay, gms Au/MT:	0.606	gms Ag/MT:	7.51
Test No.:	78301	Extracted, gms Au/MT:	0.323	gms Ag/MT:	1.37
Sample I.D.:	77548 B	Tail Assay, gms Au/MT:	0.329	gms Ag/MT:	4.09
Initial Ht., meters:	1.610	Calculated Head, gms Au/MT:	0.652	gms Ag/MT:	5.46
Crush Size, mm:	19	Weight of Sample, kg:	41.97		
Column I.D., meters:	0.152	Column Surface Area, square meters:	0.018		
		Cement Addition, grams:	0.00	kg/MT:	0.00
		Hydrated Lime Addition, grams:	86.00	kg/MT:	2.05

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
Date	pH, units	Free NaCN, g/L	Total NaCN, g/L	Ca(OH) ₂ Added, grams	Cum. Lime Added, kg/MT	NaCN Added, grams	Cum. NaCN Consumed, kg/MT	Days Run	Water Added, grams	Carbon Bottle	Au, mg/L	Ag, mg/L	Cu, mg/L	Volume, mL	Flow Rate Preg. L/Hr/M ²	Cum. T Sol'n / T Ore	Solution, gms Au/MT	Solution Cumulative Extraction, gms Au/MT	Extracted Gold Solution	Cumulative Extracted Gold Solution	Percent of Total Extracted Gold	Solution, gms Ag/MT	Solution Cumulative Extraction, gms Ag/MT	Extracted Silver Solution	Cumulative Extracted Silver Solution
5-Jun	10.4	0.34	0.34	---	---	---	---	52	---	---	<0.01	0.04	---	5.440	12.43	4.40	0.000	0.322	0.0%	49%	100%	0.01	1.32	0.1%	24%
6-Jun	10.2	0.31	0.31	0.00	2.05	1.60	0.47	---	---	---	<0.01	<0.01	---	5.440	---	---	0.000	0.322	0.0%	---	---	0.00	1.32	0.0%	---
6-Jun	10.4	0.33	0.33	---	---	---	---	53	---	---	<0.01	0.09	---	4.970	11.35	4.52	0.000	0.323	0.0%	49%	100%	0.01	1.33	0.2%	24%
7-Jun	10.3	0.31	0.31	0.00	2.05	1.40	0.52	---	---	---	<0.01	0.01	---	4.970	---	---	0.000	0.322	0.0%	---	---	0.00	1.33	0.0%	---
7-Jun	10.6	0.40	0.40	---	---	---	---	54	---	---	<0.01	0.07	2.44	4.760	10.87	4.63	0.000	0.322	0.0%	49%	100%	0.01	1.34	0.1%	25%
8-Jun	10.1	0.33	0.33	0.00	2.05	1.30	0.55	---	---	---	<0.01	0.01	---	4.760	---	---	0.000	0.322	0.0%	---	---	0.00	1.34	0.0%	---
8-Jun	10.4	0.40	0.40	---	---	---	---	55	---	---	<0.01	0.06	---	4.810	10.99	4.75	0.000	0.322	0.0%	49%	100%	0.01	1.35	0.1%	25%
9-Jun	10.1	0.33	0.33	0.00	2.05	1.30	0.57	---	---	---	<0.01	0.01	---	4.810	---	---	0.000	0.322	0.0%	---	---	0.00	1.34	0.0%	---
9-Jun	10.3	0.35	0.35	---	---	---	---	56	---	---	<0.01	0.05	---	4.690	10.71	4.86	0.000	0.322	0.0%	49%	100%	0.01	1.35	0.1%	25%
12-Jun	10.0	0.31	0.31	0.00	2.05	2.00	0.60	---	600	---	<0.01	0.01	---	4.690	---	---	0.000	0.322	0.0%	---	---	0.00	1.35	0.0%	---
12-Jun	10.2	0.36	0.36	---	---	---	---	59	---	---	0.01	0.05	---	5.030	11.49	4.98	0.001	0.323	0.2%	50%	100%	0.01	1.35	0.1%	25%
13-Jun	10.1	0.26	0.26	0.00	2.05	1.70	0.64	---	---	---	<0.01	<0.01	---	5.030	---	---	0.000	0.323	0.0%	---	---	0.00	1.35	0.0%	---
13-Jun	10.4	0.31	0.31	---	---	---	---	60	---	---	<0.01	0.10	---	4.260	9.73	5.08	0.000	0.323	0.0%	50%	100%	0.01	1.37	0.2%	25%
14-Jun	10.0	0.28	0.28	0.00	2.05	0.00	0.68	---	---	---	<0.01	<0.01	---	4.260	---	---	0.000	0.323	0.0%	---	---	0.00	1.37	0.0%	---
14-Jun	10.2	0.43	0.43	---	---	---	---	61	---	---	<0.01	0.05	2.45	5.040	11.51	5.20	0.000	0.323	0.0%	50%	100%	0.01	1.37	0.1%	25%
16-Jun	10.1	0.36	0.36	0.00	2.05	0.00	0.66	---	---	XC-4	<0.01	<0.01	---	5.040	---	---	0.000	0.323	0.0%	---	---	0.00	1.37	0.0%	---

date: 11/20/2017

Head Screen, gms Au/MT:	0.527	gms Ag/MT:	4.30
Head Assay, gms Au/MT:	0.524	gms Ag/MT:	4.30
Extracted, gms Au/MT:	0.285	gms Ag/MT:	1.86
Tail Assay, gms Au/MT:	0.180	gms Ag/MT:	3.40
Calculated Head, gms Au/MT:	0.465	gms Ag/MT:	5.26
Weight of Sample, kg:	25.40		
Column Surface Area, square meters:	0.008		
Cement Addition, grams:	0.00	kg/MT:	0.00
Hydrated Lime Addition, grams:	52.00	kg/MT:	2.05

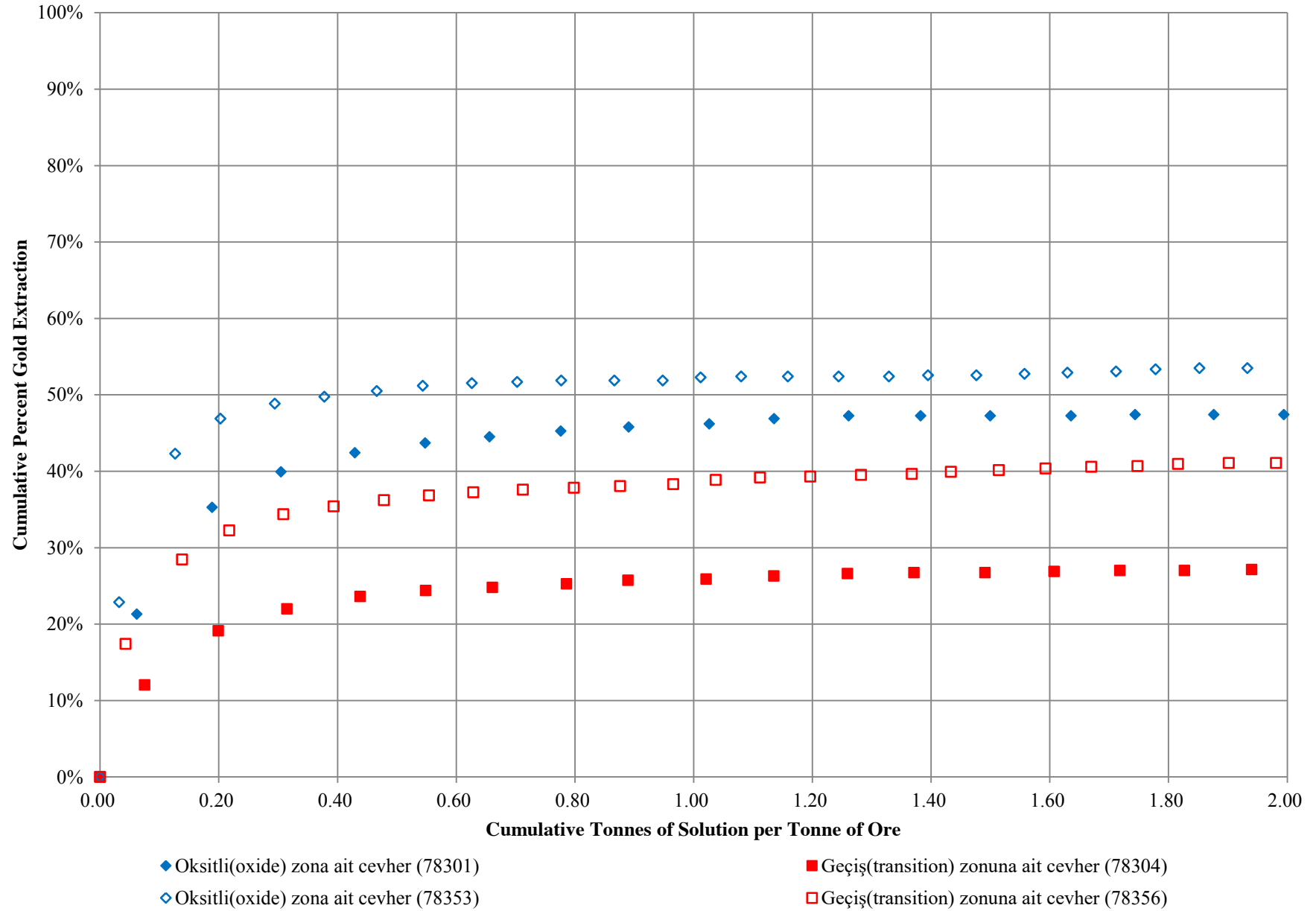
doc.file: ODA01 CTL 13/78353 page 6 of 14 date: 11/20/2017

Project:	ODAS-Stratex															Head Screen, gms Au/MT:		0.760	gms Ag/MT:		5.12																	
Sample Description:	Geçiş(transition) zonuna ait cevher															Head Assay, gms Au/MT:		0.581	gms Ag/MT:		5.21																	
Test No.:	78304															Extracted, gms Au/MT:		0.237	gms Ag/MT:		1.57																	
Sample I.D.:	77549 B															Tail Assay, gms Au/MT:		0.604	gms Ag/MT:		2.79																	
Initial Ht., meters:	1.584															Calculated Head, gms Au/MT:		0.841	gms Ag/MT:		4.36																	
Crush Size, mm:	19															Weight of Sample, kg:		42.39																				
Column I.D., meters:	0.152															Column Surface Area, square meters:		0.018																				
																		Cement Addition, grams:		0.00	kg/MT: 0.00																	
																		Hydrated Lime Addition, grams:		86.00	kg/MT: 2.03																	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26													
Date	pH, units	Free NaCN, g/L	Total NaCN, g/L	Ca(OH) ₂ Added, grams	Cum. Lime Added, kg/MT	NaCN Added, grams	Cum. NaCN Consumed, kg/MT	Days Run	Water Added, grams	Carbon Bottle	Au, mg/L	Ag, mg/L	Cu, mg/L	Volume, mL	Flow Rate Preg. L/Hr/M ²	Cum. T Sol'n / T Ore	Solution, gms Au/MT	Solution Cumulative Extraction, gms Au/MT	Extracted Gold Solution	Cumulative Extracted Gold Solution	Percent of Total Extracted Gold	Solution, gms Ag/MT	Solution Cumulative Extraction, gms Ag/MT	Extracted Silver Solution	Cumulative Extracted Silver Solution													
2-Jun	10.4	0.44	0.44	---	---	---	---	49	---	---	<0.01	0.08	---	5.120	11.69	4.24	0.000	0.237	0.0%	28%	100%	0.01	1.48	0.2%	34%													
5-Jun	10.1	0.23	0.23	0.00	2.03	1.90	0.68	---	---	---	<0.01	<0.01	---	5.120	---	---	0.000	0.237	0.0%	---	---	0.00	1.48	0.0%	---													
5-Jun	10.2	0.46	0.46	---	---	---	---	52	---	---	<0.01	0.10	---	4.960	11.33	4.36	0.000	0.237	0.0%	28%	100%	0.01	1.49	0.3%	34%													
6-Jun	10.1	0.36	0.36	0.00	2.03	1.20	0.71	---	---	---	<0.01	<0.01	---	4.960	---	---	0.000	0.237	0.0%	---	---	0.00	1.49	0.0%	---													
6-Jun	10.1	0.35	0.35	---	---	---	---	53	---	---	<0.01	0.18	---	4.350	9.94	4.46	0.000	0.237	0.0%	28%	100%	0.02	1.51	0.4%	35%													
7-Jun	10.1	0.29	0.29	0.00	2.03	2.20	0.73	---	900	---	<0.01	0.02	---	4.350	---	---	0.000	0.237	0.0%	---	---	0.00	1.51	0.0%	---													
7-Jun	10.4	0.58	0.58	---	---	---	---	54	---	---	<0.01	0.12	4.76	4.530	10.35	4.57	0.000	0.237	0.0%	28%	100%	0.01	1.52	0.3%	35%													
8-Jun	10.1	0.43	0.43	0.00	2.03	0.80	0.76	---	800	---	<0.01	0.01	---	4.530	---	---	0.000	0.237	0.0%	---	---	0.00	1.52	0.0%	---													
8-Jun	10.2	0.60	0.60	---	---	---	---	55	---	---	<0.01	0.10	---	4.820	11.01	4.68	0.000	0.237	0.0%	28%	100%	0.01	1.53	0.3%	35%													
9-Jun	10.2	0.42	0.42	0.00	2.03	0.00	0.74	---	---	---	<0.01	0.01	---	4.820	---	---	0.000	0.237	0.0%	---	---	0.00	1.53	0.0%	---													
9-Jun	10.1	0.36	0.36	---	---	---	---	56	---	---	<0.01	0.08	---	5.280	12.06	4.81	0.000	0.237	0.0%	28%	100%	0.01	1.54	0.2%	35%													
12-Jun	10.0	0.23	0.23	0.00	2.03	2.00	0.74	---	---	---	<0.01	0.01	---	5.280	---	---	0.000	0.237	0.0%	---	---	0.00	1.54	0.0%	---													
12-Jun	10.0	0.36	0.36	---	---	---	---	59	---	---	<0.01	0.07	---	5.180	11.83	4.93	0.000	0.237	0.0%	28%	100%	0.01	1.54	0.2%	35%													
13-Jun	10.0	0.28	0.28	0.00	2.03	1.70	0.79	---	---	---	<0.01	0.01	---	5.180	---	---	0.000	0.237	0.0%	---	---	0.00	1.54	0.0%	---													
13-Jun	10.2	0.52	0.52	---	---	---	---	60	---	---	<0.01	0.16	---	4.350	9.94	5.03	0.000	0.237	0.0%	28%	100%	0.02	1.56	0.4%	36%													
14-Jun	10.0	0.40	0.40	0.00	2.03	0.00	0.81	---	---	---	<0.01	0.01	---	4.350	---	---	0.000	0.237	0.0%	---	---	0.00	1.56	0.0%	---													
14-Jun	10.1	0.52	0.52	---	---	---	---	61	---	---	<0.01	0.08	4.22	5.270	12.04	5.16	0.000	0.237	0.0%	28%	100%	0.01	1.57	0.2%	36%													
16-Jun	10.1	0.36	0.36	0.00	2.03	0.00	0.77	---	---	XC-4	<0.01	0.02	---	5.270	---	---	0.000	0.237	0.0%	---	---	0.00	1.57	-0.1%	---													

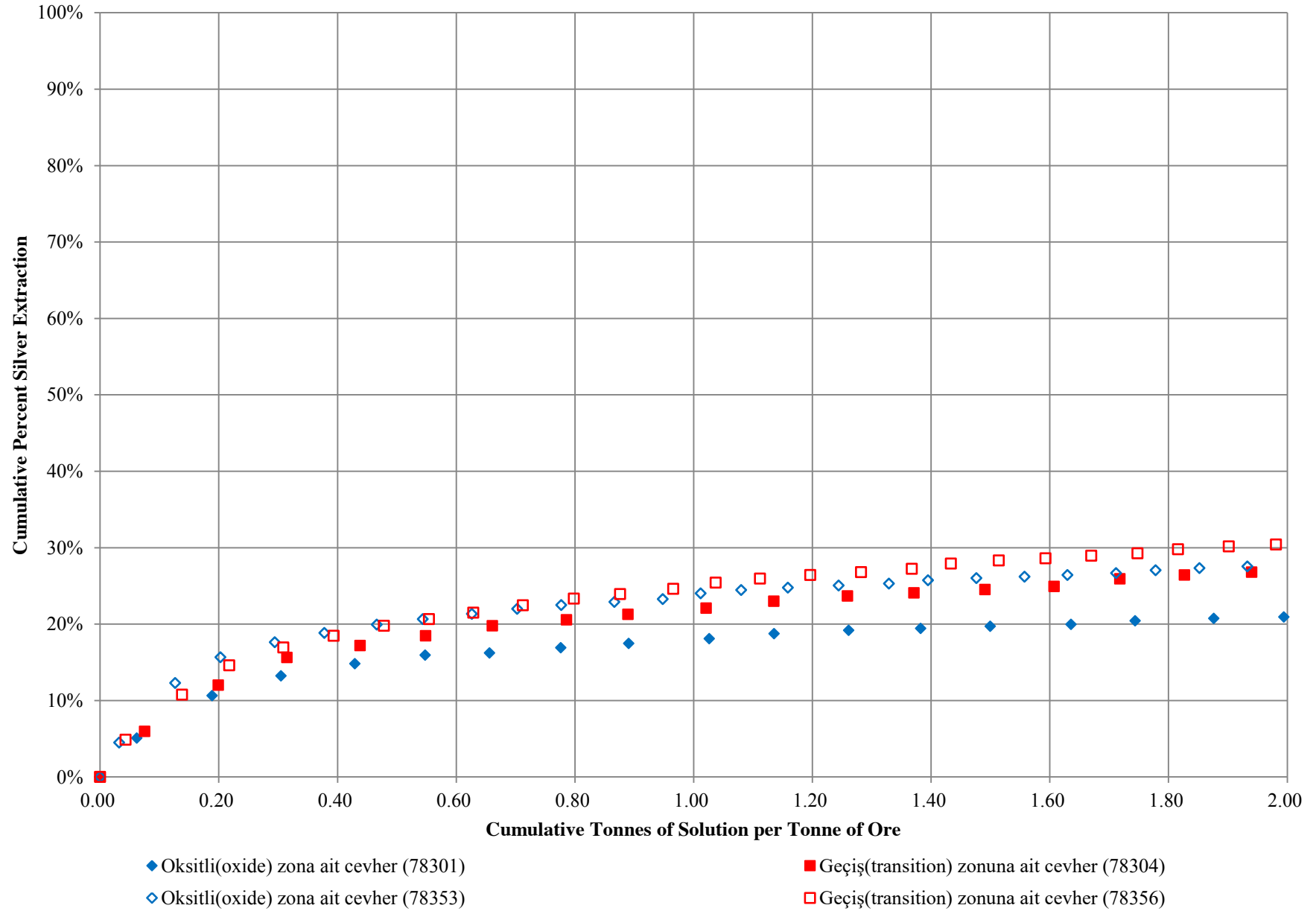
date: 11/20/2017

date: 11/20/2017

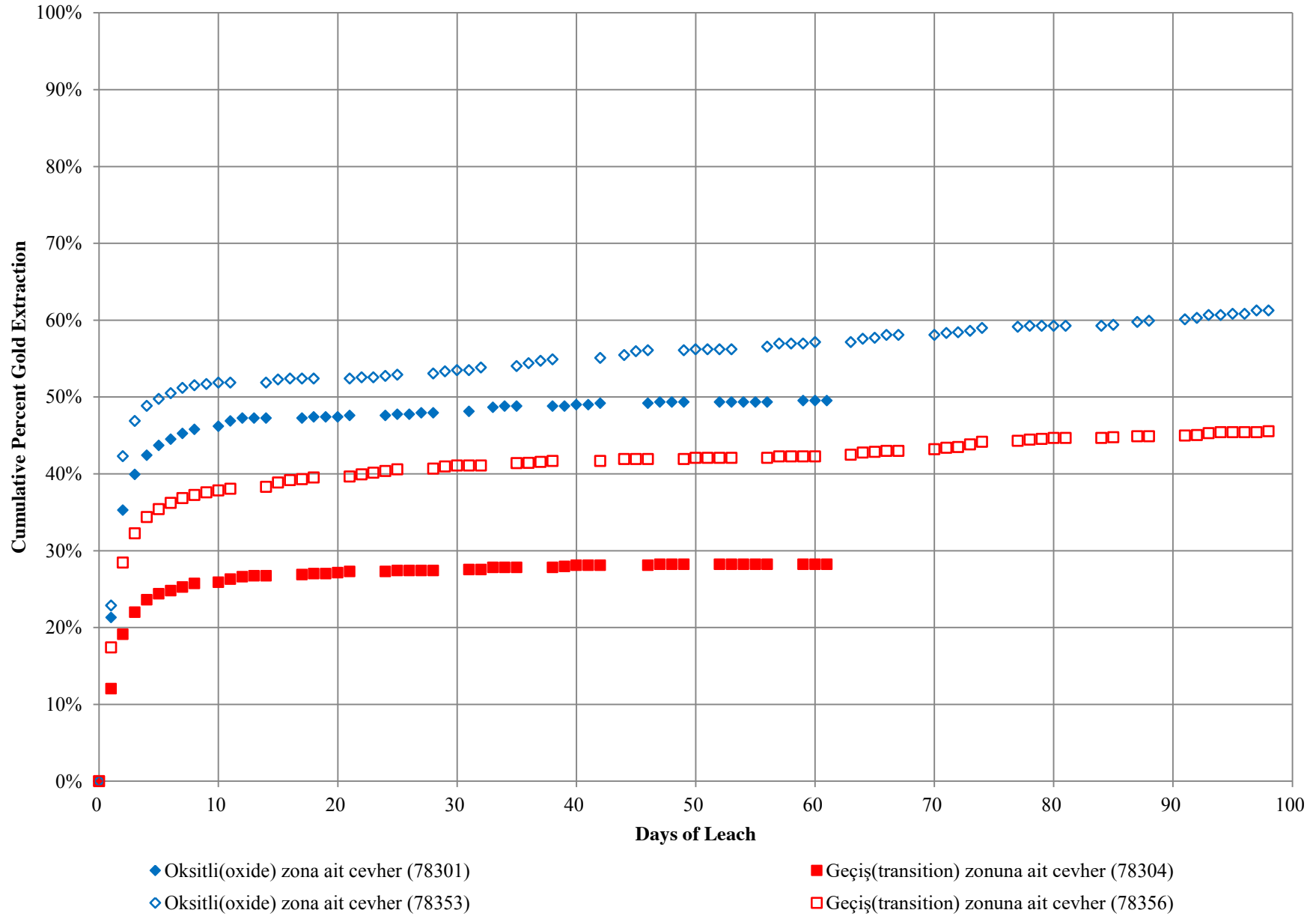
ODAS - Stratex Project



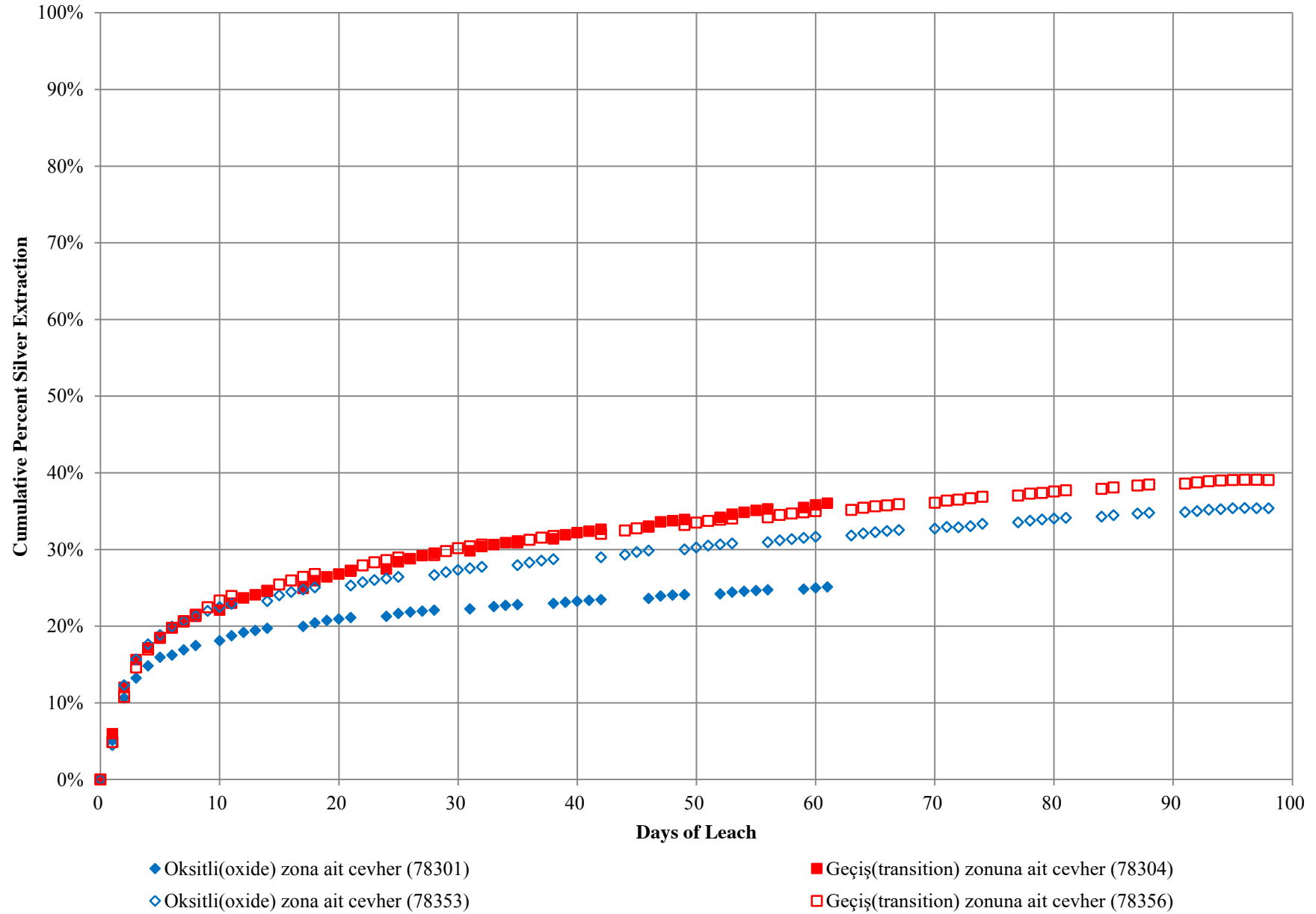
ODAS - Stratex Project



ODAS - Stratex Project



ODAS - Stratex Project



Appendix B

Hazen Research Inc. Comminution Report

HAZEN RESEARCH, INC.

4601 Indiana Street • Golden, Colorado 80403 USA
Phone: (303) 279-4501 • Fax: (303) 278-1528
www.hazenresearch.com

April 27, 2017

E-mail Delivery

Mr. Terry Albert
Kappes, Cassiday & Associates
7950 Security Circle
Reno, NV 89506

E-mail: talbert@kcareno.com

Subject: Comminution Testing
Hazen Project 12398
Report and Appendices A and B

Dear Mr. Albert:

As requested, the Stratex samples received at Hazen Research, Inc. in April 2017 were subjected to Bond abrasion index (A_i) and Bond ball mill work index (BW_i) testing. Upon receipt, the samples were inventoried and assigned internal numbers (HRI) for identification and future reference. Table 1 summarizes the A_i and BW_i results for the samples. All test data sheets are in Appendices A and B.

Table 1. Sample Identification and Results

HRI Number	Client ID	A_i , g	BW_i , kWh/t
54783-1	77548 A / Oxide ODAS/Stratex	0.5971	15.4
54783-2	77549 A / Transition ODAS/Stratex	0.9206	16.4
54783-3	77550 A / Sulfide ODAS/Stratex	0.3837	14.3

This letter report completes the work authorized for these samples. Hazen looks forward to assisting you with comminution testing in the future. Please let me know if you have questions concerning this report.

Regards,



Erik C. Stepperud
Project Engineer

ECS/gr/kam

APPENDIX A

A_i Results

Abrasion Test

Date: Apr 25, 2017
Project No: 12398
Sample No: 54783-1

Purpose: To determine the abrasion index that can be used to determine steel media and liner wear in crushers, rod mills, and ball mills.

Procedure: The equipment and procedure duplicate the Pennsylvania Crusher method for determining an abrasion index.

Sample: Client Identified: 77548 A
Sample Number: 54783-1

Results:

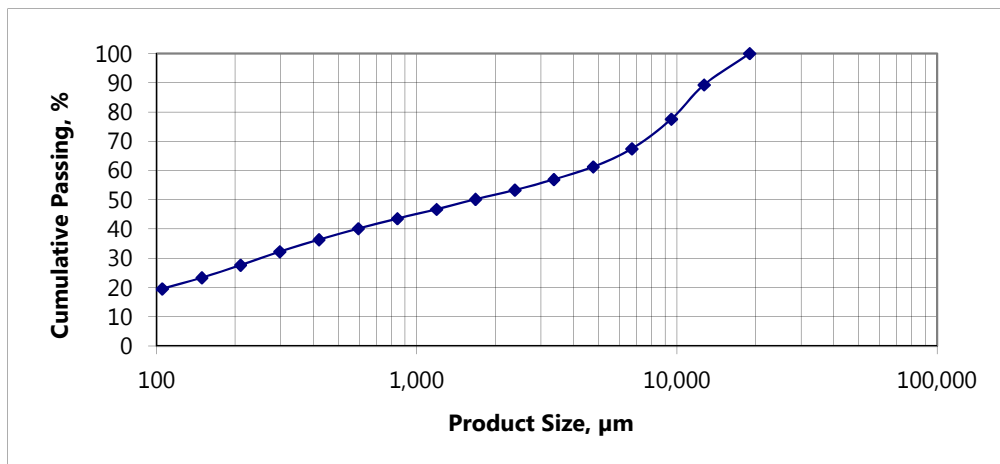
Original Coupon Weight	=	93.2157 g
Final Coupon Weight	=	92.6186 g
Abrasion Index (A_i)	=	0.5971 g

Equipment		Equations ^a ($A_i > 0.021$)	Wear Rate (lb/kWh)
Wet Rod Mill	Rods =	$0.35(A_i - 0.020)^{0.2}$	= 0.3136
	Liner =	$0.035(A_i - 0.015)^{0.3}$	= 0.0298
Wet Ball Mill (overflow and grate discharge)	Balls =	$0.35(A_i - 0.015)^{0.33}$	= 0.2928
	Liner =	$0.026(A_i - 0.015)^{0.3}$	= 0.0221
Dry Ball Mill (grate discharge, $A_i < 0.22$)	Balls =	$0.05A_i^{0.5}$	= 0.0386
	Liner =	$0.005A_i^{0.5}$	= 0.0039
Crushers (gyratory, jaw, and cone)	Liner =	$(A_i + 0.22)/11$	= 0.0743
Roller Crushers	Roll Shell =	$(0.1A_i)^{0.67}$	= 0.1526

^aBond, FC, "Metal Wear in Crushing and Grinding," Allis-Chalmers Publication 07P1701, Dec. 1963.

Abrasion Test**Date: Apr 25, 2017****Project No: 12398****Sample No: 54783-1**

Tyler Mesh		Direct Wt.		Cumulative %	
in. or mesh	µm	g	%	Passing	Retained
3/4 in.	19,000	0.0	0.0	100.0	0.0
1/2	12,700	171.5	10.7	89.3	10.7
3/8	9,510	187.9	11.7	77.6	22.4
3 mesh	6,700	162.5	10.1	67.4	32.6
4	4,760	98.8	6.2	61.3	38.7
6	3,360	69.6	4.3	56.9	43.1
8	2,380	58.1	3.6	53.3	46.7
10	1,680	50.5	3.2	50.1	49.9
14	1,190	55.3	3.5	46.7	53.3
20	841	50.4	3.1	43.6	56.4
28	595	54.6	3.4	40.1	59.9
35	420	60.9	3.8	36.3	63.7
48	297	66.1	4.1	32.2	67.8
65	210	73.5	4.6	27.6	72.4
100	149	69.3	4.3	23.3	76.7
150	105	60.5	3.8	19.5	80.5
200	74	59.5	3.7	15.8	84.2
-200	-74	253.6	15.8	0.0	100.0
Total:		1,602.6	100.0		

Product Size Passing 80% (P₈₀)**10,151 µm**

Abrasion Test

Date: Apr 25, 2017
Project No: 12398
Sample No: 54783-2

Purpose: To determine the abrasion index that can be used to determine steel media and liner wear in crushers, rod mills, and ball mills.

Procedure: The equipment and procedure duplicate the Pennsylvania Crusher method for determining an abrasion index.

Sample: Client Identified: 77549 A
Sample Number: 54783-2

Results:

Original Coupon Weight	=	94.6452 g
Final Coupon Weight	=	93.7246 g
Abrasion Index (A_i)	=	0.9206 g

Equipment		Equations ^a ($A_i > 0.021$)	Wear Rate (lb/kWh)
Wet Rod Mill	Rods =	$0.35(A_i - 0.020)^{0.2}$	= 0.3427
	Liner =	$0.035(A_i - 0.015)^{0.3}$	= 0.0340
Wet Ball Mill (overflow and grate discharge)	Balls =	$0.35(A_i - 0.015)^{0.33}$	= 0.3387
	Liner =	$0.026(A_i - 0.015)^{0.3}$	= 0.0252
Dry Ball Mill (grate discharge, $A_i < 0.22$)	Balls =	$0.05A_i^{0.5}$	= 0.0480
	Liner =	$0.005A_i^{0.5}$	= 0.0048
Crushers (gyratory, jaw, and cone)	Liner =	$(A_i + 0.22)/11$	= 0.1037
Roller Crushers	Roll Shell =	$(0.1A_i)^{0.67}$	= 0.2037

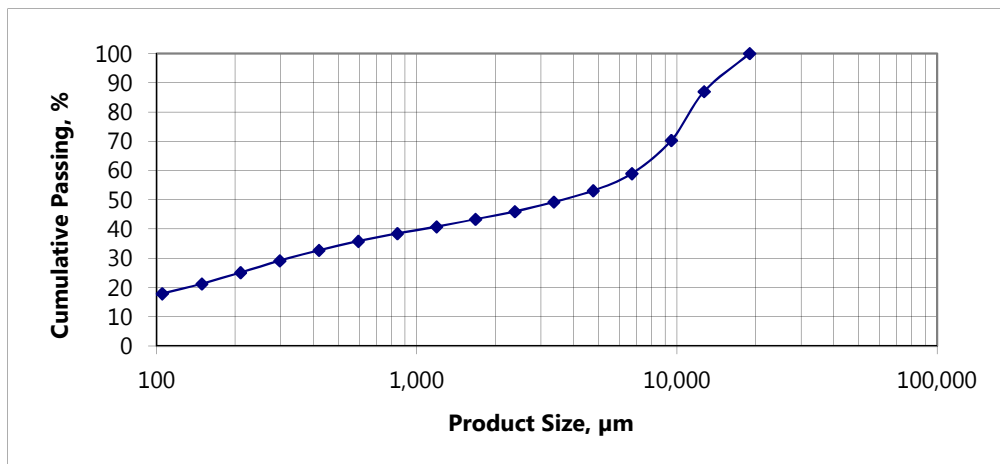
^aBond, FC, "Metal Wear in Crushing and Grinding," Allis-Chalmers Publication 07P1701, Dec. 1963.

Abrasion Test

Date: Apr 25, 2017
Project No: 12398
Sample No: 54783-2

Tyler Mesh		Direct Wt.		Cumulative %	
in. or mesh	µm	g	%	Passing	Retained
³ / ₄ in.	19,000	0.0	0.0	100.0	0.0
¹ / ₂	12,700	207.8	13.0	87.0	13.0
³ / ₈	9,510	267.1	16.7	70.3	29.7
3 mesh	6,700	181.6	11.4	58.9	41.1
4	4,760	93.3	5.8	53.1	46.9
6	3,360	62.1	3.9	49.2	50.8
8	2,380	52.4	3.3	45.9	54.1
10	1,680	41.6	2.6	43.3	56.7
14	1,190	41.4	2.6	40.7	59.3
20	841	37.0	2.3	38.4	61.6
28	595	42.1	2.6	35.8	64.2
35	420	49.6	3.1	32.7	67.3
48	297	57.0	3.6	29.1	70.9
65	210	64.9	4.1	25.1	74.9
100	149	61.4	3.8	21.2	78.8
150	105	53.5	3.3	17.9	82.1
200	74	50.7	3.2	14.7	85.3
-200	-74	235.1	14.7	0.0	100.0
Total:		1,598.6	100.0		

Product Size Passing 80% (P₈₀) 11,407 µm



Abrasion Test

Date: Apr 25, 2017
Project No: 12398
Sample No: 54783-3

Purpose: To determine the abrasion index that can be used to determine steel media and liner wear in crushers, rod mills, and ball mills.

Procedure: The equipment and procedure duplicate the Pennsylvania Crusher method for determining an abrasion index.

Sample: Client Identified: 77550 A
Sample Number: 54783-3

Results:

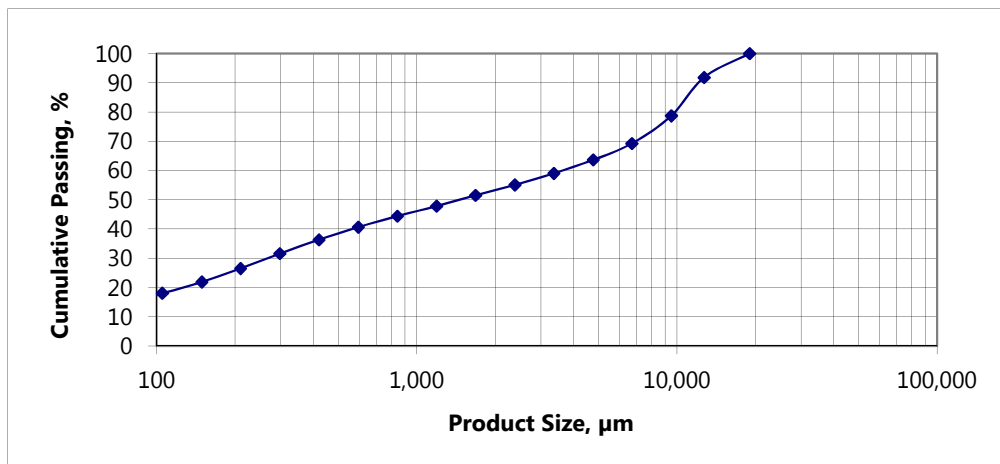
Original Coupon Weight	=	93.7246 g
Final Coupon Weight	=	93.3409 g
Abrasion Index (A_i)	=	0.3837 g

Equipment		Equations ^a ($A_i > 0.021$)	Wear Rate (lb/kWh)
Wet Rod Mill	Rods =	$0.35(A_i - 0.020)^{0.2}$	= 0.2859
	Liner =	$0.035(A_i - 0.015)^{0.3}$	= 0.0259
Wet Ball Mill (overflow and grate discharge)	Balls =	$0.35(A_i - 0.015)^{0.33}$	= 0.2518
	Liner =	$0.026(A_i - 0.015)^{0.3}$	= 0.0193
Dry Ball Mill (grate discharge, $A_i < 0.22$)	Balls =	$0.05A_i^{0.5}$	= 0.0310
	Liner =	$0.005A_i^{0.5}$	= 0.0031
Crushers (gyratory, jaw, and cone)	Liner =	$(A_i + 0.22)/11$	= 0.0549
Roller Crushers	Roll Shell =	$(0.1A_i)^{0.67}$	= 0.1136

^aBond, FC, "Metal Wear in Crushing and Grinding," Allis-Chalmers Publication 07P1701, Dec. 1963.

Abrasion Test**Date: Apr 25, 2017****Project No: 12398****Sample No: 54783-3**

Tyler Mesh		Direct Wt.		Cumulative %	
in. or mesh	µm	g	%	Passing	Retained
3/4 in.	19,000	0.0	0.0	100.0	0.0
1/2	12,700	130.8	8.2	91.8	8.2
3/8	9,510	209.6	13.1	78.7	21.3
3 mesh	6,700	151.8	9.5	69.2	30.8
4	4,760	89.1	5.6	63.7	36.3
6	3,360	74.0	4.6	59.0	41.0
8	2,380	63.2	3.9	55.1	44.9
10	1,680	57.0	3.6	51.5	48.5
14	1,190	59.1	3.7	47.8	52.2
20	841	54.7	3.4	44.4	55.6
28	595	60.4	3.8	40.6	59.4
35	420	69.1	4.3	36.3	63.7
48	297	75.7	4.7	31.6	68.4
65	210	81.3	5.1	26.5	73.5
100	149	73.9	4.6	21.9	78.1
150	105	61.4	3.8	18.1	81.9
200	74	52.4	3.3	14.8	85.2
-200	-74	236.6	14.8	0.0	100.0
Total:		1,600.1	100.0		

Product Size Passing 80% (P₈₀)**9,834 µm**

APPENDIX B

BW_i Results

Standard Bond Ball Mill Grindability Test

Date: Apr 25, 2017
Project No: 12398
Sample No: 54783-1

Purpose: To determine the ball mill grindability of the test sample in terms of a Bond ball mill work index, BW_i .

Procedure: The equipment and procedure duplicate the Bond method for determining ball mill work indices. The sample was stage crushed to minus 6 mesh. This material was used as feed for the grindability test.

Sample: Client Identified: 77548 A
Sample No: 54783-1

Results: P_{100} = 100% passing size of product 105 μm
 P_{80} = 80% passing size of product 79 μm
 F_{80} = 80% passing size of feed 2,116 μm
Gpr = Grams per revolution 1.25 g

Calculation of a Bond ball mill work index:

$$BW_i = \frac{44.5}{P_{100}^{0.23} \times Gpr^{0.82} \times \left(\frac{10}{\sqrt{P_{80}}} - \frac{10}{\sqrt{F_{80}}} \right)}$$

$$BW_i = 14.0 \text{ kWh/st}$$

$$BW_i = 15.4 \text{ kWh/t}$$

Standard Bond Ball Mill Grindability Test

Date: Apr 25, 2017
Project No: 12398
Sample No: 54783-1

Test Conditions and Notes

100% passing size of product: 150 mesh
Test feed weight (700 cm³): 1,171.0 g
Amount of minus 150 mesh in feed: 14.2 %
Target product weights: + 150 mesh 836.4 g
- 150 mesh 334.6 g

Test Ball Charge

Ball Size, in.	Number of Balls	Weight, g
1.45	43	8,806.4
1.17	67	7,209.2
1.00	10	672.0
0.75	71	2,009.3
0.61	94	1,428.0
Total:	285	20,125.0

Stage No.	Revolutions	New Feed, g	Undersize		U'Size In Product, g	Undersize Product		Circ. Load, %
			In Feed, g	To Be Ground, g		Total, g	Per Mill Revolution, g	
1	100	1171.0	166.0	168.6	316.0	150.0	1.500	270.6
2	193	316.0	44.8	289.8	281.7	236.9	1.227	315.7
3	240	281.7	39.9	294.6	325.9	286.0	1.192	259.3
4	242	325.9	46.2	288.4	337.7	291.5	1.205	246.8
5	238	337.7	47.9	286.7	342.0	294.1	1.236	242.4
6	232	342.0	48.5	286.1	337.8	289.3	1.247	246.7
7	230	337.8	47.9	286.7	337.7	289.8	1.260	246.8
8	227	337.7	47.9	286.7	332.2	284.3	1.253	252.5

Average of Last Three Stages: 1.253 248.6

Standard Bond Ball Mill Grindability Test

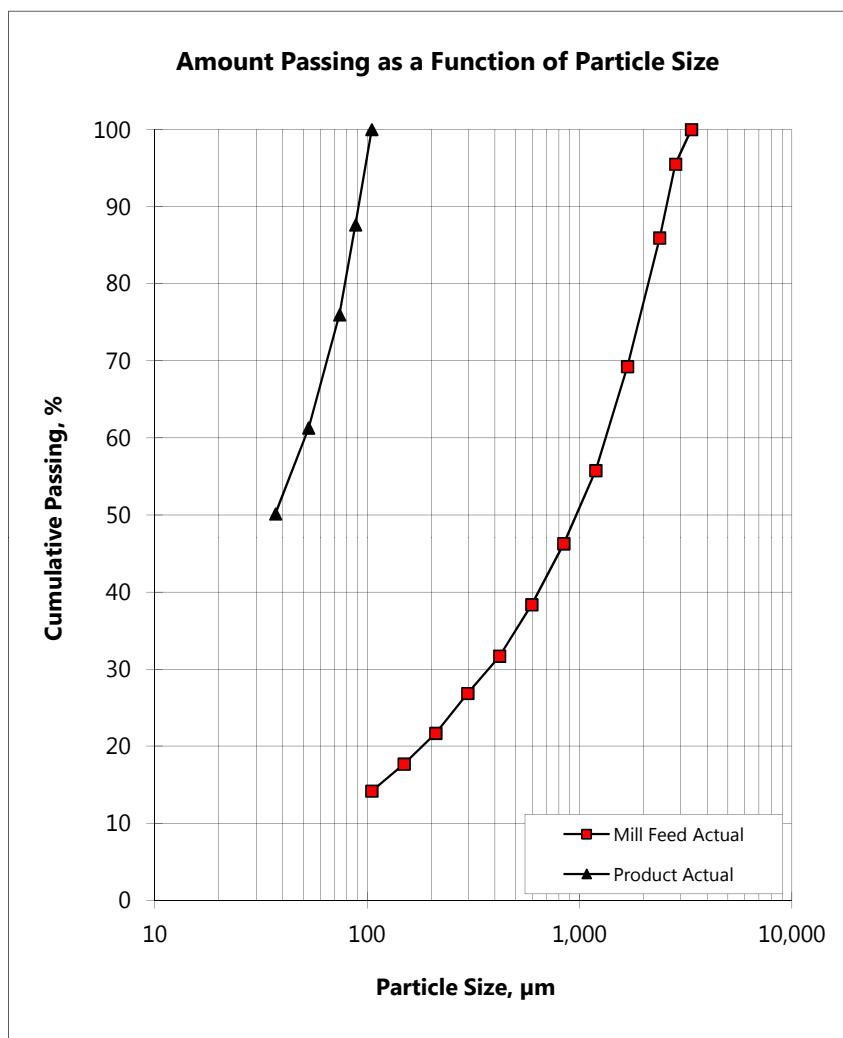
Date: Apr 25, 2017
Project No: 12398
Sample No: 54783-1

Detailed Particle Analyses

Screen Size (Retained)		Mill Feed, -6 mesh				Circ. Load, +150 mesh			Test Product, -150 mesh			
Tyler Mesh	µm	Weight		Cum. Wt, %		Weight		Pass, %	Weight		Cum. Wt, %	
		g	%	Pass	Retain	g	%		g	%	Pass	Retain
6	3,360	0.0	0.0	100.0	0.0	0.0	0.0	100.0				
7	2,830	52.5	4.5	95.5	4.5	14.9	1.8	98.2				
8	2,380	112.2	9.6	85.9	14.1	41.3	4.9	93.3				
10	1,680	195.4	16.7	69.2	30.8	72.9	8.7	84.6				
14	1,190	158.1	13.5	55.7	44.3	50.8	6.1	78.6				
20	841	111.1	9.5	46.3	53.7	35.4	4.2	74.3				
28	595	92.5	7.9	38.4	61.6	35.1	4.2	70.1				
35	420	78.1	6.7	31.7	68.3	45.1	5.4	64.8				
48	297	56.7	4.8	26.8	73.2	57.8	6.9	57.9				
65	210	60.6	5.2	21.7	78.3	120.4	14.4	43.5				
100	149	46.8	4.0	17.7	82.3	177.6	21.2	22.4				
150	105	41.0	3.5	14.2	85.8	187.5	22.4	0.0				
-150	-105	166.0	14.2	0.0	100.0	0.0	0.0	0.0				
Total:		1,171.0	100.0			838.8	100.0					
150	105								0.0	0.0	100.0	0.0
170	88								26.7	12.4	87.6	12.4
200	74								25.2	11.7	76.0	24.0
270	53								31.7	14.7	61.3	38.7
400	37								24.1	11.2	50.1	49.9
-400	-37								108.3	50.1	0.0	100.0
Total:									216.0	100.0		

Standard Bond Ball Mill Grindability Test

Date: Apr 25, 2017
Project No: 12398
Sample No: 54783-1



Standard Bond Ball Mill Grindability Test

Date: Apr 25, 2017
Project No: 12398
Sample No: 54783-2

Purpose: To determine the ball mill grindability of the test sample in terms of a Bond ball mill work index, BW_i .

Procedure: The equipment and procedure duplicate the Bond method for determining ball mill work indices. The sample was stage crushed to minus 6 mesh. This material was used as feed for the grindability test.

Sample: Client Identified: 77549 A
Sample No: 54783-2

Results: P_{100} = 100% passing size of product 105 μm
 P_{80} = 80% passing size of product 80 μm
 F_{80} = 80% passing size of feed 2,226 μm
Gpr = Grams per revolution 1.16 g

Calculation of a Bond ball mill work index:

$$BW_i = \frac{44.5}{P_{100}^{0.23} \times Gpr^{0.82} \times \left(\frac{10}{\sqrt{P_{80}}} - \frac{10}{\sqrt{F_{80}}} \right)}$$

$$BW_i = 14.9 \text{ kWh/st}$$

$$BW_i = 16.4 \text{ kWh/t}$$

Standard Bond Ball Mill Grindability Test

Date: Apr 25, 2017
Project No: 12398
Sample No: 54783-2

Test Conditions and Notes

100% passing size of product: 150 mesh
Test feed weight (700 cm³): 1,253.7 g
Amount of minus 150 mesh in feed: 12.6 %
Target product weights: + 150 mesh 895.5 g
- 150 mesh 358.2 g

Test Ball Charge

Ball Size, in.	Number of Balls	Weight, g
1.45	43	8,806.4
1.17	67	7,209.2
1.00	10	672.0
0.75	71	2,009.3
0.61	94	1,428.0
Total:	285	20,125.0

Stage No.	Revolutions	New Feed, g	Undersize		U'Size In Product, g	Undersize Product		Circ. Load, %
			In Feed, g	To Be Ground, g		Total, g	Per Mill Revolution, g	
1	100	1253.7	157.6	200.6	291.0	133.4	1.334	330.8
2	241	291.0	36.6	321.6	300.5	263.9	1.095	317.2
3	293	300.5	37.8	320.4	360.8	323.0	1.102	247.5
4	284	360.8	45.4	312.8	365.5	320.1	1.127	243.0
5	277	365.5	45.9	312.3	366.1	320.2	1.156	242.4
6	270	366.1	46.0	312.2	359.6	313.6	1.161	248.6
7	270	359.6	45.2	313.0	359.4	314.2	1.164	248.8
8	269	359.4	45.2	313.0	359.1	313.9	1.167	249.1
9	268	359.1	45.1	313.1	355.7	310.6	1.159	252.5

Average of Last Three Stages: 1.163 250.1

Standard Bond Ball Mill Grindability Test

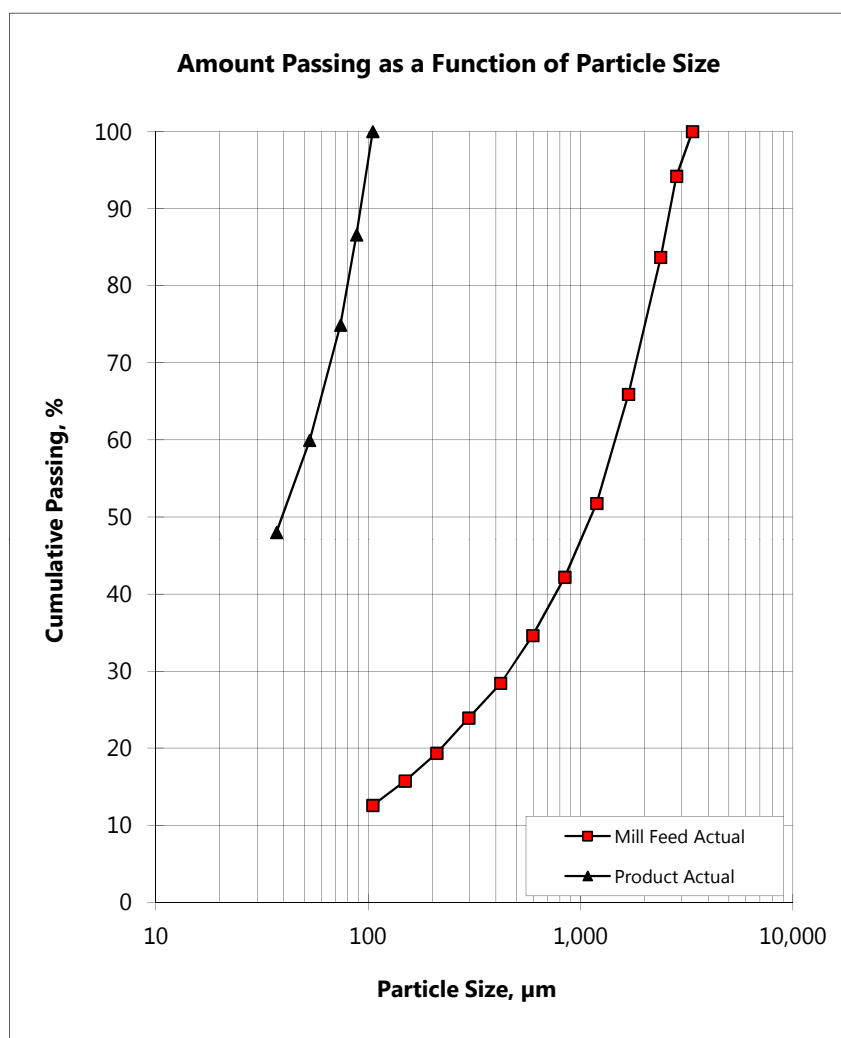
Date: Apr 25, 2017
Project No: 12398
Sample No: 54783-2

Detailed Particle Analyses

Screen Size (Retained)		Mill Feed, -6 mesh				Circ. Load, +150 mesh			Test Product, -150 mesh			
Tyler Mesh	µm	Weight		Cum. Wt, %		Weight		Pass, %	Weight		Cum. Wt, %	
		g	%	Pass	Retain	g	%		g	%	Pass	Retain
6	3,360	0.0	0.0	100.0	0.0	0.0	0.0	100.0				
7	2,830	72.7	5.8	94.2	5.8	22.7	2.5	97.5				
8	2,380	131.9	10.5	83.7	16.3	57.1	6.4	91.1				
10	1,680	222.8	17.8	65.9	34.1	95.4	10.6	80.5				
14	1,190	177.4	14.2	51.8	48.2	64.5	7.2	73.3				
20	841	120.1	9.6	42.2	57.8	42.8	4.8	68.5				
28	595	94.9	7.6	34.6	65.4	40.3	4.5	64.1				
35	420	77.6	6.2	28.4	71.6	48.2	5.4	58.7				
48	297	56.4	4.5	23.9	76.1	57.3	6.4	52.3				
65	210	57.4	4.6	19.3	80.7	113.1	12.6	39.7				
100	149	45.1	3.6	15.7	84.3	166.5	18.5	21.2				
150	105	39.8	3.2	12.6	87.4	190.1	21.2	0.0				
-150	-105	157.6	12.6	0.0	100.0	0.0	0.0	0.0				
Total:		1,253.7	100.0			898.0	100.0					
150	105								0.0	0.0	100.0	0.0
170	88								28.4	13.4	86.6	13.4
200	74								24.8	11.7	74.9	25.1
270	53								31.7	15.0	59.9	40.1
400	37								25.3	11.9	48.0	52.0
-400	-37								101.7	48.0	0.0	100.0
Total:									211.9	100.0		

Standard Bond Ball Mill Grindability Test

Date: Apr 25, 2017
Project No: 12398
Sample No: 54783-2



Standard Bond Ball Mill Grindability Test

Date: Apr 25, 2017
Project No: 12398
Sample No: 54783-3

Purpose: To determine the ball mill grindability of the test sample in terms of a Bond ball mill work index, BW_i .

Procedure: The equipment and procedure duplicate the Bond method for determining ball mill work indices. The sample was stage crushed to minus 6 mesh. This material was used as feed for the grindability test.

Sample: Client Identified: 77550 A
Sample No: 54783-3

Results: P_{100} = 100% passing size of product 105 μm
 P_{80} = 80% passing size of product 81 μm
 F_{80} = 80% passing size of feed 2,086 μm
Gpr = Grams per revolution 1.40 g

Calculation of a Bond ball mill work index:

$$BW_i = \frac{44.5}{P_{100}^{0.23} \times Gpr^{0.82} \times \left(\frac{10}{\sqrt{P_{80}}} - \frac{10}{\sqrt{F_{80}}} \right)}$$

$$BW_i = 13.0 \text{ kWh/st}$$

$$BW_i = 14.3 \text{ kWh/t}$$

Date: Apr 25, 2017
Project No: 12398
Sample No: 54783-3

Test Ball Charge

Ball Size, in.	Number of Balls	Weight, g
1.45	43	8,806.4
1.17	67	7,209.2
1.00	10	672.0
0.75	71	2,009.3
0.61	94	1,428.0
Total:	285	20,125.0

Stage No.	Revolutions	New Feed, g	Undersize		U'Size In Product, g	Undersize Product		Circ. Load, %
			In Feed, g	To Be Ground, g		Total, g	Per Mill Revolution, g	
1	100	1253.8	156.7	201.5	305.7	149.0	1.490	310.1
2	215	305.7	38.2	320.0	317.5	279.3	1.299	294.9
3	245	317.5	39.7	318.5	360.3	320.6	1.309	248.0
4	239	360.3	45.0	313.2	368.4	323.4	1.353	240.3
5	231	368.4	46.0	312.2	366.3	320.3	1.386	242.3
6	225	366.3	45.8	312.4	359.6	313.8	1.395	248.7
7	225	359.6	44.9	313.3	361.0	316.1	1.405	247.3
8	223	361.0	45.1	313.1	357.7	312.6	1.402	250.5

Average of Last Three Stages:	1.400	248.8
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Standard Bond Ball Mill Grindability Test

Date: Apr 25, 2017
Project No: 12398
Sample No: 54783-3

Detailed Particle Analyses

Screen Size (Retained)		Mill Feed, -6 mesh				Circ. Load, +150 mesh			Test Product, -150 mesh			
Tyler Mesh	µm	Weight		Cum. Wt, %		Weight		Pass, %	Weight		Cum. Wt, %	
		g	%	Pass	Retain	g	%		g	%	Pass	Retain
6	3,360	0.0	0.0	100.0	0.0	0.0	0.0	100.0				
7	2,830	59.0	4.7	95.3	4.7	13.3	1.5	98.5				
8	2,380	109.2	8.7	86.6	13.4	33.9	3.8	94.7				
10	1,680	212.8	17.0	69.6	30.4	68.3	7.6	87.1				
14	1,190	178.9	14.3	55.3	44.7	46.9	5.2	81.9				
20	841	126.6	10.1	45.2	54.8	34.1	3.8	78.1				
28	595	103.8	8.3	37.0	63.0	34.7	3.9	74.2				
35	420	87.5	7.0	30.0	70.0	46.0	5.1	69.1				
48	297	64.2	5.1	24.9	75.1	62.8	7.0	62.1				
65	210	66.2	5.3	19.6	80.4	134.5	15.0	47.0				
100	149	50.8	4.1	15.5	84.5	204.7	22.8	24.2				
150	105	38.1	3.0	12.5	87.5	216.9	24.2	0.0				
-150	-105	156.7	12.5	0.0	100.0	0.0	0.0	0.0				
Total:		1,253.8	100.0			896.1	100.0					
150	105								0.0	0.0	100.0	0.0
170	88								29.7	13.9	86.1	13.9
200	74								25.7	12.1	74.0	26.0
270	53								31.6	14.8	59.2	40.8
400	37								23.9	11.2	48.0	52.0
-400	-37								102.3	48.0	0.0	100.0
Total:									213.2	100.0		

