

**WATSON FRAC SAND PROJECT  
EVALUATION SURVEY & SAMPLING  
REPORT**



Map 105A02

**095 803**

**Watson Lake Mining District**

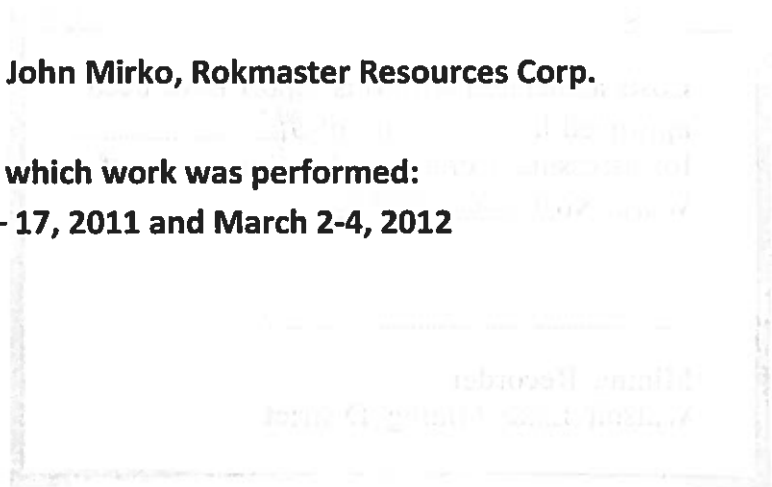
Placer Claim	P49878	Alaska	Timothy A. Young
Lease to Prospect	IL00043	Alaska 1	Adam Murphy
Lease to Prospect	IL00044	Alaska 2	Tetyana Gusyeva
Lease to Prospect	IL00045	Alaska 3	Shaun Maskerine
Lease to Prospect	IL00046	LRE 1	John Mirko
Lease to Prospect	IL00047	LRE 2	Seamus Young
Lease to Prospect	IL00048	LRE 3	Sedley Cook
Lease to Prospect	IL00049	LRE 4	Sidney McLeod
Lease to Prospect	IL00050	LRW 1	Timothy A. Young
Lease to Prospect	IL00051	LRW 2	Warren Mirko

**Property Location – Latitude 60 00.300 Longitude -128 35.650**

**Authors: Jack Denny and Luis Igreda, P. Geo, March 21, 2012**

**Operator Supervisor: John Mirko, Rokmaster Resources Corp.**

**Dates on which work was performed:  
August 13 – 17, 2011 and March 2-4, 2012**



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## **Introduction**

The purpose of the program was to conduct a preliminary assessment and prospecting of the Company's 1 placer claim and 9 placer leases located in the Watson Lake area. The mineral claims cover prospective quartzite sand zones. Based on that preliminary work, Rokmaster Resources Corp. has determined that several of the properties meet the criteria for raw silica sources that could potentially be used in the production of frac sands.

Sand is used as a proppant to hold open fractures after hydraulic fracturing is done in the well-bore-holes in shale-gas deposits. As development of shale-gas resources continues, increasing volumes of frac sand will be required.

The current program was designed to test the potential for developing a frac sand deposit. The samples were also analyzed by ICP and fire assayed to indicate potential for placer gold content. Prior to staking, investigations were made to determine the proper form of title to acquire, for an investigation, into the potential of developing a frac sand deposit by testing some of the large sand benches near the Liard River. The program was financed by Rokmaster Resources Corp. and the underlying Quartz Claim holder was notified of the program.

A relatively random sample was collected from each lease to prospect in order to give a wide distribution of results. The pits were dug to a depth below the vegetation soil influence where the sand color became cleaner. Each sample was placed in either a plastic five gallon bucket, large poly sample bags or 100L garbage cans which were marked with a felt pen.

## The Property

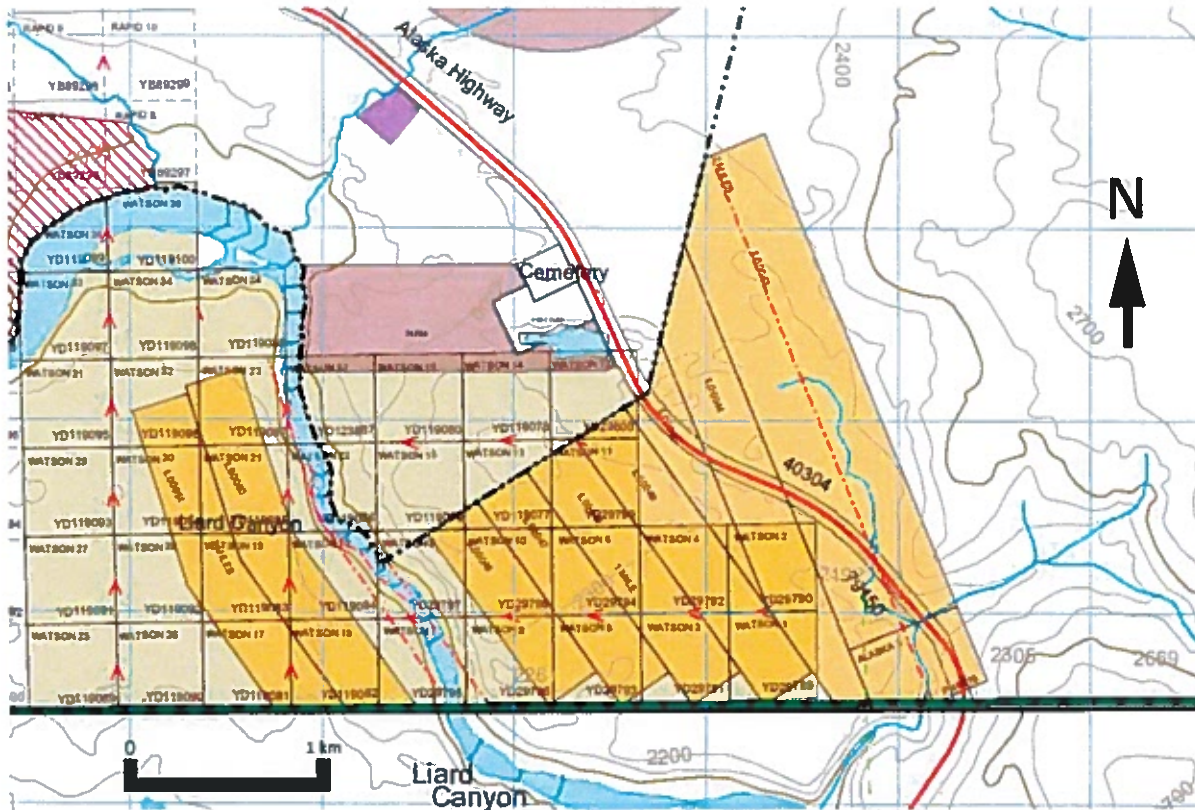
### Map 105A02

#### Watson Lake Mining District - Yukon Territory

	Grant	Name	Owner	Operator
Placer Claim	P49878	Alaska	Timothy A. Young	Rokmaster
Lease to Prospect	IL00043	Alaska 1	Adam Murphy	Rokmaster
Lease to Prospect	IL00044	Alaska 2	Tetyana Gusyeva	Rokmaster
Lease to Prospect	IL00045	Alaska 3	Shaun Maskerine	Rokmaster
Lease to Prospect	IL00046	LRE 1	John Mirko	Rokmaster
Lease to Prospect	IL00047	LRE 2	Seamus Young	Rokmaster
Lease to Prospect	IL00048	LRE 3	Sedley Cook	Rokmaster
Lease to Prospect	IL00049	LRE 4	Sidney McLeod	Rokmaster
Lease to Prospect	IL00050	LRW 1	Timothy A. Young	Rokmaster
Lease to Prospect	IL00051	LRW 2	Warren Mirko	Rokmaster

# Watson Frac Sand Project Claim Map

WATSON FRAC SAND PROJECT  
Claim Map  
Map 105A02  
Watson Lake Mining District



## History

There is one Minfile occurrence on the property, 105A 005 Watson, which refers to a hard-rock Drilled Prospect. Of significance to our study is the fact that sandy material is reported to 44.5 meters, where a drill hole was abandoned. (Assessment Report 093892 by R. Chow)

Open File 2005 – 6 which is Local Scale Biophysical Mapping for Integrated Resource Management, Watson Lake 14-160(NTS 105A/2), Yukon, by P.S. Lipovsky and K. McKenna applies to the area and mentions large sand banks.

There is no apparent record of anyone investigating frac sand potential in this area.

## Data

### Sampling

At least one relatively random sample was collected from each lease to prospect in order to give a wide distribution of results. Selection of the sample sites involved digging a hole to see if the material was appropriate to be worth sampling and included refilling the un-sampled prospect holes.

After sampling, each resulting hole was at least one cubic meter. The sampling was done by hand with shovels and after each sample was extracted the hole was filled and the ground was smoothed over. The pits were dug to a depth below the vegetable soil influence where the sand color became cleaner. Each sample was placed in either a plastic five gallon bucket or a large poly sample bag which were marked with a felt pen.

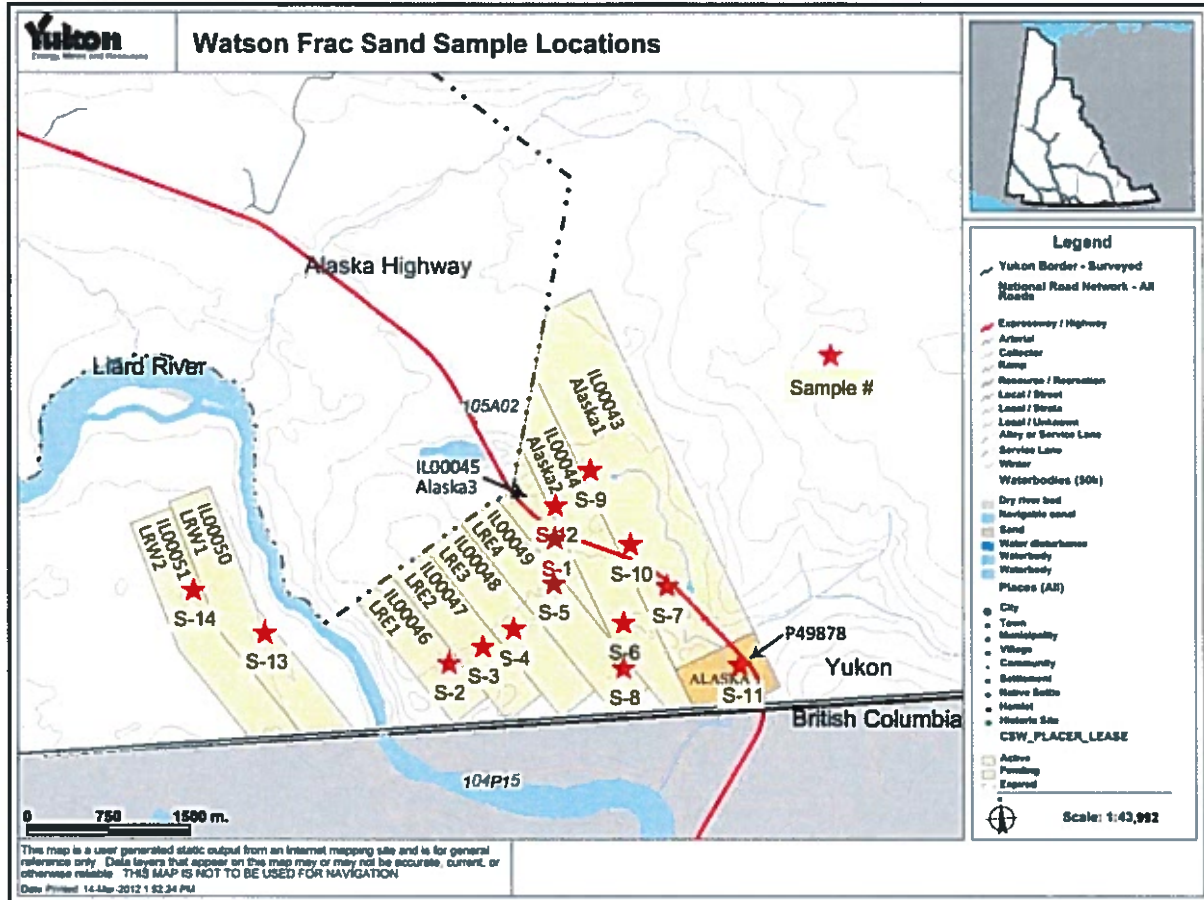
Samples S-11 and S-12 were larger and were collected into large 100L plastic garbage containers. Sample locations are listed in NAD 83 Zone 9N. Locations and elevations were determined with a hand-held Garmin Map 76CSx (depths are in meters). Remarks are a rough description from the surface down to the bottom of the hole where the sample was collected followed by the number of the lease to prospect from which the sample was obtained.

Samples S-13 and S-14 were from the South side of the Liard River and were collected in a later (March 2012) phase of sampling. These samples were each collected in a large garbage container and do not have testing or assaying results as of the time of this report.

Sample Descriptions:

Sample	Easting	Northing	Elevation	Depth	Remarks
S-1	524097	6652503	673m	1.1	soil 0.25m, with some brown soil and dirty sand, fine grained white sand, IL00045
S-2	523216	6651908	680m	1.2	soil 0.25m, dirty sand, white sand fine grained, IL00046
S-3	523405	6651927	678m	1.2	brown soil 0.20m, with dirty sand, fine to med. coarse white sand, IL00047
S-4	523710	6652117	675m	1.4	soil 0.40m, with dirty sand and quartz pebbles, fine white sand with minor coarse sand, IL00048
S-5	523986	6652451	681m	1.2	soil 0.40m, with dirty sand, white sand fine to med. coarse, IL00049
S-6	524454	6652148	673m	1.2	soil 0.30m, with dirty sand, white fine grained sand IL00044
S-7	524661	6652309	670m	1.2	soil 0.30m, with dirty sand and clay, fine grained white sand, IL0043
S-8	524506	6651796	668m	1.2	soil 0.25m, dirty sand, fine grained white sand IL00044
S-9	524265	6653249	679m	1.2	soil 0.30m, with dirty sand, fine grained white sand IL00043
S-10	524658	6652618	669m	1.5	soil 0.40m, with dirty sand, fine grained grayish-white sand, IL00043
S-11	525274	6651743	664m	1.3	soil 0.25m, with dirty sand, fine grained white sand, P9878
S-12	523812	6653087	682m	1.2	soil 0.25m, with dirty sand and clays, fine grained white sand, IL00045
S-13	521808	6652246	658m	1.2	soil 0.20m, with dirty sand and clay, fine grained white sand, IL00050
S-14	521405	6652782	660m	1.2	soil 0.30m, gravel to 0.6m, fine grained white sand, IL00051

## Watson Frac Sand Project Sample Location Map



### Assaying

There was a small representative portion of each sample sent to Acme Labs for analysis by their 1D, 4A and fire assay methods (see appendix "A" for results). Sample prep was P200 which is drying (60 degrees C) and then pulverizing until 85% passes through a 200 mesh screen for each 250 g. The 1D method used aqua-regia digestion followed by ICP-ES analysis of 0.5 grams. The 4A method used LiBO<sub>2</sub>/LiB<sub>4</sub>O<sub>7</sub> fusion followed by ICP-ES analysis of 0.2 grams. The fire assay was Au, Pt and Pd analysis by ICP-ES of 30 grams.

## Testing

### Stage 1

The complete samples were shipped to Cape Horn Consulting Ltd. in Nakusp B.C. The samples were individually screened and washed to remove any rocks, sticks or other impurities and size the sand.

### Stage 2

A combined, representative sample of the sand from all the initial samples was shipped to Mr. Lee White of Del Sol Industrial Services Inc. This sample was then attrition scrubbed. The process of attrition scrubbing involves the raw, unscreened sand being placed in a static tubular cylinder with a fluted impellor at one end. Water is added to the sand until it becomes a 66% solids mixture and then the impellor is run for ten minutes for each portion of the sample, floating off the lightest portion. The attrition scrubbing process emulates the process used in the wet side of a frac plant post hydrosizing. Options to this procedure are different solids percentage sand washing durations. Prior to sending for analysis the sample was screened to achieve a 40/70 size portion.

Del Sol then sent the final sample splits to Prop Tester's Texas Laboratory for full **ISO 13503-2** analysis on the **#32 40/70 Cut** sand sample (see appendix "B"). That is testing of sands employed as fracturing proppant based upon their ability to meet quality standards described by the American Petroleum Institute (API, 1995) and more recently, by the International Organization for Standardization (ISO, 2006).

### Stage 3

Further recovery sizing and cleaning tests were then conducted on portions of the remaining samples by Cape Horn Consulting Ltd.

## Sample Preparation and Sizing

The sand was first dried using a hotplate and metal pan. A 10 oz sample of each was then weighed out and sifted through 20 to 120 mesh sieves to separate into -20, 20-40, 40-70, and 70-120 grain sizes. Screens were manually agitated for two minutes. 3-4 ounces of sand in the screens each time produced the best results without overloading. Samples were then weighed to determine % composition of grain sizes. All screening and weighing was done dry.



Hotplate used for drying



Test bench

Results of screening

	Oz	-20	20-40	40-70	70-120	finer	comment
Sample	total	oz	oz	oz	oz	oz	
1	10	0.05	5.5	2.4	2.0	0.05	Light colour
2	10	0.1	0.9	1.5	4.9	2.6	brown
3	10	0	1.2	1.6	5.8	1.4	silty
4	10	0.3	3.4	2.3	3.5	0.5	light
5	10	0.05	0.5	2.3	6.1	1.0	dark
6	10	0.5	5.1	2.1	2.0	0.3	light

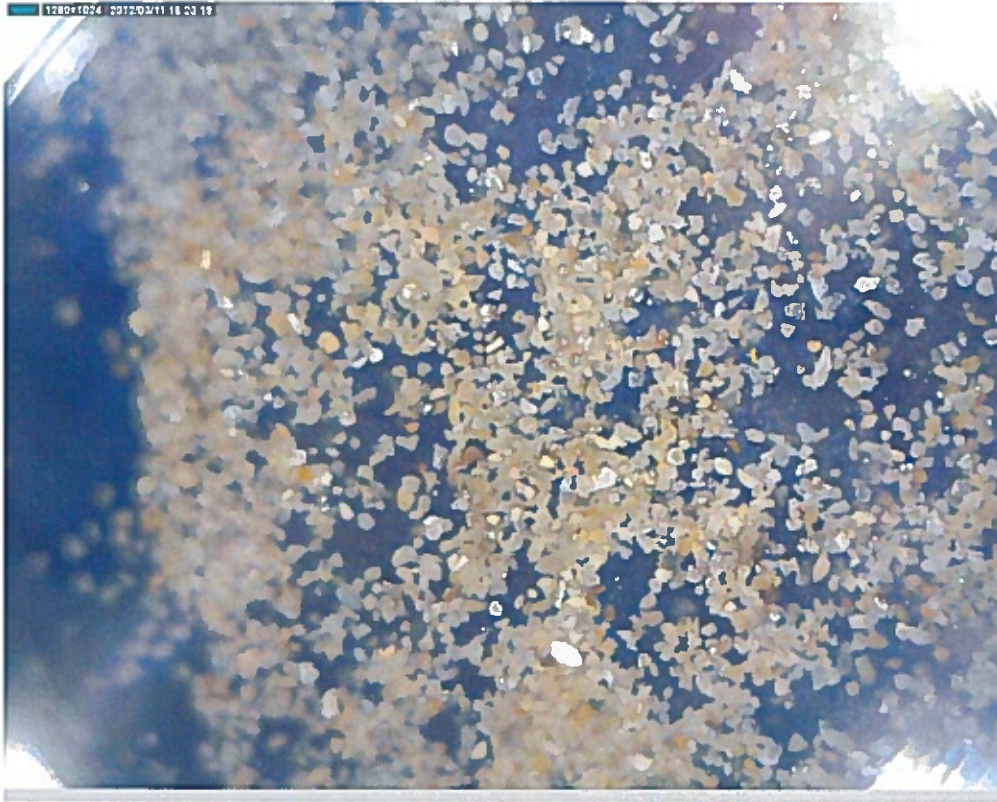
- Screens required regular cleaning to continue functioning.
- Visible separation of darker grains was evident while agitating the screens in a circular fashion.
- Photos of screened sand were taken with a Dino-Lite digital microscope.



20-40 mesh dry screened



40-70 mesh dry screened



70-120 mesh dry screened

### **Rising Current Classification**

Further separation of sand particles using a rising current of water was also attempted.

A one gallon jar sitting in a five gallon bucket with a controlled volume of water entering the bottom of the one gallon jar was used for this purpose. The 40-70 mesh sand from sample # 1 was used for this test since it has a more coarse texture and has 88.9% silica (acme labs).

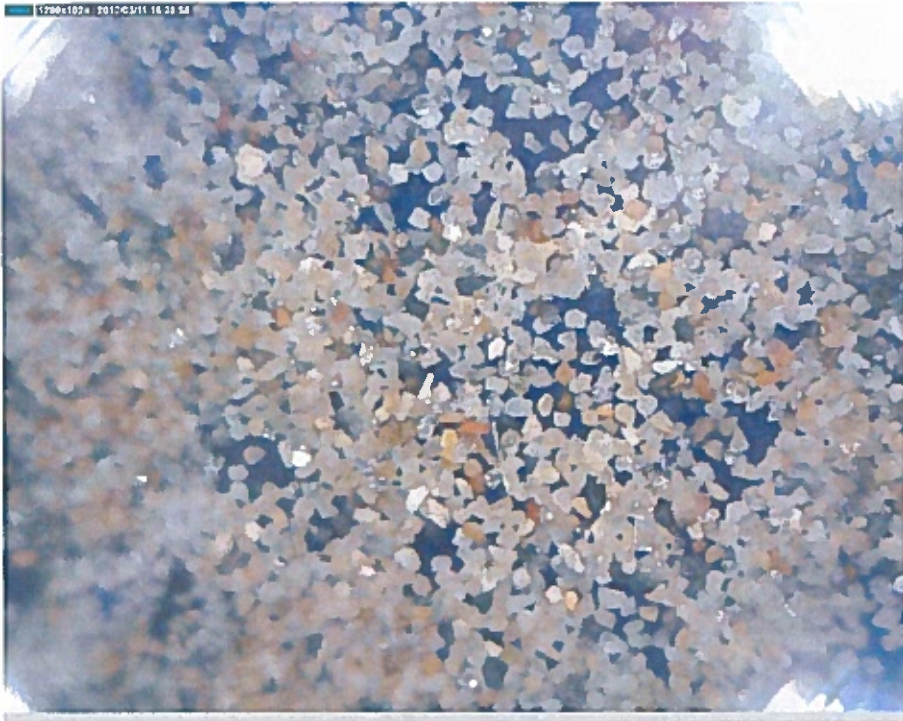
A one oz sample of 40-70 (sample 1) sand was used in the rising current separator.



Rising current classification.

A visible blend of dark and light sand rose to the surface of the jar and overflowed into the bucket.

Dry weight of the overflow sand was 0.1 oz with 0.9 oz of sand remaining in the jar. The 0.1 oz of overflow sand recovered from the bucket was somewhat visually darker than the remaining sand, indicating that some of the impurities weigh less than, or are the same as similar sized silica grains. The remaining sand still had a significant amount of visually evident darker impurities.



40-70 mesh left in rising current classifier



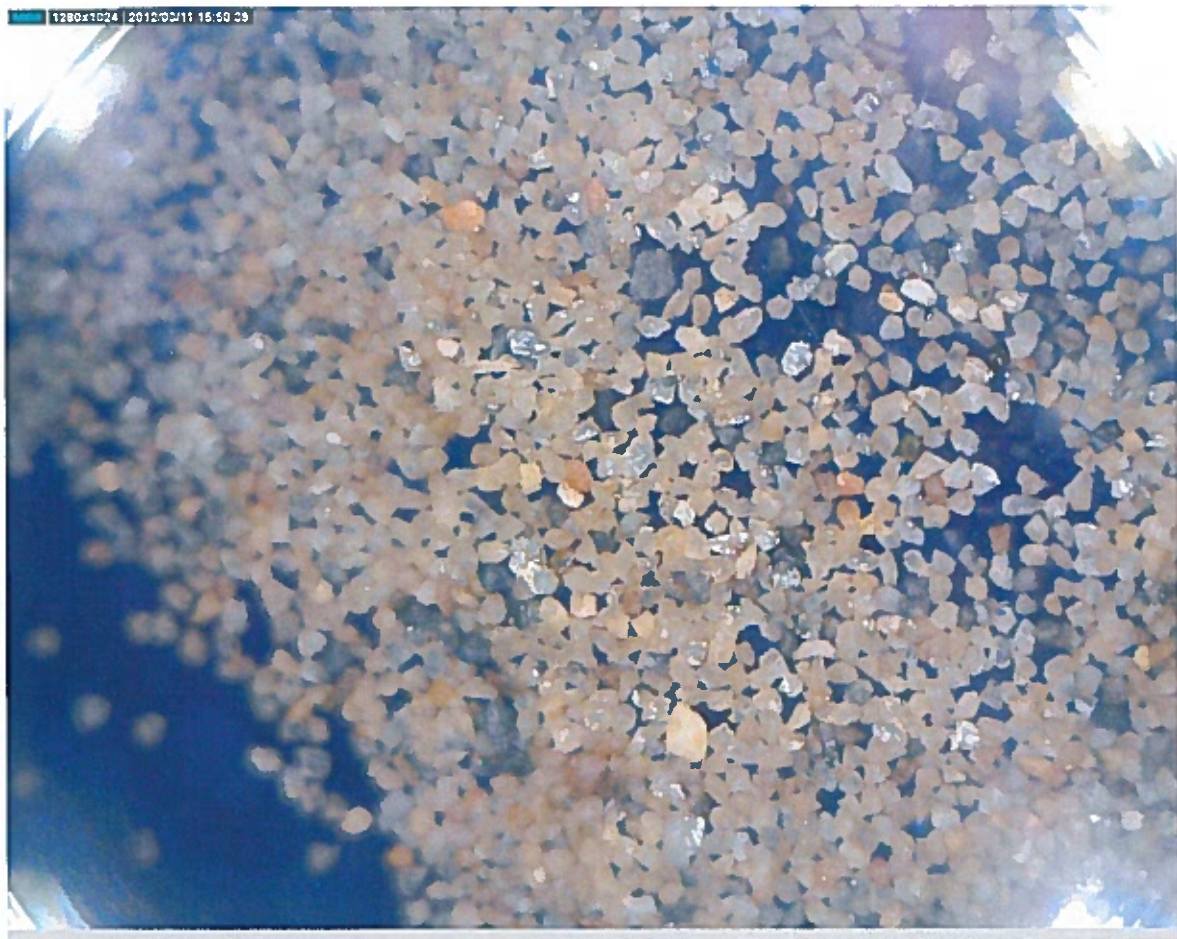
Overflow of rising current classifier 40-70 test

### Attrition Scrubbing

An attempt to attrition scrub the sand was made using 1 oz of washed (using a rising current of water) 40-70 grain. This sand was dried before weighing and placed into a 500ml plastic bottle along with 1 oz of #2 gauge steel shot balls and shaken dry for 10 minutes. The sample was then dry screened and weighed.

A 0.8 oz of the scrubbed material remained sized to 40-70mesh, a 0.05oz pass 70-120 mesh; and 0.15oz of fines were produced. This 0.8 oz of remaining 40-70 mesh material was then washed through a 70 mesh screen and re-dried for examination and photographing.

The scrubbed-washed 40-70 mesh sand is visually more uniform and has visually less impurities than before scrubbing.

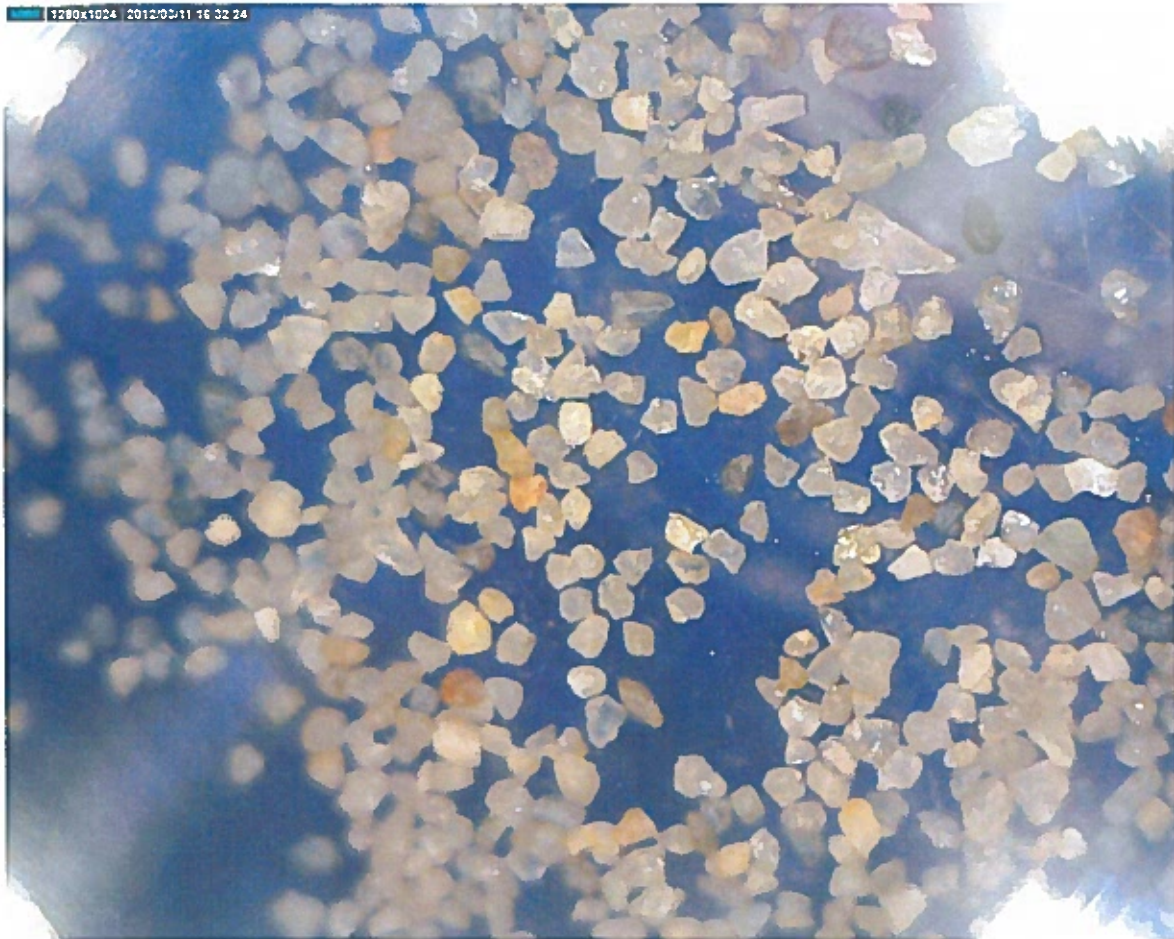


40-70 mesh washed and attrition scrubbed

A 1 oz sample of 20-40 mesh dry screened sand from sample #1 was dry attrition scrubbed using 1 oz of #2 gauge steel balls in a 500ml plastic bottle manually shaken for 10 minutes to compare results.

After scrubbing , 0.6 oz of 20-40 mesh grain remained. A 0.3 oz of 40-70 mesh was produced along with 0.1 oz of 70-140 mesh and fines.

These three sample sizes were washed, dried and photographed.



20-40 mesh dry screened and attrition scrubbed



40-70 mesh created from attrition of 20-40 sand



Holes were dug to below any signs of vegetation and surface discoloring before it was determined the location was suitable for sampling.



After sampling the holes were filled and the surface smoothed.



After the sand dries, it becomes even whiter.

## Conclusions and Recommendations

The program of testing proved that the property contains a significant amount of fine grained sand, much of which is the properly sized material to fit the 20/40, 40/70, 100/150 mesh requirements for frac sand. Ideally, frac sand is composed predominantly of rounded quartzite of the desired size fraction.

The sand tested passes most tests and qualifies as 3k frac grade. That means it has the correct amount of fines after a 3000 psi crush test. There are still difficulties to overcome. The combined sample failed the roundness test so further research may discover a process for refining or sorting for roundness or sections of the property may fit this requirement.

The combined sample also failed the acid solubility test, but after looking at the assay results, selecting areas of higher silica ( $\text{Si O}_2$ ) content could resolve that problem. The samples with higher silica contain considerably lower percentages of calcium, barium, iron and other impurities and if those higher silica content areas can be separated, there may not be an acid solubility problem. Another solution or process which could be added is washing the material and removing the heavies, similar to a placer concentrate. That would reduce the barite and could also reduce any other heavy impurities.

The samples tested by assay showed negligible amounts of gold, platinum and palladium. Further, more comprehensive testing will be required including testing to depth should the near surface testing continue to show signs of success. Testing to depth in the best areas will give a better idea of potential volumes.

Other things which have been learned, particularly with the testing by Doug Seaton, are all sand samples became visually cleaner (less dark particles) after attrition scrubbing and washing.

- Aggressive attrition scrubbing reduces a significant amount of the silica particles in size (40% size reduction after 10min scrubbing the 20-40 mesh sample) and promotes roundness (sphericity).
- Aggressive scrubbing also reduces the amount of impurities in the sand.

Coarse material is needed to aggressively scrub silica particles without creating excess unusable fines.

- Further testing of attrition scrubbing methods is needed to maximize the output product.
- Further testing is needed to discover a method for further rounding the sand grains to meet sphericity requirements of ISO testing standards.

A higher degree of crush test and acid solubility performance than reported by Del Sol may be achieved by more aggressive attrition scrubbing. This is possible when working with a coarse material.

Other methods such as using a spiral classifier to remove impurities have yet to be tried.

A porosity test should be conducted on a clean and scrubbed sample to determine if the Watson sand deposit meets percolation specifications for gas and oil despite its (the sands) angular nature.

The plastic screens plug up and require more frequent cleaning than the brass ones.

## **Cost Statements**

There is a single cost statement for the entire program plus individual cost statements for each of the placer leases and the placer claim which assign the appropriate portion to each title.

### **Sampling Sample collection NE of the Laird River**

John Mirko (Supervisor) Aug. 13, 14, 15 - 3 days @ \$700/day	\$2,100.00
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Doug Seaton (Prospector) Aug. 13, 14, 15, 16, 17 - 5 days @ \$600/day	\$3,000.00
Luis Igreda (Geologist) Aug. 14, 15, 16, 17 - 4 days @ 800/day	\$3,200.00
Jack Denny prospector Aug. 14, 15, 16, 17 - 4 days @ \$500/day	\$2,000.00
Sample shipping and delivery - 1,923 km Watson Lake to Nakusp, BC	\$1,216.64
Sample processing and cleaning	\$1,006.86
Sample Testing (Del Sol Industrial Services Cypress, Texas)	\$3,401.21
Analysis	<u>\$574.30</u>
<b>Subtotal</b>	<b>\$16,199.01</b>

**Sample Collection SW of the Liard River**

Crew clearing trail, snowmobiling into site, thawing an area with fires to allow sampling and sampling (March 2012). Equipment included - snowmobiles, shovels, etc.

Iyon Kechica Contracting Ltd.

- Derek Loots plus 3 crew March 2, 3, 4, 2012
- Sample collection, supplies and equipment

**Subtotal** **\$7,313.50**

**Grand Total** **\$22,199.01**

**P49878 Cost Statement**

<u>Sample collection</u>	Portion of work attributed to this claim
John Mirko (Supervisor) Aug. 13, 14, 15 - 3 days @ \$700/day	<u>\$50.00</u>
Doug Seaton (Prospector) Aug. 13, 14, 15, 16, 17 - 5 days @ \$600/day	\$100.00
Luis Igreda (Geologist) Aug. 14, 15, 16, 17 - 4 days @ 800/day	\$100.00
Jack Denny prospector Aug. 14, 15, 16, 17 - 4 days @ \$500/day	\$50.00
Sample shipping and delivery - 1,923 km Watson Lake to Nakusp, BC	\$152.08
Sample processing and cleaning	\$125.85
Sample Testing (Del Sol Industrial Services Cypress, Texas)	\$425.15
Analysis	<u>\$71.79</u>
<b>Total</b>	<b>\$1,074.87</b>

**IL00043 Cost Statement**

<u>Sample collection</u>	Portion of work attributed to this <u>claim</u>
John Mirko (Supervisor) Aug. 13, 14, 15 - 3 days @ \$700/day	\$410.00
Doug Seaton (Prospector) Aug. 13, 14, 15, 16, 17 - 5 days @ \$600/day	\$580.00
Luis Igreda (Geologist) Aug. 14, 15, 16, 17 - 4 days @ 800/day	\$620.00
Jack Denny prospector Aug. 14, 15, 16, 17 - 4 days @ \$500/day	<u>\$390.00</u>
<b>Subtotal</b>	<b>\$2,000.00</b>
Sample shipping and delivery - 1,923 km Watson Lake to Nakusp, BC	\$152.08
Sample processing and cleaning	\$125.85
Sample Testing (Del Sol Industrial Services Cypress, Texas)	\$425.15
Analysis	<u>\$71.79</u>
<b>Total</b>	<b>\$2,774.87</b>

**IL00044 Cost Statement**

<u>Sample collection</u>	Portion of work attributed to this <u>claim</u>
John Mirko (Supervisor) Aug. 13, 14, 15 - 3 days @ \$700/day	\$410.00
Doug Seaton (Prospector) Aug. 13, 14, 15, 16, 17 - 5 days @ \$600/day	\$580.00
Luis Igreda (Geologist) Aug. 14, 15, 16, 17 - 4 days @ 800/day	\$620.00
Jack Denny prospector Aug. 14, 15, 16, 17 - 4 days @ \$500/day	<u>\$390.00</u>
<b>Subtotal</b>	<b>\$2,000.00</b>
Sample shipping and delivery - 1,923 km Watson Lake to Nakusp, BC	\$152.08

Sample processing and cleaning	\$125.86
Sample Testing (Del Sol Industrial Services Cypress, Texas)	\$425.16
Analysis	<u>\$71.79</u>
<b>Total</b>	<b>\$2,774.89</b>

**IL00045 Cost Statement**

<u>Sample collection</u>	Portion of work attributed to this <u>claim</u>
John Mirko (Supervisor) Aug. 13, 14, 15 - 3 days @ \$700/day	\$205.00
Doug Seaton (Prospector) Aug. 13, 14, 15, 16, 17 - 5 days @ \$600/day	\$290.00
Luis Igreda (Geologist) Aug. 14, 15, 16, 17 - 4 days @ 800/day	\$310.00
Jack Denny prospector Aug. 14, 15, 16, 17 - 4 days @ \$500/day	<u>\$195.00</u>
<b>Subtotal</b>	<b>\$1,000.00</b>
Sample shipping and delivery - 1,923 km Watson Lake to Nakusp, BC	\$152.08
Sample processing and cleaning	\$125.86
Sample Testing (Del Sol Industrial Services Cypress, Texas)	\$425.15
Analysis	<u>\$71.79</u>
<b>Total</b>	<b>\$1,774.88</b>

**IL00046 Cost Statement**

<u>Sample collection</u>	Portion of work attributed to this <u>claim</u>
John Mirko (Supervisor) Aug. 13, 14, 15 - 3 days @ \$700/day	\$205.00
Doug Seaton (Prospector) Aug. 13, 14, 15, 16, 17 - 5 days @ \$600/day	\$290.00

Luis Igreda (Geologist) Aug. 14, 15, 16, 17 - 4 days @ 800/day	\$310.00
Jack Denny prospector Aug. 14, 15, 16, 17 - 4 days @ \$500/day	<u>\$195.00</u>
<b>Subtotal</b>	<b>\$1,000.00</b>
Sample shipping and delivery - 1,923 km Watson Lake to Nakusp, BC	\$152.08
Sample processing and cleaning	\$125.86
Sample Testing (Del Sol Industrial Services Cypress, Texas)	\$425.15
Analysis	<u>\$71.79</u>
<b>Total</b>	<b>\$1,774.88</b>

**IL00047 Cost Statement**

<u>Sample collection</u>	Portion of work attributed to this <u>claim</u>
John Mirko (Supervisor) Aug. 13, 14, 15 - 3 days @ \$700/day	\$205.00
Doug Seaton (Prospector) Aug. 13, 14, 15, 16, 17 - 5 days @ \$600/day	\$290.00
Luis Igreda (Geologist) Aug. 14, 15, 16, 17 - 4 days @ 800/day	\$310.00
Jack Denny prospector Aug. 14, 15, 16, 17 - 4 days @ \$500/day	<u>\$195.00</u>
<b>Subtotal</b>	<b>\$1,000.00</b>
Sample shipping and delivery - 1,923 km Watson Lake to Nakusp, BC	\$152.08
Sample processing and cleaning	\$125.86
Sample Testing (Del Sol Industrial Services Cypress, Texas)	\$425.15
Analysis	<u>\$71.79</u>
<b>Total</b>	<b>\$1,774.88</b>

**IL00048 Cost Statement**

<u>Sample collection</u>	Portion of work attributed to this <u>claim</u>
John Mirko (Supervisor) Aug. 13, 14, 15 - 3 days @ \$700/day	\$205.00
Doug Seaton (Prospector) Aug. 13, 14, 15, 16, 17 - 5 days @ \$600/day	\$290.00
Luis Igreda (Geologist) Aug. 14, 15, 16, 17 - 4 days @ 800/day	\$310.00
Jack Denny prospector Aug. 14, 15, 16, 17 - 4 days @ \$500/day	<u>\$195.00</u>
<b>Subtotal</b>	<b>\$1,000.00</b>
Sample shipping and delivery - 1,923 km Watson Lake to Nakusp, BC	\$152.08
Sample processing and cleaning	\$125.86
Sample Testing (Del Sol Industrial Services Cypress, Texas)	\$425.15
Analysis	<u>\$71.79</u>
<b>Total</b>	<b>\$1,774.88</b>

**IL00049 Cost Statement**

<u>Sample collection</u>	Portion of work attributed to this <u>claim</u>
John Mirko (Supervisor) Aug. 13, 14, 15 - 3 days @ \$700/day	\$410.00
Doug Seaton (Prospector) Aug. 13, 14, 15, 16, 17 - 5 days @ \$600/day	\$580.00
Luis Igreda (Geologist) Aug. 14, 15, 16, 17 - 4 days @ 800/day	\$620.00
Jack Denny prospector Aug. 14, 15, 16, 17 - 4 days @ \$500/day	<u>\$390.00</u>

<b>Subtotal</b>	<b>\$2,000.00</b>
Sample shipping and delivery - 1,923 km Watson Lake to Nakusp, BC	\$152.08
Sample processing and cleaning	\$125.86
Sample Testing (Del Sol Industrial Services Cypress, Texas)	\$425.15
Analysis	<u>\$71.78</u>
<b>Total</b>	<b>\$2,774.88</b>

**IL00050 Cost Statement**

Sample collection

Portion of work  
attributed to this  
claim

Iyon Kechica Contracting Ltd.

Derek Loots plus 3 crew March 2, 3, 4, 2012

Sample collection, including crew, supplies and equipment \$3,656.75

**IL00051 Cost Statement**

Sample collection

Portion of work  
attributed to this  
claim

Iyon Kechica Contracting Ltd.

Derek Loots plus 3 crew March 2, 3, 4, 2012

Sample collection, including crew, supplies and equipment \$3,656.75

## Statement of Qualifications

Jack Denny

1. Jack Denny of Box 325, Salmo, B.C., VOG 1Z0 certify that:  
I am a professional prospector and I have worked in mining exploration continuously since 1971 with short stints in the mining industry, mostly in British Columbia.

### 2. Education

1971-72 Geology program Selkirk College

1970 + 76 + 87 Chamber of Mines of Eastern BC Prospecting Course

1974 Open Pit Mining, BC Mining School, Rossland BC

1988 BC Dept of Mines Advanced Prospecting Course

Numerous short courses in various aspects of Mining Exploration

3. Experience I am a self employed Prospector and have been since 1975 and I also work as a contract mining explorationist in all aspects of the Exploration Industry for a wide variety of companies.



Jack Denny

**Statement of Qualifications**

I, Luis G. Igreda, P. Geo, do hereby certify that:

1. I am residing at 105 Green Bush Rd, North York, Toronto, Ontario, M2M 1P5
2. I am a graduate with as a Geological Engineer of the National University "San Marcos", Lima Peru in 1972
3. I have worked as a geologist for a total of 38 years since my graduation, both domestically and internationally.
4. My relevant experience is as follows:
  - 1972 - 1993 I have worked as a Mine geologist employed by mining companies in Peru
  - 1995 - 2012 I am self employed and also I work as contract Exploration geologist in several mining / exploration companies including Holmer Gold Mines, Geomaque Explorations, Marathon PGM Explorations, Aurelian Resources, Roca Mines Corp; Kodiak Explorations, Rokmaster Resources.
5. I am member in good standing of the Association of Professional Geoscientists of Ontario (APGO member # 1231)
6. I have visited the property.
7. I am a co-author of this Report with Jack Denny.



Luis G. Igreda, P. Geo

## **Bibliography**

Using Industry Standards As a Way to Predict Sand Performance and Approve Sand Deposits: Is There a Catch 22? Paper Abstract by H.D. Brannon, SPE, and C.J. Stephenson, SPE, BJ Services Company, and E.R. Freeman, SPE, D.A. Anschutz, SPE, J.J. Renkes, SPE, and A.R. Rickards, SPE, PropTester Inc. 2008. Society of Petroleum Engineers

Yukon Assessment Report 093892 by R. Chow

Yukon Minfile Report 105A 005 Watson

# Schedule "A" Assay Certificates



www.acmelab.com

**Client:** Rokmaster Resources Corp.  
910 - 1050 W. Pender St  
Vancouver BC V6E 3S7 Canada

Submitted By: J Merko  
Receiving Lab: Canada-Vancouver  
Received: January 09, 2012  
Report Date: February 03, 2012  
Page: 1 of 2

**CERTIFICATE OF ANALYSIS** VAN12000052.2

**CLIENT JOB INFORMATION**

Project: FRAC SAND  
Shipment ID:  
P O Number: F6001  
Number of Samples: 12

**SAMPLE DISPOSAL**

RTRN-PLP Return

Acme does not accept responsibility for samples left at the laboratory after 90 days without prior written instructions for sample storage or return.

Invoice To: Rokmaster Resources Corp.  
910 - 1050 W. Pender St.  
Vancouver BC V6E 3S7  
Canada

CC:

**SAMPLE PREPARATION AND ANALYTICAL PROCEDURES**

Method Code	Number of Samples	Code Description	Test Wgt (g)	Report Status	Lab
P200	12	Pulverize to 85% passing 200 mesh			VAN
ID01	12	1:1 Aqua Regia digestion ICP-ES analysis	0.5	Completed	VAN
4A	12	LIBOZ/LIB407 fusion ICP-ES analysis	0.2	Completed	VAN
3B02	12	Fire assay fusion Au Pt Pd by ICP-ES	30	Completed	VAN

**ADDITIONAL COMMENTS**

Version 2: 3B02 included.



This report supersedes all previous preliminary and final reports with this the number dated prior to the date on this certificate. Signature indicates final approval, preliminary reports are unsigned and should be used for reference only. All results are considered the confidential property of the client. Acme assumes the liability for actual cost of analysis only. Results apply to samples as submitted. \*\*\* asterisk indicates that an analytical result could not be provided due to unusually high levels of interference from other elements.



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 910 - 1050 W. Pender St.  
 Vancouver BC V6E 3S7 Canada

Project: **FRAC SAND**  
 Report Date: **February 03, 2012**

Page: 2 of 2 Part 1

**CERTIFICATE OF ANALYSIS** VAN12000052.2

Method	Analyte	Unit	MDL	Mo	Cu	Pb	Zn	Ag	Ni	Co	Mn	Fe	As	Au	Th	Sr	Cd	Sb	Bi	V	Ca	P	La
				ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	%	ppm
S-1 RKR	Sand		<1	7	4	18	<0.3	12	3	150	0.85	2	<2	2	9	<0.5	<3	<3	10	0.12	0.019	8	
S-2 RKR	Sand		<1	10	4	31	<0.3	23	5	289	1.40	4	<2	3	89	<0.5	<3	<3	21	2.73	0.041	12	
S-3 RKR	Sand		<1	8	5	18	<0.3	14	5	144	1.08	4	<2	4	9	<0.5	<3	<3	13	0.10	0.022	13	
S-4 RKR	Sand		<1	4	5	15	<0.3	9	3	107	0.81	3	<2	2	8	<0.5	<3	<3	10	0.09	0.022	8	
S-5 RKR	Sand		1	12	4	38	<0.3	27	5	269	1.48	5	<2	<2	97	<0.5	<3	<3	28	3.30	0.037	7	
S-6 RKR	Sand		<1	8	<3	24	<0.3	18	4	184	1.08	5	<2	<2	70	<0.5	<3	<3	17	2.24	0.028	7	
S-7 RKR	Sand		<1	10	3	30	<0.3	26	5	267	1.36	<2	<2	3	79	<0.5	<3	<3	21	2.46	0.039	11	
S-8 RKR	Sand		<1	9	<3	26	<0.3	19	4	200	1.13	2	<2	<2	72	<0.5	<3	<3	17	2.19	0.029	8	
S-9 RKR	Sand		<1	4	<3	12	<0.3	10	4	108	0.73	3	<2	2	7	<0.5	<3	<3	8	0.07	0.018	8	
S-10 RKR	Sand		<1	12	<3	37	<0.3	26	5	246	1.34	4	<2	<2	87	<0.5	<3	<3	26	3.57	0.037	7	
S-11 RKR	Sand		<1	5	4	14	<0.3	11	4	118	0.83	3	<2	2	9	<0.5	<3	<3	8	0.11	0.018	8	
S-12 RKR	Sand		<1	4	3	14	<0.3	11	3	130	0.82	3	<2	2	8	<0.5	<3	<3	9	0.12	0.019	8	

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 Vancouver BC V6E 3S7 Canada

Project: **FRAC SAND**  
 Report Date: **February 03, 2012**

Page: 2 of 2 Part 2

**CERTIFICATE OF ANALYSIS** VAN12000052.2

Method	Analyte	Unit	1D		1D		1D		1D		1D		1D		1D		4A		3B		3B		3B	
			Cr	Mg	Ba	Tl	B	Al	Na	K	W	g	Hg	Tl	Sc	Ga	BiO2	Au	Pt	Pd	ppb	ppb	ppb	ppb
		MOL	ppm	%	ppm	%	ppm	%	ppm	%	ppm	%	ppm	ppm	ppm	ppm	%	ppb	ppb	ppb	ppb	ppb	ppb	ppb
S-1 RKR	Sand		12	0.18	72	0.018	<20	0.39	0.02	0.08	<2	<0.05	<1	<5	<5	<5	88.94	8	<3	<3	<3	<3	<3	
S-2 RKR	Sand		20	0.74	194	0.035	<20	0.66	0.04	0.12	<2	<0.05	<1	<5	<5	<5	73.99	<2	<3	<3	<3	<3	<3	
S-3 RKR	Sand		15	0.22	76	0.021	<20	0.52	0.02	0.10	<2	<0.05	<1	<5	<5	<5	86.18	<2	<3	<3	<3	<3	<3	
S-4 RKR	Sand		10	0.17	75	0.013	<20	0.47	0.02	0.09	<2	<0.05	<1	<5	<5	<5	87.40	<2	<3	<3	<3	<3	<3	
S-5 RKR	Sand		25	0.99	324	0.038	<20	0.82	0.03	0.11	<2	0.08	<1	<5	<5	<5	71.83	<2	<3	<3	<3	<3	<3	
S-6 RKR	Sand		18	0.84	195	0.027	<20	0.49	0.02	0.09	<2	<0.05	<1	<5	<5	<5	79.11	<2	<3	<3	<3	<3	<3	
S-7 RKR	Sand		24	0.74	120	0.034	<20	0.60	0.03	0.10	<2	<0.05	<1	<5	<5	<5	75.07	<2	<3	<3	<3	<3	<3	
S-8 RKR	Sand		17	0.80	195	0.025	<20	0.51	0.03	0.10	<2	<0.05	<1	<5	<5	<5	77.85	2	<3	<3	<3	<3	<3	
S-9 RKR	Sand		10	0.14	70	0.011	<20	0.38	0.02	0.07	<2	<0.05	<1	<5	<5	<5	89.56	<2	<3	<3	<3	<3	<3	
S-10 RKR	Sand		23	0.94	212	0.034	<20	0.59	0.03	0.10	<2	0.08	<1	<5	<5	<5	71.27	<2	<3	<3	<3	<3	<3	
S-11 RKR	Sand		11	0.14	87	0.011	<20	0.35	0.02	0.08	<2	<0.05	<1	<5	<5	<5	88.63	<2	<3	<3	<3	<3	<3	
S-12 RKR	Sand		12	0.17	74	0.016	<20	0.37	0.02	0.08	<2	<0.05	<1	<5	<5	<5	88.73	<2	<3	<3	<3	<3	<3	

This report supersedes all previous preliminary and final reports with the file number stated prior to the date on this certificate. Signature indicates final approval; preliminary reports are unsigned and should be used for reference only.



**QUALITY CONTROL REPORT**

**VAN12000052.2**

Method	Analyte	Unit	1D	1D	1D	1D	1D	1D	1D	1D	1D	1D	1D	1D	1D	4A	3B	3B	3B	
			Cr	Mg	Se	Ti	B	Al	Na	K	W	S	Hg	Tl	Sc	Ge	SiO2	Au	Pt	Pd
			ppm	%	ppm	%	ppm	%	%	%	ppm	%	ppm	ppm	ppm	ppm	%	ppb	ppb	ppb
		MDL	1	0.01	1	0.001	20	0.01	0.01	0.01	2	0.05	1	5	5	0.01	2	3	3	3
<b>Pulp Duplicates</b>																				
S-9 RKR	Sand		10	0.14	70	0.011	<20	0.38	0.02	0.07	<2	<0.05	<1	<5	<5	<5	89.56	<2	<3	<2
REP S-9 RKR	QC																	<2	<3	<2
<b>Reference Materials</b>																				
STD DS8	Standard		118	0.56	281	0.111	<20	0.89	0.09	0.38	<2	0.17	<1	<5	<5	<5				
STD OREAS45CA	Standard		745	0.13	148	0.125	<20	3.89	0.02	0.67	<2	<0.05	<1	<5	44	<5				
STD PD1	Standard																	540	456	563
STD SO-18	Standard																	58.19		
STD SO-18	Standard																	58.08		
STD DS8 Expected			118	0.6045	279	0.113	2.6	0.93	0.0883	0.41	3	0.1679	0.192	5.4	2.3	4.7				
STD OREAS45CA Expected			769	0.1358	164	0.128		3.892	0.0075	0.0717		0.021	0.03	0.07						
STD SO-18 Expected																		58.47		
STD PD1 Expected																		542	456	563
BLK	Blank		<1	<0.01	<1	<0.001	<20	<0.01	<0.01	<0.01	<2	<0.05	<1	<5	<5	<5				
BLK	Blank																	<0.01		
BLK	Blank																	<2	<3	<2
<b>Prep Wash</b>																				
G1	Prep Blank		5	0.54	118	0.111	<20	0.84	0.09	0.42	<2	<0.05	<1	<5	<5	<5	85.58	N.A.	N.A.	N.A.
G1	Prep Blank		5	0.54	118	0.110	<20	0.86	0.08	0.41	<2	<0.05	<1	<5	<5	<5	85.66	N.A.	N.A.	N.A.

The report exceeds that of previous preliminary and final reports with this file number dated prior to the date on this certificate. Signatures indicate final approval. Preliminary reports are unsigned and should be used for reference only.

Schedule "B" Del Sol Proppant Test Report



Qualifying Fluid & Proppant Performance<sup>®</sup>



Prepared For:

Mr. Lee White

**Sample #32 40/70 Cut**

# ISO 13503-2 Analysis

January 5, 2012

**RFA #100-12-01-23-04-D**

## Information:

Sales Contact:

Brandon White

Report Generated by:

Kirk Decker

Technician:

McKenzie Stalter

Pre Job Background:

December 20, 2011 one raw, unprocessed sand sample was delivered Fed Ex to PropTester's Cypress, TX Laboratory from Mr. Lee White. Following reporting the unprocessed sand sample sieve distribution, Mr. White requests full ISO 13503-2 analysis on the **#32 40/70 Cut** sand sample.

### **Color Analysis – Proppant Test Data:**

Proppant test results are referenced against ISO 13503-2 standards and available public data. Classification by color or numerical variance does not imply a level of performance. However, coloring of standard and public data does indicate a specific range of variance of sample test results. The numerical ranges are typical of data variance between laboratories that participate in ISO round robin or performance (e.g. conductivity) evaluation. When limits (e.g. > or <) are used, then only green or red will apply.

### **Conclusions:**

- Del Sol raw sand *as received* contains 77.9% **#32 40/70 Cut** mesh sand within the mass. The mass Median Particle Diameter (MPD) is 0.322 mm. Figure 1
- Del Sol lab generated **#32 40/70 Cut** sample meets all ISO Standards for a quality #32 40/70 mesh fracturing sand except Krumbein Shape Factors and Acid Solubility. Bulk Density and Specific Gravity are similar to that of typical frac grade sands. Figure 2 & Photomicrograph 1
- ISO Krumbein Shapes require average scores of at least 0.6 for Roundness and Sphericity of the grains in addition to  $\leq 1.0\%$  Clusters. The Del Sol lab generated **#32 40/70 Cut** sand grains are not as Round as required and do not meet ISO Standards. Figure 1
- Particle Size Distribution of the Del Sol lab generated **#32 40/70 Cut** is 98.6% in size and meets the ISO Standard. The MPD is 0.307 mm and the *Mean Particle Diameter* is 0.314 mm. This sand sample sieve distribution varies somewhat from that of 40/70 mesh frac sand public data. Figures 2 & 3
- ISO Standard Acid Solubility for this mesh size should not exceed 3.0% by weight in 12/3 HCL/FL @ 150F for 30 minutes. This Del Sol lab generated **#32 40/70 Cut** sand sample is 5.8% soluble in this acid blend and does not meet the ISO Standard. This sample acid solubility exceeds that of public data. Figure 2

- The **ISO Standard Crush** requires that crush properties of a proppant be evaluated at incremental pressures until fines generated are < 10% by weight. For the *Del Sol lab generated #32 40/70 Cut* sample this occurs at 3,000 psi when the sample produces an average of 8.9% fines. Therefore, this **#32 40/70 Cut** sand sample rates as 3k ISO frac grade sand. **Figure 2**
- **pH of Water Extract** test measures the pH influence of proppant to ensure compatibility with frac fluid systems. The pH of this proppant sample in water at pH = 8.74 shows very little change and is benign if representative. This *Del Sol lab generated #32 40/70 Cut* sand proppant should not impact frac fluid chemistry. **Figure 2**

**Figure 1 – Sieve Distribution (as received):**

**Del Sol Sample #32**

Median Particle Diameter **0.322 mm**

Mesh Distribution Mesh Size	Grams by Weight	% Retained by Weight	% Cumulative
6	0.00	0.0	0.0
8	0.00	0.0	0.0
10	0.00	0.0	0.0
12	0.00	0.0	0.0
14	0.00	0.0	0.0
16	0.00	0.0	0.0
18	0.00	0.0	0.0
20	0.12	0.1	0.1
25	0.17	0.2	0.3
30	0.68	0.7	1.0
35	4.67	4.7	5.6
40	10.10	10.1	15.8
45	19.95	20.0	35.7
50	25.54	25.6	61.3
60	21.05	21.1	82.4
70	11.29	11.3	93.7
80	4.03	4.0	97.7
100	1.59	1.6	99.3
120	0.49	0.5	99.8
140	0.13	0.1	99.9
200	0.07	0.1	100.0
pan	0.02	0.0	100.0
Total	99.90	100.0	
%16/30	1.0		
%20/40	15.6		
%30/50	60.3		
%30/60	81.4		
%30/70	92.7		
%40/70	77.9		
%50/140	38.6		
%70/140	6.2		

## Figure 2 - Proppant Test Data:

### Del Sol #32 40/70 Cut

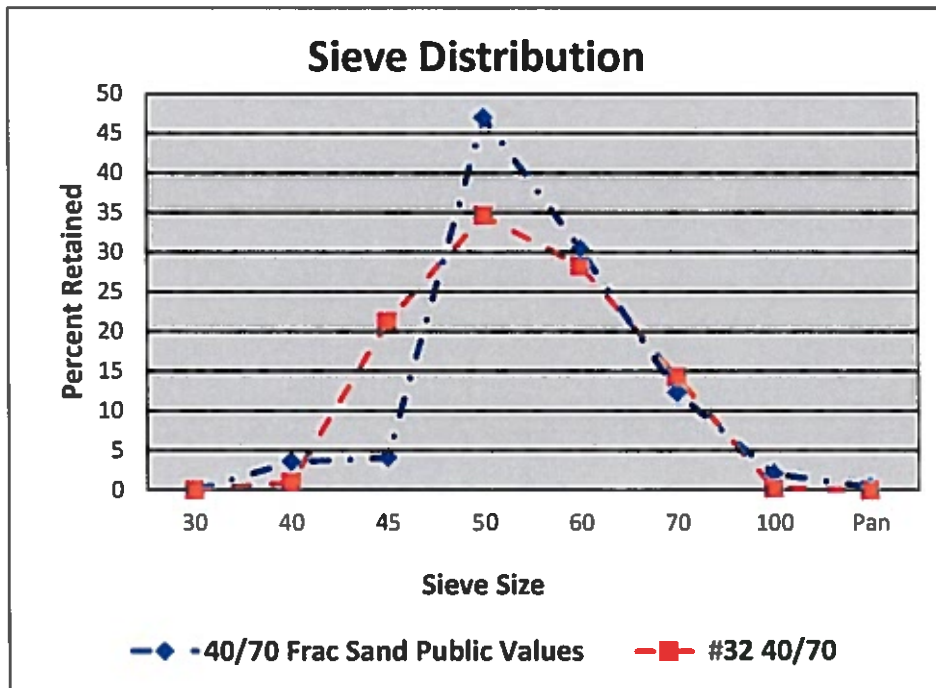
<b>Quick Chek ✓</b>		ISO 13503-2	40/70 Frac Sand Public Values	#32 40/70
Turbidity (NTU)		< 250	36	5
<b>Krumbein Shape Factors</b>				
Roundness		≥ 0.6		0.3
Sphericity		≥ 0.6		0.6
Clusters (%)		≤ 1.0		0
Bulk Density (g/cm <sup>3</sup> )				1.28
Bulk Density (lb/ft <sup>3</sup> )				80.14
Specific Gravity			2.65	2.64
Particle Size Distribution, mm		Mesh size		
	0.600	30	< 0.1	0
	0.425	40		3.6
	0.355	45		4.1
	0.300	50		47.0
	0.250	60		30.4
	0.212	70		12.3
	0.150	100		2.1
	<0.150	Pan	< 1.0	0.4
	Total			100
% In Size		> 90	93.8	98.6
Mean Particle Diameter, mm				0.314
Median Particle Diameter (MPD), mm				0.307
Solubility in 12/3 HCL/HF for 0.5 HR @ 150°F (% Weight Loss)		≤ 3.0	0.4	5.8
pH of Water Extract – Test Fluid				7.56
pH of Water Extract – Test Fluid & Prop				8.74
Settling Rate (ft/min)				16.79
<b>Crush Chek ✓</b>				
ISO Crush Analysis (% Fines) 4lb/ft <sup>2</sup> @ 3,000 psi		≤ 10		8.9
ISO Crush Analysis (% Fines) 4lb/ft <sup>2</sup> @ 4,000 psi		≤ 10		14.2

<b>Sample Correlation</b> 0 to +/- 8.999% Variance From ISO or Published Data	<b>Sample Correlation</b> +/- 9 to 25% Variance From ISO or Published Data	<b>Sample Correlation</b> -25% X > +25% Variance From ISO or Published Data
---	--	---

### Figure 3 – Sieve Distribution:

#### Del Sol #32 40/70 Cut

Sieve Size	40/70 Frac Sand Public Values	#32 40/70
30	0	0.0
40	3.6	1.0
45	4.1	21.3
50	47	34.7
60	30.4	28.3
70	12.3	14.3
100	2.1	0.3
Pan	0.4	0.0



**Photomicrograph 1**

**Del Sol #32 40/70 Cut**



## Testing Definitions & Descriptions

**Turbidity** – A measure to determine the levels of dust, silt, suspended clay, or finely divided inorganic matter levels in fracturing proppants. High turbidity reflects improper proppant manufacturing and/or handling practices. The more often and more aggressively a proppant is handled, the higher the turbidity. Offloading pressures exceeding manufacturer guidelines can have a detrimental effect on the proppant performance. Produced dust can consume oxidative breakers, alter fracturing fluid pH, and/or interfere with crosslinker mechanisms. As a result, higher chemical loadings may be required to control fracturing fluid rheological properties and performance. If fluid rheology is altered, then designed or modeled fracture geometry and conductivity will be altered. A change in conductivity directly correlates to reservoir flow rate.

**Krumbein Shape Factors** – determines proppant roundness and sphericity. Grain roundness is a measure of the relative sharpness of grain corners, or of grain curvature. Particle sphericity is a measure of how closely a proppant particle approaches the shape of a sphere. Charts developed by Krumbein and Sloss in 1963 are the most widely used method of determining shape factors.

**Clusters** – Proppant grains should consist of single, well-rounded particles. During the mining and manufacturing process of proppants, grains can attach to one another causing a cluster. It is recommended by ISO 13503-2 that clusters be limited to less than 1% to be considered suitable for fracturing proppants.

**Bulk Density** – A dry test to gain an estimation of the weight of proppant that will fill a unit volume, and includes both proppant and porosity void volume. This is used to determine the weight of a proppant needed to fill a fracture or a storage tank.

**Specific Gravity** – Also called Apparent Density, it includes internal porosity of a particle as part of its volume. It is measured with a low viscosity fluid that wets the particle surface.

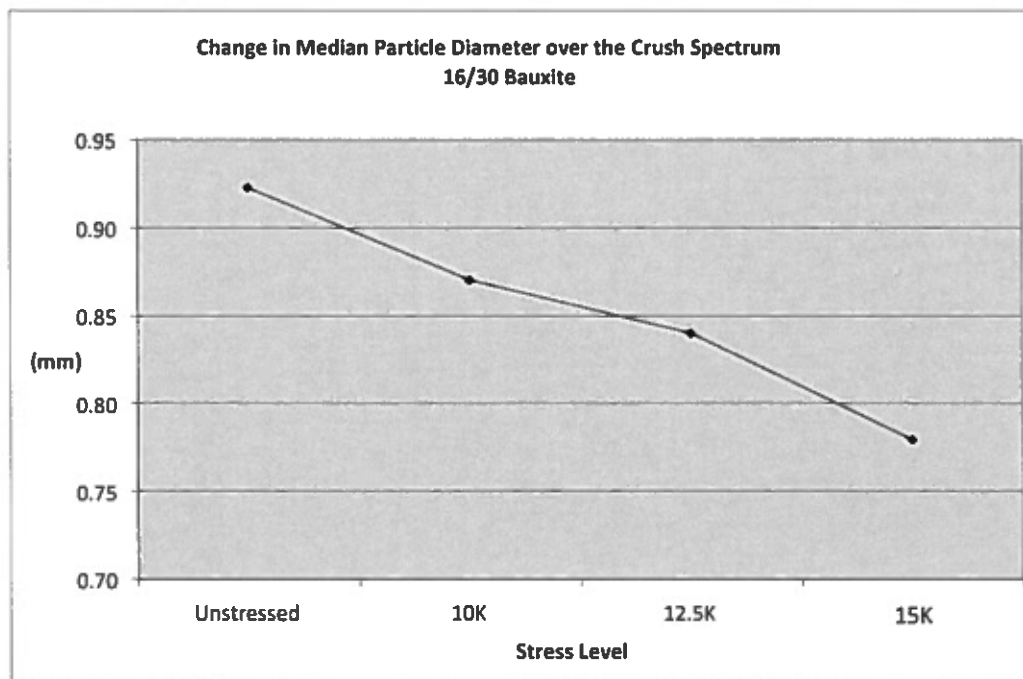
**Sieve Analysis: Particle Size Distribution & Median Particle Diameter** – Also called a sieve analysis, this test determines the particle size distribution of a proppant sample. Calibrated sieves are stacked according to ISO 13503-2 recommended practices and loaded with a pre-measured amount of proppant. The stack is placed in a Ro-Tap sieve shaker for 10 minutes and then the amount on each

sieve is measured and a percent by weight is calculated on each sieve. A minimum of 90 % of the tested proppant sample should fall between the designated sieve sizes. Not over 0.1% of the total tested sample should be larger than the first sieve size and not over 1.0% should fall on the pan. The in-size percent and MPD are calculated which relates directly to propped fracture flow capacity and reservoir productivity.

## Testing Definitions & Descriptions

**ISO Crush Test** – This test is useful for comparing proppant crush resistance and overall strength under varying stresses. A proppant is exposed to varying stress levels and the amount of fines is calculated and compared to manufacturer specifications. Studies by Coulter & Wells (e.g. SPE JPT, June 1972, pp. 643-650) have demonstrated that as little as 5% added fines can reduce propped fracture conductivity by 50%.

A **PT Crush Profile** (see example below) can show graphically how median particle diameter (MPD) can vary with changes in closure stress. Unlike the ISO crush test, the PT Crush Profile uses the entire proppant sample for crushing at each stress, the sample is then sieved to determine particle distribution, and MPD is then calculated. A change in MPD directly correlates to flow capacity and reservoir productivity. *This test, ordered separately, provides a more realistic view of initial proppant flow capacity at reservoir specific stresses.*



## **Testing Definitions & Descriptions**

**Acid Solubility** – The solubility of a proppant in 12-3 hydrochloric-hydrofluoric acid (HCL-HF) is an indication of the amount of undesirable contaminants. Exposing a proppant (specifically gravel pack/frac pack materials) may result in dissolution of part of the proppant, deterioration in propping capabilities, and a reduction in fracture conductivity in the zone contacted by such acid. The loss of fracture conductivity near the wellbore may cause a dramatic reduction in well productivity, as has been demonstrated by Raymond and Binder (JPT, January 1967, Pgs. 120-130).

**Resin Content/Loss on Ignition (LOI)** – This test determines the resin content remaining on the proppant. Resin content is a direct function of the proppants strength and its ability to encapsulate the substrate when exposed to high stress levels. By reducing fines generation and migration, the proppant pack remains clean, allowing maximum well production.

**Resin Coating Efficiency** – Used to determine the percent of uncoated grains in a resin coated proppant sample.

**Unconfined Compressive Strength (UCS)** – Grain-to-grain bonding at specific temperatures over time will develop bond strength that can be measured by using a UCS test. This test directly reflects the proppants ability to bond downhole in order to reduce embedment and control proppant flowback. By reducing embedment and keeping the available proppant in place, fracture width can be maximized.

**pH of Water Extract** – This test reflects the potential chemical impact of a resin coated proppant on the fracturing fluid buffering capacity. This test can be important to fracturing fluid stability during pumping operations when switching from uncoated proppant to curable resin coated proppant. If not enough buffer is utilized, the pH of the fluid can be impacted which in turn can effect crosslinker mechanisms. As a result, higher chemical loadings may be required to control fracturing fluid rheological properties and performance. A proper understanding of the pH effects on the crosslinkers and breakers by the service company is required. If fluid rheology is altered, then designed or modeled fracture geometry and conductivity will be altered. A change in conductivity directly correlates to reservoir production rate.

## TEST PROCEDURES

**PropTester<sup>®</sup>** & ISO test procedures were applied in this Request for Analysis (RFA)

### **Quick Chek** ✓

#### Procedures

Turbidity	ISO 13503-2
Microscopic Exam	ISO 13503-2
Krumbein Shape Factors	
Clusters	
Photomicrographs	
Bulk Density	ISO 13503-2
Specific Gravity	ISO 13503-2
Sieve Analysis	ISO 13503-2
Particle Size Distribution	ISO 13503-2
MPD	PropTester <sup>®</sup>

### **Crush Chek** ✓

#### Procedures

API Crush Test	API RP 56/58/60
ISO Crush Test	ISO 13503-2
PT Crush Profile	PropTester <sup>®</sup>

### **Res Chek** ✓

#### Procedures

% Resin Content, LOI	PropTester <sup>®</sup>
Coating Efficiency %	PropTester <sup>®</sup>
Unconfined Compressive Strength (UCS)	PropTester <sup>®</sup>
pH of Water Extract	PropTester <sup>®</sup>

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