4 January 2017
Americas/United States
Equity Research
Oil & Gas Equipment & Services

Oilfield Services & Equipment

COMMENT

Research Analysts
James Wicklund
214 979 4111
james.wicklund@credit-suisse.com
Jacob Lundberg
212 325 6785
jacob.lundberg@credit-suisse.com
Charles Foote
212 538 8444
charles.foote@credit-suisse.com

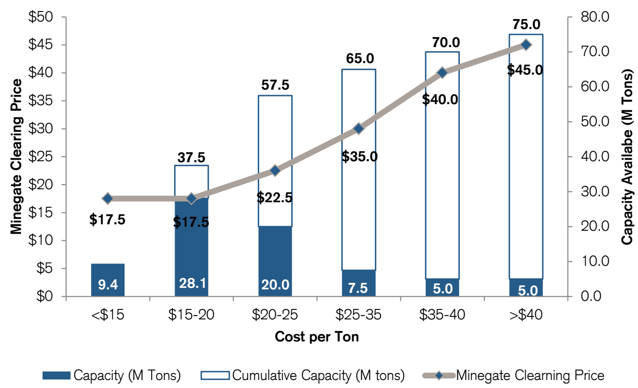
Enter Sandman Part II – Up and To the Right, Just Not As Fast As Before

This note is a follow-up piece to our note published last September, Enter Sandman Part I. If you would like a copy of our sand demand and cost curve model please contact your CS sales coverage or the research team.

- **Momentum Slowing, but Still Moving in the Right Direction.** Nearly everything associated with the sand industry (stocks, total demand, use per well, and recently, even price) improved over the course of 2016. The stock moves and the increase in the amount of sand used per well have been particularly staggering. Nevertheless, at some point momentum will slow. We think the industry has started reaching that point today. We still like the fundamentals of the sand industry, but the hyper share price appreciation of 2016 is very unlikely to be seen again in 2017. On the back of an improved NAM activity outlook (see our note published today), we raise our 2017 / 2018 industry demand estimates to 59.9M tons / 74.4M tons from 50.7M tons / 66.9M tons, respectively.
- **Foot Off the Gas.** There are two reasons why we think demand and price momentum will begin to slow. First, the use of sand per well is beginning to hit diminishing marginal returns. We are big fans of inflecting second derivatives. Second, there is more "low-cost" capacity than we originally estimated. Both of these issues are not thesis killers, but are reasons to be more tempered on the pace of demand and price improvements in out years (in particular 2018).
- **The Most Important Thing.** In this note, we introduce the Credit Suisse All-In Delivered Cost Curve. Our curve attempts to be as comprehensive as possible while considering the range of costs for mining, rail, transload, and trucking (i.e., last-mile). Although the number of cost combinations between these four buckets is infinite, we conclude regional sand is almost always cheaper on an all-in basis (when delivering to Texas) compared with Northern White sand in the current trucking environment. That said, regional sand is nearly sold out and incremental volumes will soon have to come from Northern White mines (a positive for all four public players).
- **Stocks.** As a result of the change in our demand forecast, we increase estimates and target prices for all four of the sand stocks we cover: SLCA, FMSA, HCLP, and SND. (See details on page 8.) In addition, we reiterate our Outperform ratings on all four stocks. Last, due to the stock's impressive move through 2016 and our more tempered sand outlook moving forward, the Credit Suisse Investment Policy Committee has decided to remove SLCA from the US Focus List.

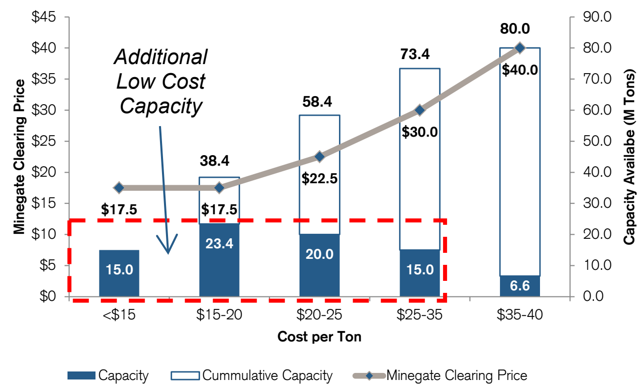
Key Charts

Figure 1: Sept. 2016 Minegate Cost Curve



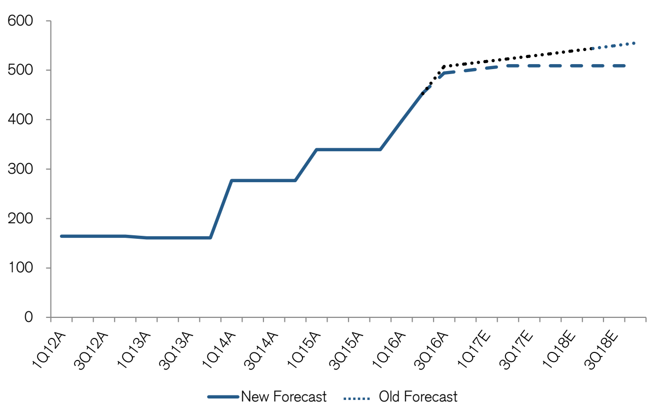
Source: Company data, Credit Suisse estimates, PropTester

Figure 2: Jan. 2017 Minegate Cost Curve



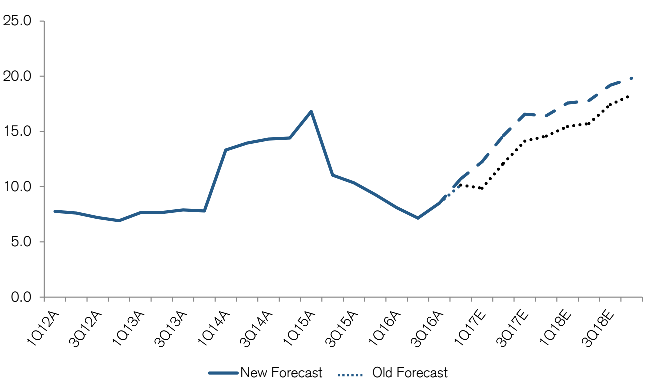
Source: Company data, Credit Suisse estimates, PropTester

Figure 3: Frac Sand Use per Foot



Source: Company data, Credit Suisse estimates, PropTester

Figure 4: Frac Sand Quarterly Demand



Source: Company data, Credit Suisse estimates, PropTester

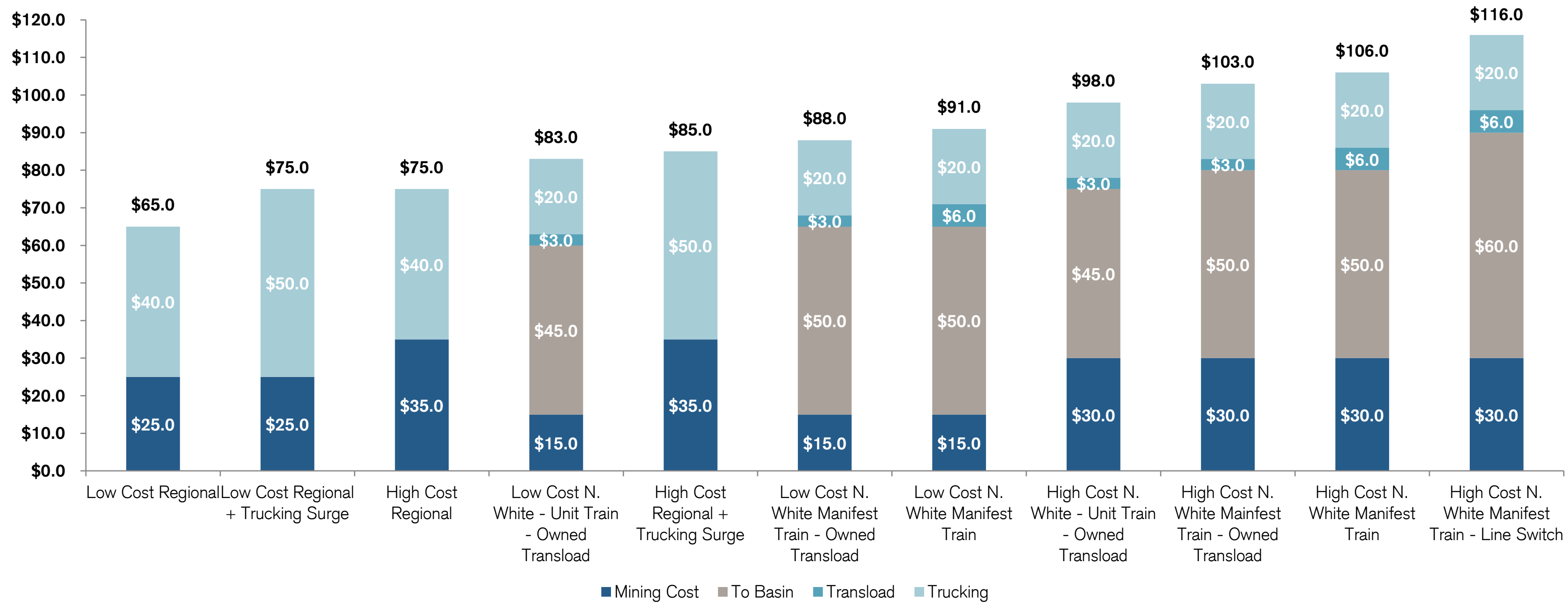
Delivered Cost Curve: Framing the Moving Pieces

As sand miners continue to perfect their craft, and profits at the minegate slowly grind higher, it becomes ever more apparent that the way to earn a profit in the sand industry is through an integrated logistics network. To help investors place the publicly traded frack sand companies in this context, we roll out the Credit Suisse All-In Delivered Cost Curve. (See Figure 5 and 6.) Our curve is based on moving sand to Texas. The curve would look much different if the final destination were the Bakken, DJ Niobrara, etc. (a benefit for Northern White producers located in Wisconsin or Illinois). This is an important point and it demonstrates how much variability there is in the all-in curve.

We break the value chain in to four buckets: mining, to basin (e.g., rail cost), transload, and trucking (e.g., last-mile). Within each bucket there are an infinite number of possibilities for how much each step can cost. In addition, there are numerous combinations of low-cost/high-cost steps in the chain. As a result, we display the most common combinations to give a range of how much it costs to deliver sand to Texas. See Figure 6 for full detail.

We conclude regional sand is almost always cheaper on an all-in basis in today's trucking environment. That said, we think regional sand capacity is very near sold out today. As a result, incremental capacity must come from Northern White mines in 2H17.

Figure 5: Frac Sand Industry All-In Delivered Cost Curve



Source: Credit Suisse estimates

Figure 6: Frac Sand Industry All-In Delivered Cost Table

	Low Cost Regional	Low Cost Regional + Trucking Surge	High Cost Regional	Low Cost N. White - Unit Train - Owned Transload	High Cost Regional + Trucking Surge	Low Cost N. White Manifest Train - Owned Transload	Low Cost N. White Manifest Train	High Cost N. White - Unit Train - Owned Transload	High Cost N. White Manifest Train - Owned Transload	High Cost N. White Manifest Train	High Cost N. White Manifest Train - Line Switch
Mining Cost	$25.0	$25.0	$35.0	$15.0	$35.0	$15.0	$15.0	$30.0	$30.0	$30.0	$30.0
To Basin	$0.0	$0.0	$0.0	$45.0	$0.0	$50.0	$50.0	$45.0	$50.0	$50.0	$60.0
Rail Cost	$0.0	$0.0	$0.0	$50.0	$0.0	$50.0	$50.0	$50.0	$50.0	$50.0	$50.0
UT Discount	$0.0	$0.0	$0.0	($5.0)	$0.0	$0.0	$0.0	($5.0)	$0.0	$0.0	$0.0
Line Switch	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$10.0
Transload	**$0.0**	**$0.0**	**$0.0**	**$3.0**	**$0.0**	**$3.0**	**$6.0**	**$3.0**	**$3.0**	**$6.0**	**$6.0**
Transload Fee	$0.0	$0.0	$0.0	$6.0	$0.0	$6.0	$6.0	$6.0	$6.0	$6.0	$6.0
Owner Discount	$0.0	$0.0	$0.0	($3.0)	$0.0	($3.0)	$0.0	($3.0)	($3.0)	$0.0	$0.0
Trucking	**$40.0**	**$50.0**	**$40.0**	**$20.0**	**$50.0**	**$20.0**	**$20.0**	**$20.0**	**$20.0**	**$20.0**	**$20.0**
All In	**$65.0**	**$75.0**	**$75.0**	**$83.0**	**$85.0**	**$88.0**	**$91.0**	**$98.0**	**$103.0**	**$106.0**	**$116.0**

Source: Credit Suisse estimates

Updating Our Demand Model: Moving Up… But

Since we introduced our sand demand model in September 2016, our rig count and well count forecasts have moved up. These inputs help drive our sand demand model. As a result, our sand demand estimates move up. We now forecast sand demand to be 59.9M tons in 2017 and 74.4M tons in 2018 (up from 50.7M tons and 66.9M tons, in 2017 and 2018, respectively). We remain bullish on sand demand based on a number of secular trends, including: longer laterals, more stages per well, and more sand per foot/stage. The later of these trends has started to become a concern, at least in some basins. At some point, there is likely to be a point of diminishing production return relative to how much sand is pumped downhole.

EOG has consistently been a leader in completion techniques, in particular in the arena of sand. EOG was the first to begin using fine-mesh, regional sand four years ago. Other operators soon followed. On EOG's Q3 earnings call, the company was asked about proppant loadings, we display EOG's response below.

"We're still experimenting there in the Delaware Basin. I might just take you back to the Eagle Ford, where we've operated for so many years. ***We found the point of diminishing returns and as a matter of fact here, our sand loadings for 2016, on average, are slightly less than what it was in 2015.*** *We've got a pretty good handle as to what we anticipate as an optimum sand loading rate there for the Delaware Basin."* – Gary Thomas (President and COO, EOG) [emphasis is ours]

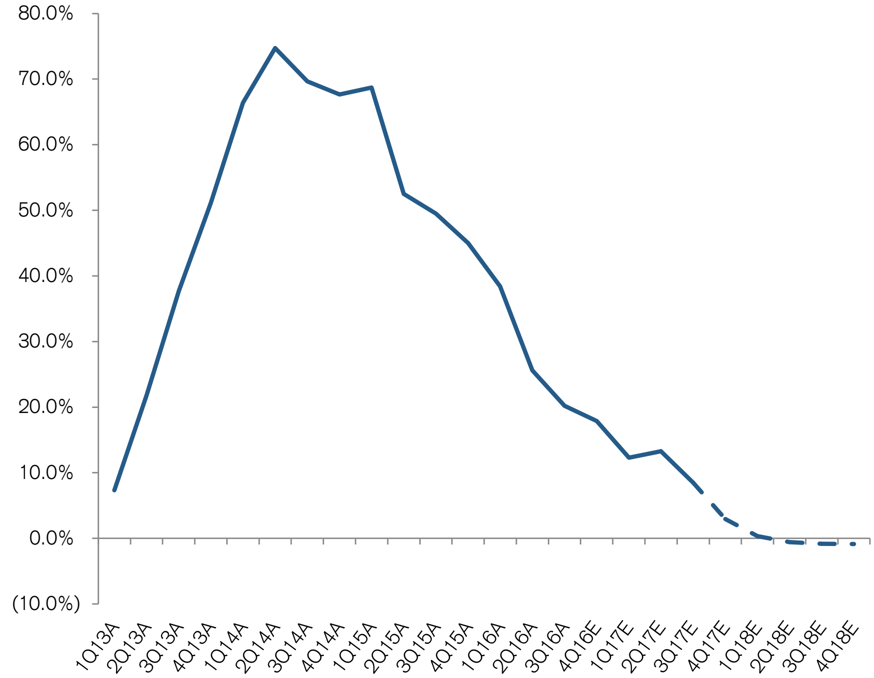
EOG's comments are some of the first that indicate sand use per stage/foot may start to slow soon. In our second quote from EOG (next paragraph), we detail the massive amounts of sand the company is using per foot. Average sand use is still well below 2,000 to 2,800 pounds per foot. The good news for sand demand is that EOG is a leading-edge operator. While EOG may be finding the sweet spot for sand use, many other operators have not and, as a result, will likely play catch-up through 2017.

"We've tested as much as maybe 3,000 pounds per foot, which is probably not going to be applicable across all the plays in every area. It's probably going to average somewhere between 2,000 and 2,800, probably in that range, depending on the zone and where it is. It will be a broad range, depending on the play and where it is within the play." – Billy Helms (CEO, EOG)

In addition to operators reaching points of diminishing returns, rising sand prices will likely inhibit ever-increasing sand use per well. Similar to how the focus on costs drove the shift to regional sand, higher-cost sand will likely force operators to be more creative with how sand is used, also in an effort to save. More sand at higher prices can drastically increase well costs and eat in to IRRs.

All in all, we expect sand use per well to begin to slow down some time in the next 18 months. In Figure 7, we display the second derivative (rolling annual average rate of change) of sand use per well. The rate of change has been increasing at a decreasing rate for some time (e.g., momentum is slowing). This is not surprising given the law of large numbers.

Figure 7: Second Derivative of Sand per Well



Source: Credit Suisse estimates, PropTester, Company data

Regional Sand: Where We Stand

In our conversations with operators and service companies alike, fine-mesh regional sand appears to be closing its performance gap with Northern White sand (even on a long-term basis). In addition, as we discuss in our delivered cost curve section, regional sand is almost always cheaper (in today's environment, when in Texas) on an all-in delivered basis. Based on these two qualities, we think regional sand is here to stay. Luckily for those companies with Northern White sand reserves, the amount of low-cost, fine-grade, regional sand that is reasonably close to drilling activity is limited.

Given the shrinking performance gap and cost advantage of regional sand, the next logical question to ask is: how much more regional sand capacity can come online? This is a difficult question to answer. Coming up with an exact estimate is a futile exercise (hypothetically, an old parking lot could be turned in to a mine; however it would not be low cost or strategically located).

An item that must be seriously considered as well is trucking costs. Trucking costs generally make up more than one-half of the all-in delivered cost of regional sand. Today, the fragmented trucking market and relatively low total sand demand makes for cheap rates. However, as demand increases trucking rates will rise quickly (especially relative to rail rates which are much more stable). Therefore, regional sand capacity expansion is greatly inhibited by distance.

Additional Low-Cost Capacity Hampers Pricing

The amount of "low-cost" capacity in the market appears to be growing. An important point for investors to consider is the age of the frac sand industry. Most of the large public companies were not originally frac sand companies. They are industrial sand providers that made the wise adjustment to pursue frac sand business with the rise of hydraulic fracturing. As a result, it is no surprise they have continuously improved the craft of mining over time. The generational downcycle and subsequent knife-fight for profitability only accelerated these cost-reduction efforts. As a result of these improvements, the amount of low-cost capacity has grown. It will likely continue to do so. To demonstrate, in Figure 8, we display all of the potential low-cost capacity to which the companies we cover have access (assuming full utilization). Keep in mind (1) in our previous industry cost curve, we assumed only 35M tons of low cost capacity and (2) Figure 8 does not take in to account any private company capacity.

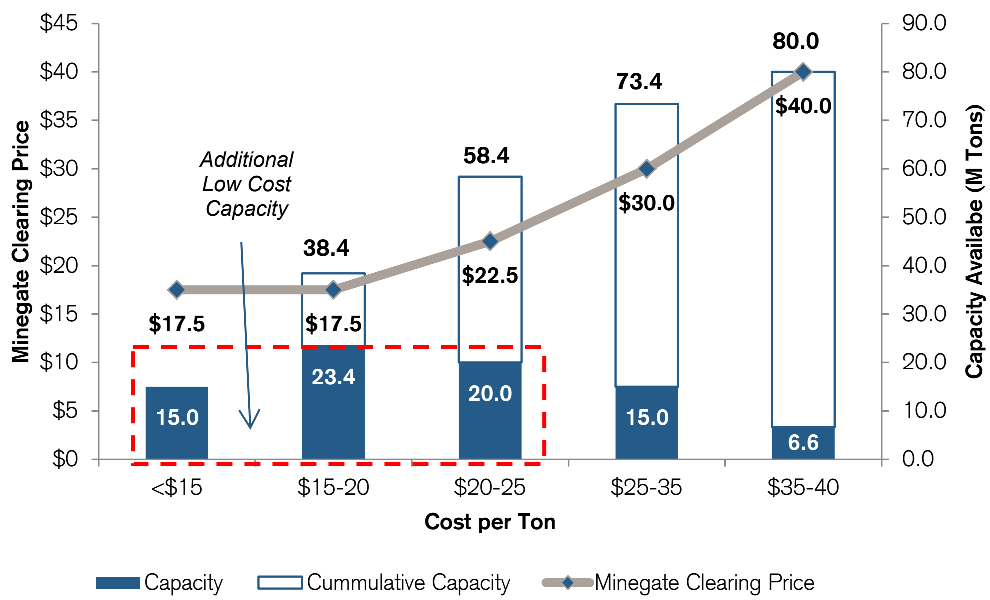
Figure 8: Potential Low-Cost Capacity Among CS Covered Publically Traded Frac Sand Companies

CS Covered Publically Traded							
Operator	**Capacity**	**Working Capacity**	**% Low Cost**	**Idle Capacity**	**% Low Cost**	**Potential Expansion**	**% Low Cost**
U.S. Silica	12.5	12.5	100%	0.0	--	1.0	100%
Hi-Crush Limited Partners	10.4	7.5	100%	2.9	100%	0.5	100%
Farmount Santrol	13.4	9.6	100%	3.8	0%	0.0	--
Smart Sand	4.4	3.3	100%	1.1	100%	4.9	100%
TOTAL	40.7	32.9		7.8		6.4	
Total Potential Low Cost Capacity		38.40					

Source: Company data, Credit Suisse estimates; ****Total Potential Low Cost Capacity assumes Smart Sand does not expand Oakdale.**

Because there is so much low-cost public capacity (and likely even more low-cost private capacity that we simply do not know about), we changed the shape of our cost curve. (See Figure 9.) Compared with our previous curve, we have added 3.4M tons to the low-cost bucket, added 5M tons to the total market (owing to potential low-hanging-fruit expansions) and removed the highest-cost bucket from our curve. The changes result in a slower-than-previously-modeled pricing recovery and relatively lower EBITDA levels at higher sand volumes across the industry.

Figure 9: CS Frac Sand Industry Minegate Cost Curve



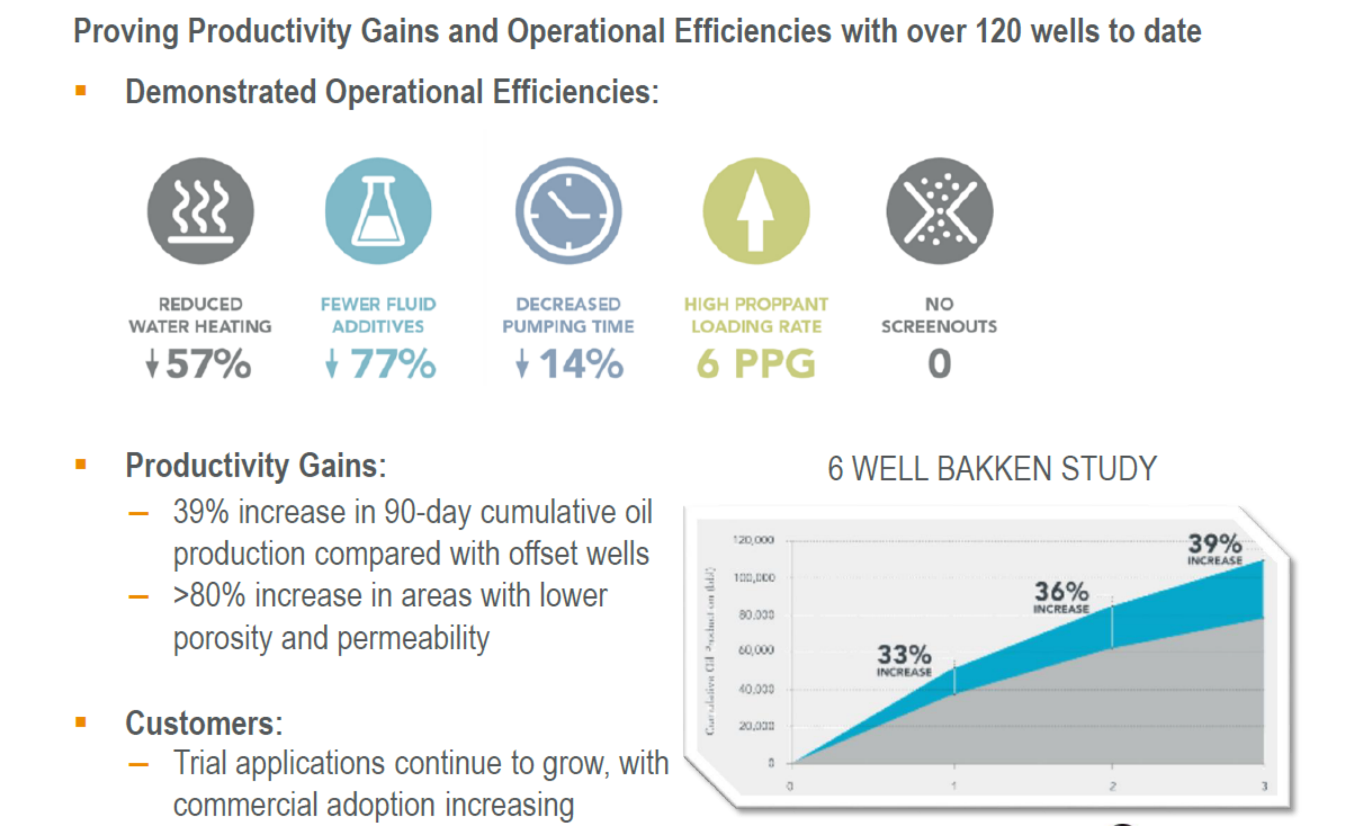
Source: Company data, Credit Suisse estimates

Keep an Eye on Self-Suspending Proppants

We have been relatively negative on value-added proppants (e.g., resin coated sand, ceramics, etc.) due to their higher cost and lack of return on investment (from an operator perspective). Nevertheless, there has been interesting commentary coming from FMSA and OAS, among others, regarding the use of self-suspending proppants (SSP). On its

3Q16 earnings call, OAS noted that the use of enhanced proppant placement and the use of suspended proppant improved production. We, along with our E&P colleagues, looked through completion reports and noticed six OAS wells with a mixture of Northern White sand and SSP completed in the Bakken. While official production data are not yet available, FMSA noted a 39% uplift in cumulative oil production through the first three months of the well's life. (See Figure 10.)

Figure 10: FMSA Six Well Bakken Study SSP Results



Source: Company data

The other element to consider as a potential catalyst to switch to SSP is relative costs. As frac sand prices inflate, there is a chance that SSP adoption could pick up as the potential increased production uplift from SSP comes at a cheaper relative cost (assuming SSP prices do not move with the sand market as a whole) to frac sand.

U.S. Silica (SLCA)

Rating	**OUTPERFORM [V]**
Price (03-Jan-17, US$)	56.62
Target price (12-mth, US$)(from 52.00)	60.00
52-week price range	58.24 - 14.96
Market cap (US$ m)	3,999.46

*Stock ratings are relative to the coverage universe in each analyst's or each team's respective sector.
¹Target price is for 12 months.
[V] = Stock Considered Volatile (see Disclosure Appendix)

Research Analysts

James Wicklund
214 979 4111
james.wicklund@credit-suisse.com

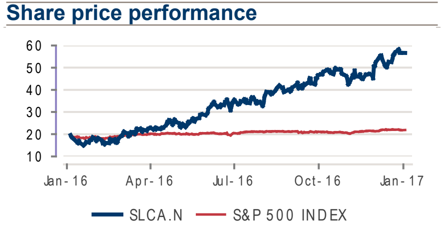
Jacob Lundberg
212 325 6785
jacob.lundberg@credit-suisse.com

Charles Foote
212 538 8444
charles.foote@credit-suisse.com

Reiterate Outperform, Remove From Focus List

- **Profit Taking.** Owing to the stock performance (up ~188% in 2016 vs the OIH up ~25%) and that performance driving a lot of incremental investment in the sector this year, the investment Policy committee is removing SLCA from the Credit Suisse Focus List. While the easy money might have been made, we see enough continued upside to SLCA to reiterate our Outperform rating. SLCA is the leader/first-mover in the sand space. Given the company's leadership position and our still positive outlook on the sand market, we increase our target price to $60 (from $52). We think two items, outside of general industry pick-up, will drive the stock forward in 2017. First, SandBox will continue to take market share. Second, SLCA will make another accretive acquisition in the form of additional sand reserves.
- **Raise.** Our 2017 / 2018 EBITDTA estimates move to $226M / $405M from $167M / $389M.

Share price performance



On 03-Jan-2017 the S&P 500 INDEX closed at 2246.8
Daily Jan04, 2016 - Jan03, 2017, 01/04/16 = US$19.7

Quarterly EPS	Q1	Q2	Q3	Q4
2015A	0.28	0.06	-0.03	-0.20
2016E	-0.19	-0.17	-0.13	-0.10
2017E	0.01	0.20	0.39	0.42

Financial and valuation metrics

Year	12/15A	12/16E	12/17E	12/18E
EPS (CS adj.) (US$)	0.10	-0.57	1.02	2.68
Prev. EPS (US$)	-	-0.58	0.48	2.53
P/E (x)	546.3	-98.7	55.4	21.1
P/E rel. (%)	n.m	-512.4	321.1	137.0
Revenue (US$ m)	643.0	578.3	1,235.2	1,700.3
EBITDA (US$ m)	105.2	37.4	226.1	405.2
OCFPS (US$)	1.14	-0.33	0.80	2.59
P/OCF (x)	16.4	-174.0	70.5	21.9
EV/EBITDA (current)	40.3	113.5	18.8	10.5
Net debt (US$ m)	215	-186	-188	-280
ROIC (%)	4.67	-2.22	8.84	18.80

Number of shares (m)	70.64	IC (current, US$ m)	598.79
BV/share (Next Qtr., US$)	16.9	EV/IC (x)	3.5
Net debt (Next Qtr., US$ m)	-185.8	Dividend (current, US$)	0.25
Net debt/tot eq (Next Qtr.,%)	-14.7	Dividend yield (%)	-

Source: Company data, Thomson Reuters, Credit Suisse estimates

Americas/United States
Oil & Gas Equipment & Services

Fairmount Santrol Holdings, Inc. (FMSA)

Rating	**OUTPERFORM [V]**
Price (30-Dec-16, US$)	11.79
Target price (12-mth, US$)(from 11.00)	13.50
52-week price range	11.85 - 1.23
Market cap (US$ m)	2,627.88

*Stock ratings are relative to the coverage universe in each analyst's or each team's respective sector.
¹Target price is for 12 months.
[V] = Stock Considered Volatile (see Disclosure Appendix)

Research Analysts

James Wicklund
214 979 4111
james.wicklund@credit-suisse.com

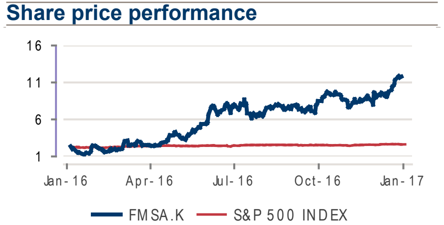
Jacob Lundberg
212 325 6785
jacob.lundberg@credit-suisse.com

Charles Foote
212 538 8444
charles.foote@credit-suisse.com

Updated Demand Forecast: Raising Target Price

- **Moving Forward.** On the back of our new sand demand forecast, we raise our FMSA target price to $13.50 (from $11). FMSA shares dipped below $1.50 in January as many investors feared the company would be forced to restructure its debt via bankruptcy. The company hired a new CFO in March and numerous positive balance sheet actions ensued (multiple equity raises and debt repayments). These actions helped push the stock above $10 by year-end 2016. While still over-levered, its net debt is manageable and the valuation remains compelling. Clearly, it was a transformative year for FMSA.
- **Raise.** We raise our 2017 / 2018 EBITDA estimates to $135M / $327M from $96M / $315M.

Share price performance



On 30-Dec-2016 the S&P 500 INDEX closed at 2246.8
Daily Jan04, 2016 - Dec30, 2016, 01/04/16 = US$2.43

Quarterly EPS	Q1	Q2	Q3	Q4
2015A	0.19	0.02	-0.05	-0.10
2016E	-0.07	-0.17	-0.11	-0.08
2017E	-0.04	-0.00	0.04	0.05

Financial and valuation metrics

Year	12/15A	12/16E	12/17E	12/18E
EPS (CS adj.) (US$)	0.06	-0.44	0.04	0.61
Prev. EPS (US$)	-	-	-0.12	0.54
P/E (x)	195.9	-27.0	301.1	19.4
P/E rel. (%)	n.m	-140.0	n.m	125.8
Revenue (US$ m)	828.7	558.6	1,029.5	1,519.8
EBITDA (US$ m)	138.1	-9.7	134.6	326.8
OCFPS (US$)	1.44	-0.09	0.11	0.55
P/OCF (x)	1.6	-137.2	109.2	21.6
EV/EBITDA (current)	25.8	-365.1	26.4	10.9
Net debt (US$ m)	1,066	658	666	576
ROIC (%)	13.88	-4.63	4.32	16.60

Number of shares (m)	222.89	IC (current, US$ m)	1,005.96
BV/share (Next Qtr., US$)	1.3	EV/IC (x)	3.5
Net debt (Next Qtr., US$ m)	658.5	Dividend (current, US$)	-
Net debt/tot eq (Next Qtr.,%)	243.3	Dividend yield (%)	-

Source: Company data, Thomson Reuters, Credit Suisse estimates

Americas/United States
Oil & Gas Equipment & Services

Smart Sand, Inc. (SND)

Rating	**OUTPERFORM [V]**
Price (03-Jan-17, US$)	17.03
Target price (12-mth, US$)(from 16.00)	18.00
52-week price range	17.03 - 10.77
Market cap (US$ m)	666.15

*Stock ratings are relative to the coverage universe in each analyst's or each team's respective sector.
¹Target price is for 12 months.
[V] = Stock Considered Volatile (see Disclosure Appendix)

Research Analysts

James Wicklund
214 979 4111
james.wicklund@credit-suisse.com

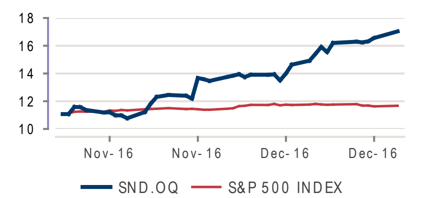
Jacob Lundberg
212 325 6785
jacob.lundberg@credit-suisse.com

Charles Foote
212 538 8444
charles.foote@credit-suisse.com

Updated Demand Forecast: Raising Target Price

- **Discount.** SND should, and does, trade at a discount to other public frac sand companies. Our $18 target price (from $16) is based on 8.5x 2018 EBITDA (relative to 12.0x for SLCA and FMSA and 11.0x for HCLP). SND is working to build a profitable logistics business. The company's prized Oakdale mine is located near two Class I rails. However, to access the Union Pacific line sand must be trucked from Oakdale, which adds cost and erodes profitability. The good news is that SND owns a higher percentage (relative to total capacity) of fine-mesh sand than any other public sand company. This is an advantage that isn't going to go away any time soon.
- **Raise.** We raise our 2017 / 2018 EBITDA estimates to $36M / $88M from $32M / $87M.

Share price performance



On 03-Jan-2017 the S&P 500 INDEX closed at 2246.8
Daily Nov04, 2016 - Jan03, 2017, 11/04/16 = US$10.99

Quarterly EPS	Q1	Q2	Q3	Q4
2015A	0.00	0.02	0.04	0.06
2016E	0.01	-0.07	-0.00	0.44
2017E	0.05	0.09	0.13	0.17

Financial and valuation metrics

Year	12/15A	12/16E	12/17E	12/18E
EPS (CS adj.) (US$)	0.12	0.39	0.44	1.26
Prev. EPS (US$)	-	-	0.37	1.24
P/E (x)	144.8	44.1	39.1	13.5
P/E rel. (%)	741.9	228.7	226.5	87.7
Revenue (US$ m)	47.7	67.2	90.7	155.6
EBITDA (US$ m)	21.9	39.2	35.7	87.8
OCFPS (US$)	0.80	0.67	0.45	1.27
P/OCF (x)		25.5	37.6	13.4
EV/EBITDA (current)	30.5	17.0	18.7	7.6
Net debt (US$ m)	-0	-49	-14	-12
ROIC (%)	337.02	20.16	12.03	24.55

Number of shares (m)	39.12	IC (current, US$ m)	2.57
BV/share (Next Qtr., US$)	3.8	EV/IC (x)	6.1
Net debt (Next Qtr., US$ m)	-49.3	Dividend (current, US$)	-
Net debt/tot eq (Next Qtr.,%)	-32.9	Dividend yield (%)	-

Source: Company data, Thomson Reuters, Credit Suisse estimates

Hi-Crush Partners, LP (HCLP)

Rating	OUTPERFORM [V]
Price (03-Jan-17, US$)	20.70
Target price (12-mth, US$)(from 20.00)	24.00
52-week price range	20.70 - 3.68
Market cap (US$ m)	1,317.93
Adjusted EV	-

*Stock ratings are relative to the coverage universe in each analyst's or each team's respective sector.
¹Target price is for 12 months.
[V] = Stock Considered Volatile (see Disclosure Appendix)

Research Analysts

James Wicklund
214 979 4111
james.wicklund@credit-suisse.com

John Edwards, CFA
713 890 1594
john.edwards@credit-suisse.com

Bhavesh Lodaya
212 325 2337
bhavesh.lodaya@credit-suisse.com

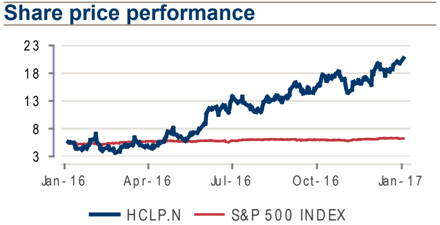
Jacob Lundberg
212 325 6785
jacob.lundberg@credit-suisse.com

Charles Foote
212 538 8444
charles.foote@credit-suisse.com

Updated Demand Forecast: Raising Target Price

- **Turning Defense to Offense.** HCLP completed three equity raises in 2016. The first two were defensive. The third one was offensive. The company did an excellent job taking advantage of what the market gave it. Balance sheet issues are no more. HCLP has a strong logistics network, which will help results as the market turns. Our $24 target price (from $20) is based on 11.0x 2018 EBITDA, a 1.0x discount to SLCA and FMSA. While MLPs typically trade at a premium to c-corps, HCLP doesn't pay a distribution at present and isn't likely to until 2018 (at the earliest). The company is 100% Northern White frac sand with no industrial business or regional sand. Therefore, we believe a discount is warranted. We view HCLP as a potential take-out candidate considering multiple companies are looking for more vertical integration, more backward integration, more production and reserves, and capable logistics. With few additional assets to drop into the MLP, the company's GP would not have a stranded asset issue. Getting bought out at a premium just escalates the recognition of value already there, ergo our Outperform rating.
- **Raise.** We raise our 2017 / 2018 EBITDA estimates to $74M / $166M from $45M / $162M.

Share price performance



On 03-Jan-2017 the S&P 500 INDEX closed at 2246.8
Daily Jan04, 2016 - Jan03, 2017, 01/04/16 = US$5.82

DCF/LP Unit	Q1	Q2	Q3	Q4
2015A	-	-	-	-
2016E	-	-	-	-
2017E	-	-	-	-

Financial and valuation metrics

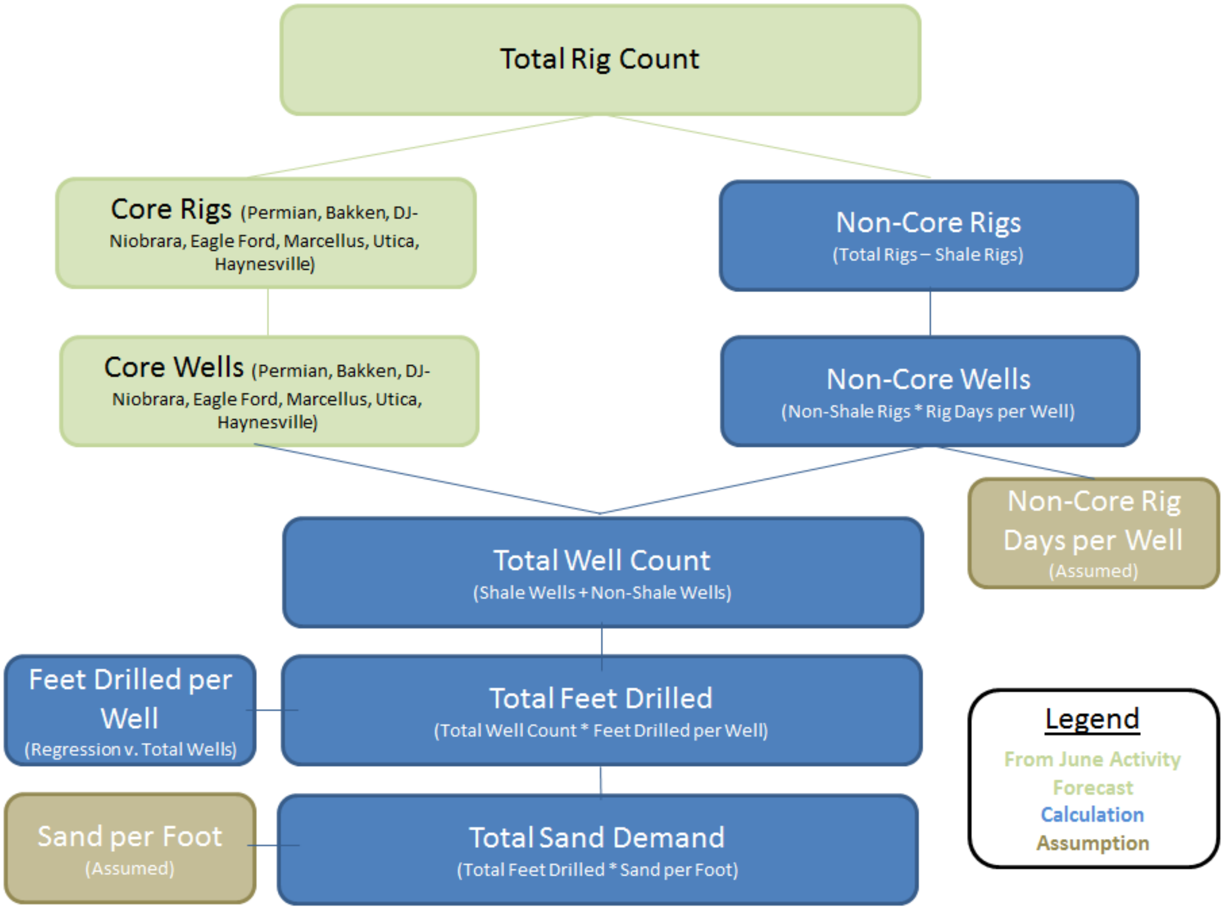
Year	12/15A	12/16E	12/17E	12/18E
EBITDA (US$ m)	57	-49	74	166
Distribution/unit- DPU (US$ m)	0.00	0.00	0.00	0.00
Earnings/unit - EPU (US$)	2.13	-0.94	0.63	2.11
Prev. Earnings/unit - EPU (US$)	-	(0.95)	0.16	2.04
EPU - consensus (US$)	1.42	-0.79	0.13	1.20
Distribution coverage (x)	-	-	-	-
P/DCF (x)	-	-	-	-
Adj. current EV/EBITDA (x)	-	-	-	-

DPU (US$)	0.00	Distribution yld (%)	0.0
Units outstanding (m)	64	GP take (%)	-
Net debt current (US$ m)	187.7	Net debt/EBITDA (x)	-
6-month ADV (000's)	126	Net debt/market cap. (%)	-
Free float (%)	87	Institutional ownership (%)	-

Source: Company data, Thomson Reuters, Credit Suisse estimates

Appendix – Demand Methodology

Figure 11: Credit Suisse Sand Demand Methodology



Source: Credit Suisse estimates

Companies Mentioned *(Price as of 03-Jan-2017)*

EOG Resources (EOG.N, $102.59)
Fairmount Santrol Holdings, Inc. (FMSA.K, $11.79, OUTPERFORM[V], TP $13.5)
Hi-Crush Partners, LP (HCLP.N, $20.7, OUTPERFORM[V], TP $24.0)
Oasis Petroleum (OAS.N, $15.6)
Smart Sand, Inc. (SND.OQ, $17.03, OUTPERFORM[V], TP $18.0)
U.S. Silica (SLCA.N, $56.62, OUTPERFORM[V], TP $60.0)

Disclosure Appendix

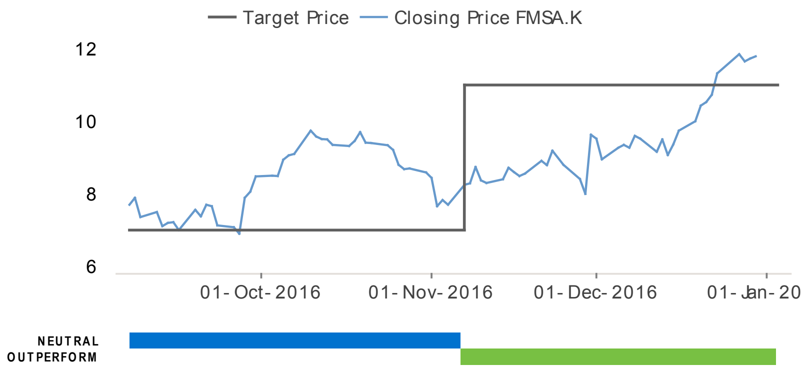
Analyst Certification

James Wicklund and Jacob Lundberg each certify, with respect to the companies or securities that the individual analyzes, that (1) the views expressed in this report accurately reflect his or her personal views about all of the subject companies and securities and (2) no part of his or her compensation was, is or will be directly or indirectly related to the specific recommendations or views expressed in this report.

3-Year Price and Rating History for Fairmount Santrol Holdings, Inc. (FMSA.K)

FMSA.K Date	Closing Price (US$)	Target Price (US$)	Rating
07-Sep-16	7.70	7.00	N *
07-Nov-16	8.25	11.00	O

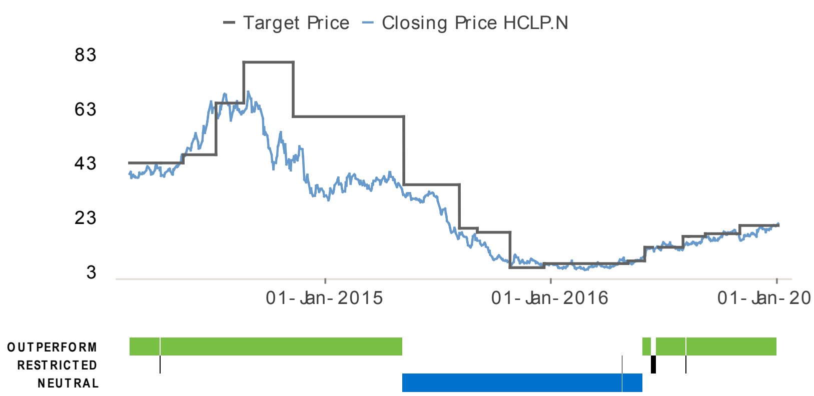
** Asterisk signifies initiation or assumption of coverage.*



3-Year Price and Rating History for Hi-Crush Partners, LP (HCLP.N)

HCLP.N Date	Closing Price (US$)	Target Price (US$)	Rating
18-Feb-14	38.94	43.00	O
08-Apr-14	40.33		R
10-Apr-14	38.25	43.00	O
16-May-14	44.96	46.00	
08-Jul-14	60.30	65.00	
22-Aug-14	61.73	80.00	
10-Nov-14	44.03	60.00	
08-May-15	31.37	35.00	N
06-Aug-15	17.23	19.00	
04-Sep-15	14.44	17.50	
27-Oct-15	5.16	4.50	
21-Dec-15	5.44	6.00	
28-Apr-16	8.14		R
29-Apr-16	7.00	6.00	N
05-May-16	6.51	7.00	
01-Jun-16	9.00	12.00	O
14-Jun-16	11.93		R
23-Jun-16	12.16	12.00	O
02-Aug-16	11.34	16.00	
10-Aug-16	12.87		R
11-Aug-16	12.87	16.00	O
07-Sep-16	16.20	17.00	
02-Nov-16	15.05	20.00	

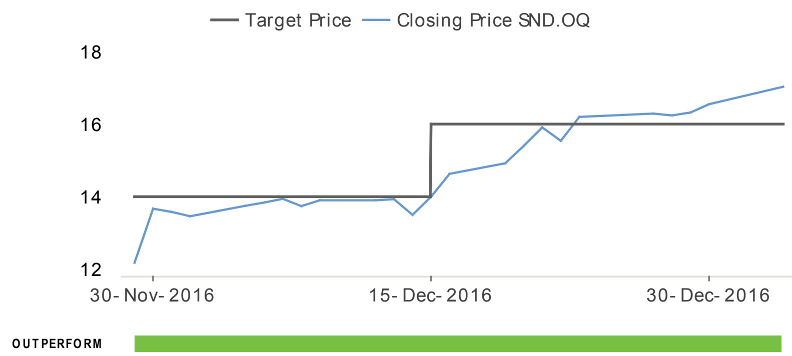
** Asterisk signifies initiation or assumption of coverage.*



3-Year Price and Rating History for Smart Sand, Inc. (SND.OQ)

SND.OQ Date	Closing Price (US$)	Target Price (US$)	Rating
29-Nov-16	12.18	14.00	O *
15-Dec-16	14.00	16.00	

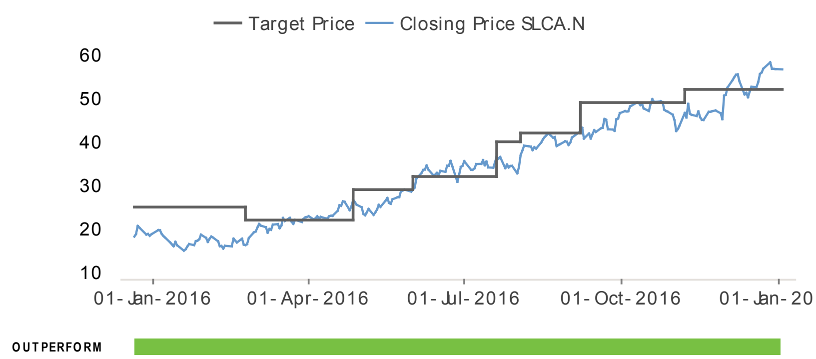
** Asterisk signifies initiation or assumption of coverage.*



3-Year Price and Rating History for U.S. Silica (SLCA.N)

SLCA.N Date	Closing Price (US$)	Target Price (US$)	Rating
21-Dec-15	18.20	25.00	O *
24-Feb-16	16.23	22.00	
27-Apr-16	26.59	29.00	
01-Jun-16	29.02	32.00	
20-Jul-16	36.54	40.00	
03-Aug-16	36.99	42.00	
07-Sep-16	42.51	49.00	
07-Nov-16	46.61	52.00	

** Asterisk signifies initiation or assumption of coverage.*



The analyst(s) responsible for preparing this research report received Compensation that is based upon various factors including Credit Suisse's total revenues, a portion of which are generated by Credit Suisse's investment banking activities

As of December 10, 2012 Analysts' stock rating are defined as follows:

Outperform (O) : The stock's total return is expected to outperform the relevant benchmark* over the next 12 months.
Neutral (N) : The stock's total return is expected to be in line with the relevant benchmark* over the next 12 months.
Underperform (U) : The stock's total return is expected to underperform the relevant benchmark* over the next 12 months.

**Relevant benchmark by region: As of 10th December 2012, Japanese ratings are based on a stock's total return relative to the analyst's coverage universe which consists of all companies covered by the analyst within the relevant sector, with Outperforms representing the most attractive, Neutrals the less attractive, and Underperforms the least attractive investment opportunities. As of 2nd October 2012, U.S. and Canadian as well as European ratings are based on a stock's total return relative to the analyst's coverage universe which consists of all companies covered by the analyst within the relevant sector, with Outperforms representing the most attractive, Neutrals the less attractive, and Underperforms the least attractive investment opportunities. For Latin American and non-Japan Asia stocks, ratings are based on a stock's total return relative to the average total return of the relevant country or regional benchmark; prior to 2nd October 2012 U.S. and Canadian ratings were based on (1) a stock's absolute total return potential to its current share price and (2) the relative attractiveness of a stock's total return potential within an analyst's coverage universe. For Australian and New Zealand stocks, the expected total return (ETR) calculation includes 12-month rolling dividend yield. An Outperform rating is assigned where an ETR is greater than or equal to 7.5%; Underperform where an ETR less than or equal to 5%. A Neutral may be assigned where the ETR is between -5% and 15%. The overlapping rating range allows analysts to assign a rating that puts ETR in the context of associated risks. Prior to 18 May 2015, ETR ranges for Outperform and Underperform ratings did not overlap with Neutral thresholds between 15% and 7.5%, which was in operation from 7 July 2011.*

Restricted (R) : In certain circumstances, Credit Suisse policy and/or applicable law and regulations preclude certain types of communications, including an investment recommendation, during the course of Credit Suisse's engagement in an investment banking transaction and in certain other circumstances.
Not Rated (NR) : Credit Suisse Equity Research does not have an investment rating or view on the stock or any other securities related to the company at this time.
Not Covered (NC) : Credit Suisse Equity Research does not provide ongoing coverage of the company or offer an investment rating or investment view on the equity security of the company or related products.

Volatility Indicator [V] : A stock is defined as volatile if the stock price has moved up or down by 20% or more in a month in at least 8 of the past 24 months or the analyst expects significant volatility going forward.

Analysts' sector weightings are distinct from analysts' stock ratings and are based on the analyst's expectations for the fundamentals and/or valuation of the sector* relative to the group's historic fundamentals and/or valuation:
Overweight : The analyst's expectation for the sector's fundamentals and/or valuation is favorable over the next 12 months.
Market Weight : The analyst's expectation for the sector's fundamentals and/or valuation is neutral over the next 12 months.
Underweight : The analyst's expectation for the sector's fundamentals and/or valuation is cautious over the next 12 months.

**An analyst's coverage sector consists of all companies covered by the analyst within the relevant sector. An analyst may cover multiple sectors.*

Credit Suisse's distribution of stock ratings (and banking clients) is:

Global Ratings Distribution

Rating	Versus universe (%)	Of which banking clients (%)
Outperform/Buy*	44%	(64% banking clients)
Neutral/Hold*	38%	(59% banking clients)
Underperform/Sell*	15%	(53% banking clients)
Restricted	3%	

**For purposes of the NYSE and NASD ratings distribution disclosure requirements, our stock ratings of Outperform, Neutral, and Underperform most closely correspond to Buy, Hold, and Sell, respectively; however, the meanings are not the same, as our stock ratings are determined on a relative basis. (Please refer to definitions above.) An investor's decision to buy or sell a security should be based on investment objectives, current holdings, and other individual factors.*

Important Global Disclosures

Credit Suisse's research reports are made available to clients through our proprietary research portal on CS PLUS. Credit Suisse research products may also be made available through third-party vendors or alternate electronic means as a convenience. Certain research products are only made available through CS PLUS. The services provided by Credit Suisse's analysts to clients may depend on a specific client's preferences regarding the frequency and manner of receiving communications, the client's risk profile and investment, the size and scope of the overall client relationship with the Firm, as well as legal and regulatory constraints. To access all of Credit Suisse's research that you are entitled to receive in the most timely manner, please contact your sales representative or go to https://plus.credit-suisse.com .

Credit Suisse's policy is to update research reports as it deems appropriate, based on developments with the subject company, the sector or the market that may have a material impact on the research views or opinions stated herein.

Credit Suisse's policy is only to publish investment research that is impartial, independent, clear, fair and not misleading. For more detail please refer to Credit Suisse's Policies for Managing Conflicts of Interest in connection with Investment Research: http://www.csfb.com/research-and-analytics/disclaimer/managing_conflicts_disclaimer.html .

Credit Suisse's policy is only to publish investment research that is impartial, independent, clear, fair and not misleading. For more detail please refer to Credit Suisse's Policies for Managing Conflicts of Interest in connection with Investment Research:

Target Price and Rating
Valuation Methodology and Risks: (12 months) for Fairmount Santrol Holdings, Inc. (FMSA.K)

Method: Our 12-month target price for FMSA equates to 12.0x our 2018 EBITDA estimate of $327M. Using our WACC of 11.5% and discounting to 12-months from today gives us a target price of $13.50. Our Outperform rating is based on our positive view of sand industry fundamentals and FMSA's improved liquidity position.

Risk: Risks to our $13.50 target price and Outperform rating include: (1) if the current trend of increasing proppant use per lateral foot were to halt or reverse, (2) if FMSA's customer base were to aggressively build out its own logistics infrastructure, and (3) if customers continue using lower-quality sand in favor of Northern White frac sand or resin coated proppant. Investment risks for FMSA include the following. Of FMSA's shares, 37.17% are owned by American Securities, a private equity firm; American Securities holds two of ten board seats. FMSA operations are subject to the cyclicality of the end markets that it services. FMSA is significantly exposed to the oil and gas industry and thus particularly exposed to the cyclicality of that industry. FMSA's top ten customers accounted for 43% of its 2015 revenues. The company is subject to extensive environmental, health, and safety regulations that carry significant compliance costs. Inhalation of respirable crystalline silica is associated with the lung disease silicosis; related health issues and litigation could have an adverse effect on the business.

Target Price and Rating
Valuation Methodology and Risks: (12 months) for Hi-Crush Partners, LP (HCLP.N)

Method: Our $24 price target is based on a 11.0x our 2018 EBITDA estimate of $166M. Our Outperform rating is based on HCLP's low cost structure and secular growth trends in the proppant space.

Risk: Risks to our $24 target price and Outperform rating for HCLP are a decline in the demand for frac sand as the rig count falls, increased supply of frac sand may negatively impact spot market pricing, the general partner's ability to develop additional mines may impact the partnership's growth, frac sand price volatility, increased regulation and changes to the tax status of MLPs.

Target Price and Rating
Valuation Methodology and Risks: (12 months) for Smart Sand, Inc. (SND.OQ)

Method: Our $18 price target is 8.5x our 2018 EBITDA estimate of $88M. Our Outperform rating is based on upside to our price target from current trading levels.

Risk: Risks to our $18 price target and Outperform rating include: (1) successful build-out of a logistics function, (2) successful re-entry into the spot market, (3) Northern White's continued position as the proppant of choice.

Target Price and Rating
Valuation Methodology and Risks: (12 months) for U.S. Silica (SLCA.N)

Method: Our $60 target price for SLCA is derived from our 12.75x our 2018 EBITDA estimate of $405M discounted back at 9.3% (SLCA's WACC). Our Outperform rating is based on upside to our price target and our relatively positive view of the frac sand market.

Risk: Risks to our $60 price target and Outperform rating include: (1) if SLCA's customer base were to aggressively build out their own logistics infrastructure, and (2) if the current trend of increasing proppant use per lateral foot were to halt or reverse. Investment risks for SLCA include the following. SLCA operations are subject to the cyclicality of the end markets that it services. SLCA is significantly exposed to the oil and gas industry and thus particularly exposed to the cyclicality of that industry. Frac sand could fall out of favor as a proppant in the hydraulic fracturing process in favor of alternatives such as ceramic proppant. SLCA's top ten customers accounted for 52% of its 2013 revenues. The company is subject to extensive environmental, health, and safety regulations that carry significant compliance costs. Inhalation of respirable crystalline silica is associated with the lung disease silicosis; related health issues and litigation could have an adverse effect on the business. During the shale revolution, SLCA has derived a significant portion of its profits from the delivery of sand to the wellsite. SLCA's customers are increasingly building out their own logistics infrastructure (unit cars and transloads), eating into SLCA's historical margin. To the degree this trend continues, SLCA may be unable to show the same level of profitability in the future as over the past few years prior to the current downcycle.

Please refer to the firm's disclosure website at https://rave.credit-suisse.com/disclosures for the definitions of abbreviations typically used in the target price method and risk sections.

See the Companies Mentioned section for full company names

The subject company (HCLP.N, SND.OQ, FMSA.K, SLCA.N, EOG.N, OAS.N) currently is, or was during the 12-month period preceding the date of distribution of this report, a client of Credit Suisse.

Credit Suisse provided investment banking services to the subject company (HCLP.N, SND.OQ, FMSA.K, OAS.N) within the past 12 months.

Credit Suisse has managed or co-managed a public offering of securities for the subject company (HCLP.N, SND.OQ, OAS.N) within the past 12 months.

Credit Suisse has received investment banking related compensation from the subject company (HCLP.N, SND.OQ, FMSA.K, OAS.N) within the past 12 months

Credit Suisse expects to receive or intends to seek investment banking related compensation from the subject company (HCLP.N, SND.OQ, FMSA.K, EOG.N, OAS.N) within the next 3 months.

For other important disclosures concerning companies featured in this report, including price charts, please visit the website at https://rave.credit-suisse.com/disclosures or call +1 (877) 291-2683.

For date and time of production, dissemination and history of recommendation for the subject company(ies) featured in this report, disseminated within the past 12 months, please refer to the link: https://rave.credit-suisse.com/disclosures/view/report?i=276042&v=4i8zfzcmitc1q5jnmw3u9pe7b .

Important Regional Disclosures

Singapore recipients should contact Credit Suisse AG, Singapore Branch for any matters arising from this research report.

The analyst(s) involved in the preparation of this report may participate in events hosted by the subject company, including site visits. Credit Suisse does not accept or permit analysts to accept payment or reimbursement for travel expenses associated with these events.

Restrictions on certain Canadian securities are indicated by the following abbreviations: NVS--Non-Voting shares; RVS--Restricted Voting Shares; SVS--Subordinate Voting Shares.

Individuals receiving this report from a Canadian investment dealer that is not affiliated with Credit Suisse should be advised that this report may not contain regulatory disclosures the non-affiliated Canadian investment dealer would be required to make if this were its own report.

For Credit Suisse Securities (Canada), Inc.'s policies and procedures regarding the dissemination of equity research, please visit https://www.credit-suisse.com/sites/disclaimers-ib/en/canada-research-policy.html.

Credit Suisse has acted as lead manager or syndicate member in a public offering of securities for the subject company (HCLP.N, SND.OQ, EOG.N, OAS.N) within the past 3 years.

Principal is not guaranteed in the case of equities because equity prices are variable.

Commission is the commission rate or the amount agreed with a customer when setting up an account or at any time after that.

This research report is authored by:

Credit Suisse Securities (USA) LLC..James Wicklund ; Jacob Lundberg ; Charles Foote

For Credit Suisse disclosure information on other companies mentioned in this report, please visit the website at https://rave.credit-suisse.com/disclosures or call +1 (877) 291-2683.