



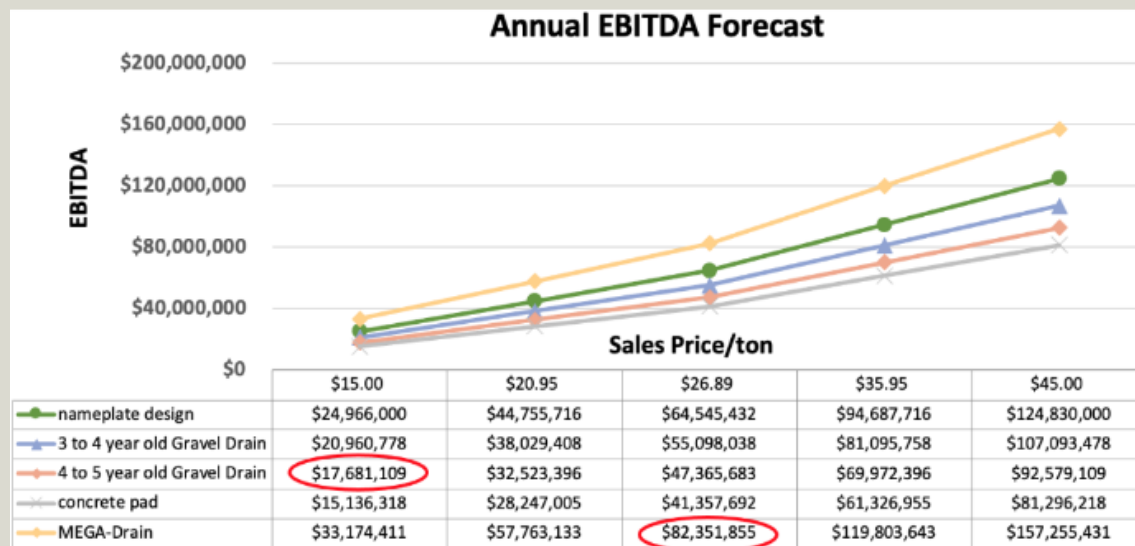
# MEGA-DRAIN™

## Permian Frac Sand Plant De-Rating Caused By High Moisture Feed To Dryer

**Background** Original design parameters of Permian frac sand plants underestimated the amount of stockpile decant time that fine washed material requires for moisture reduction at or below 6% before being fed to the dryers. In addition, the moisture reduction 1st generation gravel drain systems installed at many of the Permian in-basin mines are all nearing their useful life expectancy of 3 to 5 years as the pore spaces in the underlying gravel drain pad has filled with the generated fines carried off in the decant process. As a result, the design efficiency of sand plants in the Permian are now constrained and capital needs to be invested to correct the moisture decant bottleneck.

More to the point, if the nameplate design of Permian sand plant was around 5.1 million tons per year based on a 6.0% moisture feed to the dryers; we would expect actual plant output to be only 66% of nameplate. If we assume that the 3.4 million tons of saleable output (5.1 million tons x 66%) is currently sold under long-term fixed price contract at say \$15.70 per ton FOB mine<sup>1</sup>, the de-rated sand plant would have annual EBITDA of a modest \$18.2 million in the example shown below.

**The MEGA-Drain™ Solution** We believe that the installation of the 2nd generation, patent-pending, MEGA-Drain™ system can recapture 100% of the nameplate capacity. More specifically, 5.1 million tons of saleable product based on a 5.0% moisture feed to the dryers and decant times of only 2 to 3 days. Shortening the decant time on the pad solves the moisture bottleneck and creates greater operating efficiency, resulting in 1.7 million tons of additional sand that can be sold into the spot market, a projected lowering of the cash operating costs by \$.77/ton, and greatly reduced make-up water requirements. With current Permian spot sand prices around \$45/ton FOB plant, the resulting EBITDA is projected at \$80.7 million (3.4 million tons sold @



\$15.70/t+1.7 million tons sold @ \$45.00/t = 5.1 million tons sold @ \$25.37/t), an increase in EBITDA of 344% from the current de-rated plant that is sold-out under \$15.70/t long term fixed price contracts. Blind off issues from fines have been addressed and we expect the installed life of the 2nd generation MEGA-Drain™ system to be 20+ years as the water storage vault and collection system has 95% pore space and is designed for inspection, cleanout, heating, and maintenance. Payback is estimated at less than 3 months.

Permian Dune Sand	Plant Capacity	100K BTU's/hr	BTU's/ton	Fuel Cost/ton	Water Recovery		H <sub>2</sub> O \$/ton	Cash Op Cost		
	TPH	tons/year	feed moisture	sand sold	\$4.95/MCF	% recovery <sup>1</sup>	gal/yr	gal rec/ton	\$/bb	ton sold
nameplate design	400	3,328,800	8.20%	249,351	\$1.20	1.47%	11,727,019	3.52	(\$0.04)	\$7.50
3 to 4 year old Gravel Drain	345	2,871,090	10.00%	289,050	\$1.39	1.20%	8,256,779	2.88	(\$0.03)	\$7.70
4 to 5 year old Gravel Drain	300	2,496,600	12.00%	333,160	\$1.60	0.90%	5,384,856	2.16	(\$0.03)	\$7.92
concrete pad	265	2,205,330	14.00%	377,270	\$1.81	0.60%	3,171,082	1.44	(\$0.02)	\$8.14
MEGA-Drain <sup>2</sup>	559	4,136,034	5.00%	178,555	\$0.86	7.80%	77,314,564	18.69	(\$0.22)	\$6.98

**Notes:**

- \$15.70/t sales price deck from Technical Report Summary of US Silica Lamesa Site by Westward Environmental dated Feb 11,2022
- MEGA-Drain™ proven moisture level reduction to <5% in 36hours ( Permian 100 mesh sand with 18% moisture discharge off radial stacker)
- “% Recovery” = ( 18% moisture from radial stacker – feed moisture) x 15% for all cases except MEGA-Drain, which utilizes a 60% recovery factor

## WATER IS AN ASSET, NOT A LIABILITY

**Robert Kibel**  
Co-Founder & CEO  
830.708.8318  
robert@megadraincorp.com

**Nate Peterson**  
Technical Director  
817.513.7133  
nate@megadraincorp.com

**Joel Schneyer**  
Independent Director  
303.619.4211  
jschneyer@megadraincorp.com



# MEGA-DRAIN™

## How is MEGA-Drain™ so Qualified?

- Proven installation with satisfied clients.
- Strategic team of employees and manufacturers combined. Total Team Approach!
- 13 Geologist
- 2 Hydrologists
- 5 Structural Engineers
- 3 Environmental Experts, CPESC
- 1 Geomembrane Lining Industry Expert / IAGI Former President
- Low Safety EMR 1.0
- Globally recognized General Liability Broker that understands the MEGA-Drain™ system!



## How Safe is MEGA-Drain™?

- All drainage components are ISO in the USA.
- All products pass creep testing, live load testing, dead load testing and temperature ranges -65C to +140F.
- All drainage components are non-reactive.
- All drainage is site specific to with perspective material types.
- All designs are treated with Pass/Fail reports with engineering sign offs.
- All installs are performed with MSHA and OSHA trained staff.



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[www.megadraincorp.com](http://www.megadraincorp.com)



830-708-8318



Operating Globally



[robert@megadraincorp.com](mailto:robert@megadraincorp.com)