Price vs. Cost of Lagoon Pumping

Price per gallon to pump vs. the total cost to clean out lagoon solids

Often producers or customers only look at the cost per gallon and feel they are getting a better deal with gallons pumped at a lower price. But is the price per gallon a valid ***cost vs benefit*** comparison?

The price per gallon is NOT a good or even a valid comparison between custom pumping contractors. The real basis of comparison is how many dry solids are being removed from a lagoon for the total cost paid.

Dry tons are determined by the percent of solids in a gallon(s) of slurry being pumped. The formula is as follows:

Dry tons = gallons x percent of solids x weight of a gallon of slurry/ 2000 pounds

To demonstrate let's look at 2 scenarios and see which one has the best cost value:

1) A million gallons were pumped at 8% solids at 1.2¢ per gallon
2) A million gallons were pumped at 12% solids at 1.36¢ per gallon

Scenario 1) *8% solids @ 1.2¢ per gallon*

Dry tons = gallons x percent of solids x weight of a gallon of slurry/ 2000 pounds

Dry tons = **360.4 dry tons** = 1,000,000 x .08 x 9.01 / 2000

Total Cost to Pump 1 million gallons = **$12,000** = 1,000,000 x 1.2¢

$12,000 cost to pump / 360.4 dry tons removed = $33.30 per dry ton

Cost per dry ton of solids removed = $33.30

Scenario 2) *12% solids @ 1.36¢ per gallon*

Dry tons = gallons x percent of solids x weight of gallon of slurry/ 2000 pounds

Dry tons = **560.4 dry tons** = 1,000,000 x .12 x 9.34 / 2000

Total Cost to Pump 1 million gallons = **$13,600** = 1,000,000 x 1.36¢

$13,600 cost to pump / 560.4 dry tons removed = $24.27 per dry ton

Cost per dry ton of solids removed = $24.27

In the comparison above, Scenario 2 has the best cost benefit value even though the producer had to pay $1,600 more to pump the same million gallons. But by paying 13% more per gallon an additional 200 dry tons of solids were removed from the lagoon.

Which custom pumper would you hire? Obviously, the pumper who charged more per gallon but who removed more dry tons of bio-solids from your lagoon.

The percent of solids can ONLY be accurately determined by a certified lab test. If a pumper is not providing these lab reports, you are paying for an undetermined amount of solids being removed; only paying for gallons being pumped.

Percent solids is measured by weight. The thicker the solids the more weight the slurry will have. This can be mathematically calculated by knowing the weight of pure water which is 8.34 pounds. As more solids are pumped, the weight of the slurry increases as it is a percentage of the water weight. Thus 10% solids are .834 pounds per gallon, etc. The following chart will show the mathematical weight based on the percent of solids.

Gallons it takes to Pump a Dry Ton of Solids from a Lagoon

Weight of a Gallon of Plain Water = 8.34

% Solids	Weight of Gallon Slurry	Weight of Solids	Gallons/ Dry Ton
0.0%	8.34	0.00	- - -
0.5%	8.38	0.04	47,723
1.0%	8.42	0.08	23,743
1.5%	8.47	0.13	15,751
2.0%	8.51	0.17	11,755
2.5%	8.55	0.21	9,358
3.0%	8.59	0.25	7,761
3.5%	8.63	0.29	6,620
4.0%	8.67	0.33	5,765
4.5%	8.72	0.38	5,100
5.0%	8.76	0.42	4,568
5.5%	8.80	0.46	4,133
6.0%	8.84	0.50	3,771
6.5%	8.88	0.54	3,464
7.0%	8.92	0.58	3,202
7.5%	8.97	0.63	2,974
8.0%	9.01	0.67	2,776
8.5%	9.05	0.71	2,600
9.0%	9.09	0.75	2,445
9.5%	9.13	0.79	2,305

% Solids	Weight of Gallon Slurry	Weight of Solids	Gallons/ Dry Ton
10%	9.17	0.83	2,180
11%	9.26	0.92	1,964
12%	9.34	1.00	1,784
13%	9.42	1.08	1,632
14%	9.51	1.17	1,503
15%	9.59	1.25	1,390
16%	9.67	1.33	1,292
17%	9.76	1.42	1,206
18%	9.84	1.50	1,129
19%	9.92	1.58	1,061
20%	10.01	1.67	999
21%	10.09	1.75	944
22%	10.17	1.83	893
23%	10.26	1.92	848
24%	10.34	2.00	806
25%	10.43	2.09	767
26%	10.51	2.17	732
27%	10.59	2.25	699
28%	10.68	2.34	669
29%	10.76	2.42	641

As the solid content raises it will take less gallons to remove a dry ton of bio-solids. Less gallons pumped even at a higher price per gallon, will cost less per dry ton removed.

Lagoon Pumping is upfront and transparent in our pricing policies. We are also committed to doing the job right, completing the job started, at the prices we agreed upon. If we suspect higher solids, we will be upfront with you.

To keep your pumping cost down when pumping heavy solids, we recommend the following:

- Pump your heavy solids to closer fields, this will limit the number of pumps needed
- Pump the heavy solids during the summer months when Lagoon Pumping & Dredging offers off-season discounts.
- Enter into a solids' guarantee arrangement with LPD *(additional water is required)*

<u>Certified Lab results confirm solids being pumped.</u>

Lagoon Pumping is transparent in our reporting to our customers. We take slurry samples every 30-40 acres. These certified lab reports are provided to our customers at NO CHARGE. This is done for two reasons:

1) to give the customer confirmed N-P-K nutrient results delivered to the field, and
2) to give absolute certified clarity to the customer of the solids delivered to each field.