

Data for Keeping Small Sand/Gravel Mine's Affected Area Under 5 Acres

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Concerning Changes to Santa Fe County's Code, SLDC

Section 10.19. Small Scale Sand and Gravel Extraction

The information below, letters from Jim Kuipers, P.E., suggests that the affected area or a cut-off acreage for small sand and gravel mines can be contained under five acres (instead of ten). When one understands the limits of tonnage (& volume) to be extracted to the acres needed, it becomes apparent that under five acres, including the staging area, is area enough and a better match for the acreage to tonnage ratio.

Containing the affected area of a small mine to under 5 acres can result in a better layout for a mine with reduced environmental impacts, and consequently reduce the area needed for reclamation.

From: Jim Kuipers [Professional Engineer (PE Mining/Minerals)]
Subject: How may tons of sand / gravel can an 18 wheeler carry?
Date: July 13, 2016
To: Ross Lockridge [Emphasis added by RL, of the RCA]

Ross,

This is from the NM Motor Transportation Division "Truckers Guide" - The maximum allowable weight per tire is 600 pounds per inch of tire width. The maximum allowable weight for a single axle is 21,600 pounds. The maximum allowable for a four foot (4') tandem axle is 34,320 pounds. The maximum legal weight for the vehicle or vehicle combination shall not exceed 86,400 pounds.

If you assume the vehicle combination weighs 10,000 lbs empty, then you would have a 76,400 lb (38.2 tons) carrying capacity.

Miners think more in terms of volume when it comes to trucks and pups. If you have a fifteen cubic yard truck and ten cubic yard pup (trailer) you have 25 yards total. If the material weighs 110 lb/cubic foot then you have 25 yards x 27 ft³/yard x 110 lb/ft³= 74,250 lb or roughly 37 tons. So even if they ignore the regulations it is unlikely they will be over-weight unless they overfill.

Jim K

From: "Jim Kuipers"
Subject: RE: How may tons of sand / gravel can an 18 wheeler carry?

[Limits Production Per Year]

Date: July 14, 2016

To: "Ross Lockridge"

Ross - The most common federal and state regs for small miners limit production to 10,000 tons per year. In reality most "small miners" typically produce much less but I imagine the sand and gravel folks might spread their operations out and run close to that limit in many cases for periods of time.

Jim K

From: "Jim Kuipers"

Subject: Further Input on Sand / Gravel Mining—Depth

Date: July 18, 2016

To: "Ross Lockridge"

Ross,

I'm not sure what folks use in each case but 110#/cubic ft is a relatively standard figure for density of sand or gravel.

For one acre, 20,000 tons x 2000#/ton x cubic ft/110# x acre/43,560 square ft = 8.4 ft depth.

If they then mine the same volume from five acres you spread out the operations and get 1/5th the depth or 1.7 ft depth.

Keep in mind that the same acreage also has to apply to any roads, stockpiles or other areas, so as a rule of thumb I'd suggest 50% of the area is actually mined at any given time. So that would mean double the depths calculated above as a result.

Jim K