

**High-Grade Materials Co.
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Water Use for Aggregate Washing Operations

This analysis was conducted at a high level to determine the water use for the rinsing and washing of all High-Grade, Littlerock aggregate products. The controls of this analysis were based on an operating average at 900 tons per hour (TPH). The recent analysis revealed an overall percent passing the #200 sieve is 8.6%. The allowed percent passing #200 sieve under ASTM standards for Washed Concrete Sand ranges between 0 and 5%. This analysis conducted its analysis on washing the aggregate product to result is a conservative 2% passing the #200 sieve after washing for its Washed Concrete Sand. The resulting wash requirements are a net washing requirement needed of approximately 6.6%. The standards in the industry by manufacturing experts is approximately 50 gallons per minute (GPM) per every ton of minus #200 sieve of aggregates washed per hour. Clearly there are no standards of quantities required for recycling of process wash water. Accordingly, the below table depicts the various percentages of recycling. Absent the quantified amount of water recycled at the Hi-Grade, Littlerock operations, the below estimates offer various scenarios. Older aggregate wet washing systems result in recycling as much water as is possible under its operating capabilities. Under the normal processing operation and within the realm of feasibility these operations result in recycled wash water to be around 60% to 80%. New technology provides the potential of the recycling of as much as 95% with minimal to the non-existence of return wash water ponds. It is my understanding that this technology is not currently employed at the site. Clearly this new technology is expensive in its initial capital cost but has serious advantages in future operating.

Wash Water Quantities in Acre Feet	Recycle Quantities in Percents	Net Gallons Used Measured in Acre Feet
1085	40%	651
1085	50%	543
1085	60%	434
1085	70%	326
1085	80%	217

The application of the new technology is not required in the most operating aggregate facilities and is relatively new technology. The above tables are estimates but the analysis are proven to be very reliable to the extent the operations are using and following manufactures guidelines in the use of processing water. It is very difficult for operators to pursue acceptable water use guidelines absent water flow meters to adjust and monitor process water use. Absent monitoring and following standard water use guidelines it is difficult to provide precise water use by the operations. However, the above analysis is based on recommended operating water use guidelines and requirements for the effective rinsing and washing of aggregates. The guidelines applied are based on the results of the testing received from Hi-Grade Materials Company for its Littlerock operations.

This water use does not include evaporation nor does it include pond percolation. The water use provided by Hi-Grade for its Ready Mix operations and dust suppressant are found to be within the parameters of normal RMC processing and delivery guidelines and reasonable dust controls.