

Memorandum

*Making Conservation
a California Way of Life.*

To: DISTRICT DIRECTORS

Date: March 1, 2018

From: MALCOLM DOUGHERTY
Director

for

Subject: **2018 AGGREGATE RESOURCE POLICY STATEMENT AND TOOLS**

With the recent passage and ongoing implementation of Senate Bill 1, the Road Repair and Accountability Act of 2017, the California Department of Transportation (Caltrans), counties, cities, and other transportation entities will generate a significant increase in the need for aggregates—the basic material in roadway and structure work. It is therefore appropriate to reiterate our aggregate mining policy. This memorandum clarifies the policy and provides tools for districts to encourage an increased supply of aggregate material.

Having aggregate sources of sufficient quality and quantity close to project sites is essential in supporting a safe and sustainable transportation system that enhances California's economy, environment, and livability. Having local aggregate resources is vital in reducing truck hauling to projects and processing facilities. This, in turn, reduces the wear on the highway system, reduces greenhouse gas and other pollutant emissions, and results in increased safety by decreasing the number of trucks making longer and more frequent trips. It also allows for the more efficient use of trucks. Although we are exploring the increased use of recycled aggregates, the demand for virgin aggregates will continue to grow.

With this in mind, Caltrans must continue to work with local and State agencies to help gain approval of new aggregate mining sites throughout the state. Caltrans will continue to provide technical assessment and information pertaining to local aggregate availability, aggregate needs for infrastructure projects, education of local stakeholders, and early public engagement regarding long-term aggregate issues.

The following documents are attached to assist you in these efforts:

- (1) A modifiable sample letter to send to your local and regional transportation planning partners. The letter outlines our policy toward mineral resource development in general.
- (2) The updated Construction Aggregate Supply Limitations Fact Sheet (February 2018)
- (3) The Aggregate Sustainability in California map (2012), also known as Map Sheet 52, which shows the permitted aggregate materials supply in relation to projected demand over 50 years. The California Geological Survey is currently working on a 2018 update. The map and supporting report are also at: <http://www.conservation.ca.gov/cgs/minerals/mlc>

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Please take the time to review and use the attached tools. This issue has been important for some time and its significance has grown with the increased long-term funding provided through Senate Bill 1. It is my hope that ongoing collaboration will help secure the resources needed to provide world-class transportation options for years to come.

Attachments:

- (1) Sample Policy Statement Letter
- (2) Construction Aggregate Supply Limitations Fact Sheet, February 2018
- (3) Department of Conservation Map Sheet 52 (2012), Aggregate Sustainability in California map

DEPARTMENT OF TRANSPORTATION
DIVISION OF TRANSPORTATION PLANNING
DISTRICT
ADDRESS
CITY, CA ZIPCODE
PHONE
FAX
WEB URL



*Making Conservation
a California Way of Life.*

Dear Recipient,

As you are aware, aggregate resources play a vital role in our efforts to build and improve our State's infrastructure. Indeed, our State's mineral resource development is essential to our economic well-being. The statewide modal plans and Regional Transportation Plans shape California's transportation future and outline extensive improvements to the current system. It is important we find ways to meet current needs for construction materials and expand future aggregate supply. However, we need to do so in a manner that provides for the long-term sustainability of California's environment and future generations. Caltrans and local transportation agencies have been challenged to find new ways to reduce Green House Gas (GHG) emissions while providing world class transportation facilities for our citizens.

In 2011, Assembly Bill (AB) 566 amended Sections 2711 and 2761 of the Public Resource Code to add findings that mineral extraction is essential to the needs of California. Of equal importance is the State's commitment to long term sustainability of our environment, as enacted by AB 32 - Global Warming Solutions Act, and Senate Bill 375, to find new ways to reduce GHG emissions. Yet, between long truck hauls averaging 50 miles and international importing of materials, the GHG impact of aggregate delivery continues to mount. An increased aggregate reserve that is closer to construction sites is key to addressing our dire air quality and climate change concerns.

The California Department of Transportation (Caltrans) continues to coordinate with public decision-makers, the construction industry, and government officials in exploring opportunities to improve the reclamation and permitting processes, and to increase California's aggregate supply. While the pressure for resources has eased due to the decline in residential construction, the transportation sector continues to build projects, and the housing market is regaining strength. This is not a time to relax our efforts, but, rather, to increase them as the economy recovers.

Caltrans plans to award an increasing number of State Highway Operation and Protection Program contracts for highway projects over the next ten years and a similar amount will probably come through local agencies. This does not include State Transportation Improvement Program or other projects. Many will need substantial amounts of aggregates to complete. Highway projects are only one part of the story, however, as the California High Speed Rail Authority, Department of Water Resources, and other entities deliver projects with their own sand, gravel, and crushed stone needs.

While we are continuing to work with local and State agencies to help gain approval of new aggregate mining sites throughout the State, there is still much work to be done to ensure that these essential resources will be available for development in the far reaches of our long-range plans.

I would like to encourage you to explore new strategies to increase aggregate reserves in your region, including education of local stakeholders, early public engagement, and willingness to collaborate in

*"Provide a safe, sustainable, integrated and efficient transportation system
to enhance California's economy and livability"*

Recipient
Month date, year
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the mitigation of environmental and transportation system impacts from aggregate production and distribution.

The attached Construction Aggregate Supply Limitations fact sheet provides information on the potential economic, social, air quality, and environmental factors that are affected by local aggregate supply. This is a good starting point for collaborative discussions that aim to find solutions to issues regarding aggregate availability. Also attached is a map that shows statewide aggregate supply and demand.

Finally, I would like to invite you to contact <CALTRANS DISTRICT REPRESENTATIVES>, who are available upon request to speak at public meetings regarding the importance of increasing California's aggregate supply. While the permitting of new mining facilities must be done with attention to all of the possible impacts to surrounding areas, Caltrans encourages the development of new sources for construction aggregate. Our economy and our environment depend on it.

Please share this information with your planning commissions, city councils, and county boards of supervisors.

Thank you in advance for helping to provide a safe, sustainable and integrated transportation system to enhance California's economy and livability.

Sincerely,

District Director

Attachments:

- (1) Construction Aggregate Supply Limitations Fact Sheet, February 2018
- (2) Aggregate Sustainability in California Map

Construction Aggregate Supply Limitations Fact Sheet

Some Estimates of Economic Impact

February 2018

- Aggregates are heavy-weight building materials used in construction, including sand, gravel, crushed stone, and recycled concrete. Aggregates are mined and either used as raw material (for example, as foundations) or serve as composite materials in the production of concrete and asphalt. The main end markets for aggregates, with approximate percentages, include private residential construction (34 percent), commercial construction (17 percent), and public infrastructure projects (43 percent, which includes 26 percent for public highways, streets and transit).
- Aggregates are usually shipped from quarries or production sites close to their end market because transportation is a major element in the cost of delivered aggregates and the cost depends on the distance of the delivery. According to the industry, shipping costs for aggregates can outweigh production costs if the material is trucked more than 20 miles.¹ Permitting new aggregate sites would lead to shorter haul distance to minimize transport and shipping cost.
- According to the California Geological Survey (CGS), California has an estimated 78 billion tons of aggregate resources underlying mineral lands studied by the State Geologist.² However, only approximately five to six percent have actually been permitted by local agencies for mining activities. Permitting of mining sites is difficult and time consuming due to environmental, land development, and zoning laws, and could take between five and ten years. At the current rate of production, available aggregate supply in some areas in the State could be depleted in a decade.
- According to the California Department of Finance, housing construction activity in California nearly tripled between 2009 and 2016 (from 36 to 101 thousand units), which has contributed to an increase in the demand for construction aggregate in recent years.
- According to the CGS, California produced 148.9 million tons (valued at \$1.64 billion) of construction sand, gravel, and crushed stone in 2015, compared to 133.5 million tons (valued at \$1.4 billion) in 2009, an increase of 11.5 percent. The transportation of 148.9 million tons of construction aggregates generates nearly 6.0 million truckloads (at 25 tons per truck), or a total of 11.9 million truck trips a year (including empty trucks returning to the aggregate sites) related to the transportation of construction aggregates in the State.³
- Truck transportation accounts for approximately 99 percent of shipping aggregates for 40 miles or less.⁴ At an average 50-mile distance, the total aggregate-truck vehicle miles traveled (VMT) would be 595 million miles per year (11.9 million truck trips x 50 miles).³
- Assuming that permitting additional mining facilities would reduce the average hauling distance from 50 to 35 miles statewide, and using an average hauling distance of 35 miles, the total annual aggregate-truck miles of travel would be 417 million miles (11.9 million truck trips x 35 miles). The 15-mile shorter hauling distance would reduce aggregate-truck miles of travel by 178 million miles per year (595-417), and annual diesel fuel consumption by 23 million gallons [using California Air Resources Board (CARB) diesel fuel consumption rate of 0.13 gallons per vehicle-mile at 55-60 mph. A University of California, Berkeley, study⁵ confirms that the most likely, and dominant, effect of the opening of new sites for the production of construction aggregates would be a reduction in truck miles of travel for

¹ Therese Dunphy, "Evening the Playing Field," *Aggregates Manager*, August 2006.

² California Geological Survey, *Aggregate Sustainability in California, 2012*
http://www.conservation.ca.gov/cgs/information/publications/ms/Documents/MS_52.pdf;
http://www.conservation.ca.gov/cgs/information/publications/ms/Documents/MS_52_2012.pdf

³ California Geological Survey, http://www.conservation.ca.gov/cgs/minerals/min_prod/Documents/FINAL_NON-FUEL_2015_7-26-17.pdf

⁴ Tina Grady Barbaccia, "Off-highway Transportation," *Aggregates Manager*, July 2006.

⁵ Peter Berck, "A Note on the Environmental Costs of Aggregates," *Working Paper No. 994*, Dept. of Agricultural and Resource Economics and Policy, University of California, Berkeley, January 2005.

hauling aggregates (i.e., new quarries will be located closer to the users to minimize transportation costs), thus a reduction in emissions from trucks. Based on earlier CARB emission factors estimates, and assuming an average 55-60 miles per hour speed, a reduction of 178 million miles of truck travel (or 20 million gallons of diesel fuel consumption) would reduce carbon dioxide emissions by approximately 223,800 tons a year.⁶

- The total transportation cost of aggregates (at \$0.10 per ton per mile) shipped 35-miles average distance throughout California would be slightly above \$1.0 billion (11.9 million truck trips x 25 tons x 35 miles x \$0.10), and nearly \$1.5 billion if shipped an average distance of 50 miles. The statewide transportation cost savings due to reduced hauling distance would amount to \$446 million a year, a 30 percent cost savings. More and closer quarries would save costs by the use of less fuel, decreased use of the trucks, and decreased wear on highways.
- The California Department of Transportation (Caltrans) estimates that on average, approximately \$2.5 billion is spent on State and local capital outlay projects each year, and on average, aggregates account for 8-10 percent of total project costs, or approximately \$250 million annually. A 30 percent increase/decrease in shipping cost of aggregates would increase/decrease the total annual project costs by \$75 million.
- The reduction in aggregate-related truck miles of travel would also reduce traffic congestion and traffic accidents on roads, but these impacts would be difficult to estimate. An additional benefit from truck trip reduction would be reduced pavement deterioration. Caltrans expects to spend approximately \$1.5 billion annually on pavement rehabilitation projects. Assuming trucks account for 60 percent of the pavement damage on the State highways, and aggregate-trucks on average account for 5 percent of all heavy truck travel on the State highways, the trucks shipping aggregates would account for approximately \$45 million of cost savings in the pavement rehabilitation each year.
- Project delays due to lack of aggregate supply in the area would also result in project cost escalation and reduced user benefits (reduced travel time and accidents) that would have otherwise been generated.
- Generalizing, and pro rating, the user benefits estimated for the Interregional Transportation Improvement Program projects, a delay of ten percent of the capital outlay program for one year could also pose significant costs for California in increased roadway congestion and traffic accidents.

In conclusion, with a limited supply of construction aggregates, increased homebuilding, and more long-term funding provided through Senate Bill 1, there is concern that there will be a severe shortage of construction materials.

***Data based on the most recent information of the California Department of Conservation (2012), which is to be updated in 2018.**

⁶ U.S. Energy Information Administration, <https://nnsa.energy.gov/sites/default/files/nnsa/08-14-multiplefiles/DOE%202012.pdf>

CALIFORNIA GEOLOGICAL SURVEY

AGGREGATE SUSTAINABILITY IN CALIFORNIA

Fifty-Year Aggregate Demand Compared to Permitted Aggregate Reserves

By
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2012

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Milton Fonseca



LEGEND

- 50-year demand that will not be met by existing permitted reserves.
 - Permitted aggregate reserves.
 - 50-year demand is 25 to 200 million tons.
 - 50-year demand is > 200 to 500 million tons.
 - 50-year demand is > 500 to 800 million tons.
 - 50-year demand is more than 800 million tons.
- Examples
- 25/100 Million Tons (permitted reserves/ 50-year demand)
17 to 20 Years (years of permitted reserves remaining)
 - 50-year demand for aggregate is 510 million tons;
permitted reserves are greater than or equal to the 50-year demand.
 - 550/510 Million Tons (permitted reserves/ 50-year demand)
More Than 50 Years (years of permitted reserves remaining)

Areas With Short Term Aggregate Supply

- < 10 years of permitted reserves remaining in the study area.

Aggregate Production Areas
(Symbols represent one or more aggregate mines, tonnage represents 2010 annual production)

- < 0.5 Million Tons per Year
- > 0.5 - 1.5 Million Tons per Year
- > 1.5 - 3 Million Tons per Year
- > 3 - 5 Million Tons per Year
- > 5 Million Tons per Year

Population
1 Dot = 100 Persons
(based on 2010 Census Data)

- City
- Interstate Route
- U.S. Route
- State Route
- Primary Highway
- Secondary Highway
- County Boundary
- River
- Lake/ Ocean

Map Usage and Limitations

This map is created to provide general information about the current availability of California's permitted construction aggregate reserves to state, regional, and local transportation and development agencies. It is designed to assist planning agencies in evaluating construction aggregate availability in the regional planning process. However, the map is not intended to be used as the sole source of information about construction aggregate availability, or as the basis for site-specific decisions. Although the data and information on the map may be useful to local decision-makers, the users should information contained in the referenced aggregate studies should be used for local decision-making purposes.

Fifty-Year Aggregate Demand Compared to Permitted Aggregate Reserves

The pie charts show the projected 50-year demand for aggregate as of January 2011 compared to currently permitted aggregate reserves (in short tons). The 50-year demand for a particular study area is graphically represented by one of four pie diagram sizes. Study area boundaries are shown on the index map of aggregate studies (lower left).

* Permitted aggregate reserves are those portions of the resources for which local land agencies (counties and cities) have issued mining permits. Non-permitted aggregate resource information is given in each aggregate study report. See accompanying text for references to these reports.

