Issue Summary
Past trends strongly suggest that demand for aggregates will grow at or above historical rates in the future. This demand will be driven primarily by population growth and the associated requirements for residential and non-residential construction, and the need to upgrade and/or replace aging infrastructure of all types.

It is becoming more difficult to site and open new quarries, particularly in proximity to high-growth areas. As demand increases and supply decreases in high-growth areas, new approaches to supplying aggregates will be required and aggregates will travel greater distances from point of production to point of consumption. This will likely result in cost increases for aggregates and aggregates-related construction materials such as hot-mix asphalt and ready-mixed concrete.

Aggregates Demand and Supply
Using publicly available data, Vulcan developed a list of the factors it believes will drive future demand for aggregates and the factors that will impact future aggregates supply. On the demand side, these include:

- A growing population of 400 million by 2043, according to the U.S. Census.
- An increase in non-residential construction such as stores, offices, schools and government buildings driven by the increasing population; a decline in the number of people per household, and new home development and the replacement of structurally sound buildings with more energy efficient and technologically advanced ones (i.e., configured for advanced computer networks).
- An aging, baby boomer population with increased demand for second homes along with needs for more long- and short-term health care facilities and more elderly friendly multi-family developments.
- Aging infrastructure of all types that will need to be upgraded and/or replaced. In particular, highways, roads, ports and rail facilities will be required to handle increased car and truck traffic along with increased imports and exports.
- An increase in the use of Portland cement concrete in the construction of both residential and non-residential buildings due to concrete’s resistance to wind damage, environmental efficiency and construction flexibility.

Factors influencing aggregates supply in the future include:

- Continued opening of new aggregates operations but with a permitting process that will be difficult and expensive.
- Expansion of existing operations with sufficient reserves but at the expense of accelerating the depletion of reserves.
- Investments of significant amounts of capital to make operations more efficient.
- Opening of newer operations further from markets as reserves at existing operations within or near city limits are depleted. This will result in increased transportation costs to the points of consumption.
The need to ship aggregates over greater distances will increase the number of distribution facilities in metropolitan areas.

A continuing trend toward industry consolidation, but with the overall makeup of the industry remaining much as it is today in which there are relatively few, large public companies and several thousand small, privately owned companies.

An increase in the number of companies with some degree of vertical integration.

The need for aggregates producers to meet tighter specifications, which results in more unusable material being produced.

The need to site quarries with deposits that, because of the less than ideal geology, result in leftover material equal to 20% to 30% of total production.

Recycled concrete will continue to play an important role in urban areas; however, recycled material will remain a small part of the total aggregates supply.

The amount of recycled asphalt pavement (RAP) in Hot-Mix Asphalt will continue to increase in both DOT approved and commercial applications.

### Economic Drivers in the Construction Materials Industry
In addition to transportation, a number of economic factors that apply to the aggregates industry have a significant impact on the cost of products. These include the substantial amounts of capital required to maintain and operate an aggregates facility. Funds are needed to replace...
equipment, make upgrades for productivity improvements and to comply with existing and new safety, health and environmental regulations. Reserve determinations and mine planning require additional major investments in software, personnel and in some cases consultants.

It is a time consuming and costly proposition to open a greenfield quarry site. Once property has been identified, the quality and quantity of reserves must be established by drilling. The property must be leased or purchased. Permit applications must be made and the proper zoning, if needed, obtained. Depending on many factors, including the amount of public and political opposition, it can take several years to open a greenfield site and begin operations.

Beyond customary costs for materials and labor, blasting and crushing operations have an effect on costs due to the fact that they both produce a number of different aggregates sizes. Even with flexibility in creating product mixes, some portion of the production must be either sold externally (i.e., for non-construction end uses) or be stored as non-spec material. Tighter specifications (e.g. Superpave) also increase the amount of discarded material. Often, these specifications are written from the asphalt or ready-mixed concrete perspective with no regard as to the impact on the aggregates producer. In addition, high quality reserves close to end use markets are increasingly becoming unavailable due to aboveground construction and/or zoning and permitting restrictions. As a result, quarries sited near markets but on less than ideal geological formations may produce between 20% and 30% un-saleable material. In addition to impacting costs, the storage of non-spec materials can create a problem if the storage area is above in-ground reserves that will eventually need to be mined.

The recycling of concrete for reuse as an aggregate is economically feasible especially where there is a supply of construction rubble and where the recycled product can be sold at a price that makes disposal a more costly option (i.e., the disposal of construction rubble involves a tipping fee.) In addition, because of transportation, supply and/or other factors, recycled materials must be able to compete in terms of pricing with virgin materials. These conditions are typically found in urban areas with older infrastructure and buildings that are demolished for new construction. These same urban areas increasingly have restrictions on and/or high tipping fees for the landfill disposal of construction rubble, which promotes the additional use of recycled materials.

Unlike concrete, asphalt historically has been a widely recycled product. Increasing costs for liquid asphalt will likely increase the use of recycled asphalt pavement (RAP) in the future. As crude oil refineries focus on high-margin products, there will be lower volumes and higher costs for liquid asphalt. This will drive DOTs and asphalt producers to promote the use of RAP. Confirmation of this assumption can be found among many asphalt producers that are making significant plant improvements in order to accept and recycle asphalt pavement on a larger scale.

**Community Issues in the Aggregates and Related Industries**

Community relations are an essential part of doing business in the aggregates industry. Without good community relations, a producer runs the risk of losing the unwritten but necessary public franchise that is required to operate and grow. As compared to aggregates operations, there are fewer community relations issues associated with asphalt and ready-mix plants. However, operators of these facilities must also understand that their ability to operate is often dependent
on having a good relationship with the surrounding community. Community relations issues in the future will remain important and will likely place additional restraints on locating and operating aggregates facilities. Successful companies in the future will continue to identify and meet public expectations as they change over time.

**How Vulcan is Addressing Supply Issues**

All companies depend on customers for success. In Vulcan’s case, we understand that our customers need to have confidence in our ability to reliably and consistently provide quality products. To address our customers’ future needs for aggregates, Vulcan is taking a number of steps.

In metropolitan areas where reserves are being depleted and there are deficiencies in supply, Vulcan has steadily increased the number of distribution facilities. Vulcan has also increased its leased and owned rail cars and has added a third Panamax-class oceangoing vessel to its fleet, which serves the U.S. Gulf Coast and U.S. East Coast.

With respect to capital, Vulcan is making the investments needed to help ensure that we meet our customers’ expectations in the future. Over the past decade, Vulcan has invested over $4 billion
in capital improvements such as new mobile equipment, plant replacements, new plants and safety, health and environmental stewardship efforts.

Vulcan is the industry leader in community relations and we understand the importance of community relations to our future success and our ability to meet customer needs. We are committed to conduct our business – now and in the future – in a manner that makes Vulcan a valued member of the communities where we operate.

Vulcan has some of the best employees in the construction materials industry. Our workforce has an average service of approximately 10 years and many of our employees begin their careers at Vulcan and continue with us until retirement. We also have a number of second- and third-generation employees. Our stable workforce helps us ensure that our customers continue to receive quality products and services. To attract and retain employees in the future, Vulcan must continue to offer competitive salaries and benefits programs. Healthcare, retirement and other benefits typically add between 30% and 50% of base salary to an employee’s total compensation package.

**Summary**

Vulcan is committed to its customers and intends to be a reliable source of aggregates in the future. In response to emerging trends, the company is taking aggressive measures, including the investment of significant amounts of capital, to help ensure that Vulcan has the locations, reserves and equipment to meet current and anticipated demands for aggregates.