



November 18, 2014

The Honorable Tommie Williams
Georgia State Senate
110 State Capitol
Atlanta, GA 30334

RE: Estimated economic impact of the proposed DuPont titanium sand mining operation in Wayne County, GA

Dear Senator Williams,

In response to your request for information on the economic impact of the proposed titanium sand mining operation in Wayne County, faculty and staff at the Carl Vinson Institute of Government constructed a baseline economic forecast for the county and used data provided by DuPont to estimate the impacts the operation would have over its ten-year life. The mine and plant would produce titanium dioxide sand (68% titanium dioxide) from sands located under the topsoil through a standard process of collection and separation of the titanium sand from the other mineral and organic materials. The operation would also produce a quantity of zircon sand and Staurolite[®], a DuPont product used in sandblasting.

We used Implan to produce the baseline forecast of the Wayne County economy and to estimate the economic impacts the DuPont operation would have on that economy in terms of jobs, the labor income associated with those jobs, and the economic output in the county. Implan is a standard input-output model widely used for this purpose. After estimating the existing economy, we develop a set of inputs or changes to the economy and the model estimates the impacts. Inputs to the Implan model can be jobs (FTE), industry payroll, industry output, or a change in the value of commodity production.

To model the economic impacts of this operation, we obtained estimates from DuPont that the mine and plant operation would require 60 full time positions (see Table 1). The compensation for these positions was estimated by DuPont using a wage survey of the Jesup, Georgia region by WMS Human Resources Management Consultants. The total estimated payroll for the 60 full time positions in 2019, the first year of operation, is \$4,191,700 including a 35 percent benefits factor. This yields about \$69,000 per job in the first year. For purposes of this analysis, we assume a two percent annual increase in labor costs over the period.

Table 1. Projected Employment at DuPont Titanium Mine/Plant Operation		
Mine and Plant Operation		
Position	Description	Number of Positions
Shift work operators	Heavy equipment and industrial machinery operators	32 (8 per shift)
Maintenance	Industrial mechanics/EI&I technicians	5
Area managers/shift supervision	Engineers/technicians	5
Assistance to operation staff	SHEA/surveyors/engineers/geologists	4
Day field/clearing and reclamation workers	Heavy equipment operators	4
Contract haulers	Truck driver/loader operator	10
TOTAL		60
Source: DuPont		

The estimated economic impacts of the mine and plant operation are presented in Table 2. Over the ten-year period, the 60 direct employment jobs will support another 10 to 17 indirect jobs. These are jobs related to the plant operation and include transportation, maintenance, and service sector jobs that will support DuPont’s operation. Initially, these jobs will produce about \$565,735 in labor income in the county, growing to just over \$1.1 million in 2028.

As household spending increases due to the wages associated with the direct and indirect employment, another 13 or 14 jobs will be supported in the broader economy through an induced effect. The induced effect remains fairly constant over the entire period. These jobs are largely within the service sectors, including professional and non-professional services (physicians, dentists, attorneys, accountants, restaurant workers, dry cleaners, and others), and retail establishments (general merchandise stores, grocers, and others). The induced effect will produce an estimated \$402,345 in labor income initially increasing to nearly \$520,000 in 2028.

Table 2 also includes an estimate of local economic output associated with the indirect and induced employment. Economic output in this case is similar to Gross Domestic Product; it is the value of goods and services produced in the county. The output figures associated with the indirect and induced employment are based on regional averages for the employment sectors involved.

Table 2. Estimated Economic Impacts on Wayne County of the DuPont Mine/Plant Operation

Year	Direct Effect		Indirect Effect		Induced Effect		Total Effect In Wayne County		
	Employment	Labor Income*	Employment	Labor Income*	Employment	Labor Income*	Employment	Total Labor Income*	Indirect and Induced Economic Output*
2019	60	4,160,700	10.6	565,736	13.5	402,345	84.1	5,128,781	3,818,474
2020	60	4,243,914	15	816,093	14.1	431,055	89.1	5,491,061	4,936,541
2021	60	4,328,792	16.7	930,346	14.4	448,141	91.1	5,707,278	5,460,718
2022	60	4,415,368	17.6	998,898	14.5	461,421	92.1	5,875,686	5,786,910
2023	60	4,503,675	17.6	1,018,876	14.5	470,649	92.1	5,993,200	5,902,648
2024	60	4,593,749	17.5	1,039,253	14.5	480,062	92.0	6,113,064	6,020,701
2025	60	4,685,624	17.5	1,060,038	14.5	489,663	92.0	6,235,325	6,141,115
2026	60	4,779,336	17.5	1,081,239	14.5	499,457	92.0	6,360,032	6,263,937
2027	60	4,874,923	17.5	1,102,864	14.5	509,446	92.0	6,487,233	6,389,216
2028	60	4,972,422	17.3	1,110,860	14.4	518,419	91.7	6,601,701	6,455,913

Notes:

Direct effect is defined as the employment and wages paid to the employees.

Indirect effect is defined as employment and wages attributed to the goods and services provided to the company.

Induced effect is defined as the employment and wages related to the goods and services purchased by direct and indirect employees.

Indirect and induced economic output is the value of the goods and services produced locally through indirect and induced economic activity.

Source: Carl Vinson Institute of Government, Implan

* Current year dollars

The analysis in Table 2 shows the estimated economic impact of the employment activities related to the mining operation for a specific geography, Wayne County. DuPont estimates that the non-labor operating budget will be about \$12.9 million initially, including \$5 million in power consumption (electrical service and diesel fuel), \$3.1 million for supplies and equipment rental and \$4.8 million for maintenance and other operating costs. The portion of the non-labor operating budget with impacts in Wayne County is included in the indirect employment output figures in Table 2. Based on our economic model we estimate that the \$12.9 non-labor budget will generate 70 jobs across the United States. The estimated 16 indirect and induced jobs created in Wayne County from the operating budget are already accounted for in the estimate of 24 (2019) in Table 2.

We also modeled the one-time economic impact of the initial capital investment. DuPont reported to us that a \$60 million capital investment will be made and that a third (\$20 million) will be expended for site preparation and construction. This portion of the capital investment will have a significant impact in the county and is modeled as construction of new manufacturing structures, Sector 35 in the Implan model of Wayne County. The remainder of the capital investment is in equipment purchased from vendors outside the county. This will have a relatively small impact in the county and is not included in this analysis.

Table 3 presents the estimated economic impacts of the initial \$20 million capital investment for site preparation and construction. The estimates in Table 3 model the entire impact of the \$20 million expenditure in a single year, 2018, one year prior to the start of production. To the extent that the capital investment period is longer, a proportionate number of jobs would be supported annually. For instance, if the construction period is later determined to be 24 months, about 73 or 74 direct employment jobs would be supported annually. The capital investment will support another 30 jobs indirectly and through an induced effect.

Table 3. Estimated Economic Impacts of the \$20 Million Capital Investment Associated with the DuPont Operation				
Wayne County		Employment	Labor Income*	Economic Output*
Year	Impact			
2018	Direct Effect	146.9	5,296,125.60	18,997,675.80
	Indirect Effect	12.1	376,445.70	1,452,986.40
	Induced Effect	18.0	484,946.40	1,851,179.50
	Total Effect	177.0	6,157,517.60	22,301,841.70
Source: Carl Vinson Institute of Government, Implan				
*Current year dollars. May not sum due to rounding.				

In summary, we estimate that this project will produce 84 jobs in Wayne County. Sixty of those jobs are direct and another 24 are indirect or induced. The estimated annual economic impact of the jobs will be approximately \$5 million in year one and grow to \$6.6 million by year ten. The one-time economic impact of the \$20 million capital investment for site preparation and construction will generate

approximately \$6.1 million in labor income, a portion of which will be spent in Wayne County for housing, food, and other goods and services.

Please let me know if you have any questions about the analysis or about Implan. I can be reached at gwclarke@uga.edu, or by phone at (706) 542-6202.

Sincerely,

A handwritten signature in black ink that reads "Wes Clarke". The signature is written in a cursive, flowing style.

Wes Clarke, Ph.D