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Impacts of Davisco’s Lake Norden Cheese Plant

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ABSTRACT

This paper addresses the regional impact of the Davisco Foods International cheese plant in Lake Norden, South Dakota. Since opening in November 2003, the $40 million plant has exerted a growing influence on dairying throughout eastern South Dakota and adjacent areas, as well as influencing the community of Lake Norden, the cultural landscape, the economy, and the environment in various ways. Each topic is investigated from a geographic perspective based primarily on field research. As the plant continues to expand, its impact on the covered topics deepens, both negatively and positively.

INTRODUCTION

In November, 2003, Davisco Foods International opened a $40 million cheese plant in the small South Dakota community of Lake Norden. Davisco, a firm that has owned and operated a food ingredient plant in Lake Norden since 1983, announced plans to build the new cheese plant in late 2001. This multi-million dollar operation affects both the community and region economically, environmentally, and in other ways. Mark Davis, CEO of Davisco stated, “This is a major investment... .[one] that represents an expanded partnership between the state of South Dakota, Lake Norden, Davisco, Land O’Lakes, and area milk producers.” Land O’Lakes, which markets the cheese made in Lake Norden, partnered with Davisco in milk purchasing for the plant. The Davisco operation also has given area farmers a steady and reliable market for milk.

Lake Norden was chosen as the site of the new cheese plant for various reasons. The food ingredient plant, which processes whey, was already located in the community. Before the cheese plant was built, the food ingredient plant received whey from several other South Dakota cheese plants, including Land O’Lakes in Volga (prior to its shutting down several years ago), Cass Clay in Hoven, and Dairy Concepts in Pollock. Building the cheese plant in Lake Norden would reduce the need to transport whey from these other plants. Another factor contributing to the Lake Norden site was the close proximity of Interstate 29, located 24 miles to the east. This makes trucking the milk in and cheese out more efficient. Additionally, the greatest number of dairy farms are located in Eastern South Dakota close to the I-29 corridor (Figure 1).
With all the perishable milk received on a regular basis, the Lake Norden Cheese Plant, in order to keep up with its supply, is in production 21 hours per day. Currently, 40 to 50 milk trucks bring in about 2.3 million pounds (approximately 270,000 gallons) of milk daily. When the plant first opened in 2003, it processed about 1.2 million pounds of milk daily. In 2004, the amount increased to 1.8 million pounds per day, resulting in a doubling of production over a four year period. Davisco’s ultimate goal is to expand to five million pounds of milk processed daily, slightly more than double the current production. In the spring of 2007, the plant produces approximately 200,000 pounds of cheese daily, most of which is mozzarella. The cheese is produced in large blocks that are then cut into smaller pieces that are distributed in 6, 10, or 20 pound packages.

The plant sends out approximately 12 to 15 trucks of cheese daily, Monday through Friday. The product is delivered throughout South Dakota and much of the United States to companies such as Papa Murphy's, Schwan's, and Kraft. Marketing plans currently are underway to begin exporting cheese to South Korea.

The Lake Norden Cheese Plant is fairly new and is expanding its operation. As this occurs, the company continues to expand its impact on the region’s economy, environment, and landscape in various ways.

RESULTS

Economy

When a $40 million operation comes into a small community, such as Lake Norden with a population of approximately 450, it is bound to have a profound economic impact.
on the town and its people. The Lake Norden Cheese Plant has affected the economy of the town, region, and state. Before the cheese plant was built, Davisco employed 80 people in its food ingredient operation that dried whey. With the addition of the cheese plant, 100 new jobs were created. Only about 10% of the employees live in Lake Norden; the remainder of them comes from rural areas or communities within a radius of approximately 40 miles. With the creation of new jobs, more money is being put into circulation, which in turn benefits the local economy. The two-week wages for the plant’s hourly employees is approximately $185,000. In April of 2007, the plant began the second phase of a $10 million expansion. When completed, even more employees will be needed, although the number is undisclosed by the firm.

Environment

Some concern has been expressed regarding the plant’s affects upon the environment, both directly and indirectly. The plant itself produces a considerable amount of effluent—treated waste water—that must be held in ponds until it evaporates. There are eight holding ponds, occupying an area of approximately 160 acres, located just south of Lake Norden. Initially, local concern was limited primarily to the odor created by the ponds, which was most evident within the community with a southerly wind. Tests conducted by the Department of Environment and Natural Resources (DENR) have found small levels of hydrogen sulfide that produce a noxious odor similar to that of rotten eggs. This gas is attracted to moisture, so it often is referred to as a swamp gas. Hydrogen sulfide is produced under an anaerobic state, one that does not require oxygen, and although the holding ponds were designed to be aerobic—meaning there are bacteria that require oxygen to break materials down—somehow the gas is being emitted into the air. The smell tends to be overwhelmingly strong because hydrogen sulfide tends to settle in low spots, and because it is a heavy gas, it dissipates very slowly, if at all. Davisco has indicated that the ponds are secreting gasses they did not expect, and they have been actively searching for a solution to the problem. In March of 2007, the company indicated plans to place environmental “blankets” over the ponds. These “blankets” would resemble the appearance of the Metrodome in Minneapolis, but at a smaller scale. When the pressure from the gasses built up, equipment called scrubbers would burn the gasses off.

Another matter that has caused some local concern is that sodium levels are rising in nearby sloughs and fields. Treated waste water from the plant is sent to the holding ponds, and then to the waste water treatment plant. After the water is treated, it is moved to the aerobic respirator. Before it can be dumped into the constructed wetlands, dissolved oxygen level (DO) of 8 must be reached. The waste water put in the holding ponds only needs a DO of 2, but because the water in the constructed wetlands is designed to gradually leak back into the groundwater, the water must be completely treated and of sound quality. The wetlands are lined with clay, which is designed to filter out the sodium while the water slowly leaks back into the aquifer. Tests have been conducted on the water in nearby sloughs, and it has been found that they contain considerably higher amounts of sodium than normal. Flora in the vicinity of the sloughs has been negatively impacted by the toxic water. A normal water supply has a sodium content of approximately 50-200 parts per million, and to be considered a fresh body of water, the
concentration has to be less than 1000 parts; sloughs near the Lake Norden area were
tested with levels between 800 and 1600 parts per million. When these high sodium levels
are secreted, they sterilize the ground, thereby prohibiting crop growth. Davisco is aware
of this problem, and is considering options by which the sodium problem can be solved.

There also has been concern expressed over the negative impact that bigger dairy
operations may have on land and water resources. The Department of Environment and
Natural Resources, however, has not documented any ill-effects on water or land
resources. As an environmental safeguard, any dairy with 700 or more cows must meet
the requirements of the department’s general water pollution control permit for
concentrated animal feeding operations. This permit ensures the protection of the state’s
surface and ground waters by establishing minimum environmental standards for
regulated livestock operations. There also are many zoning regulations set by each county
to ensure environmentally safe conditions.

**Landscape**

The Lake Norden Cheese Plant has had a considerable impact on the area’s cultural
landscape. The community itself has experienced dramatic landscape changes. From a
distance, people approaching the community can not help but notice the plant’s “towers”
rising above the rest of the buildings and trees. Upon entering the town, the plant’s gray
walls now form a massive backdrop. Lake Norden’s Main Street has undergone
considerable renovation during recent years. With the addition of the cheese plant, the
street has taken on a rather “corporate” appearance. When construction on the plant began
in 2002, so did construction of a new road along the south and west side of town. It was
built to allow truck drivers going to and from the cheese plant to bypass the town while
also providing better access to the plant. Instead of going through the town where they
would increase traffic and thereby pose a safety hazard, break up the streets, and contribute
to both sound and exhaust pollution, most truck drivers use the bypass. Driving south out
of town, where the landscape used to be one dominated by open fields, the plant’s eight
holding ponds and constructed wetlands now occupy an area of about 300 acres.

New and larger dairy operations have been built across the state. These new farms
have a different appearance than the traditional small, family owned and operated dairy
farm with perhaps a dozen to fifty cows. In smaller dairy operations, the cows are
sometimes pastured, but on the bigger dairy operations, they are usually confined in the
huge barns or adjacent dry lots year round.

**Regional Impacts**

For years, the number of dairy cows and dairy operations in South Dakota had been
decreasing. When Davisco announced plans for the cheese plant, it was anticipated that
milk from 65,000 cows would be needed. With dairy farmers knowing there was a
demand for raw milk, cattle numbers gradually started to rise in 2005. Hamlin County, in
which Lake Norden is located, and other nearby counties such as Kingsbury and
Brookings, actually began to experience an increase in the number of dairy cattle in 2004.

Although the number of dairy cows in South Dakota has actually decreased by about
14,000 since 2000, according to the USDA National Agricultural Statistics Service, milk
produced per cow has increased dramatically from 15,516 to 18,580 pounds per year, an annual increase of a little over 3,000 pounds of milk per cow (Figure 2). This increase has had a very positive impact on the total production of milk throughout the state, which has also risen since 2000 (Figure 3).

![Number of Milk Cows in SD](image)

**Figure 2**

![Total Milk Production in SD](image)

**Figure 3**

There has not been an increase in the state's number of dairy farms. In 2003, there were 778 farms and in 2006 the number had dropped to 601 operations, a loss of 177 dairy operations over a three year period. This trend of fewer operations and numbers of dairy cows reflects what is happening nationwide. In John Cross’s article “Restructuring America’s Dairy Farms,” he acknowledges that dairy operations have decreased steadily between the years 1992 and 2002. The exception is herds of 500 or more cows, which
have experienced an increase over the past decade (Figure 4). South Dakota's case is very similar to that of the national average. Since 2000, herds of 200 or more cows have increased, while smaller herds continue to decline (Figure 5). But because of better technology, feed, and management, milk production per cow has increased.

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**Corporate Dairy Operations 500+ Head**

![Graph of Corporate Dairy Operations 500+ Head]

**Small Family Operations - Less than 50 Head**

![Graph of Small Family Operations - Less than 50 Head]
The Lake Norden Cheese Plant purchases milk from all over the state of South Dakota, southwestern Minnesota, northwestern Iowa, and condensed milk from Davisco’s plant in Jerome, Idaho. South Dakota supplies 90% of the milk needed for the cheese plant to run at maximum capacity. Currently, milk is taken from about 30,000 cows, which as of now is the plant’s maximum capacity. In April 2007, work began on a $10 million expansion project which includes the addition of new equipment that will increase the capacity by an additional 10,000 cows. Eventually, the plant’s goal is to expand and use milk from 75,000 cows. According to 2005 data from the USDA, there are approximately 81,000 head of dairy cows in South Dakota. If the Lake Norden Cheese Plant is to achieve its goal of 75,000 cattle, the state will have to either raise more dairy cattle, or the plant will need to extend its milkshed and bring in more milk from outside the state.

CONCLUSIONS

The Lake Norden Cheese Plant has been in operation since 2003, or for nearly four years. During this relatively short period, it has had a considerable impact on the region’s economy, environment, and landscape. Each month, hundreds of thousands of dollars are put into circulation in the economy. Davisco is continually searching for ways to ensure that the environment is not negatively impacted. With the physical plant structure, the roads, the holding ponds, and the surrounding dairy farms, the landscape continues to be altered in many ways. Currently, the Lake Norden Cheese Plant collects most of the milk it needs from dairies in South Dakota, Minnesota, and Iowa. The majority of the milk it collects does come from South Dakota. The plant hopes to expand to full production capacity sometime in the near future, which means it must double the number of cows from which milk currently is obtained. To obtain the amount of milk needed, the plant will probably have to expand the region from which it is acquired. With this expansion, however, new jobs will be created. The Lake Norden Cheese Plant has impacted the community, surrounding area, and state from its beginning, and it will certainly continue to do so in the future as the company continues to expand.

REFERENCES