

Sinkholes and Titan America's Cement Plant and Mine Castle Hayne, NC

What is a sinkhole?

A sinkhole is a naturally-occurring depression in the land surface, formed most commonly in areas of limestone bedrock.ⁱ Sinkholes can range in size from less than 1 to more than 100 feet in depth.ⁱⁱ Sinkhole formation can be accelerated when man-made activities like water withdrawals and mining occur near or within limestone formations.

What causes sinkholes?

Rainfall seeps through soil and reacts with decaying vegetation to create slightly acidic water. As the water moves through spaces and cracks underground, it slowly dissolves limestone and creates a network of cavities and voids. As the limestone dissolves, pores and cracks are enlarged, carrying even more acidic water. When the land surface above collapses or sinks into the cavities, a sinkhole is formed.ⁱⁱⁱ

Are sinkholes common in US and/or New Hanover County?

Experts estimate 20 percent of the US is susceptible to sinkholes because of the natural geology known as karst or limestone.^{iv} Certain areas are more prone to sinkholes than others, such as the coastal plain area of North Carolina.^v Numerous sinkholes in New Hanover County have already been documented.^{vi}

In New Hanover County, what are the main causes of sinkholes?

Experts cite water withdrawal from the Castle Hayne aquifer as a leading cause of sinkhole formation in our county.^{vii} Several past sinkholes have already been linked to water withdrawal from the Castle Hayne aquifer by the Cape Fear Public Utility Authority as they try to meet the growing water needs of the county. Sinkholes have also developed at the proposed Titan site--caused by dewatering from past mining activity by other industries.

Will Titan America's cement project have any effect on sinkholes in our area?

Yes. Local authorities have already established a risk of sinkhole formation when large amounts of water are pumped from the Castle Hayne aquifer. Titan plans to withdraw an additional 8-16 million gallons per day from the Castle Hayne aquifer for their mining operation--which will last at least 30 years. In addition to their withdrawals, Titan's mining and blasting will fracture natural limestone formation, increasing water seepage. If Titan is allowed to build their plant, additional sinkhole development is expected.^{viii}

Are sinkholes a serious threat?

Deaths and injuries from sinkholes are rare, but they do occur. More commonly, sinkholes can be enormously costly. Insurance claims for sinkholes submitted in Florida alone between 2006 and 2010 totaled \$1.4 billion, according to a 2010 Florida Senate report.^{ix} It is not always clear who pays to repair a sinkhole, especially if it occurs on private property.

What can citizens do if they are concerned about Titan's impact on sinkholes?

Oppose the project and let your elected officials know. The amount of water Titan could withdraw from our aquifer is twice as much as the Cape Fear Public Utility Authority currently withdraws from groundwater to meet the growing needs of our county. CFPUA has capacity to withdraw 6 million gallons per day. Titan has stated they could withdraw up to 16 million gallons per day. CFPUA will likely need to expand its water withdrawal as our area grows. Water rights, contamination risks, and property damage are three major reasons why the Titan project is not appropriate for our area.

This document was prepared by the North Carolina Coastal Federation. Email contactus@stoptitan.org with any questions. October 2013. Sources on page 2.

ⁱ http://ncwater.org/education_and_technical_assistance/Ground_Water/Sinkholes/

ⁱⁱ <http://www.usgs.gov/blogs/features/printemail/?post=176125>

ⁱⁱⁱ <http://www.usgs.gov/blogs/features/printemail/?post=176125>

^{iv} <http://www.usgs.gov/blogs/features/printemail/?post=176125>

^v http://ncwater.org/education_and_technical_assistance/Ground_Water/Sinkholes/

^{vi} “Groundwater Withdrawals in Northeast New Hanover County: History, Current Challenges and a Way Forward.” CFPWA. September 2011

^{vii} “Potential Groundwater Impacts of Proposed CCC Facility.” GeoResources, Inc., Sept. 13, 2013. Page 9-10.

^{viii} “Potential Groundwater Impacts of Proposed CCC Facility.” GeoResources, Inc., Sept. 13, 2013. Page 2.

^{ix} <http://www.flsenate.gov/Committees/InterimReports/2011/2011-104bi.pdf>
