

**FACT SHEET FOR NPDES PERMIT DEVELOPMENT  
NPDES PERMIT No. NC0089168**

Facility Information			
Applicant/Facility:	Martin Marietta Materials, Inc. - Vanceboro Quarry		
Applicant Address:	P.O. Box 30013, Raleigh, NC 27622		
Facility Address:	Welbourn Road, Vanceboro, NC		
Permitted Flow (MGD):	9 MGD design average flow, split between Outfalls 001/002		
Type of Waste:	Groundwater and Stormwater		
Facility Classification:	I		
Permit Status:	New Proposed Discharge		
County:	Beaufort		
Miscellaneous			
Receiving Stream:	UT to Blounts Creek	Regional Office:	Washington
Stream Classification:	C-Sw NSW	NC Grid/USGS Quad:	Bath
River Basin:	Tar-Pamlico	Date:	February 4, 2013
Subbasin	030307	Facility Location: 	
303 (d) listed?	No		
Summer 7Q10 (cfs)	Zero		
8-digit HUC	03020104		
IWC (%):	100%		

**Overview:**

- This is a new application from Martin Marietta Materials for a discharge of comingled groundwater and stormwater from mining operations. Although a facility of this type typically obtains coverage under the NCG020000 General NPDES stormwater permit, it was decided that the discharge volume and proximity to coastal waters warranted that the facility obtain an individual NPDES wastewater permit.
- The extracted mineral is crushed limestone for use in the construction industry. Pit dewatering, required to extract this material, will create a discharge of comingled groundwater and stormwater. The flow from pit dewatering and comingled stormwater during full production is estimated to be 9.0 MGD. It is projected that full production may take decades to reach.
- The proposed discharge will mostly come from the Castle Hayne aquifer. Based on aquifer testing data, this discharge is expected to have a pH of 6.9, an alkalinity of 321 mg/L, and a hardness of 316 mg/l.
- The facility will have two outfalls which discharge to separate tributaries. Each outfall has a projected discharge of 4.5 MGD. Distributing flow to two separate ditches will act to minimize potential geomorphic impacts.
- This site will not discharge any domestic wastewater, and does not include oxygen-demanding waste.

- Wastewater treatment will consist of two pit clarification ponds. These ponds have a capacity of about 50 million gallons each.
- There will be a series of closed-loop settling cells which will provide 125 million gallons of plant makeup water.
- No chemicals will be used in the processing of crushed stone or added to the discharge.
- The mining site is surrounded by property owned by Weyerhaeuser Company for silviculture operations, and has been extensively ditched.
- Due to heightened public interest, a public hearing on the draft permit will be held. The hearing will be combined with a public hearing required for the issuance of a Section 401 water quality certification.

### **Receiving Stream**

- Both outfalls discharge to UTs to Blounts Creek. These discharge locations are considered zero-flow freshwater streams. They are located approximately 1100 feet apart.
- Blounts Creek is tributary to Blounts Bay, which flows into the Pamlico River.
- The outfalls are located at the headwaters of Blounts Creek. Blounts Creek from its source to Herring Run is classified C-Swamp NSW; from Herring Run to Blounts Bay it is classified SB-NSW. Herring Run is approximately three miles downstream from the confluence of the outfalls.
- The outfalls are not located in a primary nursery area (PNA).
- Blounts Creek is not on the 2012 303(d) list. However, Blounts Bay is listed as being impaired for chlorophyll-a and for copper. This discharge is not expected to contribute to this impairment. The wastestream is not considered a nutrient source, and should not stimulate algal growth.
- USGS does not currently provide low-flow characteristics for streams affected by tidal influences. Therefore low-flow characteristics cannot be determined for the location where Blounts Creek discharges into Blounts Bay nor for the Pamlico River at Blounts Bay.

### **Permit Development**

- Federal effluent guidelines at 40 CFR 436.22 apply to the crushed stone subcategory of mineral mining and processing. The only parameter applicable in these guidelines is pH, which is limited to a range of 6.0- 9.0 standard units similar to State freshwater standards.
- NC General Stormwater Permit No. NCG020000 for mine dewatering discharges was used as a guideline for permit development. Applicable conditions from the general permit, including the pumping operation and monitoring plan and relevant best management practices (BMPs), were included as special conditions.
- As a limestone mining operation this facility falls under SIC code 1429 for crushed and broken stone. 15A NCAC 2B.0508 specifies monthly monitoring for turbidity, settleable matter, TSS, and pH.
- A toxicity testing requirement was not proposed for this application. The discharge consists solely of mine dewatering groundwater and stormwater, with no chemicals added. Division guidance is not to require toxicity testing for mine dewatering.
- Settleable solids were limited to 0.1 ml/L, consistent with the stormwater general permit.
- Effluent Turbidity was limited to that which would not cause the concentration in the receiving waters to exceed 50 NTU. This is in accordance with standards for freshwater Class C waters.

## Engineering Alternatives Analysis

- In accordance with state regulations concerning antidegradation (15A NCAC 2B.0201), the permittee must consider non-discharge alternatives. The permit application contained an engineering alternatives analysis (EAA) dated September 2011 to consider these options.
- In response to a request for additional information regarding non-discharge alternatives, the applicant submitted a revised EAA on September 14, 2012 prepared by Groundwater Management Associates (GMA). The following options were considered: connection to an existing public water supply system, land application, groundwater injection, direct discharge, and combinations of direct discharge with each of the other alternatives. As shown on the following table, it was demonstrated that the most economical and technically feasible alternative was a direct discharge of all effluent to surface waters. The Division concurs with the conclusions of the revised EAA.

Discharge Alternative	Present Value of Costs Analysis (20 Year)
100% Discharge to Blounts Creek	\$2,997,928
Raw Water to Vanceboro & Discharge to Blounts Creek	\$6,775,594
Groundwater ReInjection & Discharge to Blounts Creek	\$7,698,116
100% Groundwater ReInjection	\$11,919,365
Raw Water to Vanceboro & Land Application Discharge	\$21,410,542
100% Land Application	\$23,002,364

## Water Quality Impacts Evaluation

The two major water quality parameters that may be influenced by a quarry dewatering discharge at this location are pH and salinity. Due to heightened public interest and the complex nature of these issues, the Division requested that the applicant conduct further studies. Martin Marietta Materials, Inc. subsequently contracted for the studies summarized below:

- Aquatic Habitat Assessment of the Upper Headwaters of Blounts Creek in the Vicinity of a Potential Quarry Site near Vanceboro, Beaufort County, NC (CZR Incorporated, August 2011). This study evaluated Blounts Creek and associated unnamed tributaries for aquatic habitat at four locations - two potential impact locations and two control (no planned impact) locations. The habitat assessment included a collection of water quality data (salinity, dissolved oxygen, and pH), fish data (species richness), and macroinvertebrate diversity. Water quality data were within expected ranges for coastal plain swamp streams.
- Technical Memorandum from Kimley-Horn and Associates (Kimley-Horn) dated September 6, 2012. This report summarized the results of several analyses regarding stream stability, potential flooding, and water quality issues. It also provided predicted zones of impact for further analysis. There were four major conclusions: (1) Modeling indicated that there is no substantial off-site impact to flooding from the addition of a maximum 18 cfs discharge; (2) The results of the bank stability analysis showed that only minor changes would be anticipated from this discharge; (3) The pH would be raised from the 4.0-5.5 range to 6.3-6.9 in Blounts Creek above the confluence with Herrings Run; and (4) Predicted changes in salinity would not be enough to affect mobile aquatic species. It was concluded that potential increases in pH in upper Blounts Creek may result in increases to the numbers and diversity of acidic-intolerant species. It was also recommended that the further planned study by CZR Incorporated provide a narrative discussion of potential impacts to immobile plants and invertebrates.

- Water Quality Analysis Technical Memorandum by Kimley-Horn dated October 10, 2012. This report addressed comments from the Division and from the US Army Corps of Engineers (USACE), and provided CZR Incorporated with predicted zones of potential impact for further analysis. The report concluded that an increase in pH (from 4.0-5.5 to 6.3-6.9) would be noticeable from the discharge point to the confluence with Herrings Run. Regarding salinity, a volumetric displacement model predicted no significant changes at the affected area downstream of Herrings Run. Such changes may be masked by the natural variability from tidal effects and runoff events. For example, actual salinity measurements taken after Tropical Storm Beryl in May 2012 and other storm events showed much lower salinity than that predicted to occur from the permitted discharge. Model predictions generally show less than one part per thousand (1 ppt) difference in salinity between base flow conditions and base flow plus full discharge conditions, at several distances and depths below Herrings Run.
- Flood and Stability Technical Memorandum by Kimley-Horn dated October 10, 2012. This report addressed concerns from comments made by the Division, by USACE, and by residents of the Cotton Patch Subdivision regarding flood elevations and stream stability. The results of this study found that the discharge from the proposed quarry would have little effect on flood elevations. In addition, the maximum dewatering discharge from the two outfalls was predicted to result in little or no changes to the channel geometry of the upper reaches of Blounts Creek. The limited amount of stream bank erosion would not be expected to result in a significant increase in instream turbidity.
- Technical Memorandum by CZR Incorporated, October 30, 2012. This report addressed potential effects on identified fish populations from predicted changes in Blounts Creek water quality. The report findings include: (1) No adverse effects are likely to occur to fish species. Increases in pH provide more habitat and less stress to freshwater species; and diadromous species may also have a more suitable habitat for spawning; (2) No adverse effects are likely to occur to macroinvertebrates or managed invertebrates (e.g. blue crabs, hard clams, shrimp); (3) No adverse effects are likely to essential fish habitat (EFH) in Blounts Creek due to predicted changes in pH, salinity, and flow velocity from the proposed maximum design quarry discharge. EFH includes submerged aquatic vegetation (SAV), aquatic beds, wetlands, and the water column. The report also notes that the only Federally-listed endangered, threatened, or special-concern fish species known or expected to regularly occur in the vicinity of Blounts Creek is the American eel (*Anguilla rostrata*), currently listed by USFWS as a species of concern.

On the basis of the above reports, DWQ concludes that the proposed discharge will have no likely significant adverse effects to aquatic life.

**Proposed Schedule for Permit Issuance:**

Draft Permit to Public Notice:	February 4, 2013
Public Hearing	March 14, 2013
Permit Scheduled to Issue:	June 2013

**NPDES CONTACT**

If you have questions regarding any of the above information or Draft Permit, please contact Tom Belnick at (919) 807-6390 or via email at [tom.belnick@ncdenr.gov](mailto:tom.belnick@ncdenr.gov).