



June 10, 2014

0739604213.300

Mr. Simon Lobdell, P.E.
City of Durham
Water Management Department
1600 Mist Lake Drive
Durham, North Carolina 27704

**RE: SUMMARY OF GROUNDWATER MONITORING WELL MW-5 REPAIRS
CLOSED CITY OF DURHAM LANDFILL
DURHAM, NORTH CAROLINA**

Dear Simon:

Golder Associates NC, Inc. (Golder) is submitting this summary of the repair of groundwater monitoring well MW-5 and upgrades to Nature and Extent Study (NES) well NES-3. During the second semi-annual water quality monitoring event performed on November 7, 2013, personnel from Golder discovered that groundwater monitoring well MW-5 had been damaged and was unable to be sampled. It is speculated that it was damaged during mowing activities at the facility. Damage to the above-grade steel protective casing and the polyvinyl chloride (PVC) riser extended to approximately 2 feet below ground surface. A photograph of the damaged well is provided on Figure 1.

Well NES-3 was installed with a PVC stickup and a locking expansion cap during the NES on July 31, 2009, by S&ME. The City will be submitting a request to the North Carolina Department of Environment and Natural Resources (NC DENR) to allow NES-3 to replace MW-10 in the water quality compliance network. In order to be considered an acceptable monitoring point, NES-3 required a protective casing and concrete apron.

Golder contracted Parratt-Wolff Inc., a NC licensed well driller, to replace the steel protective casing, concrete apron, and the damaged portion of the PVC riser of MW-5, and to install a steel protective casing and concrete apron to NES-3. Golder oversaw the well repairs and upgrades on March 5, 2014. As required, the well repair and upgrade were performed in accordance with Title 15A North Carolina Administrative Code (NCAC) 02C .0112.

Well MW-5 was excavated approximately 2 feet below ground surface, which was the depth that the steel protective casing and PVC riser was bent. The casing and riser were cut below the bend. The PVC riser was replaced using a slip coupling (without glue). A 4-inch by 4-inch square anodized aluminum protective casing was installed and a 3-foot by 3-foot by 0.5-foot concrete apron was poured. A photograph of the repaired well is provided on Figure 1.

At NES-3, the area around the well was excavated approximately 4-inches in order to construct the concrete well apron just above ground surface. Then, a 4-inch by 4-inch square anodized aluminum protective casing was installed and a 3-foot by 3-foot by 0.5-foot concrete apron was poured. The height of the PVC riser of NES-3 was not modified and therefore no additional survey was required. Photographs of NES-3 before and after the upgrades are provided on Figure 2.

Golder contracted Dewberry Engineers, a NC licensed surveyor, to survey the repaired PVC riser and concrete pad of MW-5 for location and elevation as required in 15A NCAC 13B .1632(d)(1). Survey activities were completed on May 27, 2014. A sealed document with the location and elevations is attached.

Please keep this report in the facility records to document the repair of MW-5 and the upgrade of NES-3. Golder recommends forwarding a copy of this report to the NC DENR and can do so for the City upon your approval. If you have any questions, please contact the undersigned at 336-852-4903.

Golder Associates NC, Inc.

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Golder Associates: Operations in Africa, Asia, Australasia, Europe, North America and South America

Sincerely,
GOLDER ASSOCIATES NC, INC.



David "Dusty" Y. Reedy II, P.G.
Senior Project Hydrogeologist



Rachel P. Kirkman, P.G.
Associate and Senior Consultant

Attachments: Figure 1: Well Repair Photos of MW-5
Figure 2: Well Upgrade Photos of NES-3
Sealed Surveyor Monitoring Well Report

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Discovery of damaged Well MW-5 on November 3, 2013



Well MW-5 after repairs on March 5, 2014

CLIENT
CITY OF DURHAM

PROJECT
CITY OF DURHAM LANDFILL

CONSULTANT

YYYY-MM-DD 2014-06-05

TITLE
WELL REPAIR PHOTOS OF MW-5



PREPARED DYR

DESIGN DYR

REVIEW RPK

APPROVED RPK

PROJECT No.
0739604213

Phase
300

Rev
0

FIGURE
1



Well NES-3 on before upgrades on March 5, 2014



Well NES-3 after upgrades on March 5, 2014

CLIENT
CITY OF DURHAM

PROJECT
CITY OF DURHAM LANDFILL

CONSULTANT

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WELL UPGRADE PHOTOS OF NES-3

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FIGURE
2



Monitoring Well Report

Client: Golder Associates NC, Inc.
5B Oak Branch Drive
Greensboro, NC 27407

Site address: Durham County Landfill
2115 East Club Blvd.
Durham, NC 27704

Horizontal Datum: GPS Survey, NAD 83
Vertical Datum: GPS Survey, NAVD 88

Structure Number: Monitoring Well #5 (MW-5)
Northing: 832227.07
Easting: 2043380.96
Elevation - PVC Riser: 300.26 ft.
Elevation - Concrete Pad: 296.67 ft.



Photo looking northeast



Photo looking southeast

Company: Dewberry Engineers Inc.

Surveyor
Signature/Seal
Printed Name Adam C. Hales, PLS
License Number L-4980
Phone 919-881-9939
Date: 05/28/2014

