State of New Jersey

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BOB MARTIN
Commissioner

April 21, 2016

William Colvin
BRAC Environmental Coordinator
OACSIM – U.S. Army Fort Monmouth
PO Box 148
Oceanport, NJ 07757

Re: *Methane Gas Survey Report for Nine Landfills*
Fort Monmouth
Oceanport, Monmouth County
PI G000000032

Dear Mr. Colvin:

The New Jersey Department of Environmental Protection (Department) has completed review of the *Methane Gas Survey Report* portion of the referenced submittal, received January 19, 2016, prepared by Parsons Government Services Inc. (Parsons). Comments to the *Landfill Boundary Refinement* portion of the submittal will be provided in the near future.

A methane gas survey was conducted at each of the Fort's nine landfills in July and August of 2015 to evaluate the potential presence of methane gas. Methane gas sampling was performed at 95 locations at the landfills, with the majority of readings revealing no methane present. Two of the landfills, FTMM-05 and FTMM-18, had no detectable levels of gas measured from the locations sampled. Although no exceedances were detected along the perimeters of any landfill, levels greater than twenty-five percent of the lower explosive limit (LEL) for methane were detected in seven of the nine landfills at interior locations nearer to the center portion of the landfills.

Based on the levels of gas found, it is agreed these results do not indicate the need for either passive or active gas evacuation systems at this time, provided the landfills will be covered with relatively permeable soil cap (as per the intended/proposed remedy) as opposed to an impermeable cap. If the capping system for a landfill changes, the need for a landfill gas venting system is to be reevaluated.

The generation and subsurface flow of landfill gas is impacted by many variables and is difficult to predict. Although a venting system is not required at this time, based upon results indicating

methane is present within most of the landfills, and to be consistent with Solid Waste Rules, additional monitoring is required.

1. An additional methane survey is to be conducted at all landfills. These surveys should be conducted at points throughout the landfill as well as along the perimeter under the conditions described below in order to confirm the previous results. If the results are significantly different than those reported in the January 2016 report, these recommendations should be reevaluated.

2. The responsible entity is to begin conducting quarterly methane surveys immediately under the conditions described below at the perimeter of landfills FTMM-02, FTMM-12 and FTMM-14. Quarterly methane surveys should be performed at landfills FTMM-03, FTMM-04 and FTMM-8 upon completion of installation of the final cover system.

   The quarterly methane gas surveys should be performed around the perimeter of the landfills to determine whether gas is migrating off-site or into on-site structures, if present, in accordance with N.J.A.C. 7:26-2A.8(h)9. The survey should be performed with a hand held portable explosimeter, or equivalent, and the minimum sampling depth shall be three feet below the ground or above the water table, whichever is higher. The sampling locations should be strategically placed to account for nearby receptors; however, the maximum interval between sampling points for ground samples shall be 300 feet. The maximum interval between sampling points for any structures located proximal to each landfill shall be 50 feet; however, there shall be at least one sampling point along each side of the structure (if present). Areas with natural barriers to gas migration, e.g. water bodies, may be eliminated from the surveys. When methane is detected at a monitoring location, additional monitoring shall be conducted at 25-foot intervals both away from and along the landfill perimeter (in both directions). Monitoring shall continue at these 25-foot intervals until values are 0% of the LEL.

   To obtain worst case results, surveys should occur when barometric pressure is falling.

   It is recommended that quarterly gas monitoring continue for at least 8 sampling events. Future decisions regarding the need for installation of a venting system or the reduction or discontinuance of further monitoring may be made based on the results of the quarterly surveys.

3. Any buildings to be built on or near the landfills should be constructed with a system to prevent gas migration into the building. The system should be designed and constructed in accordance with the requirements of N.J.A.C. 7:26-2A.7(f)14 or an equivalent design.

The following is a detailed evaluation of the methane results included in the January 2016 report for each landfill:

FTMM-02

Three out of 13 locations exhibited readings of methane. Two sample locations near the middle of the landfill had methane readings of 14.5% and 8.8% methane, 290% and 176% of the LEL, respectively. Residential homes are located approximately 100 south of the landfill. Due to the methane levels and close proximity to residential properties methane monitoring should begin immediately.

FTMM-03

Two of 12 sample locations exhibited readings of methane. One sample location near the middle of the west end of the landfill had a reading of 2.7% methane, which is 54% of the LEL. There is an unidentified building (secured by a fence) located approximately 50 feet south of the western portion of the landfill perimeter, and another building located approximately 230 feet west of the west end of the landfill. Due to the presence of methane and the proximity of the building, quarterly perimeter methane monitoring should be performed upon installation of final cover on the landfill

FTMM-04

Methane was detected at two out of ten locations. One sample location near the interior of the landfill east of Mill Creek had a methane reading of 5.5% methane, which is 110% of the LEL. A small building is located southwest of the landfill and adjacent to the Avenue of Memories. Building 689 is located approximately 80 feet east of the landfill perimeter. Due to the presence of methane and proximity to buildings and utility lines, quarterly perimeter methane monitoring should be performed upon installation of final cover on the landfill.

FTMM-05

There were no methane gas readings detected in six sample locations at this landfill. If another round of sampling confirms that no methane is present, no further monitoring will be required.

FTMM-08

Methane was detected at two of 13 sampling locations. One sample location in the northern portion of the landfill near Parkers Creek had a reading of 16.9% methane, which is 338% of the LEL. There are buildings located approximately 100 feet east of the landfill and buildings located south of the landfill, across Sherrill Avenue. Due the presence of methane and the proximity to buildings, quarterly methane monitoring should begin upon installation of the final cover.

FTMM-12

Methane was detected at four of 15 sampling locations. Three sample locations had methane readings of 31.2%, 25.7%, and 3.4% methane, which are 624%, 514%, and 68% of the LEL. The two higher readings were recorded in the middle portion at the western end of the landfill; the third, lower reading was recorded in the middle portion at the eastern end of the landfill. There are many base buildings located in proximity to the landfill along its southern border. Due to the levels of methane detected and the building locations, quarterly perimeter methane surveys should begin immediately.

FTMM-14

Methane was detected at four of 15 sampling locations. Two sample locations in the central portion of the landfill had methane readings of 21.4% and 7.8% methane, which are 428% and 156% of the LEL, respectively. There are many buildings located along Gosselin Avenue immediately north of the landfill's border (approximately 50 feet). Due to the high levels of methane detected and the proximity to buildings, quarterly methane surveys should begin immediately.

FTMM-18

There was no methane gas detected at the five sample locations for this landfill. There are buildings located immediately south of the landfill. If an additional round of sampling confirms no methane present, no further monitoring would be required.

FTMM-25

Methane was detected at one out of seven sampling locations. One sample location in the central portion of the landfill had a reading of 5.8% methane, which is 116% of the LEL. There are several buildings located east and south of the landfill. If an additional round of sampling confirms the results of the January 2016 report, then no further monitoring should be necessary.

Please contact this office with any questions.

Sincerely,

Linda S. Range

C: Joe Pearson, Calibre
James Moore, USACE
Rick Harrison, FMERA
Joe Fallon, FMERA
Frank Barricelli, RAB