

## 4 SUMMARY AND CONCLUSIONS

On behalf of the City of Key West, CH2M HILL Engineers, Inc. has prepared this notification of certification, signed and sealed by a professional engineer, verifying that long-term care of the Stock Island Landfill has been completed in accordance with the Closure Plan (Appendix IV) and is to be included in the landfill operating record.

The Engineer noted no signs of subsidence anywhere on the landfill. Slopes and the top shelf were relatively smooth, easily navigable by a mower. In addition, there were no signs of extensive erosion and no signs of the exposed polyvinyl chloride (PVC) geomembrane cap. The cover system appeared intact and operational.

Stormwater management is performed in accordance with the South Florida Water Management District Permit 44-00076-S. Stormwater structures, berms, and terraces appeared undamaged and functional with minimal or no signs of erosion. The inspection was conducted during a dry period; therefore, the functionality of the system was not observed. The system will continue to be managed in accordance with the aforementioned permit.

In addition to analysis of recent topography, the Stabilization Report (Appendix II) includes a comparison of recent topography and the 2007 FDEM LiDAR survey within the landfill footprint. Comparison of topography dating back approximately nine (9) years and what was obtained recently indicates the only areas of subsidence were either repaired as part of the subsidence repair work described in Section 2.2, or low areas located at stormwater drainage inlets where the 2007 LiDAR failed to obtain the same level of accuracy as recent topographic mapping. Sideslopes and the top shelf exhibited no significant subsidence in the comparison. It is the Engineer's conclusion that the comparison between recent topography and the 2007 FDEM LiDAR survey indicates significant subsidence of the waste has ceased in accordance with Chapter 62-701.620(1)(c), F.A.C.

Sampling of the landfill gas vents indicated the presence of methane and hydrogen sulfide in seven (7) of the vents on the top shelf of the landfill with trace amounts of methane in a few additional wells. Sampling of the remaining vents indicated no measurable methane or hydrogen sulfide. Landfill gas measurements indicated the intermittent presence of landfill gas at the deeper vents (i.e. those on the top shelf), with no indication the vents on the sideslope are producing gas in consistently measureable amounts. Although LFG production is still occurring, it is occurring at a slow rate and only detectable in the deepest portion of the landfill; therefore, LFG production in and of itself should not prevent the termination of long-term care of the landfill.

Regarding groundwater, semi-annual water quality sampling events for groundwater monitoring wells at the Stock Island Landfill over the 5-year-period, June 2011 - December 2015, were reviewed and evaluated. Only one groundwater parameter was found to occasionally exceed the Groundwater Cleanup Target Levels (GCTLs) set forth in Chapter 62-777, F.A.C. This parameter was TDS at Well #2 and Well #3. Both of these wells are between the landfill and the Gulf of Mexico. The background water condition is due to the Gulf of Mexico tidal influence the groundwater incurs through the highly permeable formations. Therefore, the TDS GCTL exceedance should not be seen as a potential concern for leachate leaks. The other parameters that have been monitored have not shown any GCTL exceedance or concerning data trends. The data analyzed during the reporting period indicated the landfill does not impact groundwater at concentrations that may be expected to result in violations of Department water quality standards or criteria. Therefore, CH2M proposes groundwater monitoring be

removed and groundwater wells abandoned as part of the Certification of Completion of Long-Term Care for the Stock Island Landfill.

In closing, the request for Certification of Completion of Long-Term Care for the Stock Island Landfill (WACS #79636), as well as release from Consent Order 89-0466 – Amendment No. 3 (included as Appendix I) has been prepared in accordance with Chapter 62-701.620, FAC. Upon Department acceptance of the City's request to certify discontinuation of the Long-Term Care requirements of Chapter 62-701.620, FAC, for the Stock Island Landfill, the City will maintain the property throughout a period herein referred to as "perpetual." City perpetual maintenance will continue to include the following:

- Management of the property in accordance with the South Florida Water Management District Permit 44-00076-S (Appendix II, Exhibit 4).
- Mowing / Clearing of vegetation over the capped area six times per year, or on an as-needed basis. Vegetation clearing would include clearing areas surrounding stormwater structures in accordance with the stormwater permit.
- Iguana control services are utilized on an as-needed basis. The City will continue to proactively protect the geomembrane from iguana activity on the capped landfill area with the ongoing assistance of a professional iguana management and removal contractor.
- In the event subsidence occurs, the City will repair area(s) in such a manner as to return the area(s) to their original permitted closure condition.
- The City will continue to address sparse and / or distressed vegetation over the entire Stock Island Landfill by replanting on an as-needed basis.