



THE CITY OF KEY WEST

Post Office Box 1409 Key West, FL 33041-1409 (305) 809-3700

TO: Sustainability Advisory Board

FROM: City of Key West, Utilities Department

CC: Alison Higgins, Sustainability Coordinator

DATE: June 7, 2019

SUBJECT: Six-month summary report on findings at the Stock Island Landfill

ACTION STATEMENT:

Staff has been tasked to assist the Sustainability Board with evaluating the Stock Island Landfill. To review environmental conditions, testing reports and current condition to determine highest and best use.

This includes:

1. If it is currently a danger to the local community or environment.
2. If "landfill reclamation" is a viable option.
3. If landfill should be used as a city park or another option like a solar park.
4. If we should leave as is.

BACKGROUND:

City of Key West dump site opened in the early 1930's. Aerials from 1959 show the current footprint of the landfill was water in 1959. It is believed that trenches were dug and fill was used as the base when it became a landfill began in the late 1960's.



1989~ Consent Order 89-0466 from FDEP

1990~ Phase I Closure

1992~ Phase II Closure. Closed by placing 18 inches of screening sand over one layer of 30-mil PVC geomembrane and covered with 6 inches of bedding sand.

2008~ 2 repairs geomembrane cap repairs.

2016~ Consent Order Ends. Released from Long Term Care. Still required to maintain liner, stormwater management, pest management and grounds maintenance. City voluntarily performs annual groundwater monitoring.

Current Conditions of the Stock Island Landfill

- Elevation approximately 90 feet; Footprint 14 acres; No bottom liner or leachate collection.
- Top cover/ cap 18 inches of screening sand cover by one layer of 30-mil PVC geomembrane and covered with 6 inches of bedding sand and grass.
- It is approximately 27 years since garbage buried at landfill, and gas production is past peak (Years 5-7) and on decline. Landfill waste can produce small amounts of gas up to 30-50 years.
- Currently 7 gas vents in the deepest areas on the top shelf of the landfill still have a slow production of gases, including methane and hydrogen sulfide, only detectable for a couple of hours a day. Not enough gas is present to draw out via vacuum.
- Minimal erosion and stormwater systems are clear and working. Erosion is addressed when detected.
- Engineer Review in 2016: Determined no subsidence when comparing to 2007 topo survey.
- 2018 Report: The impact mining would have on all the residents and businesses in the area would be severe from dust and noise to exposing garbage to the elements and traffic conditions of hauling the material out of the Keys. The rough cost estimate is between \$80-\$180 million.
- FDEP Inspection Report April 2019: No hydrogen sulfide gases were detected. The only negative remarks involved: mowing the grass, some erosion* on the west side of hill, removal of cars stored on site, and locks on the water wells. Most issues are already resolved.

*The erosion detected could either be subsidence or top cover erosion. Contractors are scheduled to remove topsoil in area to look at liner to ensure condition. FDEP is notified of all actions.

Staff Research

One citizen brought a number of concerns to the Sustainability Advisory Board about the landfill. The concerns and current status of those concerns are as follows:

- 1) Toxins are leaching out of the landfill.
Groundwater monitoring from 2011-2015 reviewed from 2 independent companies. Only parameter to occasionally exceed Groundwater Cleanup Target Levels is TDS (turbidity), at Wells #2 and #3. These wells are between the landfill and the Gulf of Mexico, therefore not a sign of leachate leaks. There has been no evidence of fish kills or seagrass die-offs in the area.
- 2) Sampling occurred only at low tide, purposely missing toxins and skewing data.
Sample data from the past 20 years was spot reviewed. Samples on all wells have happened between, before, after, and during high and low tides.
- 3) Heavy metals were found during 2017 Gerald Adams School rebuild.
 - Risks at Gerald Adams were from dermal contact only; no gases were present in quantities of concern. The School Board was advised to institute a Soil Management Plan during construction but was advised that the public does not need to take special precautions with regard to working, or going to school, even while construction was going on. The surface of the affected area was covered with 2 feet of fill.
 - The City's Landfill is already capped, with no soil exposure, and heavy metals have always been below allowable limits.
- 4) Dangerous amounts of gas are still being produced, namely Hydrogen Sulfide.
 - OSHA lists 0.11-0.33 ppb as typical background concentrations of Hydrogen Sulfide.
 - Odor is the first main sign of Hydrogen Sulfide, the rotten egg smell that comes from its most abundant Keys source: decomposing detritus in along shorelines. The smell is noticeable at 0.01-1.5 ppm.
 - At 2-5ppm (traceable by FDEP's meter), prolonged exposure may cause nausea, tearing of the eyes, headaches, loss of sleep or airway problems in some asthma patients. At 20ppm, signs are fatigue, loss of appetite, headache, irritability, poor memory and dizziness.
 - City workers operated out of the Waste to Energy Plant at the foot of the landfill for many years without any issues. In Feb 2019, the Florida Dept of Health reported receiving no complaints of any kind about the area except for one about dust in 2013.
 - May 2019 perimeter samples taken by FDEP detected no Hydrogen Sulfide from 0-100ppm.

Final Quarterly Status: No causes for alarm have been found at the Landfill, verified by FDEP and EPA. Mining the landfill will increase leachate, dust and traffic at a considerable cost and is considered not feasible.