



FLORIDA

BIOSOLIDS MANAGEMENT 2018 - STATE SUMMARY

This summary, a dashboard of state statistics, & further data are at www.biosolidsdata.org

In Florida...

- *Most wastewater solids (sewage sludges) are treated to make biosolids and are applied to soils. In 2018, about half were treated to the highest quality standard, a special “Class AA” designation under Florida regulations, and distributed and marketed as fertilizer. About a quarter were Class B biosolids applied to soils at permitted sites. The remaining biosolids went to landfill, except for ~0.4% that was burned at waste-to-energy facilities.*
- *Class AA biosolids have been distributed and used with few further restrictions, making them flexible fertilizer and soil amendment products in the general marketplace. The amount of Exceptional Quality (EQ) Class AA biosolids produced in Florida has been increasing over the past decade.*
- *Biosolids beneficial use on soils – i.e. Class B land application – has created increasing concerns amongst the public and lawmakers because of malodors and other nuisances and potential impacts of biosolids-borne phosphorus (P) on surface water quality. This led to law and regulation revisions that became effective in June 2021 and may reduce biosolids beneficial use in the Sunshine State in the coming years.*

Biosolids Management in Florida

Most – 80% – of the estimated 412,000 dry U.S. tons of final biosolids products produced in Florida in 2018 were beneficially used, according to data compiled by the Florida Department of Environmental Protection (FL DEP). Of that total, ~232,000 dry U.S. tons were Class AA biosolids (a Florida DEP designation for the highest quality biosolids) – heat dried, composted, or alkaline stabilized. About 98,000 dry U.S. tons were land applied Class B biosolids used in agriculture. The agency estimates that 350,000 dry U.S. tons of wastewater solids (sewage sludge) went into creating the larger total mass of biosolids products, with the additional tonnage being in the form of compost feedstocks and alkaline materials added in making the products. Most of the remaining ~20% of the state’s wastewater solids (~80,000 dry U.S. tons) was put in landfills. A small amount of wastewater solids (0.4%, 1800 dry U.S. tons) was burned in waste-to-energy facilities. These use and disposal numbers are representative of biosolids management in Florida over the past decade, ever since the state’s biosolids regulations were updated in 2010. Now, in 2021, those regulations have been updated again (see below), and there is a continuing decrease in Class B land application due to odor and nuisance issues driving public concerns and increased restrictions that incentivize production of Class AA biosolids.

Many WRRFs contract out their biosolids management programs, including hauling, site management, distribution, marketing, and reporting. FL DEP reports that 866 WRRFs sent solids to separate preparers in 2018. Those separate preparers treated the solids further to make biosolids

products such as Class AA composts and fertilizers, as well as some Class B biosolids (i.e. there are some small separate preparers that make Class B biosolids from multiple small WRRFs).

“In Florida, Class B biosolids are typically aerobically digested, anaerobically digested, or lime-stabilized. Most are surface-applied, either as dewatered ‘cake’ biosolids or as liquid biosolids. Almost all sites in Florida grow hay crops or are pastures, but citrus groves and sod farms can also use biosolids” (FL DEP, 2014). FL DEP reports that, by 2018 - 2021, many separate preparers who used alkaline stabilization have ceased operations. But a few remain in operation, and all the recently permitted septage land application facilities use alkaline stabilization.

Site permit requirements for Class B biosolids land application include nutrient management plans with, as of 2021, the requirement to develop a nitrogen-based agronomic rate and a phosphorus-based agronomic rate – neither of which may be exceeded. Other state requirements specify setbacks, depth to groundwater, signage, storage, public access, grazing and harvesting restrictions, and record-keeping and reporting. The site permittee does not have to be the land owner – instead, the site permittee could be a biosolids hauler/contractor, or a WRRF permittee.

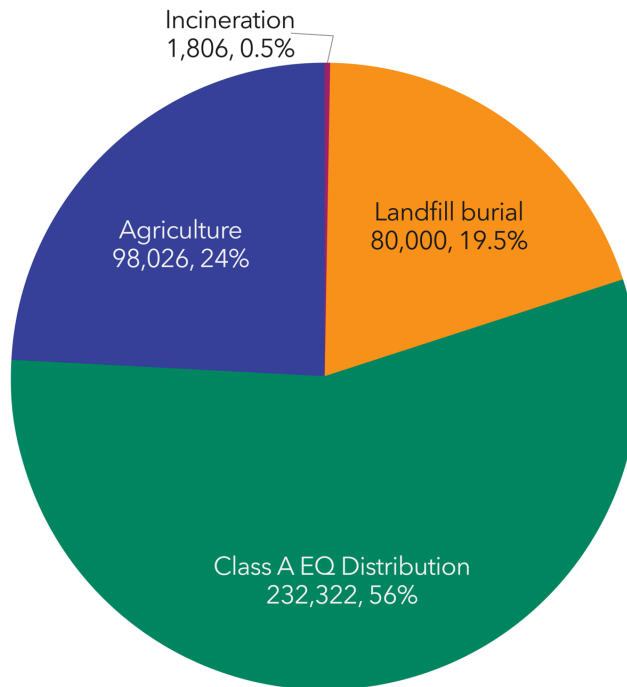
A number of large WRRFs choose to treat solids to Class AA standards – a unique designation created in Florida regulations that is essentially equivalent to Class A Exceptional Quality biosolids under the federal EPA biosolids regulations (Part 503). Class AA biosolids can be distributed and marketed for general use without further restriction, as long as they have a fertilizer license or are sold or given to someone with a fertilizer license (there is an exception for compost outside Northern Everglades watersheds). Class AA biosolids may have different physical forms: compost, heat-dried pellets, heat-dried granular products (i.e. non-uniform-size particles), alkaline-treated semi-solid forms, and even liquid. Class AA distribution and marketing does not require that end use sites be permitted, making their use far more flexible. This benefit has led to a steady increase in the production of Class AA products in Florida over the past decade. FL DEP reported that 232,322 dry U.S. tons of Class AA biosolids were produced by about 39 Florida WRRFs in 2018 compared to 197,115 dry U.S. tons in 2016 and 158,576 dry U.S. tons in 2013 (FL Senate, 2019; FL DEP, 2014). While alkaline stabilization processes have been closing down (for example, an N-Viro facility near Tampa shut down; it had mixed 85% coal ash with 15% wastewater solids), biosolids composting, along with heat drying, has become more prevalent as a way to achieve Class AA designation.

Many WRRFs send some or all of their solids to landfill – 306 reported doing so in 2018. When corrected for wetness, landfilled solids totaled ~80,000 dry U.S. tons in 2018. They included some Class AA, Class A, and Class B biosolids that could not be used at the time. “Disposal of biosolids in landfills must be in accordance with the Department’s solid waste regulation, Chapter 62-701, F.A.C., and the incineration of biosolids must be in accordance with the Department’s air regulations.” There are about 10 Class 1 (lined) landfills that accept wastewater solids/biosolids out of a total of approximately 50 in the state. While there are no “sewage sludge” incinerators in Florida, there are waste-to-energy trash incinerators that, in 2018, burned about 0.4% of the state’s wastewater solids – mostly heat-dried pellets. Air emissions from such facilities are strictly controlled for mercury and other pollutants.

A few Florida WRRFs have helped pioneer new biosolids-related bioenergy technologies. There are several large WRRFs that use anaerobic digestion (AD) and put their biogas to use (e.g. Jacksonville,

Miami-Dade, Tampa, St. Petersburg). In the 2000s, gasification of biosolids was demonstrated at full scale by Maxwest at a facility in Sanford, FL; it was claimed to have overcome most technical issues but faced financial challenges and is no longer operating. Additionally, an Orlando pilot project evaluated supercritical water oxidation.

Florida Biosolids Use & Disposal 2018
(dry US tons, %)
Total: 412,000



Agency/Department Oversight, Regulations, and Permitting

As noted in a FL DEP report on biosolids management in 2013, “Section 403.702, Florida Statutes (F.S.)... promotes resource recovery and management, [and] supports the beneficial use of biosolids such as land application and distribution and marketing of biosolids. Biosolids are typically high in organic content and contain moderate amounts of nutrients such as nitrogen and phosphorus. These properties make biosolids valuable as a fertilizer or soil amendment.”

The beneficial use of biosolids in Florida is regulated by FL DEP under Chapter 62-640, F.A.C. and by the U.S. EPA under 40 CFR Part 503. The Florida regulations are considerably more restrictive and involved than the federal Part 503 rules, including site permitting for Class B land application, set-back distances, nutrient management requirements, and more. In 2010, the Class AA regulations were enhanced to require a fertilizer license or distribution and marketing to someone with a fertilizer license, as well as requiring more information about a facility’s planned distribution and marketing, including contingency plans.

FL DEP permits water resource recovery facilities (WRRFs), including how they manage wastewater solids (sewage sludge). They also permit and oversee Class B land application sites, of which there are about 130 throughout just the northern two-thirds of the state. Typically, a wastewater facility contracts with a hauler or land application company that makes the arrangements with farmers and conducts the land application operations, permitting, and record-keeping.

Florida's additional requirements above and beyond the federal Part 503 include special requirements for molybdenum (Mo). Measuring and reporting Mo are required, and farmers must be given notice if the concentration in the biosolids exceed 37.5 mg/kg, because of possible molybdenosis concerns. The frequency of testing is also more stringent; for example, all Class AA biosolids must be tested monthly.

WRRFs and biosolids site permittees involved with Class B land application must report annually to FL DEP, in addition to completing annual electronic reports under the federal Part 503. FL DEP conducts visits and inspections to ensure compliance and enforcement. The six different district offices get odor complaints and do enforcement locally.

In June 2021, a new version of Chapter 62-640 went into effect; that version addresses public and lawmaker concerns about phosphorus management and potential impacts of biosolids use on surface water quality. These new regulations, required by a law passed by the Legislature and ratified by the Legislature in 2021, may reduce beneficial use of biosolids in Florida because of reduced application rates based on phosphorus, more restrictive groundwater monitoring requirements, new surface water monitoring requirements, and other increased monitoring, which, all together, may make land application more expensive and less viable. About one-third of Florida's counties have local county ordinances restricting biosolids use, some very restrictive, and those ordinances are being allowed to remain in place. Biosolids management programs have one or two years after June 2021 to meet the new requirements, depending on the type of permit they have and when it was issued.

Nutrient management plans (NMPs) – especially phosphorus management – are a major focus of the new 2021 regulations. The updated Chapter 62-640, F.A.C., requires the NMP to establish biosolids application rates based on nitrogen and phosphorus – neither of which can be exceeded. The phosphorus rate is developed based on crop demand with adjustments allowed based on the percent water extractable phosphorus in the biosolids and the soil phosphorus storage “capacity index.”

Pressures on Biosolids Management and Land Application

Overall, as discussed above, pressures on biosolids in FL as of 2018 include the following, which were selected by the state coordinator from a preset list in the NBDP state survey:

1. ENVIRONMENTAL ISSUES – nutrient management, phosphorus (P), nitrogen (N)
2. REGULATIONS ON BENEFICIAL USE – restrictive local ordinances
3. NUISANCE ISSUES – odors, truck traffic, dust, etc.
4. PUBLIC INVOLVEMENT – concerns of neighbors, environmental groups, and others
5. REGULATIONS ON DISPOSAL – strict regulations or fees on disposal

Florida DEP appears to have fewer staff than in 2004 to permit and enforce the biosolids regulations, which are implemented through the wastewater program. This current NBDP research project has found that many other states have also had similar reductions in staff resources dedicated to biosolids over the past ~15 years.

As of 2018, the amount of beneficial use of biosolids had been consistently at a high percentage (~80%) for many years. The production of Class AA products for fertilizer blending and general distribution has increased in recent years, and Class B biosolids have diminished. The use of Class AA biosolids is less restricted and requires no site permits, creating incentives for WRRFs to produce Class AA products. However, because of concerns about excess phosphorus in sensitive surface waters creating public pressure and legislation, in 2021, the recycling of biosolids to soils in Florida is becoming more difficult and may start to diminish.

The public concerns about phosphorus (P) were stimulated in part by reporting by *TC Palm* beginning in 2017 and continuing for several years, leading to encouraging a statewide ban on biosolids recycling to soils (see notes related to phosphorus concerns in references, below). Increasingly, biosolids are perceived as a potential source of excess phosphorus causing algae blooms in surface waters. One particular issue has been an increase in phosphorus levels in the Upper St. John's River watershed over the past ten years as reported by the St. John's River Water Management District. The increase appears to be correlated to the location of large biosolids land application sites and a major shift of biosolids land application from the Lake Okeechobee watershed to the Upper St. John's River watershed after the implementation of legislative requirements for biosolids in the Lake Okeechobee watershed. Concern from local governments and the public led the Florida DEP to form a biosolids technical advisory committee in 2018 to recommend improvements for the management of biosolids in Florida. The recommendations of the biosolids technical advisory committee led to legislation directing the Florida DEP to develop new requirements for the land application of biosolids. The proposed regulations were ratified by the Florida legislature and went into effect in June 2021. Florida DEP predicts that biosolids land applicators will need ten times more acreage to meet the need for much lower application rates now allowed for land application, or that facilities will shift to producing Class AA biosolids. It will be interesting to see the actual effect of the new regulations over the next few years as they are implemented.

Septage Management

It is estimated that 30% of Florida residents and small businesses rely on onsite wastewater systems (septic systems) for wastewater treatment. Septage can be land applied in Florida, and septage haulers treat septage by alkaline stabilization and land apply it directly, in accordance with federal requirements at 40 CFR Part 503. However, much septage is disposed of at WRRFs and contributes to production of solids at those WRRFs.

Land application of septage in Florida was technically prohibited under Department of Health regulations after June 30, 2016 (Section 381.0065(6), Florida Statutes). However, this prohibition did not apply to septage regulated as biosolids under FL DEP regulations and Part 503, and there are about 46 DEP-permitted facilities that are treating septage (sometimes along with biosolids) and applying it to land under the Florida biosolids regulations.

Table 1. Florida Septage Management

Quality of state septage data	Low
Septage haulers based in state:	no data
In-state separate preparers (not WRRFs) taking septage:	54
WRRFs required to take septage?	No
WRRFs that accept septage:	no data
Septage received at WRRFs in 2018 (gallons):	no data
Other outside wastes accepted at WRRFs:	no data
Is fats/oil/grease (FOG) a significant issue?	Yes
Is it regulated?	Yes
How?	septage regulations biosolids/sludge regulations, wastewater permits/regulations, & biofuel facilities/solid waste rules
Is there a proactive program to collect FOG?	No
Can septage be land applied in state?	Yes
If yes, what treatment is required?	Meet Part 503 and the following additional state requirements: Septage can be land applied as biosolids; otherwise the land application of septage is banned.
Most recent septage regulations update:	2010
Full-time equivalent (FTE) at state agency for septage:	no data
Notes: FL DEP does not track septage closely or collect data on amounts used or disposed. FOG (fats, oils, grease) can be accepted by wastewater treatment facilities, biosolids treatment facilities, and septage management facilities. There are also some grease processors and biofuel facilities that may or may not be permitted to take FOG depending on guidance from the FL DEP Division of Waste.	

Major WRRFs, Separate Preparers, and Notable Projects

The Miami area has the largest regional population and WRRF in Florida, and its biosolids program is diversified. It and Tampa treat solids with anaerobic digestion (AD), as do several larger WRRFs (e.g. Jacksonville; see below):

- **Miami** is the state’s second largest city at just under ½ million people, but “the Miami-Dade Water and Sewer Department (WASD) provides wastewater service by retail and wholesale to a population of about 2.5 million in the City of Miami and Dade County, with a wastewater treatment capacity over 300 million gallons per day (mgd). WASD has centralized its biosolids management facilities at its Central and South District wastewater treatment plants (WWTPs),

where biosolids are anaerobically digested and dewatered with centrifuges. Some of the biosolids at its South District WWTP are also air dried and composted to Florida Class AA quality... WASD's biosolids facilities were built mostly in the 1980s and are based primarily on traditional, Class B digestion and dewatering technologies meeting Class B standards. WASD's land application program and its open-air composting facility are susceptible to vagaries of South Florida weather. As a result, a substantial portion of WASD's biosolids are landfilled" (Forbes et al., 2018). As of 2021, WASD is considering changes to its biosolids management program.

Some WASD solids are composted at the JFE Brighton Compost Facility in Okeechobee, which can process up to 100,000 wet tons per year. The "compost (100,000 CY/yr) is sold to Harvest Quest which sells almost all of it into the citrus industry (once it is treated with their microbial inoculants). Doing more with golf courses too" (CH2M, 2018).

- **Tampa** (population ~405,000 in 2020) produces an average daily wastewater flow of about 55 million gallons. Its solids have long been anaerobically digested, producing biogas that is used to generate 20% of the WRRF's electricity requirement. The digested solids are dewatered with belt filter presses or sand drying beds and land applied as Class B bulk biosolids.

Pensacola biosolids are representative of the two most common Class AA biosolids management options in Florida, heat-drying and composting:

Pensacola is served by the Emerald Coast Utilities Authority, which operates two "small Komline-Sanderson dryers and a composting facility. The composting facility was needed to deal with yard trimmings and helps diversify biosolids management. Dried product is very dusty and produces 400-500 t/month of 6-5-0 fertilizer product. Produces 30,000 t/yr of compost. Use a building canopy for dried product storage. Sell all dried product to Mannco for \$15/t, freight on board (FOB). They resell to agriculture and sod industries. Compost was being used on landfill and is now sold for \$4 to \$10 per cubic yard, based on volume purchased" (CH2M, 2018).

Heat drying is the Class AA (EQ) option of choice for many large Florida WRRFs:

- **Jacksonville** is Florida's most populated city, with about 930,000 people served by four WRRFs. JEA is the city's utility, and "the Buckman Residuals Management Facility treats primary and secondary solids from the Buckman Water Resource Recovery Facility (WRRF), plus secondary solids pumped via force main from three other WRRFs and thickened biosolids hauled by tanker trucks from five other WRRFs... JEA practices anaerobic digestion, centrifuge dewatering, and thermal drying of biosolids using a three-pass, rotary-drum dryer fueled by a combination of digester gas and natural gas, which operates at relatively high temperatures of approximately 425 degrees C (800 degrees F), and produces dried biosolids in the form of pellets. JEA contracts with a private-sector company to purchase and resell dried biosolids for beneficial use including agriculture, forestry, and blending with other soil products" (Forbes et al., 2018). GreenEdge sells the biosolids fertilizer, which is used by landscapers, golf courses, home owners, and more. JEA is considering changes and updates to its biosolids management program.

- **Orlando**, with ~291,000 people, has had contracts with private companies to heat-dry its wastewater solids, producing about 4000 dry tons a year, which is “distributed (and delivered) to farmers for free” (CH2M, 2018).
- **The City of Tallahassee’s** Thomas P. Smith WRRF produces heat-dried biosolids for agricultural use. The product is sold directly to area farms or to fertilizer blenders.
- **Palm Beach County** had a large composting facility that closed in 2014. Now Palm Beach County solids are processed into Class AA fertilizer in a NEFCO-operated heat-drying pelletizing facility. The product is “primarily market[ed] to fertilizer blenders, and agriculture. They produce a 1.8-2.2mm hard granule that fertilizer blender[s] like. High value end users pay up to \$100/t, delivered, low value could just pay shipping \$15-\$25/t, delivered. Sell all product. Low value ag sales (pasture) are untapped” (CH2M, 2018).
- **The City of Largo** has produced heat-dried biosolids fertilizer for two decades.
- **Bonita Springs** has had “a small Andritz drying facility since 2007, producing under 1,000 dt/yr of product” that is sold at a low price for fertilizer use (CH2M, 2018).
- **Wellington’s** WRRF (6.5 mgd design capacity) treated its solids to Class B standards with lime-stabilization up until 2012, when a new automatic batch heat-drying system was installed. The solids are initially treated by aerobic digestion and dewatered to ~15% solids. They then enter the indirect dryer, which produces 2-4 tons of ~95% dry solids per day.
- **Gainesville Regional Utilities** serves approximately 185,000 people, including the University of Florida. It long had a Class B liquid land application program, providing biosolids to local farms. In the mid-2010s, it began dewatering its solids to save on transportation costs and to provide greater flexibility for end use or disposal. Alachua County, where much of the GRU Class B biosolids was used, became concerned, and much of the GRU biosolids have gone to landfill in recent years. GRU was contracting with GreenEdge to take the biosolids, and GreenEdge has been permitted for a Class AA drying facility, but it has not been built yet, as of 2021.
- **Pinellas County** contracts with Synagro, which operates a heat-drying facility producing Class AA biosolids.
- **Merrell Brothers** recently built and operates a Class AA heat-drying facility in Pasco County.

Composting is the other most common option currently in use in Florida to make Class AA biosolids:

- **Lee County and Ft. Meyers** (population ~97,000 in 2020) and surrounding communities send solids to the 22-acre Lee County Composting Facility, which is co-located at the Lee Hendry Landfill. Since 2009, the facility has been making about 30,000 wet tons of biosolids compost annually, bulked with ground yard waste, and sold from the facility in bulk or 20-pound bags. The bulk price in 2015 was \$9.75/ton (Goldstein, 2015). The compost is “selling primarily to

citrus groves (\$10/t, FOB), and a little retail (\$10/CY, FOB). Own fleet of 12 trucks that manage yard waste and compost shipping... Think product is underpriced, but allows them to sell to a small number of larger customers” (CH2M, 2018).

- **Synagro’s Charlotte Bio-Recycling Center in Punta Gorda** provides composting for numerous WRRFs in the area, including Sarasota (which had operated its own composting system until the early 2010s), North Ft. Myers, Lehigh Acres, and some of Naples.
- **Southeast Soil (Compost USA)** is another private composting operation, with two sites. They expanded out of a peat and nursery soils company, and much of the compost has been used for their own nursery products (CH2M, 2018).

Alkaline stabilization is also used to meet Class B or – more commonly in recent years – Class AA biosolids. However, several private alkaline stabilization facilities have closed in the past ten years, and use of this option is diminishing.

- **Hollywood’s** biosolids program depends on “a Schwing-Bioset lime stabilization process at the city’s wastewater treatment plant. [Bioset] operate[s] five other facilities in the state, including merchant facilities, and more are under design. Sister company ages and markets the product... Sell primarily to grazing land, orange groves, golf courses and sod producers. Soil amendment sold to sod farms, plant nurseries and for use on state projects” (CH2M, 2018).

References

The state biosolids coordinator at FL DEP provided much data and other information for this report. Additional information was gleaned from the following resources:

FL DEP:

<https://floridadep.gov/water/domestic-wastewater/content/domestic-wastewater-biosolids>

<https://floridadep.gov/water/domestic-wastewater/content/links-references-guidance-and-other-useful-information-chapter-62>

<https://www.flrules.org/gateway/ChapterHome.asp?Chapter=62-640>

Florida DEP, 2014. *Biosolids in Florida: 2013 Summary*. December 2014.

https://floridadep.gov/sites/default/files/BiosolidsFlorida-2013-Summary_1.pdf

“Chapter 62-640, F.A.C. Public Meeting, Div. of Water Resource Mgmt., May 27, 2021” public presentation by Florida DEP on new state regulations effective June 2021.

University of Florida:

https://edis.ifas.ufl.edu/entity/topic/series_florida_biosolids

http://edis.ifas.ufl.edu/topic_series_florida_phosphorous_index

General biosolids management in FL:

<https://floridadep.gov/sites/default/files/Biosolids101-TAC-090518.pdf>

<https://fwrj.com/techarticles/0611%20tech4.pdf>

Map showing land application sites:

<https://www.arcgis.com/home/item.html?id=70300d6abaa5463e83091786599d06dd>

Forbes et al., 2018: Tale of two Florida cities, WEF Proceedings, 2018(4):632-652 DOI:[10.2175/193864718824828362](https://doi.org/10.2175/193864718824828362)

https://www.researchgate.net/publication/328959613_Tale_of_Two_Florida_Cities_-

[Competition and Innovation Drive Biosolids Management toward the Private Sector/link/5bf54a65a6fdcc3a8de667e5/download](https://www.miamidadegov.com/competition-and-innovation-drive-biosolids-management-toward-the-private-sector/link/5bf54a65a6fdcc3a8de667e5/download)

CH2M, 2018: Basis of design update for biosolids processing facilities, Technical Memo for Miami Dade Water and Sewer Department (WASD), <https://www.miamidadegov.com/water/library/reports/basis-of-design-january-2018.pdf>

Peterson, Dan. 2019. Biosolids: An Annual 700-Million Pound Pollution Source About Which You Rarely Hear, online posting at <http://www.cpr-fl.org/biosolids-an-annual-7-million-pound-pollution-source-about-which-you-rarely-hear/>, with version at Gainesville.com and in the *Gainesville Sun*, September 11, 2019.

Phosphorus concerns driving new law in 2021 that restricts biosolids use:

“Here’s how human waste pollutes state waters,” an example of the kind of coverage provided by *TC Palm* from 2017 to the present: <https://www.tcpalm.com/story/news/local/indian-river-lagoon/health/2018/07/17/treasure-coast-planning-council-stop-using-biosolids-fertilizer/788872002/>

And “biosolids ban...on Planning Council agenda:” <https://www.tcpalm.com/story/news/local/indian-river-lagoon/health/2018/07/17/treasure-coast-planning-council-stop-using-biosolids-fertilizer/788872002/>

Other coverage:

<https://www.martin.fl.us/biosolids>

<https://tcrpc.org/biosolids-symposium/>

https://tcrpc.org/wp-content/uploads/2020/12/2018_Biosolids1_Barker.pdf

https://tcrpc.org/wp-content/uploads/2020/12/2018_Biosolids6_Silveira.pdf

<https://www.newswise.com/articles/study-biosolids-produce-less-nitrogen-and-phosphorus-runoff-than-inorganic-fertilizer>

<https://www.wlrn.org/news/2021-06-02/state-tightens-rules-for-sewage-sludge-used-as-fertilizer-but-leaves-a-loophole-in-place>

<https://www.floridatrend.com/article/25908/biosolids-waste-to-fertilizer-to-pollution>

<https://www.gainesville.com/opinion/20190911/dan-peterson-biosolids---future-disaster>

<https://www.dailycommercial.com/news/20190925/polk-county-again-cites-lakeland-biosolid-waste-recycling-facility-bs-ranch-for-offensive-odors>

Septage:

Map showing facilities accepting septage & septage land application sites:

<https://ca.dep.state.fl.us/mapdirect/?focus=wastewatersepticssystem>

Ft. Myers / Lee County:

Goldstein, N. 2015. Biosolids compost manufacturer taps agricultural markets. *BioCycle*, Aug. 18, 2015.

<https://www.biocycle.net/biosolids-compost-manufacturer-taps-agricultural-markets/> and

<https://www.leegov.com/solidwaste/residential/compost>

Jacksonville:

https://www.jea.com/About/Wastewater/Wastewater_Treatment_Byproducts/

<https://modernpumpingtoday.com/lowering-the-costs-and-risks-of-managing-biosolids-and-organic-waste/>

<http://www.green-edge.com/>

Miami Dade:

<https://www.floridatoday.com/story/news/local/environment/2019/09/17/county-commissioners-debate-biosolids-first-two-public-hearings/2347766001/>

Wellington, FL:

https://www.tpomag.com/editorial/2017/07/reclamation_facility_embraces_innovation_with_biosolids_and_reclaimed_water

Tallahassee: <https://www.talgov.com/you/wastewater.aspx>

Gainesville: <https://www.gru.com/OurCommunity/Content/BiosolidsRecycling.aspx>

Tampa: <https://www.tampa.gov/wastewater/info/advanced-wastewater-treatment-plant/virtual-tour/step-7---sludge-treatment>