Biosolids in Florida:

2013 Summary

Domestic Wastewater Program

Florida Department of Environmental Protection

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www.dep.state.fl.us

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Introduction

This summary presents data and information on the use and disposal of biosolids in Florida for 2013. This is the second annual biosolids summary to provide information on the land application of biosolids at permitted sites in addition to the distribution and marketing of Class AA biosolids as fertilizer. Summaries prior to 2012 provided information on only Class AA biosolids.

The data and information presented in this summary were compiled from regulatory reports submitted to the Department, from facility permits and permit-related documents, from other facility-related correspondence, and from staff knowledge. This summary provides a general overview of biosolids activities in Florida based on the best data available when the report was developed. The 2013 data appears to be more complete and accurate than the 2012 data but some instances of erroneous or incomplete data still exist. In these cases, reasonable estimates were made when possible. The Department anticipates data accuracy and availability to continue to improve as requirements from the 2010 revisions to Chapter 62-640, F.A.C., are fully implemented and as electronic reporting improves.

Background

Biosolids are the solid, semisolid, or liquid residue generated during the biological wastewater treatment process. Florida domestic wastewater facilities generate an estimated 320,000 dry tons of biosolids annually. Biosolids may be beneficially used or disposed as decided by the generating facility.

Section 403.702, Florida Statutes (F.S.), which promotes resource recovery and management, 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 the Florida Department of Environmental Protection under Chapter 62-640, F.A.C., and by the Environmental Protection Agency under Title 40 Code of Federal Regulations (CFR) Part 503. Biosolids used beneficially must be treated to reduce pathogens and vector attraction, and must also meet specific pollutant concentration limits.

Additionally, Chapter 62-640, F.A.C., and Title 40 CFR Part 503, contain requirements for recordkeeping, reporting, and management practices.

Distribution and marketing of biosolids is the sale or give-away of Class AA biosolids or biosolids products as a fertilizer or fertilizer product and is regulated by Rule 62-640.850, F.A.C. Class AA biosolids are considered the highest quality biosolids and safe for use by the general public. To achieve Class AA status, the biosolids must be treated to a level that essentially eliminates pathogens and meets strict parameter concentration limits for heavy metals.

Class AA biosolids may be distributed in bulk or may be bagged for retail sales. Class AA biosolids may have different physical forms including biosolids compost, pellets, heat-dried granular products (i.e. non-uniform size particles), alkaline-treated semi-solid forms, and even liquid. Class AA biosolids products are not subject to site management requirements if distributed and marketed as a fertilizer or distributed and marketed to a person or entity that will sell or give-away the biosolids products as a fertilizer or as a component of a fertilizer.

Land application of biosolids is the application of biosolids on permitted sites at controlled rates in accordance with Department established site restrictions and site management requirements. Requirements for biosolids land application are primarily contained in Rule 62-640.700, F.A.C. While any class of biosolids may be land-applied, biosolids land-applied in Florida appear to be exclusively Class B. Class B biosolids must be treated to significantly reduce pathogens and must meet specific concentration limits for heavy metals. Application rates are limited to crop nutrient needs as established in a site-specific nutrient management plan (NMP) submitted with the site permit application. Site restrictions include setbacks to surface waters, wells, occupied buildings, and property lines, as well as restrictions on harvesting, grazing, and public access. Cumulative loading of heavy metals to land application sites must be tracked.

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.

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. While there are no “sewage sludge” incinerators in Florida and no biosolids were

incinerated in 2013, several waste-to-energy facilities and one cement kiln recently revised their permits to allow the burning of biosolids as fuel.

Other alternatives for biosolids use or disposal are being developed or explored, such as using biosolids directly for energy production.

Distribution and Marketing

Class AA Biosolids Quantities

Approximately 178,511 dry tons of Class AA biosolids products were distributed and marketed in Florida during 2013, which is down 16 percent from the 213,307 dry tons distributed and marketed in 2012. The quantity of Florida-produced Class AA biosolids also decreased 15 percent from 187,441 dry tons to 158,576 dry tons. Class AA biosolids distributed and marketed from out-of-state facilities decreased 20 percent from 25,866 dry tons to 20,657 dry tons. While the quantities decreased this year, the decreases do not necessarily represent a decreasing trend in Class AA biosolids.

The primary reason for the decrease in the total quantity of Class AA biosolids distributed and marketed in 2013, as well as the decrease in Florida-produced Class AA biosolids, appears to be the significantly decreased quantities from the Florida N-Viro/Tomoka Residuals Management Facility (RMF) in Volusia County, which reported approximately 44,000 fewer dry tons in 2013 than 2012. This facility also accounted for most of the decrease in Class AA biosolids between 2011 and 2012. The facility has steadily decreased operations over the past couple of years and ceased production in 2014. The Tomoka RMF used significant quantities of fly ash as an alkaline agent to treat biosolids received from other wastewater facilities, resulting in inflated Class AA production quantities compared to the dry weight of the raw biosolids. The drop in Class AA biosolids production by the Tomoka RMF does not affect the quantity of raw biosolids generated by the wastewater facilities previously utilizing the Tomoka RMF.

The cessation of Class AA biosolids production by the City of Sarasota and the City of Naples also affected the quantity of Florida-produced Class AA biosolids but these and other decreases were generally offset by the opening of a new biosolids treatment facility by Biosolids Distribution Services, LLC, in Ft. Meade, Florida, which uses the Schwing Bioset process, as well as by increased production from other facilities.

Overall, the 2013 quantity of Florida-produced Class AA biosolids appears to be more representative of Class AA quantities prior to 2009, before the Florida N-Viro/Tomoka RMF started to significantly increase production. Class AA quantities may begin to increase again in 2014 since Florida N-Viro opened a new facility in Mulberry, Florida using the same treatment process as the Tomoka RMF.

Most of the decrease in Class AA biosolids distributed and marketed by out-of-state facilities is related to a drop in the quantity from the Synagro facility in Philadelphia. Overall, the quantities of out-of-state Class AA biosolids continue to be low compared to the late 1990's and early 2000's, when the annual quantities were around 80,000 to 100,000 dry tons.

Figure 1 shows the reported quantities of Class AA biosolids products distributed and marketed in Florida by in-state facilities and out-of-state facilities from 1992 to 2013. For the twenty-one year period, the chart shows an overall trend of increasing Class AA production by Florida facilities and decreasing quantities of biosolids from out-of-state.

The significant changes in quantities of Florida-produced Class AA biosolids over the past twenty years appear to correlate more with individual facility operations and the types of biosolids products than with the number of facilities producing Class AA biosolids. Changes in volume by individual facilities producing composts and alkaline-based Class AA biosolids appear to have a significant effect on overall Class AA biosolids quantities. As observed over the past five years, a single facility such as the Florida N-Viro/Tomoka RMF can dramatically change final production quantities.

In 2013, the distribution and marketing of alkaline-treated materials and compost continued to represent a significant portion of Florida's in-state production. The dry tonnage of these products can be significantly higher than the dry tonnage of the original biosolids used to produce the final products because other materials are added during the treatment processes. It is estimated that only 103,858 dry tons of biosolids were used to produce the reported 157,853 dry tons of Class AA biosolids product distributed and marketed in Florida by Florida facilities in 2013. An additional 723 dry tons of Florida-produced Class AA biosolids pellets were distributed and marketed in Alabama. Florida facilities producing Class AA biosolids, quantity produced, and type of biosolids products are provided in Table 1.

Figure 1 also shows a gradual decrease in out-of-state biosolids over the past decade. Part of the decrease may be related to the development of markets and uses for biosolids closer to the out-of-state

facilities. One example is the use of biosolids pellets as fuel at a cement kiln in Maryland that were formerly shipped to Florida. Another possible reason for the decrease is the closure of a large biosolids facility in New York several years ago.

Figure 2 presents the quantities of Class AA biosolids products distributed and marketed in Florida between 1993 and 2013 by product type. Only three types of Class AA biosolids are shown because quantities of other types of Class AA biosolids (i.e. liquid and non-alkaline cake, etc.) are small in comparison.

Quantities of pelletized biosolids, which were relatively stable from 1996 to 2006, began a gradual decrease through 2011. Again, this reflects decreases in biosolids imported from out-of-state, all of which are pellets. The slight decrease in pellets in 2013 appears to reflect the decreased quantity from the Synagro facility in Philadelphia.

Figure 1. Class AA Biosolids Product Distribution and Marketing in Florida Based on Source of Biosolids

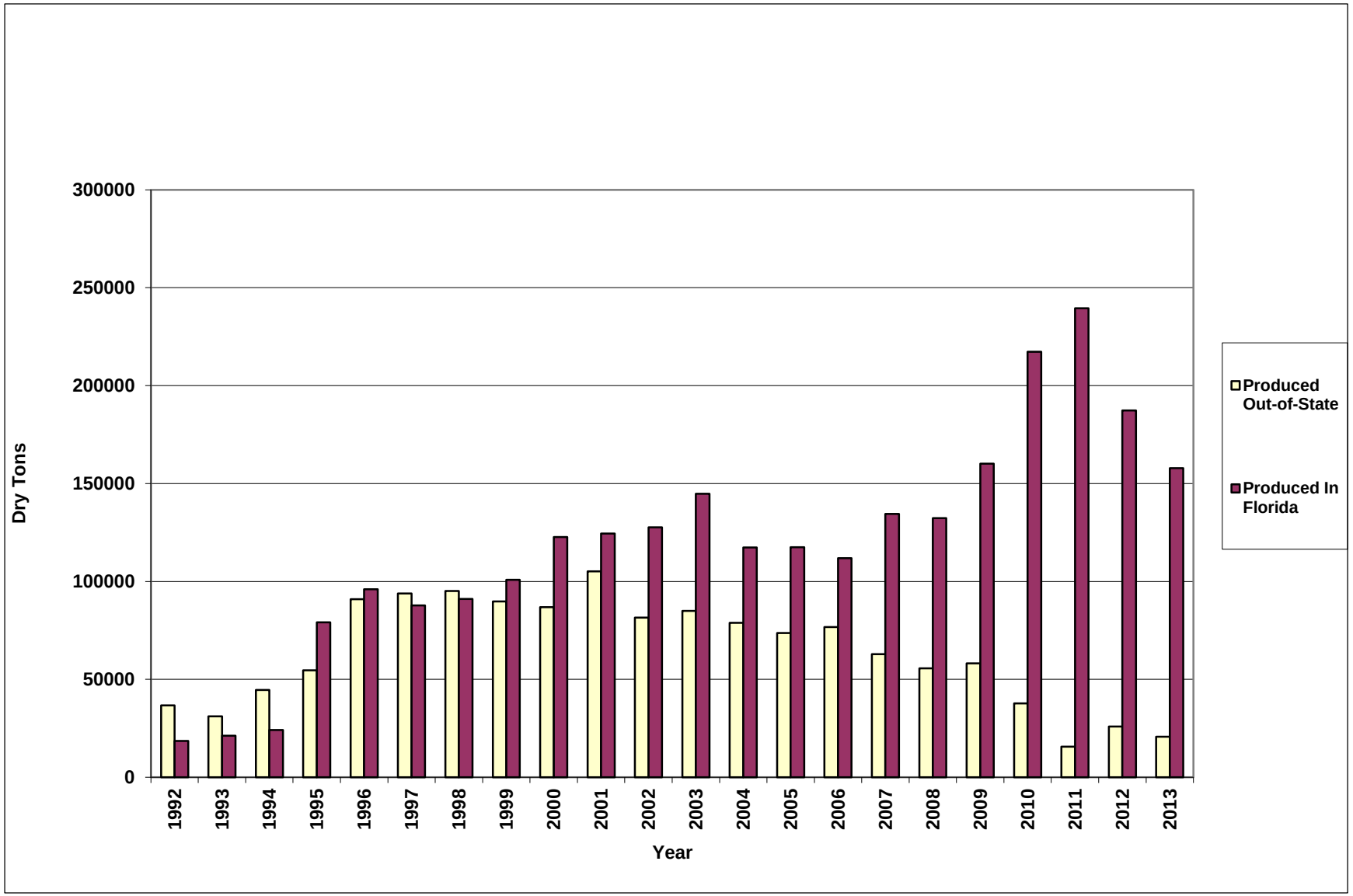
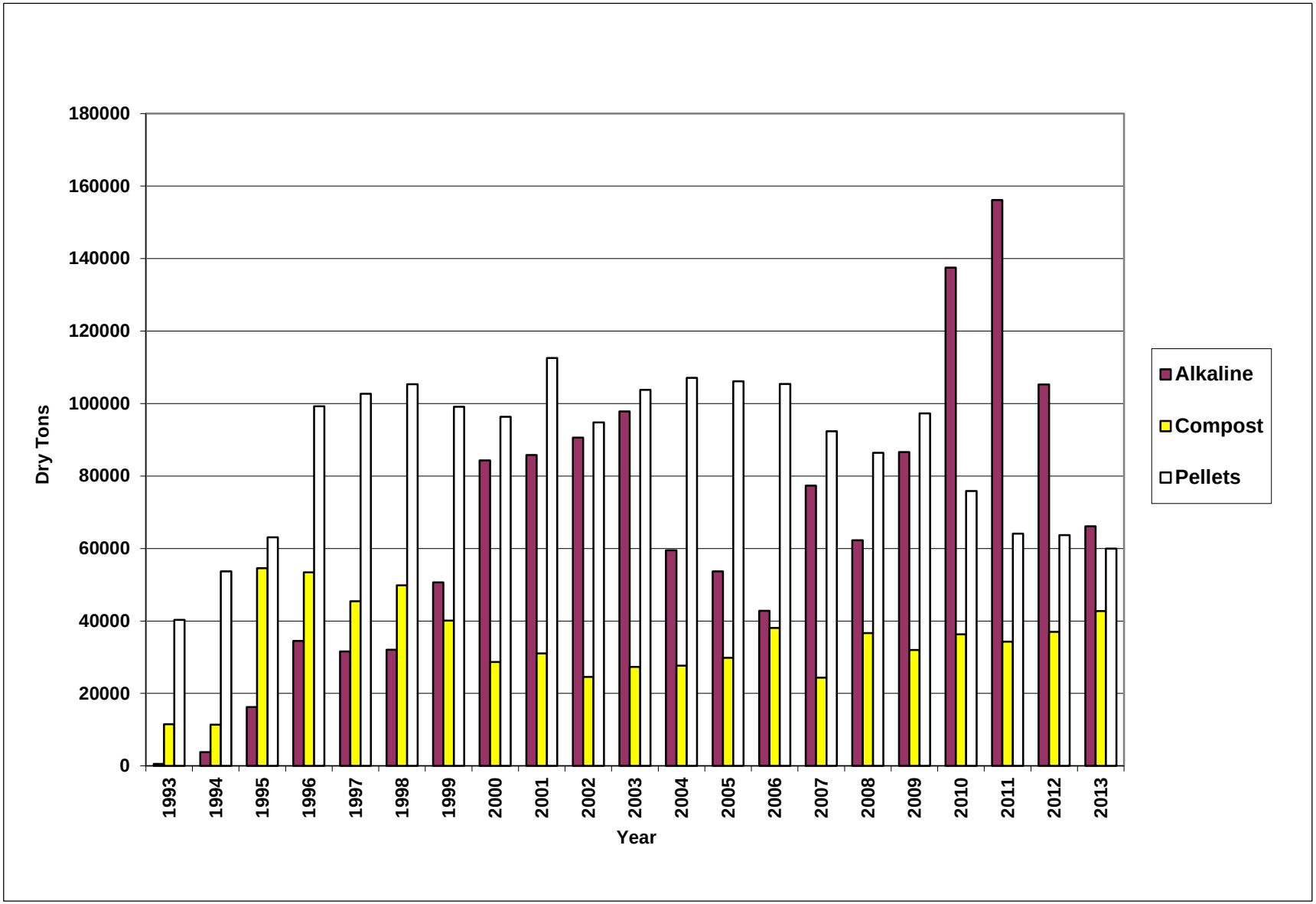


Figure 2. Distribution and Marketing of Class AA Biosolids Product Types in Florida



Florida Class AA Biosolids Producers

Table 1 lists the thirty-five Florida facilities distributing and marketing biosolids in 2013. This is one more than the thirty-four Florida facilities distributing and marketing biosolids in 2012 (Note, Soloraganics BTF distributed Class AA biosolids in 2012 but were not listed in last year's report which identified thirty-three facilities). One facility not on the 2013 list is the City of Naples, which quit producing Class AA biosolids prior to 2013. In addition to Solorganics BTF, the other two facilities added to this year's list are the Spencer WWTF and the new Biosolids Distribution System's Regional Biosolids Treatment Facilities in Ft. Meade. While the number of Florida facilities producing Class AA biosolids usually tends to hover around 30, there appears to be an overall increase over the past few years.

Table 1. Florida Class AA Biosolids Producers in 2013

COUNTY	FACILITY ID	FACILITY NAME	DRY TONS CLASS AA PRODUCT	BIOSOLIDS PRODUCT
BRADFORD	FL0028126	Starke WWTF	41.43	BCR Neutralizer - Cake Biosolids
BREVARD	FL0103349	Titusville Blue Heron WRF	244.5	ATAD - Liquid Biosolids
BROWARD	FL0026255	Hollywood Southern Regional WWTF	10,041.84	Bioset - Alkaline Biosolids
CLAY	FL0173371	Spencer WWTF	276.45	BCR Neutralizer - Cake Biosolids
CLAY	FL0025151	Miller Street WWTF	503.09	BCR Neutralizer - Cake Biosolids
CLAY	FL0043834	Fleming Island Regional WWTF	722.28	BCR Neutralizer - Cake Biosolids
CLAY	FL0039721	Ridaught Landing WWTF	467.13	BCR Neutralizer - Cake Biosolids
DUVAL	FLA188077	Buckman Biosolids Treatment Facility (BTF)	9,968.32	Pellets
ESCAMBIA	FLA559351	Central Water Reclamation Facility	1,359.36	Pellets
HENDRY	FLA702544	H & H Clewiston RMF	1,541.14	Pellets
LAKE	FLA468011	C&C PEAT CO	4,069.49	Compost
LAKE	FLA624314	Solorganics BTF	1,837	Compost
LEE	FLA012343	Bonita Springs Utilities East	729.87	Pellets

COUNTY	FACILITY ID	FACILITY NAME	DRY TONS CLASS AA PRODUCT	BIOSOLIDS PRODUCT
LEE	FLA658189	Lee County Composting Facility	10,361.17	Compost
LEON	FLA010139	T P Smith Water Reclamation Facility	2,476.77	Heat Dried/Pellets
MANATEE	FLA012618	Manatee County Southeast Regional WWTP	4,401.48	Pellets
MARION	FLA190268	Ocala WRF #3	865.69	Heat Dried
MARION	FLA658944	Compost USA	1,646.11	Compost
MIAMI-DADE	FLA042137	MDWASA South District WWTF	4,179.03	Compost
ORANGE	FLA016177	Shelley's Septic Tanks RMF	20,323.45	Pastuerization - Alkaline Biosolids
ORANGE	FLA108219	Reedy Creek Improvement District	12,586.42	Compost
PALM BEACH	FLA042595	Village of Wellington WWTP	667.17	Pellets
PALM BEACH	FLA136778	Pahokee WWTP	101	Bioset - Alkaline Biosolids
PALM BEACH	FLA296422	Solid Waste Auth of Palm Beach Biosolids Pelletization Faci	13,673.46	Pellets
PALM BEACH	FLA296432	SWAPBC Compost Facility	6,303.01	Compost
PINELLAS	FLA128848	St Petersburg Southwest WWTP	3,894.1	Bioset - Alkaline Biosolids
PINELLAS	FL0040436	South Cross Bayou WRF	6,375.12	Pellets
PINELLAS	FL0026603	Largo City of	2,022.16	Pellets
POLK	FLA012977	Haines City WWTP	526.18	BCR Neutralizer - Cake Biosolids
POLK	FL0039772	Lakeland, City of - Glendale WRF	2,055.92	ATAD - Liquid Biosolids
POLK	FLA012985	Lakeland, City of - Northside WRF	707.47	ATAD - Liquid Biosolids
POLK	FLA784893	Biosolids Distribution Services, LLC	1,989	Bioset - Alkaline Biosolids
SARASOTA	FL0040771	City of Sarasota AWWTF	1,735.25	Compost
SEMINOLE	FLA181714	Sanford/South WRF #2	108	Pellets
VOLUSIA	FLA017086	Florida N-Viro/Tomoka RMF	29,776.51	N-Viro - Alkaline Biosolids
		Total	158,576	

Out-of-State Class AA Biosolids Producers

In 2013, six out-of-state facilities imported Class AA biosolids into Florida which matches the number importing Class AA biosolids in 2012. However, in 2013, Synagro did not ship any biosolids from its Baltimore facility and a new importer, Metropolitan Biosolids Management, LLC, began shipping biosolids from Illinois. As in past years, all Class AA biosolids shipped to Florida in 2013 were pellets.

Table 2. Out-of-State Class AA Biosolids Producers Distributing and Marketing Biosolids in Florida During 2013

STATE	FLORIDA ID	FACILITY/COMPANY NAME	DRY TONS CLASS AA PRODUCT	BIOSOLIDS PRODUCT
GEORGIA	FLA735205	Clayton County GA. Water Authority	2,626	Pellets
ILLINOIS	FLA809918	Metropolitan Biosolids Management	132.19	Pellets
MASSACHUSETTS	FLA735248	New England Fertilizer Company (NEFCO) Quincy, MA	1,594.18	Pellets
PENNSYLVANIA	FLA773786	Synagro-WWT, Inc. Philadelphia	10,183.67	Pellets
VIRGINIA	FLA735281	Synagro-WWT, Inc. Upper Occoquan Service Authority (UOSA)	420.44	Pellets
WISCONSIN	FLA735221	Milwaukee Metropolitan Sewerage District	5,701	Pellets
		Total	20,657	

Land Application

Land Application Quantities and Treatment Facilities

The quantity of biosolids reported as land applied by site permittees in Florida for 2013 was approximately 97,880 dry tons. However, Florida facilities reported land applying 103,496 dry tons of biosolids. In addition to general minor errors in facility and site reports, one difference between the two quantities appears to have resulted from discrepancies in facility reports when some of a facility's

biosolids were applied to sites in Alabama. Another difference may be related to permit issuance dates for sites whose permit applications were still being processed in January 2013. There was at least one instance of a site permittee not including the quantities applied from January 1 to the date of permit issuance in the site's total quantities, although the site permittee noted the early 2013 quantities prior to permit issuance in the comments section of the form.

Overall, it appears land application in 2013 decreased slightly compared to the 108,272 dry tons land applied in 2012. Since the amount land applied by Florida facilities in 2013 closely matches the amount land applied in 2011, no trend is apparent. As with 2012, very little of the Class B biosolids land applied in 2013 was treated with lime. Adjusting for the small amount of lime addition, it is estimated that 102,534 dry tons of biosolids were used to produce the 103,496 dry tons of land applied biosolids.

The Department's records indicate only 161 facilities land applied biosolids in 2013 compared to 187 facilities in 2012. Again, it would appear most of the facilities ending land application were small and did not significantly affect the total quantity of biosolids land applied.

Table 3 lists the facilities land applying biosolids in 2013. Most of these facilities are larger wastewater treatment facilities but some small facilities land apply biosolids, especially facilities located in rural areas of the state.

Table 3. Facilities Land Applying Biosolids in 2013

COUNTY	DEP OFFICE	FACILITY ID	FACILITY NAME	DRY TONS LAND APPLIED
ALACHUA	NED	FLA011290	Alachua WWTF	145.8
ALACHUA	NED	FL0027251	GRU - Main Street WRF	1033
ALACHUA	NED	FL0112895	Kanapaha WRF	2539
ALACHUA	NED	FLA011292	Newberry WWTF	4.1
BAKER	NED	FL0040495	Macclenny WWTF	121.29
BAY	NWD	FL0169978	Lynn Haven WWTF	352.39
BAY	NWD	FL0167959	Military Point Regional AWT Facility	2220
BAY	NWD	FL0170909	Millville AWT Facility	241.8
BAY	NWD	FL0021512	Panama City Beach WWTP #1	1024.76
BAY	NWD	FL0020451	St Andrews WWTF	115.98
BREVARD	CD	FL0021521	Cocoa Water Reclamation Facility	232.24
BREVARD	CD	FLA010323	Melbourne/DB Lee WWTP	554.2
BREVARD	CD	FL0041122	Melbourne/Grant Street	534.9
BREVARD	CD	FLA103357	Palm Bay #1 WRF	937.93

COUNTY	DEP OFFICE	FACILITY ID	FACILITY NAME	DRY TONS LAND APPLIED
BREVARD	CD	FLA648744	Palm Bay #2	937.9
BREVARD	CD	FL0103268	Titusville North - Osprey	213.3
BREVARD	CD	FLA010332	West Melbourne/Ray Bullard	256.1
BROWARD	SED	FL0031771	Broward Co North Regional WWTP	9955.7
BROWARD	SED	FL0040398	Cooper City West WWTP	496.1
BROWARD	SED	FLA041301	Coral Springs Imp Dist WWTF	304
BROWARD	SED	FLA041289	Margate,City of West WWTP	770
BROWARD	SED	FLA017025	Miramar, City of WWTF	1547.22
BROWARD	SED	FLA013575	Pembroke Pines, City of WWTP	831
BROWARD	SED	FLA040401	Plantation Regional WWTP	740.3
BROWARD	SED	FLA041947	Sunrise No 1 WWTP (Springtree)	658.16
BROWARD	SED	FLA013583	Tindall Hammock Irrigation and Soil Conservation District	14.3
BROWARD	SED	FLA706736	Town of Davie Water Reclamation Facility	538.25
BROWARD	SED	FL0040541	Town of Davie WWTP	189.18
CHARLOTTE	SD	FLA118371	City of Punta Gorda WWTP	296
CITRUS	SWD	FLA011887	A-Able Rmf	740.24
CITRUS	SWD	FLA011869	Beverly Hills WWTF	88.96
CITRUS	SWD	FLA011877	Citrus Springs WWTF	7.21
CITRUS	SWD	FLA011848	Crystal River City of WWTF	63
CITRUS	SWD	FLA011903	Sugarmill Woods WWTF	61.37
CLAY	NED	FL0043834	Fleming Island Regional WWTF	37
CLAY	NED	FLA362743	Keystone Heights WWTF	1.1
CLAY	NED	FLA011377	Mid-Clay Regional WWTF	56.3
CLAY	NED	FL0025151	Miller Street WWTF	59.81
CLAY	NED	FL0023922	Orange Park WWTF	337.6
CLAY	NED	FLA011371	Ravines WWTF	11.3
CLAY	NED	FL0039721	Ridaught Landing WWTF	35.69
CLAY	NED	FL0173371	Spencer WWTF	280.26
COLUMBIA	NED	FLA113956	St. Margaret WWTF	457
DUVAL	NED	FLA182532	East Star Residuals Management Facility	84.43
DUVAL	NED	FL0023604	Monterey WRF	590.6
DUVAL	NED	FL0000922	USN Mayport Naval Station WWTF	37.3
DUVAL	NED	FL0000957	USN NAS Jacksonville WWTF	46
ESCAMBIA	NWD	FL0032468	Century, Town of - WWTF	6.59
FLAGLER	NED	FLA372196	Rainbow Ranch Lime Stabilization Facility	193.81
FRANKLIN	NWD	FLA010071	Buccaneer Inn WWTF	0.13
FRANKLIN	NWD	FLA010073	Sunset Beach Wastewater Facility	0.46

COUNTY	DEP OFFICE	FACILITY ID	FACILITY NAME	DRY TONS LAND APPLIED
FRANKLIN	NWD	FLA010072	Villas of St George	0.2
GADSDEN	NWD	FLA100781	Gretna, City of - WWTP	7.6
GADSDEN	NWD	FL0029033	Quincy WWTP	194.6
GILCHRIST	NED	FLA011615	Trenton WWTF	24
GULF	NWD	FLA010105	Gulf Correctional Institution WWTP	68.58
GULF	NWD	FLA010104	Gulf Forestry Work Camp	1.9
GULF	NWD	FL0020125	Wewahitchka WWTP	67.03
HAMILTON	NED	FL0027880	Jasper WWTF	122
HARDEE	SWD	FLA012022	Hardee Correctional Institution	19.06
HARDEE	SWD	FLA119890	Wauchula City of WWTF	27.35
HERNANDO	SWD	FLA012052	Aaa White's Septic Tank Service Rmf	240
HERNANDO	SWD	FLA280348	Appalachian Materials Systems Nordgren RMF	158.4
HERNANDO	SWD	FLA012036	Brooksville City of Cobb Road WWTF	144.8
HIGHLANDS	SD	FLA014387	Fairmount Utilities WWTP	2.2
HIGHLANDS	SD	FLA014349	Sebring Ridge Utilities WWTP	2.4
HIGHLANDS	SD	FLA016268	Sun'N Lake of Sebring Unit 4 WWTP	1.7
HILLSBOROUGH	SWD	FLA012133	Hide-A-Way Campground	1.14
HILLSBOROUGH	SWD	FLA012124	MacDill AFB WWTP	11.51
HILLSBOROUGH	SWD	FLA012230	Mcintosh Utilities	3.63
HILLSBOROUGH	SWD	FL0039896	Pebble Creek Village WWTF	46.8
HILLSBOROUGH	SWD	FL0026557	Plant City WRF	888.1
HILLSBOROUGH	SWD	FL0020940	Howard F Curren Awtp	10042.2
HOLMES	NWD	FL0027731	Bonifay, City of - WWTF	5.43
JACKSON	NWD	FLA010127	Jackson Correctional Institution WWTP	21.46
JACKSON	NWD	FLA010115	Sneads, Town of - WWTF	9.01
JEFFERSON	NED	FLA011642	Jefferson Correctional Institution WWTF	14.31
LAFAYETTE	NED	FLA011646	Mayo Correctional Institution WWTF	11.28
LAFAYETTE	NED	FLA011643	Mayo WWTF	5.59
LAKE	CD	FL0105066	Leesburg/Canal St. WWTF	339
LAKE	CD	FLA105147	Leesburg/Turnpike WWTF	57.4
LEVY	NED	FLA011648	Chiefland WWTF	32.98
LIBERTY	NWD	FLA010179	Liberty Correctional Institution WWTP	9.48
MANATEE	SWD	FLA190284	Appalachian Material SVC, Inc Rmf Mj Ranch	90.9
MANATEE	SWD	FL0021369	Bradenton WWTP City of	1328
MANATEE	SWD	FL0020401	Palmetto WWTP City of	252
MARION	CD	FLA356697	412 Biosolids Processing Facility	260.23
MARION	SWD	FLA012683	On Top of The World (Circle Square Woods)	85.07

COUNTY	DEP OFFICE	FACILITY ID	FACILITY NAME	DRY TONS LAND APPLIED
MIAMI-DADE	SED	FLA024805	MDWASA Central District WWTF	21912.81
NASSAU	NED	FL0043079	Hilliard WWTF	27.8
OKALOOSA	NWD	FLA485942	Arbennie Pritchett Water Reclamation Facility	1389
OKALOOSA	NWD	FLA010193	Crestview WWTP	115.96
OKALOOSA	NWD	FLA010194	Destin Water Users WRF	55.68
OKALOOSA	NWD	FLA010189	Eglin AFB - Main Base WWTP	8.06
OKALOOSA	NWD	FLA010188	Eglin AFB Aux Field #6 STP	0.9
OKALOOSA	NWD	FLA010190	Eglin AFB Plew WWTP	81
OKALOOSA	NWD	FL0003174	Hurlburt Field AWTP	17.97
OKALOOSA	NWD	FLA010191	Mary Esther WWTP	22.18
OKALOOSA	NWD	FLA010185	NVOC Regional WWTP	568.19
OKALOOSA	NWD	FLA010202	Okaloosa Correctional Institute WWTP	20.7
OKEECHOBEE	SED	FLA016637	Tir Na N'Og Ranch Rmf	81.22
ORANGE	CD	FLA107972	OCUD/South WRF	4844.89
ORANGE	CD	FLA010814	Orlando - Conserv II WRF	2411
ORANGE	CD	FLA016177	Shelley's Septic Tanks RMF	774
ORANGE	CD	FLA635600	Space Blvd SMF	739.21
PASCO	SWD	FLA012752	Seven Springs WWTF	39.2
PINELLAS	SWD	FL0128937	Clearwater City of Northeast AWWTP	1434.61
PINELLAS	SWD	FL0021857	Clearwater, City of - Marshall Street AWWTF	957.11
PINELLAS	SWD	FL0021326	Dunedin City of Mainland	726.9
PINELLAS	SWD	FL0027651	Oldsmar City of	636.8
PINELLAS	SWD	FLA128856	St Petersburg Northeast WWTP	1239.7
PINELLAS	SWD	FLA128821	St Petersburg Northwest WWTP	1151.7
PINELLAS	SWD	FLA128830	St. Petersburg Albert Whitted WWTP	903.6
POLK	SWD	FLA467049	AMS Central RMF	158.9
POLK	SWD	FL0021466	Auburndale Allred WWTP	232.8
POLK	SWD	FLA016559	Auburndale Regional WWTP	138.6
POLK	SWD	FL0040029	Avon Park Correctional Institute	33.8
POLK	SWD	FLA012976	City of Bartow Water Reclamation Facility	231.9
POLK	SWD	FLA012977	Haines City WWTP	145
POLK	SWD	FLA013360	Polk Correctional Institution	19.66
POLK	SWD	FL0036048	Winter Haven #3 (Wahneta)	42.6
PUTNAM	NED	FL0021610	Crescent City WWTF	3.85
SANTA ROSA	NWD	FLA010211	Holley-Navarre Wastewater Treatment Facility	33.05
SANTA ROSA	NWD	FLA010206	Jay, Town of - WWTP	0.25
SANTA ROSA	NWD	FL0102202	Pace Water System WWTP	0.0001

COUNTY	DEP OFFICE	FACILITY ID	FACILITY NAME	DRY TONS LAND APPLIED
SANTA ROSA	NWD	FLA010212	South Santa Rosa Utilities System	265.85
SEMINOLE	CD	FLA011066	Casselberry WRF	43.43
SEMINOLE	CD	FL0037966	Orlando/Iron Bridge Regional WRF	10152
ST. JOHNS	NED	FL0174441	Blacks Ford WRF	682.45
ST. JOHNS	NED	FL0042315	Hastings WWTF	16.6
ST. JOHNS	NED	FL0044237	Innlet Beach WWTF	48.2
ST. JOHNS	NED	FL0044253	Marsh Landing WWTF	31
ST. JOHNS	NED	FL0044245	Players Club South WWTF	48.2
ST. JOHNS	NED	FL0117897	Sawgrass WWTF	199.5
ST. JOHNS	NED	FL0021938	St Augustine WWTF No 1	550.94
ST. LUCIE	SED	FLA013969	Slcu North County (Holiday Pines)	9.33
ST. LUCIE	SED	FLA013946	Slcu North Hutchinson Island WWTF	49.35
ST. LUCIE	SED	FL0139475	Slcu South Hutchinson Island Reg WWTF	110.5
SUMTER	SWD	FLA013558	Sumter Correctional Institute (Prison)	19.6
SUWANNEE	NED	FLA011819	Advent Christian Village WWTF	10.4
SUWANNEE	NED	FLA011805	Live Oak WWTF	69.8
TAYLOR	NED	FL0026387	Perry WWTF	89.44
TAYLOR	NED	FLA011831	Taylor Correctional Institution WWTF	21.97
UNION	NED	FLA118338	Lake Butler, City of WWTF	14.2
VOLUSIA	CD	FLA011270	American Bio-Clean Rmf (Used to Be Hart)	374.04
VOLUSIA	CD	FL0020303	Deland/Wiley M. Nash Water Reclamation Facility	375.2
VOLUSIA	CD	FL0021431	Edgewater, City of	357.55
VOLUSIA	CD	FL0027677	Holly Hill, City of	2236.9
WAKULLA	NWD	FLA016544	Winco Utilities, Inc	24.87
WALTON	NWD	FLA010246	City of Paxton WWTP	0.42
WALTON	NWD	FLA102440	Defuniak Springs, City of (STP)	12.86
WALTON	NWD	FLA010243	Eglin AFB - Test Site C-6 WWTP	0.09
WALTON	NWD	FLA010245	Freeport, City of - WWTP	39.84
WALTON	NWD	FLA010252	Point Washington WWTF	116.34
WALTON	NWD	FLA010251	Sandestin WWTP	236.9
WALTON	NWD	FLA183555	Seacrest WWTF	34.4
WALTON	NWD	FL0102482	South Walton Utility Company WWTP	412.43
WALTON	NWD	FLA010254	Walton Correctional Institution	1.84
WASHINGTON	NWD	FLA027570	Chipley WWTP	36
WASHINGTON	NWD	FLA102563	Vernon, City of - WWTF	4.56
			Total	103,496

Land Application Sites

The 2010 revisions to Chapter 62-640, F.A.C., required all sites to be permitted by January 1, 2013. This represented a significant transition from the prior process of facilities requesting approval to use sites. Instead of multiple facilities requesting approval for the same site, one entity such as the hauler or land owner, is the site permittee. Under the site permit, each site permittee submits their own annual summary report providing the loading information for the site, replacing the multiple reports of site use from the multiple facilities sending biosolids to the site.

In 2013, 87 biosolids land application sites were permitted under the new permitting requirements. These sites covered 46,249 acres. Of the 87 permitted sites, 35 were permitted for exclusive use by a single facility. Site permittees reported 97,880 dry tons of biosolids applied to Florida sites in 2013.

Biosolids were reported applied to 73 of the 87 permitted sites in 2013. This was a decrease in the number of sites compared to 2012 when 98 of 180 approved sites were used. However, the amount of biosolids land applied in 2013 only slightly decreased from 2012 and was very similar to the amount land applied in 2011. Therefore, it does not appear the decrease in land application sites in 2013 significantly affected the quantity of biosolids land applied. Table 4 lists the biosolids sites and the amounts of biosolids reported applied.

For 2013, an estimated average of 2.42 dry tons of biosolids were applied per acre with an estimated total nitrogen concentration of 5.27% and an estimated total phosphorus content of 2.30%.

Although the data for 2013 represents an improvement in land application data, the data still may contain errors or estimations for several reasons. Most of the data comes from scanned reports filed under the Department's electronic documents database. Some reports appear to be missing from the database even though received by the Department. Also, not all reports are error-free and while some errors were identified and corrected, others could not be either identified or corrected. In one case, a site closed mid-year and the 2013 loadings were estimated from facility reports. Also, the facility annual report form was not developed to address land application out-of-state (i.e. in Alabama), and reports from the facilities whose biosolids were applied to sites in Alabama varied in how the quantities were reported. Guidance will be provided to the facilities applying biosolids in Alabama for the 2014 reports.

Table 4. Florida Land Application Sites - 2013

COUNTY	DEP OFFICE	FACILITY ID	SITE NAME	ACRES	DRY TONS APPLIED
Alachua	NED	FLA177601	Newberry Raf	17.5	4.1
Alachua	NED	FLA182796	Whistling Pines Ranch	1130	3572
Baker	NED	FLA791954	Shady Creek Farm	124.53	13.02
Baker	NED	FLA017298	Wassie Fish Biosolids Site	83.33	199.95
Brevard	CD	FLA395731	Jakubcin	200	169.22
Brevard	CD	FLA844462	Port St. John Site	85.5	44.08
Charlotte	SD	FLA804746	City of Punta Gorda Biosolids	447.3	296
Citrus	SWD	FLA512389	HCR Limestone Property	600.9	1113.62
Citrus	SWD	FLA287466	Holnam Ranch	100	303
Clay	NED	FLA179035	Hatcher Farm	96.2	227.1
Clay	NED	FLA686361	Spencer Maxville Ranch	131.18	399.66
Clay	NED	FLA686344	Spencer Middleburg Ranch	195.4	0
Collier	SD	FLA782947	BCI Pature Biosolids LAS	221.44	0
Collier	SD	FLA761150	Immokalee Biosolids Site	307.36	0
Collier	SD	FLA316326	Ranch One Grove	1293	2317
Columbia	NED	FLA568261	City of Lake City-Branford Road	115.5	457
Columbia	NED	FLA485578	Glenn Farms	262	940.6
Escambia	NWD	FLA311219	Hollis Chavers Property	5.1	0
Escambia	NWD	FLA311201	Peterson Property	17.5	0
Flagler	NED	FLA017374	Double C Ranch	263	1083
Flagler	NED	FLA323870	Rainbow Ranch*	71	193.81
Gadsden	NWD	FLA318680	Kingry Farm	22	7.8
Gilchrist	NED	FLA825689	City of Trenton Biosolids Application Site	40	8
Gilchrist	NED	FLA443191	Corbin Agricultural Site	95	16
Gulf	NWD	FLA311090	Wetappo Farms	258	3628
Hamilton	NED	FLA812773	Cat Creek Biosolids Site	38	52
Hardee	SWD	FLA318582	Wauchula Old Airport Site	27.35	47.7
Hernando	SWD	FLA287733	Durkee Ranch	118.81	341.7
Hernando	SWD	FLA287709	Melton Ranch	455	1150.1
Hernando	SWD	FLA287717	Nordgren Property	72.65	133.8
Highlands	SD	FLA288233	Hart-Albriton	1512.6	225.6
Holmes	NWD	FLA828262	R & E Farms Westville Application Fields	226.2	0
Indian River	SED	FLA587214	Corrigan Ranch	2336	4072

COUNTY	DEP OFFICE	FACILITY ID	SITE NAME	ACRES	DRY TONS APPLIED
Indian River	SED	FLA626040	Flying L Ranch	651	1365
Indian River	SED	FLA790940	Ox Creek Ranch	432	1291
Indian River	SED	FLA801097	Pressley Ranch	3059	5744
Lafayette	NED	FLA017509	Mayo Correctional Raf	9.83	11.28
Lafayette	NED	FLA017510	Mayo Raf	18	5.59
Lake	CD	FLA697737	Don Monn Ranch	360	734.43
Lake	CD	FLA799793	Leesburg CR 470 Biosolids	192	396.4
Lee	SD	FLA736139	Corkscrew Ranch	273.34	0
Levy	NED	FLA691330	Graham Site #1	65.5	8.8
Levy	NED	FLA691313	Graham Site #2	33.3	24.18
Levy	NED	FLA180190	Williston Airport	44.1	0
Liberty	NWD	FLA521159	Liberty Correctional Institution RAF	3.82	9.48
Madison	NED	FLA323888	Chason Site No. 1	23.14	0
Manatee	SWD	FLA289647	MJ Ranch	890.61	192.9
Marion	CD	FLA330728	Circle Square Woods	60	85.07
Marion	CD	FLA854638	Drake Ranch	44.8	18.47
Marion	CD	FLA317217	Homer Gary South	72.1	0
Marion	CD	FLA312240	Pasteur Site	373.8	241.76
Okaloosa	NWD	FLA310921	Crook Creek Farms - Locke & Strickland	161.9	319.74
Okaloosa	NWD	FLA789461	Crook Creek Farms - Thompson	696.4	0
Okaloosa	NWD	FLA439576	Eglin AFB - Field 4 Biosolids Site	21.1	8.97
Okeechobee	SED	FLA499170	Tir na n'Og Ranch	161	81.22
Osceola	CD	FLA697761	CECIL WHALEY RANCH	513	3603
Osceola	CD	FLA318728	Clay Whaley Ranch	1104.7	10628.3
Osceola	CD	FLA829374	Crescent J Ranch-RMF	665.2	904.92
Osceola	CD	FLA318655	Deer Park Ranch	5735	13517
Osceola	CD	FLA581356	Deseret Ranches	2394	10700.4
Osceola	CD	FLA617903	Hayman 711 Ranch	4513	10791
Osceola	CD	FLA832243	Kenansville Ranch	2551	1575
Polk	SWD	FLA289914	5r Ranch	1424	2819
Polk	SWD	FLA818925	Albritton Biosolids Land Application Site	183.47	459.35
Polk	SWD	FLA690163	B-Bar-J Ranch	615	1233
Polk	SWD	FLA286958	Buck Mann Ranch	626	282.9

COUNTY	DEP OFFICE	FACILITY ID	SITE NAME	ACRES	DRY TONS APPLIED
Polk	SWD	FLA290131	Carter 7C Ranch	786.03	1932.37
Polk	SWD	FLA690392	Chris Walker Ranch	131	164
Polk	SWD	FLA311898	Circle Cross	389	802.1
Polk	SWD	FLA290343	Fox Branch Cattle	2807	3418.2
Polk	SWD	FLA290386	JMC Ranch BLAS	345.41	449.1
Polk	SWD	FLA290165	Winter Haven Site	110.56	42.6
Putnam	NED	FLA492469	Crescent City	7.56	3.85
Sumter	CD	FLA288667	Sumter County Institution	13.22	19.6
Suwannee	NED	FLA184853	Advent Christian Village Raf	10	10.4
Suwannee	NED	FLA017515	Rolling "R" Ranch	183	495.9
Suwannee	NED	FLA384364	Rolling R Ranch K Bar Raf	122	437.3
Taylor	NED	FLA181447	Perry Raf	125.9	89.44
Taylor	NED	FLA182915	Taylor County Correctional Raf	5.83	8.38
Union	NED	FLA682578	Lake Butler	89.3	14.2
Volusia	CD	FLA319252	Hart Property	115.5	374.04
Walton	NWD	FLA789453	Crook Creek Farms - Adams	153	0
Walton	NWD	FLA789500	Crook Creek Farms - Allen	112.8	0
Walton	NWD	FLA311022	Crook Creek Farms - Ansley	151.1	344.21
Walton	NWD	FLA814016	R & E Farms - Bell Road	143.54	424.44
Walton	NWD	FLA508462	R&E Farms Zone J	331.41	782.35
Walton	NWD	FLA805271	Wolfe Creek Residuals Management Facility	1175	0
			Totals	46,249	97,880

* Approved through consent order, not formally permitted yet

Landfill Disposal

In 2013, an estimated 111,923 dry tons of biosolids were disposed of in landfills, which is virtually the same quantity estimated for 2012. This estimated landfill total was derived by subtracting the estimated quantities of biosolids used to produce Class AA and Class B biosolids from the estimated total generation of biosolids (320,000 dry tons) in Florida. Because of the potential inaccuracy in the estimated total amount of biosolids generated, the landfill quantity has the greatest potential for inaccuracy and uncertainty. However, it appears clear about one-third of Florida's biosolids are currently disposed of in landfills annually.

The current estimated landfill rates are significantly higher than the estimated landfill rates in the 1990s and early 2000s, which were around 17%. Some of the factors likely influencing the increase over the

past decade include an increased number of restrictive county ordinances, rising energy costs which affected biosolids treatment and transportation costs, restrictive legislation for sensitive watersheds, and the 2010 revisions to Chapter 62-640, F.A.C.

There are 42 active Class I landfills in Florida. However, not all these landfills accept biosolids. In 2009, only 24 landfills accepted biosolids and 10 of those only accepted biosolids from facilities within the same county.

Bioenergy and Other Methods of Use and Disposal

There have been a few notable innovative biosolids bioenergy projects in Florida in the past few years. These include projects to create energy directly from biosolids as well as the use of biosolids as "fuel." Development of "bioenergy" projects is expected to continue in the future. However, two recent projects suffered setbacks from which they may not recover.

Maxwest Environmental Systems, Inc., which came to Florida in 2008 and built a biosolids drying and gasification system in cooperation with the City of Sanford, filed for Chapter 7 bankruptcy in mid-2014. While the process appeared to be successfully operating, news reports indicated it cost more and was taking longer to develop than expected. The system is currently inactive but the City of Sanford recently chose to keep the option to use the Class AA heat-drying portion of the system in the renewed wastewater facility permit for the City's South Water Reclamation Facility #2.

The City of Orlando operated a 5 dry ton per day pilot project to study super critical water oxidation with energy generation until a catastrophic failure in mid-2013 halted the project. Although the process appeared promising, it is not known if the pilot project will ever be re-started.

A new anaerobic digestion facility with energy production constructed near Orlando appears promising. In 2012, the Department permitted construction of a new biosolids treatment facility, the Harvest Energy Garden Orlando Biosolids Treatment Facility (BTF), to anaerobically digest biosolids and other organic wastes to produce energy. Biosolids, food waste, manure, fats, oils and grease is digested to produce biogas for energy. After digestion, the remaining material is dried to produce a Class AA biosolids fertilizer product. Facility construction was completed in early 2014 and the facility began operating shortly thereafter.

A small number of "waste-to-energy" facilities' air permits have been revised to allow the burning of biosolids, as well as one cement kiln with the option to burn biosolids as fuel. Although no biosolids were reported burned in 2013, it is expected that at least a small quantity will be burned in 2014.

Summary of Biosolids Use and Disposal

In 2013, approximately 178,511 dry tons of Class AA biosolids products were distributed and marketed in Florida, approximately 97,880 dry tons of Class B biosolids were land applied to sites in Florida, and an estimated 111,923 dry tons of biosolids were disposed of in landfills. Compared to 2012, this represents a 16 percent decrease in Class AA biosolids products distributed and marketed, a 10 percent decrease in land application, and no change in the quantity of biosolids sent to landfills. Although it would appear there was a decrease in biosolids generated in Florida in 2013, these estimated quantities of biosolids and biosolids products used or disposed by Florida and out-of-state facilities differ from the estimated quantities of raw biosolids generated by Florida facilities. Charts are provided in this report to illustrate these differences. There is no indication the quantity of raw biosolids generated by Florida facilities decreased in 2013.

The following two charts illustrate biosolids use and disposal in Florida for 2013. Figure 3 presents the reported quantity of Class AA biosolids products distributed and marketed in Florida by Florida and out-of-state facilities, the reported quantity of biosolids land applied to sites in Florida, and the estimated landfill quantity. Figure 4 presents the estimated quantities of biosolids generated by Florida facilities and their ultimate use or disposal.

Figure 4 differs from Figure 3 by not including out-of-state biosolids and uses adjusted "generated" quantities of biosolids (i.e. the quantities do not include the estimated amounts of material added to composted and alkaline-treated biosolids). This provides a less-skewed comparison of generated quantities compared to the final uses. Also, Figure 4 includes all the biosolids used for land application and for distribution and marketing including those sent to Alabama, since the biosolids were generated by Florida facilities. While the percentages aren't exact, each of the three primary use and disposal options account for about one-third of Florida's biosolids.

Figure 3. 2013 Use and Disposal of Biosolids in Florida – Based on Final Dry Tonnage

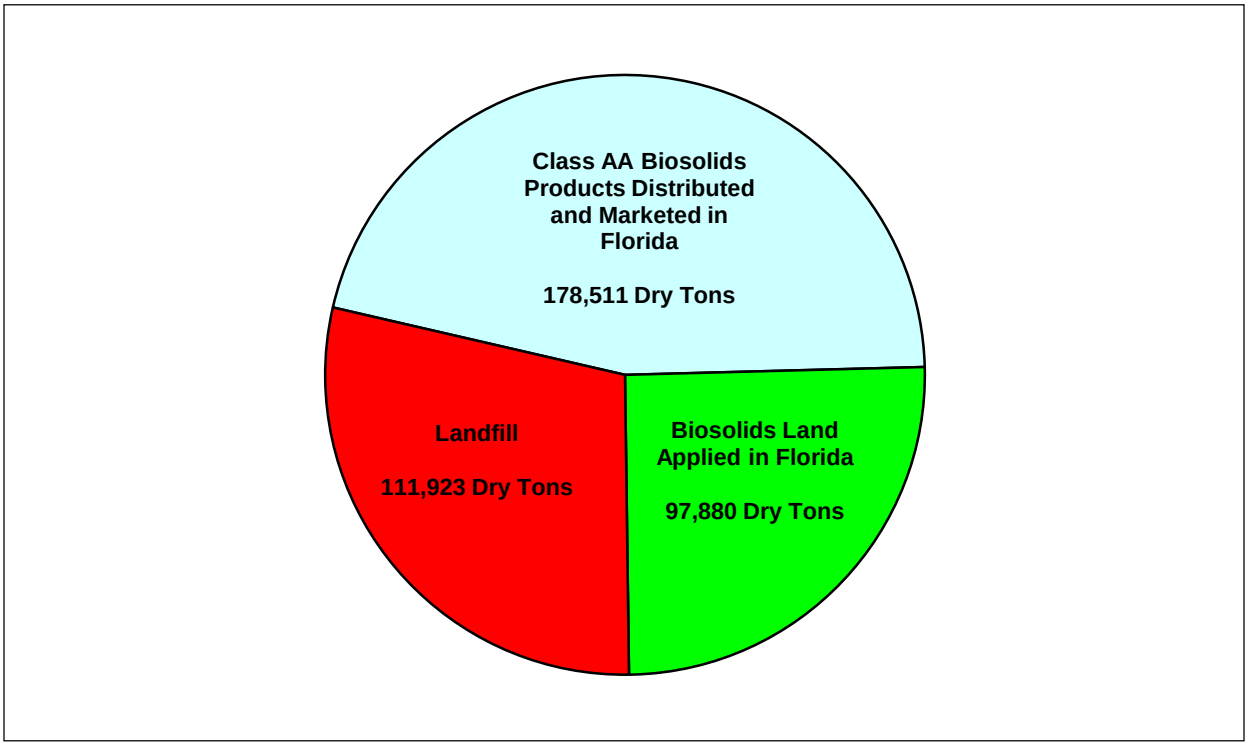
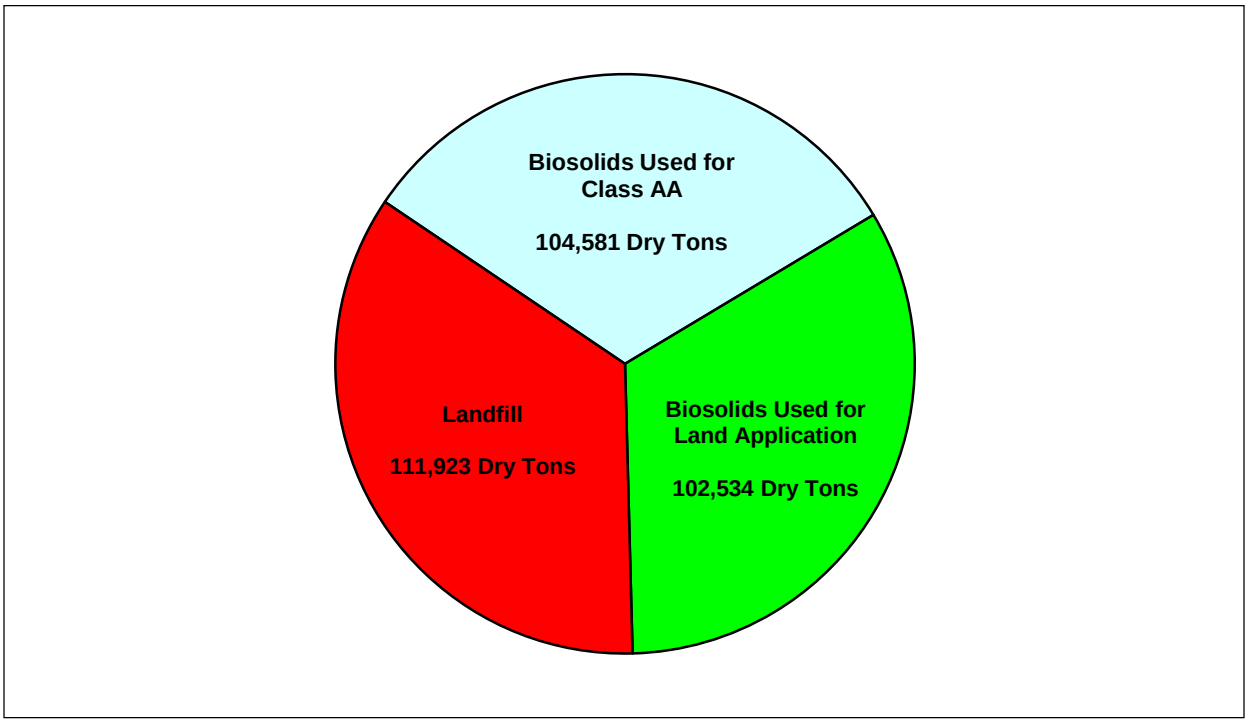


Figure 4. 2013 Use and Disposal of Florida-Generated Biosolids – Estimated Tonnage Prior to Treatment Process Additives



Average Analytical Data for Florida Facilities

Table 5 provides average metals concentrations for biosolids in Florida. The averages were derived only from electronically available data, which was limited to data from facilities whose permits were revised in the past three years, have newer reporting requirements, and whose data is currently entered electronically. Although the data represents a small subset of facilities in Florida, the resulting averages appear reasonable and consistent with past data. The electronic availability of data should continue to improve in future years.

Table 5. 2013 Biosolids Analytical Data Averages

Parameter	**Ceiling Concentration Limit** (mg/kg dry weight basis)	**Class AA Parameter Concentration Limit* Monthly Average** (mg/kg dry weight basis)	**2013 Class AA Average** (mg/kg dry weight basis)	**2013 Class B Average** (mg/kg dry weight basis)	**2013 Overall Average** (mg/kg dry weight basis)
Arsenic (As)	**75**	**41**	4.21	5.68	4.80
Cadmium (Cd)	**85**	**39**	2.10	2.94	2.44
Copper (Cu)	**4300**	**1500**	346.65	429.76	380.00
Lead (Pb)	**840**	**300**	18.89	25.31	21.47
Mercury (Hg)	**57**	**17**	0.68	0.93	0.78
Molybdenum (Mo)	**75**	**- ***	9.84	14.37	12.38
Nickel (Ni)	**420**	**420**	19.28	20.82	19.90
Selenium (Se)	**100**	**100**	9.15	9.15	9.15
Zinc (Zn)	**7500**	**2800**	676.14	853.16	747.32

* Class AA biosolids must meet both the ceiling limit and the Class AA limit.

As in 2012 and other years, the 2013 average metals concentrations in Table 5 are significantly below Class AA and biosolids ceiling concentration limits. The 2013 metals concentration averages are about the same as 2012 with the average Class AA biosolids metals concentrations remaining slightly lower than the Class B averages. The slightly lower Class AA averages may result from dilution caused by the addition of other materials during the treatment and production of certain Class AA biosolids products, such as composts and alkaline-based biosolids products.

Future Trends

Overall, the use and disposal of biosolids in Florida did not significantly change from 2012 to 2013. For 2014, no significant changes in the overall use and disposal quantities are expected. While there does appear to be a slight trend toward an increasing number of facilities producing Class AA biosolids, this has not resulted in increased Class AA production.

In 2014, several new land application sites were permitted and some new Class AA facilities have started operation. Whether these additional sites or facilities will affect the overall quantities for land application and distribution and marketing is unknown since other facilities may choose to cease land application or Class AA production, offsetting any potential increases.

For 2014, at least one waste-to-energy facility with the option to burn biosolids in its permit is expected to have received some biosolids for processing. No biosolids have been reported burned in Florida since the last two major biosolids incinerators closed in the 1990's.

Data availability for 2013 was improved with the primary improvement resulting from the initial submittal of biosolids land application site annual summary reports by site permittees under the new site permit requirements. Over the next few years, data availability and quality is expected to continue to improve because more facilities should have biosolids parameters on the facility Discharge Monitoring Report (DMR) and more facilities are expected to utilize the Department's eDMR/ezDMR electronic reporting system. Improved data may allow further analysis of biosolids practices in Florida.