NATIONAL BIOSOLIDS DATA PROJECT

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ALABAMA

BIOSOLIDS MANAGEMENT 2018 - STATE SUMMARY

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

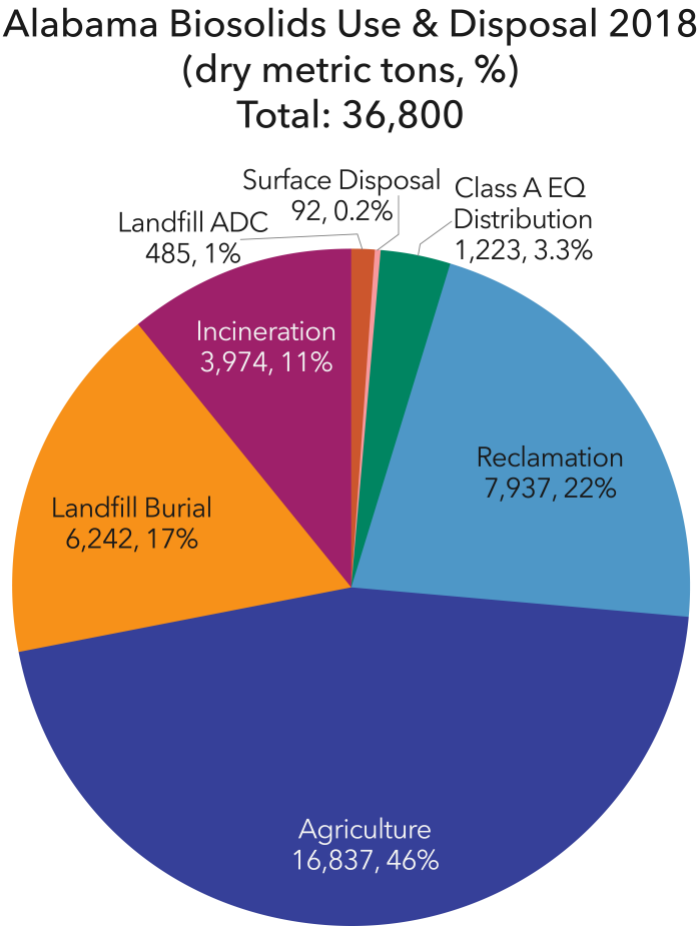
In Alabama...

- *Most wastewater solids are land applied on farmland, with some (from the Birmingham/Jefferson County area) used for mine land reclamation. Huntsville solids are incinerated in a waste-to-energy system. The remaining solids are landfilled.*
- *The Alabama Department of Environmental Management (ADEM) oversees biosolids management, increasingly since April 2020, when new state rules came into effect. Twenty years ago, U.S. EPA Region 4 was entirely responsible for overseeing biosolids in AL. In the past decade, complaints about malodors and other nuisances, including regarding out-of-state biosolids being land applied or landfilled in AL, led to pressure on ADEM to impose additional restrictions, which now include nutrient management requirements and setbacks at land application sites.*
- *Septage regulations were also updated in 2020. Septage is regulated by the AL Department of Public Health and local health departments, which oversee the relatively rare instances of land application of septage. ADEM would only get involved if there were water quality impacts. It is assumed that most septage is disposed of at water resource recovery facilities (WRRFs). Alabama has been at the forefront of identifying public health concerns related to failed septic systems in some rural low-income communities.*

Biosolids Management in Alabama

A majority of Alabama biosolids have been land applied for many years. In 2004, almost 70% were land applied for agriculture and mine reclamation (1st national biosolids survey; also https://www.farmprogress.com/biosolids-seen-fertilizer-alternative). Most of the large metropolitan areas land apply, led by Birmingham/Jefferson County. The exception is Huntsville, which sends its wastewater solids to a city-owned waste-to-energy facility. Most of the land-applied biosolids are Class B. A few water resource recovery facilities (WRRFs) have advanced alkaline stabilization or heat drying systems and produce Class A biosolids, which are also mostly used in agriculture. A lot of smaller facilities have lagoons that are dredged every 5 - 30 years; when dredged, the contracted company may treat the solids and land apply or landfill them. There are several land application contractors who manage biosolids for AL water resource recovery facilities (WRRFs), including AAA Septic, Allied, Denali Water, GreensSouth, Merrell Bros., Recyc Systems Southeast (which became part of Denali Water in 2021), and Synagro.

Alabama has been a destination for biosolids from other states, including some far away. In 2018, sewage sludge and biosolids became a major news story in Alabama because of malodors from stalled trainloads of New York City biosolids lined up for landfill disposal. Because of major public outcry over these odorous "poop trains" and other incidents, including septage and chicken waste land application malodors, the Alabama Department of Environmental Management (ADEM) initiated new biosolids regulations in 2020. The new regulations establish additional land application requirements, including nutrient management planning and setbacks. They apply not only to materials generated in-state, but also to some biosolids imported into Alabama. The rules are intended to reduce odor and other nuisance complaints, while still encouraging the land application of biosolids.



Agency/Department Oversight

In the past, ADEM focused on water quality and NPDES facility permitting, including, to some degree, the land application and other management of biosolids as part of regulating WRRFs. In particular situations, ADEM provided permits for land application. But U.S. EPA Region 4 was the responsible

enforcement agency for biosolids, and they provided oversight. At that time, some industrial by-products were land applied also, but oversight was uncertain between U.S. EPA Region 4 and the state. In 2018, adhering to the federal EPA Part 503 regulations was required. But, because of odor complaints and other concerns, ADEM created new, more comprehensive regulations that came into effect in April 2020. Under the new state rules, those that generate or distribute more than 100 dry tons of biosolids (or industrial residuals) per year are required to register and report annually, whether the biosolids are from in-state or out-of-state. In 2022, additional updates to the new regulations were developed.

As described by *JDSupra*:

> In early 2020, the Alabama Environmental Management Commission promulgated rules establishing procedures by which the Department of Environmental Management will regulate land application of eligible non-hazardous by-product materials within the State. The rules became effective April 13, 2020 and are intended to work in conjunction with the U.S. EPA's Biosolids Program governing the use or disposal of sewage sludge.
>
> The term "land application" is not defined in the ADEM rules, but, in general, it is the spreading, spraying, injection, or incorporation of by-product materials onto or below the surface of the land to take advantage of the soil enhancing qualities of those materials. ADEM defines "by-product" as a material that is generated as a result of water or wastewater treatment or residual materials from industrial or manufacturing processes that, barring any form of alternate or beneficial use of that material, would otherwise be discarded at a landfill or other solid waste disposal facility. As the definition implies, these materials can be reused as a soil amendment or fertilizer (e.g., for agricultural lands or rangelands) in place of a raw material or other feedstock, if certain requirements are met. There are obvious advantages to reuse of by-product materials through land application, so the ADEM rules intend to encourage those activities.
>
> For ADEM to consider a by-product eligible for land application, the material must not be hazardous waste, and it must be adequately characterized to confirm the use is protective of human health and the environment. In addition, the material must possess physical and/or chemical properties that make it suitable for the intended agronomic rate, a term separately defined in the rules. With certain exceptions, ADEM requires both an Operations Plan and a Nutrient Management Plan for sites where by-product materials will be applied.
>
> The first major deadline under the rules [was] *July 12, 2020* – the due date for the initial written notification to ADEM. By this date, all non-exempt generators of by-product material, as well as distributors or suppliers that handle or use by-product material for beneficial use, [had to] notify ADEM of the quantity of material handled (in tons), type of material land applied, and county of land application for the previous calendar year. As the rules suggest, ADEM [uses] the information submitted to develop an inventory of potentially-regulated entities....

Pressures on Biosolids Management and Land Application

The following pressures on biosolids programs in Alabama were selected by the state expert from options in the NBDP survey:

1. MANAGEMENT ISSUES – hauling distances
2. NUISANCE ISSUES – odors, truck traffic, dust, etc.
3. PUBLIC INVOLVEMENT – concerns of neighbors, environmental groups, and others
4. REGULATIONS ON BENEFICIAL USE – lack of regulatory support for beneficial use (as of 2018)
5. COST – land application is often less expensive, and some landfills discourage sludge disposal

Alabama was the first prominent location where the issue of PFAS in biosolids arose. PFAS are persistent and widespread fluorinated compounds of concern. 3M has a manufacturing facility in Decatur, AL that sent wastes with PFAS to the local landfills and into local wastewater, resulting in land application of industrially-impacted biosolids with high levels of PFAS that led to localized soil and water contamination that was investigated by U.S. EPA and others in the late 2000s. More than a decade later, in late 2021, 3M and the City of Decatur and others reached a settlement, including plans for further remediation and protection of water quality.

The beneficial use of biosolids has been increasing in AL in recent years, and the new 2020 regulations are intended to support land application while ensuring proper management to avoid complaints. While there is some ongoing opposition in some communities, which led to the introduction in the 2018 and 2021 legislatures of bills banning land application, the bills failed to have enough support to move forward. Nonetheless, the concerns and opposition continue here and there in rural communities near land application sites, and careful management is critical.

Septage Management

There are 14 land application facilities in Alabama that accept septage, according to an ADEM expert. The AL Department of Public Health and the 67 local health departments oversee septage management, any land application, and the pumpers (septage haulers) involved. Land application of septage has been an ongoing practice for decades and has had to follow the U.S. EPA Part 503 regulations. However, in February 2021, new septage regulations went into effect, parallel to the new biosolids regulations. As in many other states, data on quantities and destination of septage are not compiled and available. ADEM would only get involved in septage issues if there were water quality impacts. It is assumed that most septage is disposed of at WRRFs.

While not unique to Alabama alone, concerns have arisen regarding failing septic systems. Lowndes County in particular has become a nationally-publicized central example of failing on-site wastewater

treatment systems that threaten public health in low-income and minority communities in places around the U.S. (see also Catherine Flowers, 2020: *Waste*).

Arkansas Septage Management	
Quality of state septage data	Moderate
Septage haulers based in state:	~200
In-state separate preparers (not WRRFs) taking septage:	0
WRRFs required to take septage?	No
WRRFs that accept septage:	100
Septage received at WRRFs in 2018 (gallons):	no data
Other outside wastes accepted at WRRFs:	some fats, oils, grease (FOG)
Is fats/oil/grease (FOG) a significant issue?	No
Is it regulated?	No
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
	New septage regulations in 2020 were non-substantive, driven by new laws... another update is being worked on now. 1 - 2 FTEs includes field staff who inspect trucks as well as the lead septage person - not a lot of staff time is put into this.
Most recent septage regulations update:	2020
Full-time equivalent (FTE) at state agency for septage:	1
Notes: WWTPs are not required to take septage, and some refuse it. Some have holding tanks and do spot testing of septage and will reject it and require haulers to take it back if the quality is not good. Haulers haul a lot of different material, whatever they get $ for, so there can be too much FOG or other stuff in a load of septage, and WWTPs are wary of that. The guesstimated facilities taking septage are mostly the larger ones. The state does not require septic tank pumping; they recommend it once every 5 years. Septic Tank Cleaning regulations are here: https://www.healthy.arkansas.gov/images/uploads/rules/SepticTank_Final_09182020_%28signed%29.pdf	
Regarding # of WWTPs accepting septage: maybe 100 - estimate by T. Paul, DOH	
NBDP estimates that at least 50 million gallons of septage are generated each year in Arkansas.	

Major WWTPs, Separate Preparers, and Notable Projects

The following biosolids operations are leading examples of biosolids management in Alabama. Learn more about each one by clicking to selected web resources provided in the References.

Birmingham, the 2nd largest city (~206,000) but the largest metropolitan area in the state, is served by the Jefferson County Environmental Services Department, which owns and operates 9 WRRFs, treating a total of about 110 MGD on average. The largest WRRF – Valley Creek (nearly 40 MGD) – uses anaerobic digestion (AD) for solids stabilization and uses biogas energy for plant operations. The 2nd-largest – Village Creek – uses alkaline stabilization. The other facilities rely on aerobic digestion. All of the facilities rely on testing for Class B verification and use immediate incorporation routinely to meet vector attraction reduction requirements. In 2018, all but ~74 landfilled dry metric tons of the

County's solids were used for land reclamation at the Flat Top Mine northwest of the city. In other recent years, another land reclamation site – Beltona – has received Jefferson County biosolids; most of the biosolids in these reclaimed areas are used for growing Bermuda grass for hay for construction and landscaping.

Huntsville, Alabama's largest city (~208,000 population), operates six WRRFs ranging in size from 0.25 MGD to 41 MGD, and totaling 79.65 MGD. All of the resulting solids – ~4,700 tons per year from drying-bed drying – are sent to a city-owned waste-to-energy incineration system that is operated by Covanta Energy and provides renewable electricity to the area.

Montgomery is the capitol and the 3rd largest metropolitan area in the state. Its wastewater solids are land applied at a dedicated farm site:

> "The purpose of the Agrarian Center is to dispose of biosolids, the solid end product of the wastewater treatment process, in an application that meets the demands of the Environmental Protection Agency. The biosolids are collected at the Catoma Wastewater Treatment Plant and pumped as a liquid slurry that is approximately 3% solids across Catoma Creek into the holding tanks located at both sites of the Agrarian Center. There are three tanks for a total off 3.3 million gallons of storage…." (https://www.mwwssb.com/biosolids)

Mobile is the 4th largest metropolitan area in Alabama. The solids from its two WRRFs are treated with anaerobic digestion (AD) and land applied for agriculture with the help of a biosolids contractor, Denali Water.

Auburn has an 8.3 MGD WRRF and produces Class B biosolids that are land applied on nearby farms.

Albertville produces heat-dried Class A biosolids. According to a 2016 article in *TPO*, the solids are dewatered to 17% cake before going into a dryer heated with 30% biogas & 70% natural gas. "The dryer's end product has the consistency of coarse sand and is dark gray. Demand has been immediate and strong. It's sold in large bags that hold nearly a ton of material; the price is $15 per bag. The primary customer is a farmer who picks up the product at the treatment plant and applies it to hay land. This has eliminated the treatment plant's hauling costs. 'We have a verbal commitment with him for a year,' Chumley says. 'This [2016] is our first year of full dryer operation, and we're in a trial and error mode with marketing.'

Prattville installed a new Schwing Bioset advanced alkaline stabilization system in 2019. Before 2019, according to an article in *TPO*: "liquid Class B biosolids were hauled to a farm field for land application. The facility averaged 10 to 15 6,800-gallon tanker loads per day.... In the past, a continual stream of trucks... headed to the field to land-apply as much as 81,600 gallons of liquid waste per day. Today's disposal effort involves just two tri-axle trucks loaded ¾ full per week."

References:

The state biosolids coordinator and other state biosolids and septage management experts at ADEM and the Alabama Department of Public Health kindly provided information in this summary report. Additional information was obtained from:

New regulations in 2020:
https://www.jdsupra.com/legalnews/alabama-land-application-regulatory-12216/

ADEM 2020 biosolids regulations:
https://casetext.com/regulation/alabama-administrative-code/title-335-alabama-department-of-environmental-management-land-division-solid-waste-program/land-division-solid-waste-program/chapter-335-13-16-organization/section-335-13-16-03-specific-requirements-for-land-application-of-by-product-materials

Septage regulations:
https://www.alabamapublichealth.gov/environmental/assets/SeptageRules.pdf
https://aowb.alabama.gov/search/RosterSearch2.aspx
https://www.alabamapublichealth.gov/environmental/solid-waste.html
https://www.pumper.com/online_exclusives/2020/11/rules-and-regs-alabama-voters-reject-septage-spreading

On odors:
https://www.cbs42.com/news/local/jefferson-county-neighbors-complain-about-sludge-being-applied-to-land-near-homes-river/
2018 legislation: https://www.alreporter.com/2018/03/22/committee-gives-favorable-report-allowing-jackson-county-voters-to-ban-human-land-application-of-biosolids/
NYC poop train: https://www.wsj.com/articles/new-york-city-sewage-held-up-in-alabama-town-finally-taken-away-1524173499
https://apnews.com/article/2481518de6f64353b49f7ae4fde1d6a2

Albertville:
https://www.tpomag.com/editorial/2016/05/how_to_solve_your_long_term_biosolids_management_issues

Auburn: https://www.auburnalabama.org/water-resource-management/sewer/wastewater-treatment/
Decatur and PFAS:
https://www.decaturpfas.info/

Huntsville:
https://www.huntsvilleal.gov/environment/water/water-pollution-control-information/wastewater-collection-treatment/

Merrell Bros.:
https://merrellbros.com/locations/harpersville-al-division-id-13

Prattville:
https://www.tpomag.com/editorial/2020/02/the-alabama-city-of-prattville-spared-no-effort-in-a-treatment-facility-and-biosolids-program-upgrade

Montgomery:
https://www.mwwssb.com/biosolids