



2014 Biosolids Performance Report

June 2015

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WEA Recognizes KUB Biosolids Program

The Kentucky–Tennessee Water Environment Association (WEA) presented KUB with an award for Beneficial Use of Biosolids in 2014. The award recognizes programs that “have demonstrated outstanding management of their biosolids treatment and disposal process, particularly with regards to the beneficial reuse of the process by-products.”

The nomination highlighted KUB’s National Biosolids Partnership Platinum certification and 100 percent land application rate. It also noted that KUB’s biosolids are registered as a fertilizer through the state and provided free to participating farmers. The nutrients in KUB’s biosolids would cost the farmers about \$900,000 if they had to buy fertilizer instead.

National Biosolids Partnership Recertifies KUB Program at Platinum Level

KUB’s biosolids program first received NBP Platinum certification in December 2011 after a rigorous review process and third-party audit. To maintain certification, the program must continue to pass interim audits and meet the high standards required by the NBP. After a third-party audit in late 2014, NBP again gave KUB’s program its highest Platinum level certification.

KUB’s program is one of only 34 nationwide and two in Tennessee to achieve NBP certification. That recognition demonstrates a high level of commitment to industry best practices and rigorous quality control.

Biosolids are nutrient-rich organic matter produced by wastewater treatment. Annually, KUB produces nearly 30,000 tons of biosolids. Rather than send biosolids to landfills, KUB recycles 100 percent of the material through regional farmers as a fertilizer registered with the Tennessee Department of Agriculture.

For more information, go to www.kub.org, Hot Topics Index, and follow the Biosolids link.



KUB Plants Qualify for NACWA, WEA Awards

KUB’s wastewater treatment plants each qualified for peak performance awards from the National Association of Clean Water Agencies (NACWA) in 2014. The Kentucky–Tennessee Water Environment Association (WEA) also recognized three plants with Operational Excellence Awards for having no violations.

Eastbridge: 0 violations; 4,299 compliance checks; treats 0.526 million gallons a day (MGD)
NACWA Platinum 9, WEA Operational Excellence
Eastbridge first qualified for Platinum (no violations for 5 successive years) in 2010 and has remained violation free ever since.

Fourth Creek: 0 violations; 4,299 compliance checks; 5.16 MGD
NACWA Gold, WEA Operational Excellence

Loves Creek: 0 violations; 4,439 compliance checks; 2.45 MGD
NACWA Gold, WEA Operational Excellence

Kuwahee: 2 violations in 4,787 compliance checks; 28.17 MGD—three times total of other plants
NACWA Silver [5 or fewer violations]



Eastbridge Wastewater Treatment Plant



Farmer Says: Biosolids Make a Tremendous Difference

As a fifth generation farmer with hundreds of acres across two farms, Joe Jaynes knows a thing or two about managing a farm. So when Daniel Dodson, Technical Services Specialist for Synagro, KUB's biosolids contractor, walked onto his farm two years ago telling him about an organic fertilizer he could try for free, Jaynes was curious.

In the first year, Jaynes had KUB's biosolids product, which is registered as a fertilizer with the Tennessee Department of Agriculture, applied to more than 250 acres on his farm in White Pine, Tennessee. In 2014, Jaynes added 100 acres on a second farm to total more than 350 acres. His farm is one of the bigger farms in partnership with KUB and Synagro and has seen firsthand the beneficial use of biosolids.

"The difference in the soil is phenomenal," Jaynes said. "Organic fertilizer interacts with the soil so much differently than commercial fertilizer. I have seen a tremendous difference in my fields since using it."

The cost benefit of using biosolids is a major plus, too. Jaynes notes it would easily cost \$30–50,000 a year to use commercial fertilizer on his farms. "Fertilizer is a major cost, but you can't farm without it. My relationship with KUB and Synagro is a true partnership and the quality of this free product is excellent."



Application of KUB's Biosolids

KUB contracts with Synagro Technologies for land application of its biosolids. Synagro is the largest recycler of organic residuals for water and wastewater systems.

Synagro's highly trained staff ensures that the company's work maintains compliance with applicable federal, state, regional, and local regulatory requirements. In addition to working to meet current standards, Synagro works with the EPA, NBP, biosolids associations, and applicable regulatory

agencies to be proactive in meeting changing regulatory requirements.

Fifty-eight farms, comprising 5,135 acres, are approved for free biosolids land application by the Tennessee Department of Environment and Conservation. In 2014, Synagro applied 26,563 tons of KUB biosolids to 1,525 acres on 20 farms in Jefferson, Knox, and Loudon counties.

What Are the Nutrients in KUB's Free Biosolids Worth?

KUB compared the nutrients in our biosolids to three well-known chemical fertilizers. The list below shows the annual cost for fertilizer to match the nutrients in KUB's free biosolids.

Nutrient (Fertilizer)	Annual Cost
Nitrogen (Urea)	\$301,309
Phosphorous (Phosphate)	\$522,539
Potassium (Potassium Nitrate)	\$76,047

Regulatory Update: General State Operation Permit for Land Application of Biosolids

The Tennessee Department of Environment and Conservation (TDEC) Division of Water Resources issued a new general permit for Land Application that became effective on May 1, 2014.

The permit applies statewide and authorizes persons or facilities covered under the permit to land apply biosolids in accordance with specific limitations, monitoring, management practices, and other conditions set forth in the permit. KUB's Biosolids Program is authorized by the permit to land apply on farm sites.

KUB at present has 422 individual fields that have been approved by TDEC. KUB must submit a Notice of Intent (NOI)

for each new field site before the application of biosolids. TDEC reviews the submittal and, if approved, issues a Notice of Coverage (NOC).

Normally there's a 30-day waiting period to receive the NOC before the land application process can start. Because of its standing as a National Biosolids Platinum Certified organization, however, KUB has the authority to land apply immediately after application submission.

2014 Goals, Objectives, And Performance

The KUB biosolids Environmental Management System (EMS) goals and objectives seek continual improvement and periodic review of programs, practices, and procedures. It's important when producing biosolids to begin with the end in sight. The long-term success of a biosolids program depends primarily on producing a consistent high-quality biosolids product. Keeping this in mind, KUB set performance goals in 2014 for the Biosolids Program.

The first of those goals is the initiation of a Solids Management Study. This study, conducted by a third-party engineering firm, will review current plant processes and operational strategies. The study's recommendations will help develop an operations process control manual, guidelines, and tools to enhance plant performance and solids management at the Kuwahee Wastewater Treatment Plant. Optimizing plant processes will lead to long-term success in the consistent production of a quality biosolids product.

KUB also contracted a consulting firm to complete a biogas analysis to explore alternative uses for excess biogas. During the project, KUB decided to fold biogas into a broader sustainability study for Kuwahee. The study seeks to find efficiencies in KUB's practices that reduce environmental impacts. The study will be completed by the end of 2015, reinforcing KUB's commitment to being environmentally responsible and supporting the sustainability of the communities' natural resources.

KUB Contractor Performance Assessments

In 2014, KUB continued its two-phase approach to quarterly contractor assessments to help ensure the program achieves the desired five key outcomes:

- Regulatory Compliance
- Environmental Performance
- Quality Biosolids Management Practices
- Relations With Interested Parties
- Safety

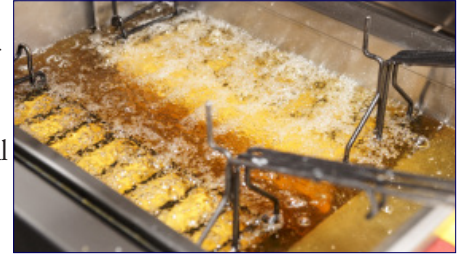
The first phase is an inspection at an active farm site to check that our biosolids contractor, Synagro, follows appropriate guidelines and best management practices when applying biosolids.



Joe Jaynes applied KUB biosolids to an additional 100 acres in 2014. [See page 2 for more.]

Grease Control Programs

KUB is committed to providing cost-effective wastewater service and to operating our wastewater system in an environmentally responsible manner. We continually work to educate residential and commercial/industrial customers about the proper disposal of fats, oils, and grease (FOG) through our Grease Control Program (GCP).



We stress to customers that proper disposal helps protect their property and the environment. Grease—even just grease from washing dishes—can build up and lead to messy, costly sewage backups in customers' buildings or overflows in the community.

KUB requires all food service facilities (FSFs) to apply for and obtain a GCP permit. Both new and remodeled FSFs must contact KUB to submit information to help determine the type and size of grease control equipment needed. FSFs must renew their permit every other year and provide updated facility and contact information.

KUB works with local plumbing inspectors to help ensure equipment is sized appropriately. FSFs must obtain KUB's approval of grease control equipment in addition to all necessary plumbing permits. KUB's GCP personnel routinely inspect FSFs, checking grease control equipment and maintenance records to ensure program compliance.

That includes having required documents on site, meeting set back requirements, and using correct application rates. Inspectors also check that the stock pile is in good condition and that there are no offensive odors.

In phase two, KUB reviews program requirements and standards set by KUB and EPA in the 40 CFR Biosolids Guidelines. KUB verifies Synagro maintains all required permits and documents, including truck reports, application rates, EPA Annual Reports, and documentation of any noncompliances. There continue to be no issues, and Synagro remains a great partner in operating and improving KUB's program.

EMS/Biosolids Community Outreach

KUB uses these methods to inform customers, the community, and interest groups about the KUB Biosolids Beneficial Reuse Program and EMS:

CUSTOMER COMMUNICATIONS

KUB shares biosolids information with the public through its website. The site provides an overview of the program, a whitepaper, goals, and objectives.

Other means of public communication include a biosolids brochure, a newsletter that mails to all customers, KUB's semi-annual report to the City of Knoxville, an annual Environmental Report, and a general handout that KUB executive staff use at speaking engagements.

KUB's Customer Information Center also is a resource for answering questions and providing materials to customers who call in.

COMMUNITY EVENTS

Biosolids staff and/or materials are available at various community events. Staff members also are available to speak at special events or meetings. Some of the events where information was available in 2014 included EarthFest and WaterFest.



Fast Facts

100 percent of KUB's biosolids are beneficially reused.

KUB's biosolids are certified as a fertilizer by the Tennessee Department of Agriculture.

KUB nutrient-rich biosolids are a free, environmentally friendly alternative to chemical fertilizers.

KUB has operated a Biosolids Beneficial Reuse Program for over 20 years.

KUB provides approximately 30,000 tons of material to local farmers as a fertilizer and soil conditioner annually.

Land application of biosolids takes place in all 50 states.

Biosolids Monitoring Requirements

Biosolids produced in Tennessee are monitored for compliance based on the EPA Part 503 Biosolids Rule (40 CFR Part 503). KUB produces Class B Biosolids. Pathogen requirements are met by anaerobic digestion and monitoring the density of indicator organisms. Vector attraction reduction requirements are met by meeting a reduction of at least 38 percent volatile solids reduction.

Monitoring Category	EPA Part 503 Monitoring Frequency	KUB Monitoring Frequency
Pathogen Requirements	Once every 60 days	Monthly
Vector Attraction Requirements	Once every 60 days	Monthly
Regulated pollutant limits (metals)	Once every 60 days	Monthly
Total solids, pH	N/A	Monthly
Nutrients	N/A	Monthly

Note: Based on biosolids production of equal to or greater than 1,500 dry metric tons but less than 15,000 dry metric tons.

KUB Blueprint Emphasizes Stewardship

"KUB's mission is to be good stewards of our communities' resources," said KUB CEO Mintha Roach. "The Biosolids program is a perfect example of how we do this — recycling this material is good for the environment, good for the farmers that use it, and good for our operations."

KUB will continue to look for opportunities to demonstrate this stewardship mission, starting with plans for a broad environmental sustainability study for Kuwahee Wastewater Treatment Plant in fiscal year 2016. The plant currently uses excess biogas produced by the treatment process to heat digesters, for example. One area of focus for the study will look at possible alternative uses for the biogas so that KUB can continue to find sustainability solutions.

Our Mission:

Our mission is to act as good stewards of our communities' resources: utility assets, customer dollars, and the environment. We work to safeguard those resources and enhance their value for the people of the communities we serve and generations to come.

For more information on KUB biosolids, visit www.kub.org or e-mail biosolids@kub.org.



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