THE CITY OF BOISE STRUVITE PRODUCTION

BENEFITS AND CHALLENGES

CITY of BOISE

October 2019

City of Boise Water Renewal Activities

The City of Boise owns and operates four water renewal facilities (WRFs): Lander Street Water Renewal Facility, West Boise Water Renewal Facility, Dixie Drain Phosphorus Removal Facility, and Twenty Mile South Biosolids Application Site (TMSBAS). The West Boise and Lander Street facilities treat used water (wastewater) from domestic and industrial sources. The City owns and operates the 4,225 acre TMSBAS for reuse of Class B biosolids. The City is implementing a comprehensive watershed-based strategy for phosphorus management that includes upgrades to both water renewal facilities, new technology at the West Boise WRF, and the operation of the Dixie Drain Phosphorus Removal Facility. Both the Lander Street and West Boise WRFs are operating using enhanced biological phosphorus removal (EBPR) processes. At West Boise, struvite recovery provides side stream phosphorus treatment and additional benefits that are outlined beginning on page 3 of this document.

In 2007, the City of Boise researched the struvite recovery options available and selected Multiform Harvest Inc. (MHI) technology as the option most applicable to our objectives. The City worked collaboratively with MHI staff throughout the process. The City of Boise's struvite installation and operation is different than typical installations due to processing of solids from the two WRFs and the City's investigation into producing Class A material.

Construction of the Struvite Production Facility (SPF) was completed in 2012 at the same time the City received phosphorus effluent limits and a ten-year schedule of compliance in the NPDES permits (Figure 1).

FIGURE 1. CITY OF BOISE STRUVITE PRODUCTION FACILITY REACTORS (LEFT) AND STRUVITE (RIGHT).

The upgrades to EBPR at the WRFs increase the phosphorus content in the biosolids. While the TMSBAS is primarily regulated for nitrogen, the City has been proactive in managing phosphorus in soils to help maximize the longevity of the land application site. By recovering a significant portion of the phosphorus as struvite, the City is reducing the impacts of EBPR on TMSBAS. Consequently, in 2013, the City of Boise began producing two distinct products:

- One product is the Class B biosolids cake which is land applied at the TMSBAS as a soil amendment for crops. This is traditional municipal biosolids consisting of solids materials harvested from solids after treatment. Digested biosolids from the Lander Street WRF are pumped to West Boise for processing before transfer to the TMSBAS. These Class B biosolids are transported to the site at around 12% to 15% solids, the consistency of a thick mud, or "cake". By the time the biosolids from the Lander Street and West Boise WRFs complete the dewatering step, the biosolids have been thickened and stabilized to reduce pathogens, odors, and volume. Biosolids from the City of Boise comply with or significantly exceed all EPA requirements for Class B biosolids quality prior to transport to the site.

- The second resource recovered is struvite, an intentionally precipitated crystalline material. An important distinction, however, is that struvite is not recovered from waste solids or "sewage sludge". Struvite, or magnesium ammonium phosphate, is a slow release fertilizer product with chemical composition NH_4MgPO_4-$6H_2O$. To reduce the overall discharge of phosphorus to the Boise River, this facility is designed to harvest struvite in a controlled environment from nutrient-rich recycle streams. Following anaerobic digestion at the WRFs, nutrients are recovered from the filtrate (liquids) and not the sludge (solids). To obtain low levels of total phosphorus in the West Boise effluent, the filtrate from the belt filter presses is sent through the struvite reactors to intentionally precipitate struvite before recycling back to the plant head works. Additionally, in September 2015, a second side stream, the phosphorus rich filtrate from waste activated sludge was diverted to the struvite reactors. This "P-release" side stream has significantly increased the amount of struvite produced by the West Boise facility. The resulting odorless pellets or sand-like grains of pure struvite are valuable as a slow release fertilizer. Struvite fertilizers release phosphorus more slowly than conventional phosphate fertilizers which release nutrients upon watering or irrigation. By applying fertilizers containing struvite to match root demand, excess phosphorus leaching and runoff can be minimized while providing a steady source of phosphorus (along with nitrogen and magnesium) throughout the growing season.

Benefits of Struvite Production at the City of Boise

Struvite production has been crucial to the City of Boise's phosphorus compliance strategy and sustainability objectives (Table 1). At the West Boise WRF, where the digested solids from both treatment plants are processed, struvite recovery removes 78% of phosphorus and 33% of the ammonia loading from the WRF internal recycle stream. Based on the loadings described below in Table 1, the recycle stream, without struvite production, would double the process loading to the biological process. The influent stream loading would be 4.2 mg/L and the recycle loading would account for another 4.2 mg/L. At current performance levels, the loading back to the biological process is only 0.9 mg/L or 18% of the process loading.

TABLE 1. STRUVITE LOADING AND OVERALL IMPACTS TO THE WEST BOISE WRF COMPLIANCE STRATEGY. DATA ARE FROM THE LAST QUARTER OF 2016 FOR BOTH THE LANDER STREET AND WEST BOISE WRFS. NA = NOT APPLICABLE TO LANDER STREET, SOLIDS ARE PROCESSED AT WEST BOISE.

Parameter	West Boise	Lander St.
Average day flow (MGD)	17.5	10.5
Influent total P (#/day)	978	543
Effluent total P (#/day)	201	43
Primary clarifier effluent reactive 'P' with recycle (mg/L)	5.1	3.9
Phosphorus loading to struvite (#/day)	608	NA
Phosphorus estimate to TMSBAS (#/day)	669	NA
Pounds of phosphorus removed in struvite production (78% reduction)	474	NA
Post struvite residual phosphorus in plant recycle (#/day)	134	NA
With struvite, recycle stream's impact to process loading (% of primary clarifier effluent phosphorus)	18%	NA
Estimated primary clarifier effluent phosphorus residual without recycle loading (mg/L)	4.2	NA
Additional recycle loading without struvite production (mg/L)	4.2	NA
Estimated primary clarifier effluent reactive 'P' concentration without struvite recovery (mg/L)	8.4	NA
Without struvite, recycle stream's impact to process loading (% of primary clarifier effluent phosphorus)	50%	NA

Average cost of chemicals ($/ton) of struvite produced (caustic soda and magnesium chloride)	$370	NA
If supplemental ammonia is purchased in addition to those above (total $/ton)	$435	NA

Additional benefits not quantified in Table 1 include:

- Reduction of unintentional struvite formation in pipes, anaerobic digesters, dewatering equipment, and storage basins.
- Reduced phosphorus content of biosolids which decreases the TMSBAS loadings and increases site longevity.
- Recovery of a recyclable product contributing to the City's sustainability goals by recovering this limited phosphorus-based resource.
- Reduction of ammonia in recycle stream.

Operational Opportunities, Challenges and Compliance History

There are several operating challenges to producing struvite in general and more specifically producing Class A struvite. Some of the operational parameters that effect production include the need for proper dosing ratios of magnesium in relation to phosphorus levels in the influent stream, influent flow volumes, bed blanket depth, and controlling reactor pH levels.

The City of Boise began generating struvite in the fall of 2012. Over the next several years failed attempts and investments were made to reconfigure the original struvite heating apparatus. Eventually a new apparatus was identified, however consistent 503 compliance solutions continued to be elusive. From 2013 to 2019, struvite materials have been released in intermittent batches and only for those struvite materials that met 503 regulations as Class B or Class A.

To demonstrate the released struvite's compliance with 40 CFR 503 *Standards for the Use or Disposal of Sewage Sludge* requirements, the City of Boise reports compliance data for both the Class B biosolids as well as the Class A/B struvite in the annual compliance report submitted to USEPA and Idaho DEQ. The City demonstrates compliance with 503 requirements for all struvite that is released to our marketing partners prior to leaving the West Boise WRF.

This was a conservative risk management decision due to lack of guidance on struvite recovery regulations. The City is hopeful that future regulatory guidance will eliminate the need for comparing the struvite quality with 503 regulations. The City looks forward to working with the regulators to move struvite and resource recovery out from under the umbrella of the 503 rule.

1. **Class A Compliance Strategy 2013**

Rail-car metal boxes were loaded with 10 bags of struvite and heated to meet time and temperature requirements using Equation in 40CFR Part at 503.32(a)(3)(ii) (A). This method was quickly abandoned as impractical as the energy requirements, inefficient heating through-out the containers and into the damp struvite material became apparent.

2. **Class B and Class A Compliance Strategy 2014-2016**

To address growing inventories of Class B generated struvite materials, the bulk of the material was land applied at the Twenty Mile South Biosolids Application Site, but in 2015 a portion was released to our marketer for transport to an Ohio based fertilizer company. Heat treatment to meet Class A requirements was provided by the fertilizer company and they provided documentation that this was accomplished. However, the Ohio based fertilizer company was unwilling to continue to accept the compliance obligation to demonstrate effective treatment and concurrent responsibility for any non-conforming product thus this strategy was halted.

In 2015, the City purchased and installed a Continental Rollo-Mixer to rotate and heat-dry the struvite to provide treatment meeting Class A Pathogen Reduction time and temperature requirements in 40 CFR Part 503.32(a)(3) which was the desired pathogen reduction compliance strategy. During the latter half of 2015, the Rollo-Mixer was tested extensively. The City learned that typical time and temperature requirements specified for Class A biosolids treatment are difficult to apply in the treatment for struvite to meet Class A condition. This challenge is due to the temperature-sensitive nature of the struvite crystal. The struvite crystal structure is destroyed when heat is applied due to release of bound water and the subsequent release of bound ammonia, leaving a dusty, low-nutrient and low-value product. The release of bound water inside the heat treatment vessel can also product a dense, sticky material that is impossible to reclaim and requires extensive maintenance to remove. Approximately 20% of the batches of struvite treated through the Rollo Mixer to meet time and temperature requirements failed. Although the City had been producing an extremely high-quality struvite product, it came at the heavy cost of staff time, maintenance, and energy consumption. Additionally, the heat treatment process through a single Rollo-mixer could not keep up with daily struvite production.

3. **Class A Compliance Strategy 2017-2018**

After seeing the success of the “Testing” options used in Bend, Oregon’s Class A biosolids management strategy and Nampa, Idaho’s pilot study for Class A biosolids, the City changed its compliance strategy for Class A struvite. Beginning in 2017, the City met pathogen reduction through Alternative 4 detailed at 40 CFR Part 503.32(a)(6). Adapting the compliance strategy used by Bend and Nampa allowed the City to maximize the production of Class A struvite and minimize the large overhead of manual labor, staffing and energy costs while ensuring and documenting that the end product is tested to meet the pathogen reduction and vector attraction reduction criteria as defined in 40 CFR Part 503.

In 2017, as part of due diligence and risk management, the City sent out struvite samples to evaluate the effectiveness of the heat treatment and potential risk of the non-heat-treated product for enteric viruses and viable helminth ova. Three heat treated and seven non-heat treated or "fresh" struvite samples were analyzed and all were below detection levels for enteric viruses and viable helminth ova. Over the course of the 2017 calendar year, the City sent out thirty-three struvite samples, thirty of which were fresh, non-heat-treated struvite. This fresh, non-heat-treated struvite comprised product of varying storage age from newly generated to six months post production to evaluate the possibility of pathogen potential and pathogen regrowth. These samples were sent to BioVir Laboratories in Benicia, California. All samples were non-detect for both enteric viruses and viable helminth ova. For more information on pathogen potential and pathogen quality in harvested struvite, see page 9 and laboratory results attached.

4. **Class A Compliance Strategy 2019**
   As a result of the intensive sampling in 2017-2018, the City has proceeded with this new pathogen reduction compliance strategy in 2019. To meet pathogen reduction, the City continues to utilize Alternative 4 detailed at 40 CFR Part 503.32(a)(6).To meet vector attraction, the requirements in 40 CFR Part 503.33 (b)(7) Option 7 are met. Under Option 7, all struvite meets a dryness criterion of at least 75% solids. For more information, see the Vector Attraction section on Page 7.

Over the past seven years, the City has gathered valuable data and experience regarding struvite pathogen potential and compliance with the 503 regulations. However, compliance with 503 requires considerable resources including labor and equipment maintenance, which results in a significant financial commitment. We hope that these data are helpful to other communities and the regulatory community. The following sections summarize the pollutant concentrations (metals), vector attraction and pathogen reduction data that the City has collected. A summary for both heat-treated and fresh non-heat-treated struvite is included for each section.

Metals

Metals concentrations of the non-heat-treated struvite are well below the ceiling concentration and pollutant concentration limits in 503.13 (Tables 2A and 2B). Extremely low metals concentrations indicate that this is essentially a pure mineral product. EPA noted this as a benefit of struvite recovery, "One important benefit of phosphorus recovery technologies is that any metal ions in the sludge remain with the sludge and are not co-precipitated with the phosphorus" EPA, *Emerging Technologies Report: Wastewater Treatment and In-Plant Wet Weather Management* (March 2013), page 2-8.

City of Boise data for metals are presented in Tables 2A and 2B. Fresh struvite is struvite directly from the struvite reactors, without any post processing (i.e. heat treatment).

A comparison of Tables 2A and 2B shows that the metals concentrations in fresh non-heated struvite and heat-treated struvite are similar. Heat treatment in the Rollo Mixer does not significantly change the concentration of metals in the final struvite crystal.

TABLE 2A. POLLUTANT MONITORING ON FRESH STRUVITE, ALL SAMPLES WERE ANALYZED USING SW-846 6010 C, EXCEPT MERCURY (7470 A). SAMPLES WERE COLLECTED FROM 2015 THROUGH 2018 (N=16).

Parameter	Average concentration (mg/kg)	Pollutant Concentration Limit from 40 CFR 503.13, Table 3 (mg/kg)	Maximum concentration (mg/kg)	Ceiling Concentration Limit from 40 CFR 503.13, Table 1 (mg/kg)
Arsenic	1.16	41	<5.09 [1.25*]	75
Cadmium	<0.07	39	<0.509	85
Copper	1.65	1500	<5.09 [2.79*]	4300
Lead	<0.52	300	<3.53	840
Mercury	0.002118	17	0.00961	57
Molybdenum	0.287	--	<1.53 [0.243*]	75
Nickel	0.320	420	<1.27 [0.415*]	420
Selenium	<0.67	100	<3.56	100
Zinc	4.27	2800	<12.7 [7.75*]	7500

TABLE 2B. POLLUTANT MONITORING ON HEAT-TREATED STRUVITE, ALL SAMPLES WERE ANALYZED USING SW-846 6010 C, EXCEPT MERCURY (7470 A). SAMPLES WERE COLLECTED FROM 2016 THROUGH 2018 (N=27).

Parameter	Average concentration (mg/kg)	Pollutant Concentration Limit from 40 CFR 503.13, Table 3 (mg/kg)	Maximum concentration (mg/kg)	Ceiling Concentration Limit from 40 CFR 503.13, Table 1 (mg/kg)
Arsenic	1.33	41	2.35	75
Cadmium	<0.0380	39	<0.0631	85
Copper	1.28	1500	3.44	4300
Lead	0.297	300	0.423	840
Mercury	0.001307	17	0.0042	57
Molybdenum	0.183	--	0.249	75
Nickel	0.218	420	0.361	420
Selenium	0.415	100	0.707	100
Zinc	2.99	2800	<12.6 [6.08*]	7500

For the purposes of calculating average concentrations in Tables 2A and 2B, all non-detects were set to the MDL. The results are corrected for sample size and percent moisture.
** = Where available, this indicates the maximum reported value if it was less than the highest reported detection level.*

Vector Attraction

City of Boise struvite currently meets vector attraction reduction by meeting the requirements in 40 CFR Part 503.33 (b)(7) Option 7 (reduce moisture content of biosolids that do not contain unstabilized solids to at least 75% solids). Crystallization and selective harvest of City of Boise's struvite and subsequent heating of the harvested crystals in the Continental Rollo-Mixer heat dryer results in a harvested product that is well above 75% solids. For non-heat conditioned struvite, the City determined that the 75% solids requirement could be met by allowing the freshly generated struvite to be stored in covered areas to allow dewatering and desiccation when exposed to ambient environmental conditions. To safely meet the 75% solids requirements, the City determined that 90 days in storage was necessary to comfortably ensure that we would be compliant with every batch of non-heat-treated struvite (See Table 3).

TABLE 3. NON-HEAT-TREATED STRUVITE TOTAL SOLIDS AND HOLDING TIME IN STORAGE

Date Analyzed	Total Solids % (40 degrees)	Hold Time (# of Days Post Production
9/12/15	78.5	0
1/6/16	62.4	2
9/12/15	76.2	5
2/11/16	62.9	9
10/15/15	73.8	10
12/17/15	65.2	10
12/17/15	65.2	10
12/17/15	63.6	11
12/17/15	63.6	11
9/17/16	76.5	12
9/17/16	76.4	12
11/15/18	98.5	12
9/17/16	75.6	13
9/17/16	76.2	14
1/27/18	85.9	14
9/17/16	77.0	15
4/1/16	66.4	16
11/21/15	69.9	23
11/21/15	69.0	24
2/22/18	81.6	30
11/15/18	98.4	34
3/29/18	73.9	40
3/29/18	74.1	50

6/2/18	79.8	60
6/11/18	89.8	60
6/2/18	87.6	75
6/11/18	86.7	75
1/27/18	79.9	90
6/2/18	80.6	90
6/11/18	88.1	90

The City can substantially reduce this hold time by heat-conditioning the struvite in the Rollo Mixer until it is greater than 75% solids. The City has collected 90 samples of heat-treated struvite from 2015 through 2019 and the lowest percent solids was 79.1% (average = 95.2%). Rollo Mixer drying (conditioning) steps may make the final struvite more marketable to our partner but it costs more in energy and operational maintenance for the conditioning step.

The struvite source material does not contain unstabilized primary solids as defined in 40 CFR Part 503.31(j). At West Boise, primary solids are sent to the fermenter and then to the anaerobic digesters. After anaerobic digestion, the solids are dewatered by the belt filter presses and the filtrate from these presses is used as a source material for struvite production. The dewatered biosolids are transported to the biosolids application site as the Class B biosolids. Liquid from the fermenter is sent to the aeration basins which is an aerobic treatment process. The Lander Street struvite source material also does not contain unstabilized primary solids. Primary solids generated at Lander Street are sent to the anaerobic digesters. The digested sludge is then sent to West Boise where the solids are dewatered by the belt filter presses. The filtrate from this dewatering step is then used as a source material for struvite production. The dewatered Class B biosolids are transported to the TMSBAS for land application.

The crystallized and harvested struvite is generally >94% in purity consisting of phosphate, magnesium, ammonium and waters of hydration. Small flecks of contaminant solids may be seen, and the amount of these contaminants is a variable of belt filter-press start-up, belt integrity, hydraulic settings, etc.
The harvested materials are sand-like and the crystal size determines the interstitial water retention. The material is odorless and does not attract flies or any type of vector. Several thousand open bags of struvite have been observed since 2012 and no insect or any other biological activity has been observed within the struvite. The two source materials (treated by anaerobic digestion or untreated) do not result in different vector attraction characteristics of the generated struvite. Because the product contains a relatively high solids content, has no odor and is not organic material, vector attraction is not a concern.

Pathogen Reduction

Freshly generated struvite material is intermittently tested for fecal coliforms to assess the "pathogen potential" of this product. Data was also collected for two source material streams, the belt filter press filtrate, and non-digested material from the P release tank. The belt filter press filtrate has average fecal coliform concentrations below the Class A limits. The P-Release results show the maximum pathogen potential of the material from the P release tank. Note that these data are collected from the feed sources to the struvite reactors and not from struvite harvested from the reactors. Influent to the struvite facility consists of roughly 50% digested material and 50% P-release. Table 4 shows the maximum pathogen potential of the influent to the struvite reactors.

Table 4. City of Boise struvite facility - influent source fecal coliform data (MPN/g dry wt.) for data collected 2012-2016 and analyzed using EPA 1681.

	Pollutant concentration (MPN/g dry wt.)			N size
	Minimum	Maximum	Average	
Belt Filter Press Filtrate	1.3	596.6	87.2	16
P-Release	35	7280	1537.7	9

The City has also collected fecal coliform data for non-heat-treated struvite to determine the pathogen potential in the freshly harvested (wetter) product. We have found that the pathogen potential is associated with the liquid remaining around the struvite crystals. Struvite that has been allowed to dry, whether through adequate ambient drying or Rollo Mixer heat-drying, has little to no pathogen potential. Even the non-heat-treated struvite met Class A pathogen thresholds in all 63 samples with a max of 689 MPN/g dry weight (see Table 5). These 63 samples cover a range of struvite from immediately harvested to up to 90 days in storage. Table 5 shows the pathogen potential in the harvested struvite crystals. All harvested struvite tested by the City has fecal coliform concentrations below the Class A limits.

Table 5. City of Boise fresh struvite compared with heat-treated struvite fecal coliform data (MPN/g dry wt.) for data collected 2015-2019 and analyzed using EPA 1681.

	Pollutant concentration (MPN/g dry wt.)			N size
	Minimum	Maximum	Average	
Fresh (Non-Heat-Treated) Struvite	<1.03	689	68.5	63
Heat Treated Struvite	<1.01	58.5	10.5	76

Since the City has implemented the new compliance strategy of using 40 CFR Part 503.32(a)(6) Alternative 4, the City has conducted additional pathogen testing for enteric viruses and viable helminth ova in our struvite prior to leaving our facility. From 2017 through 2019, the City has sent 35 non heat-treated composite samples to BioVir Laboratories in Benicia, CA. These 35 samples range from newly generated to material that had been stored for greater than six months to provide a range of pathogen potential even in freshly generated non heat-treated struvite. Additionally, 5 composites comprised of heat-treated struvite have been send to BioVir. For each of the 40 composite samples, there have been no detectable enteric viruses or viable helminth ova (see attached).

Struvite – 503 challenges

The City of Boise asserts that the struvite process significantly transforms the material to the extent that it should no longer be categorized as material derived from sewage sludge and is therefore outside the scope of 40 CFR Part 503. Regulating struvite under Part 503 is over-restrictive and will lead to many organizations simply to landfill rather than recycle this valuable resource.

Many studies have concluded that the Earth's phosphorus reserves are being depleted at an alarming rate. United States reserves are projected to last 40 years. Globally, about 90 years' worth of phosphorus remains. (1,2) Struvite is a benign, non-toxic, substance and, as mentioned, can be beneficially recycled as a fertilizer. In fact, struvite has been shown to outperform diammonium phosphate (DAP), the most widely used fertilizer today on a unit by unit bases in terms of dry matter production, phosphorus uptake, and extractable residual phosphorus (3,4).

City of Boise staff actively participate in the National Association of Clean Water Agencies activities. Over the past few years, agencies have been working through NACWA to engage EPA in a discussion regarding the clarification/distinction between resource extraction is a different process than bulk solids management and Part 503 does not govern these materials. The NACWA review is attached (5), but briefly, the arguments supporting the conclusion that struvite not be regulated under 503 are as follows:

- **Struvite does not fit the regulatory definition of sewage sludge.**
  - "Struvite is not a residue generated during the treatment of domestic sewage in a treatment works, nor is it a material derived from sewage sludge. Furthermore, struvite is wholly different in its characteristics than the materials covered by the definition of sewage sludge. Struvite is thus outside the scope of Part 503."

- **To regulate struvite under Part 503 would conflict with Congress' intent.**
  - "Congressional concern over sewage sludge focused on sludge: the semi-solid or solid end product of wastewater treatment. Congress was initially concerned with dumping and disposal of sludge in oceans and waterways. Later, Congress worked towards banning dumping and began to focus on regulating the use of sludge. Given its articulated concerns and the plain meaning of the term sludge, Congress expressed intent to regulate sludge, not mineral products that are not derived from end-product sewage sludge. Additionally, regulation of mineral products as sewage sludge does not further the broader goals of the Act."

- **The Clean Water Act promotes beneficial reuse, local autonomy, flexibility, and innovation; exempting struvite furthers these goals.**
  - "An EPA policy that encourages resource extraction from wastewater would be consistent with long-standing EPA policy to treat wastewater and sewage sludge as a valuable resource. This policy derives from the CWA and EPA pronouncements before and after the promulgation of Part 503 While struvite is not a sewage sludge, the success of EPA and the regulated community in promoting and implementing beneficial

use of sewage sludge provides a precedent for promoting resource extraction at wastewater plants."

  - "Exempting struvite would further Congress and the Agency's intent to foster innovation. New technologies necessitate new regulatory approaches. A policy statement recognizing that struvite is not a biosolids would lift the burden of 40 CFR 503 compliance and the state regulatory requirements triggered by a federal biosolids status."

- **Regulating struvite under Part 503 is unnecessary and constitutes an unreasonable burden to producers of struvite.**
  - Regulation of struvite under Part 503 is unnecessary because it does not pose the same potential risks as sewage sludge.
  - Regulation of struvite as sewage sludge is unnecessary because it can be regulated by individual states as a commercial fertilizer.

After several years of communication with EPA, NACWA secured a policy determination from the Agency clarifying the status of materials recovered from the wastewater treatment process (6). In January 2017, EPA confirmed in a letter to the National Association of Clean Water Agencies (NACWA) that "…EPA considers products extracted from sewage sludge that are not land applied, land disposed, or incinerated, but instead sold into a commodity market, outside the scope of Part 503". In addition, the letter outlines a process for municipalities to seek an EPA determination, on a case-by case basis, that resources recovered from the treatment process, which may be land applied (such as struvite used in fertilizer) can pass out of regulation under the Clean Water Act (letter is attached).

The letter outlines what information it will look to receive in reviewing requests for these case-by case determinations. The City of Boise will be submitting a request for EPA determination that struvite produced by the City of Boise, even if land applied as fertilizer, is not subject to the Part 503 regulations.

References Cited

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