

**DSHW-2023-207710**

August 9, 2023

CD-2023-158

Mr. Doug Hansen  
Director  
Division of Waste Management and Radiation Control  
195 North 1950 West  
Salt Lake City, UT 84114-4880

Subject: EPA ID Number UTD982598898  
Request for a Site-Specific Treatment Variance for  
High Concentration Arsenic Waste

Dear Mr. Hansen,

EnergySolutions herein requests an exemption from Utah Administrative Code (UAC) R315-268-40(a)(3) for waste that contains high concentrations of arsenic (greater than 1,000 mg/L) that cannot be treated to the specified treatment standard. This request is submitted in accordance with the requirements of UAC R315-260-19.

The regulatory requirement authorizing this request is found in UAC R315-268-44 which allows a site-specific variance from an applicable treatment standard provided that the following condition is met:

*UAC R315-268-44(h)(1) It is not physically possible to treat the waste to the level specified in the treatment standard.*

EnergySolutions requests approval to stabilize, macroencapsulate and dispose of approximately 250 cubic feet of Natural Gas Sweetener Filter Media (clay pellets) and rinse water that will be characteristically hazardous for arsenic (D004), cadmium (D006), and benzene (D018). Analysis of a sample of waste received in June 2023, detected arsenic at 14,400 mg/L in the aqueous liquid phase (approx. 20 cubic feet) and 4,600 mg/L in the solid phase. The stabilization treatment process will meet Universal Treatment Standards (described in R315-268) for all contaminants except arsenic. All actions requested in this variance will be performed in accordance with EnergySolutions' state-issued Part B Permit.

Similar waste from the same generator was received at the Clive Facility in 2015 and 2019. In 2015, analysis of a sample of that waste detected arsenic at 69,700 mg/L in the aqueous liquid phase and 1,800 mg/L in the solid. Over the course of two months, eight separate treatability studies of increasing intensity were conducted on that waste. Both single phase and multiple

phase formulas were attempted with all contaminants meeting treatment standards except arsenic. Arsenic was reduced from the baseline concentration and plateaued at around 130 mg/L (a reduction factor of approximately 16) with a formula dilution up to 5:1 reagents to waste. This concentration is greatly reduced from the baseline concentration, but remained greater than 25 times the treatment standard of 5.0 mg/L.

R315-268-44(h)(1) allows a variance if it can be demonstrated that “because the physical or chemical properties of the waste differ significantly from waste analyzed in developing the treatment standard, the waste cannot be treated to the specified level or by the specified method.” The treatment standard was developed using a fine-grained soil-like material; the filter media of this waste stream is physically different in that it is coarse clay pellets. In this media, it is much more difficult for intimate reagent-waste contact to treat the high concentration arsenic down to the treatment standard. Furthermore, the results described above demonstrate that large amounts of absorbent would be needed to meet the treatment standard, if it could be met. This would bring into question whether actual treatment was occurring or whether dilution was causing the reduction in arsenic concentration.

As an alternative to chemical treatment of arsenic to its treatment standard, *EnergySolutions* proposes to first treat the waste such that all contaminants other than arsenic meet their respective treatment standards, then macroencapsulate the treatment residual in accordance with requirements in Attachment II-1-5, *Macroencapsulation Plan*, of the state-issued Part B Permit. Macroencapsulation is a permitted process that significantly reduces the potential for migration (leaching) of waste. This process would ensure protection of public health and the environment.

Similar variance requests were made for this waste stream in letters dated January 22, 2016 (CD16-0019) and December 9, 2019 (CD19-0239). These previous requests were approved by the Waste Management and Radiation Control Board at meetings held on March 10, 2016, and March 12, 2020, respectively.

*EnergySolutions* requests that a variance be granted to allow macroencapsulation and land disposal of waste that will meet all treatment standards except the treatment standard for arsenic.

The name, phone number, and address of the person who should be contacted to notify *EnergySolutions* of decisions by the Director is

Mr. Vern Rogers  
Director of Regulatory Affairs  
*EnergySolutions* LLC  
299 South Main Street, Suite 1700



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Salt Lake City, UT 84111  
(801) 649-2000

Should there be any questions to this request, please contact me at (801) 649-2144.

Sincerely,

A handwritten signature in black ink that reads "Steve D. Gurr".

Digitally signed by Steve D. Gurr  
Date: 2023.08.09 14:54:11  
-06'00'

Steve D. Gurr  
Environmental Engineer and Manager

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.