



## DEPARTMENT OF HEALTH & HUMAN SERVICES

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### Ongoing Issues and Concerns Regarding the Sludge Removal Operation in Lame Deer (BI16-N39)

This letter's purpose is to discuss issues and concerns regarding the sludge removal operation at the Lame Deer Lagoon.

The Lame Deer wastewater lagoon sludge removal work is a phase of a project to renovate the lagoon. The renovation's purpose is to increase the effectiveness of the wastewater treatment. Sludge removal is necessary before the installation of the biodomes. Significant delays with the sludge removal work may result in the biodome installation having to occur in the spring due to winter weather. Discharge compliance issues may occur for a longer duration of time due to a delay.

No logs have been received for the removal of sludge, sludge transport, and sludge application. An updated schedule has not been provided and this has reduced IHS's ability to effectively inspect the work. The most recent schedule specifies that land application would be complete 7/28/18 whereas the application actually began 8/9/18. An estimate for the extent of sludge dewatering was established by testing the total solids content. The average total solids content in the tanks was roughly equal to the original sludge samples taken from the lagoon last year. This indicated that the sludge in the tanks was not dewatered. As a result, the estimated quantity for sludge removed was established as being equal to the sludge in the tanks.

The subcontractor, ADAMAS, claimed the sludge was concentrated to multiple times the original concentration. Some issues with the subcontractor's estimate are as follows:

- Unequal units were being compared as equivalent. Last year, the lagoon's sludge concentration was measured and reported as total solids. The total solids content was approximately 6% (weight of solids / weight of sample). The subcontractor is equating total solids to a centrifuged sample's settled volume divided by the sample volume. The error in this assessment was evidenced by the lab results submitted by IHS being significantly less than the results assumed by the subcontractor.
- The agreement specifications explicitly state that the solids testing shall be reported by total solids content as percentage by weight. "*Solids: Test for total solids and moisture content as a percentage by weight.*" The results from the samples IHS took last year were also reported as total solids by percentage weight.
- Sludge quantity estimates by IHS were explicitly stated as being related to volume by dry metric tons. "*Estimated sludge quantity is 840,700 gallons, or 199 dmt based on initial sampling*". The subcontractor is indicating that a ratio of volumes should be used but has not provided an adequate relationship to total solids content.

- The subcontractor's reported sample results were also not produced from a certified lab. This creates the increased potential for procedural, interpretation, and bias errors with the subcontractor's reported results.
- No logs were provided to add credibility to the subcontractor's estimate.

Below are some of the deficiencies and corresponding portions of the agreement that established the requirements.

No logs have been submitted. The agreement requirement for providing logs is specified in the following:

*33155 – Biosolids Removal and Land Application*

*Part 1 – General*

*1.2 Submittals*

*D. Daily logs of sludge removed, transported, and land applied.*

The agreement requires the submission of updated schedules. The current schedule has not been updated despite multiple requests. An updated schedule is necessary for coordinating inspection.

*01330 – Submittals*

*Part 2 – Products*

*C. NCUC's Construction Schedule: Submit Construction Schedule for distribution prior to preconstruction conference. Submit updated Construction Schedule as necessary.*

Samples are required to be taken prior to removing bio solids. The purpose of the samples is to adhere to EPA regulations for land application. Over a year has passed since the sampling was completed by IHS. The subcontractor has not submitted any lab results to date. The agreement requirement for taking and analyzing samples is specified in the following:

*3.2 Sampling and Testing*

*A. Prior to removing bio solids, NCUC shall obtain samples of bio solids and have the samples tested per applicable EPA regulations.*

*B. Testing to be provided:*

...

The agreement states that SFC may review whether a material is equivalent. The sludge in the tanks was analyzed and compared to the sludge that was sampled last year and no evidence of dewatering was observed. The total solids concentrations were approximately equal. Counting the sludge in the tanks as being equal to a greater volume was assessed to be unacceptable.

*00200 – Instructions to NCUC*

*Article 8 – Substitute and "Or-Equal" Items:*

*"SFC, and NCUC will review submissions for substitute of 'or equal' materials for acceptability"*

The subcontractor raised concerns about the trash content in the lagoons and the presence of vegetation. The agreement states that NCUC is responsible for assessing the lagoon conditions before

submitting the proposal. To IHS's knowledge, the subcontractor was aware of the extent of the vegetation and the likelihood of the lagoon containing trash.

*00300 – Fixed Price Proposal*

*3.01 In submitting this proposal, NCUC Agrees, that:*

*"F. NCUC does not consider that any further examinations, investigations, explorations, tests, studies or data are necessary for the determination of this agreement for performance of the work at the prices(s) proposed and accepted and within the times and in accordance with any other terms and conditions of the fixed price documents."*

The quantities for payment in the agreement were based on gallons.

*01220 – Unit Prices*

*3.2 List of Unit Prices*

*3.2.2 Sludge removal: Sludge removal includes dredging or otherwise removing sludge from bottom of lagoon cell and loading it into vessel for transport to land application site. This item shall be paid per gallon of sludge removed.*

Modifications to quantities for payment should be established by a change order. Based on the lack of evidence of dewatering, acceptance of a change order for dewatering seems unlikely at the present time.

*5.1 NCUC will complete the work in accordance with the fixed price documents for the price calculated in the attached fixed price proposal form.*

*"B. NCUC acknowledges that estimated quantities are not guaranteed, and are solely for the purpose of comparison of fixed prices, and final payment for all unit price fixed price proposal items will be based on actual quantities provided, determined as provided in the fixed price documents."*

The subcontractor claimed that a change order was appropriate for a delay due to coordinating an application date with the land owner. The agreement states that NCUC is responsible for the agreement with the landowner accepting the solids. Because NCUC is responsible for the landowner agreement and the agreement should have a time element, IHS does not seem responsible for a delay. Jim White requested a copy of the signed agreement between NCUC and the landowner receiving the sludge 4/13/18 and the agreement has still not been received.

*00500 – Agreement Between NCUC and SFC*

*Article 1: Work*

*1.1 NCUC shall complete all work as specified or indicated in the fixed price Documents. The work is generally described as removal and land application of bio-solids from the Lane Deer wastewater treatment facility to identified agricultural lands. An agreement must be in place before application may begin. It is the responsibility of NCUC to negotiate the application of the bio-solids with the land owner, and to apply the bio-solids in a method that is approved by Northern Cheyenne Environmental Protection Department (NCEPD), Tribal laws and regulations, and EPA requirements.*

Sincerely,



James Courtney, EIT

Cc: project file BI16-N39

James White, PE