



**Western  
Technologies  
Inc.**

The Quality People  
Since 1955

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October 25, 2012

Buckskin Sanitary District  
8832 Riverside Drive, Suite #4  
Parker, Arizona 85344

Attn: Mr. J. R. Pooler  
Acting District Manager

Re: Geotechnical Evaluation , Addendum No. 1  
Buckskin Sanitary District Improvements  
Phase 4 Expansion  
Riverside Drive  
Parker, Arizona

Job No. 4192JG096.R

This letter presents an addendum to the Western Technologies Inc. (WT) Geotechnical Evaluation report, WT Job No. 4192JG096 dated September 6, 2012, for the referenced project. The purpose of this addendum is to provide additional soil friction information for resisting uplift forces due to buoyancy. Based on information provided by Mr. Oscar Oliden, P.E., the project structural engineer, we understand that Lift Station Nos. 1, 2 and 3, will be constructed at depths of about 14.5, 23.5 and 23 feet, respectively, below the final site grades. Based on our borings, the water table will be approximately at 7, 14, and 15 feet, respectively, below the final site grades for these lift stations. We understand that the lift stations will consist of prefabricated concrete pipe with a minimum inside diameter of 6 feet. In addition, it is our understanding that existing soils will be dewatered and excavated to the approximate bottom of the lift stations to facilitate construction. Based on this information and the soils encountered in our borings, WT has evaluated soil friction against the lift stations for use in design to resist the uplift forces due to buoyancy. WT provides two backfill alternatives herein, consisting of lean-mix (2-sack) concrete slurry and/or engineered fill.

WT recommends using an average allowable soil frictional resistance against uplift forces of 53 pounds per square foot (psf), applied against the sides of the lift station pipe below the final compacted site grade. This average frictional resistance assumes that the pipe is backfilled completely to the final site grade prior to the presence of buoyant forces; therefore, dewatering systems should remain in-place until the backfill is placed completely to the final site grade. The frictional resistance is an allowable resistance and additional reduction of this friction value is not required.

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Addendum No. 1

The soils should be dewatered, as discussed in our geotechnical evaluation report. WT has provided backfill recommendations in our report and these recommendations will apply to the lift station backfill. In accordance with the Buckskin Sanitary District Specifications SECTION 02250: EARTHWORK, engineered fill should consist of a naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and crushed sand (ASTM D 2940) with at least 90 percent passing a 3-inch sieve and not more than 12 percent passing a No. 200 sieve.

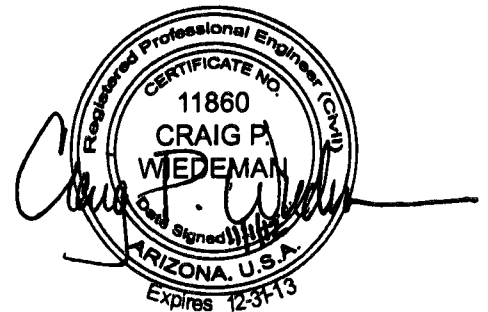
We recommend observation and testing be performed by an engineering firm to verify that the soils are sufficiently compacted. If these backfill recommendations are not implemented, the friction value provided will not be applicable. As an alternative to backfilling with an engineered fill, lean-mix (2-sack) concrete slurry may be used to backfill the excavation. The bottom of the excavation should be stable prior to placing the lift station pipe and backfilling.

This addendum should be attached to and become part of the original report. If you have any questions concerning this information, or require additional consultation, design, observation, or testing services, please contact us. We look forward to working with you on future projects.

Sincerely,  
WESTERN TECHNOLOGIES INC.  
Geotechnical Engineering Services



Maximilian Kemnitz, P.E.  
Geotechnical Engineer



Reviewed by: Craig P. Wiedeman, P.E.  
Geotechnical Engineer

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