State of Alaska
Department of Environmental Conservation
Village Safe Water Program
555 Cordova Street
Anchorage, AK 99501
evan.patterson@alaska.gov

September 11, 2025

To: Vendor List

Re: Amendment 3
ITB 26-VSW-UNK-011
Unalakleet Water System Replacement Project
ITB Due Date: October 9, 2025 @ 2:00 PM AST

The following are vendor questions and the department's response and required changes:

1. Vendor: Has there been a geotechnical investigation for the project?

   Department: See attached Geotechnical Considerations, Water Distribution System, Unalakleet, Alaska dated October 21, 2024.

2. Vendor: The Asphalt Paving specification refers to Section 401 of the AKDOT Standard Specification for Hot Mix Asphalt Pavement. Would cold patching, or recycling of the removed asphalt to resurface the disturbed roadway be acceptable?

   Department: No. Hot mix asphalt pavement is required.

Evan Patterson
Evan Patterson
Procurement Specialist

October 21, 2024 Unalakleet Water System

Karl Hulse, PE
CRW Engineering Group, Inc.
3940 Arctic Blvd, Suite 300
Anchorage, AK 99503

GEOTECHNICAL CONSIDERATIONS, WATER DISTRIBUTION SYSTEM, UNALAKLEET, ALASKA

Karl:

We have reviewed the 65-percent civil plans developed by CRW Engineering Group LLC (CRW) and CE2 Engineers (CE2) for the planned replacement water distribution system for Unalakleet, Alaska. In general, the proposed replacement water pipelines will be located within the existing roadway right-of-way within the developed portion of the community.

We have not been authorized to conduct a site or project specific geotechnical assessment of the planned improvement area as part of our authorized scope of services. You have requested we develop summary geotechnical consideration for reasonably anticipated subsurface conditions within the planned improvement area. Per our discussions, we have relied on historic geotechnical data and our geotechnical experience in Unalakleet to develop our geotechnical considerations provided with this submittal.

Based on our discussions and a brief meeting with knowledgeable local personnel there are no reported geotechnical issues related to the existing water system performance. The roadway prism and trafficking surface performance is not reflecting significant geotechnical distress associated with the existing buried water distribution system.

We have reviewed select in-house and reliable third party historic geotechnical data at or near the planned improvement area. We have also reviewed select historic imagery for the planned development area to aid with our geotechnical interpretations. As noted previously, we have not been authorized to conduct a geotechnical investigation to verify or confirm our inferred geotechnical conditions summarized below.

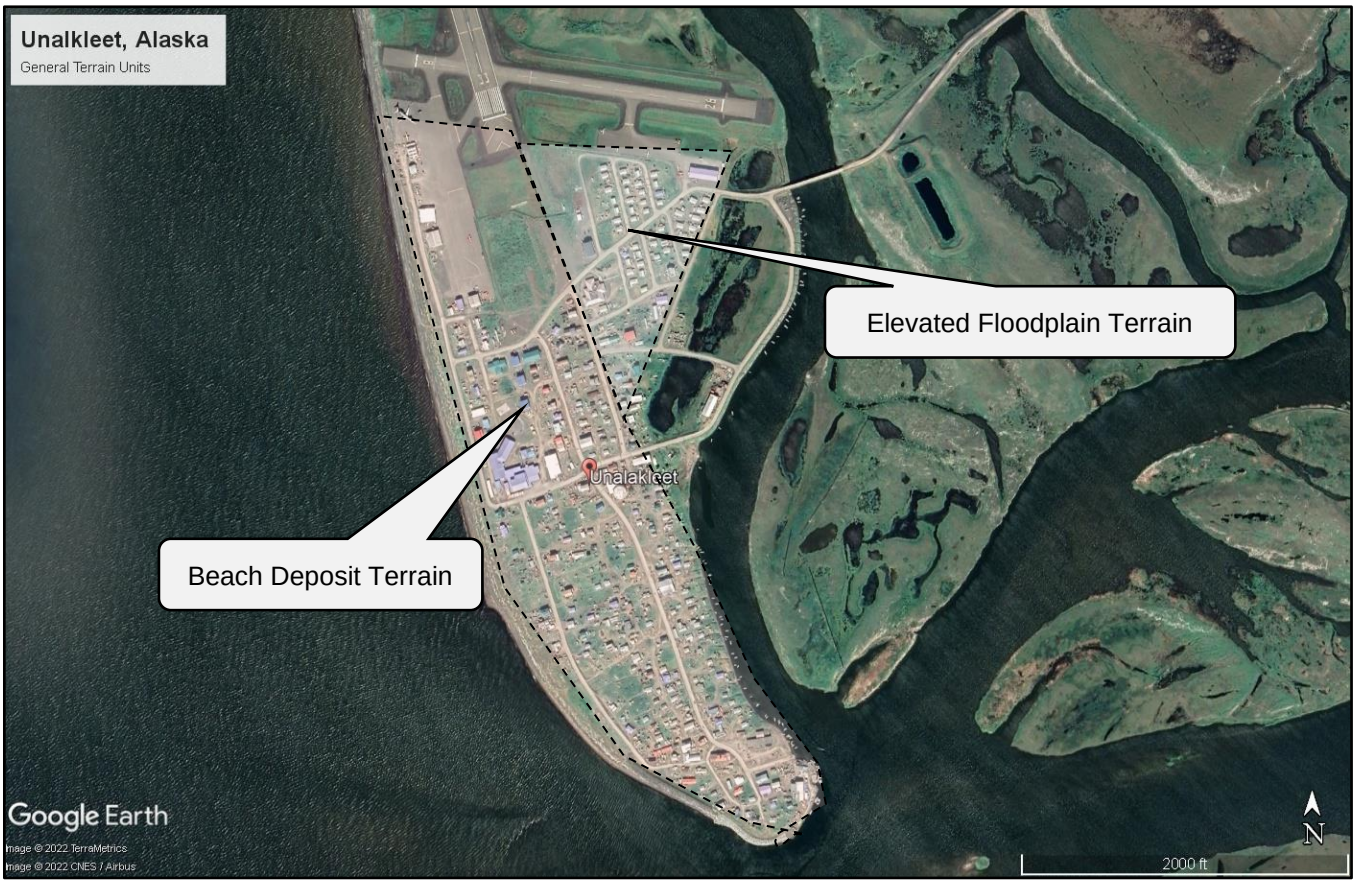
The planned water distribution replacement area is heavily developed with residential and commercial structures, numerous buried utilities within the roadway prisms, and extensive surface and near surface fill placement and reworked in-place soils. Based on our review of historic geotechnical data and imagery the undisturbed in-place soils may represent two key terrain units within the planned improvement area. The generally expected in-place soils, ground thermal states and approximate terrain boundaries within the planned water distribution replacement area are summarized below.

Beach Terrain

Primarily sand and gravelly sand deposits possibly underlain at depth by mineral silty sand or sandy silt. Permafrost conditions are not anticipated in this terrain.

Elevated Floodplain Terrain

Where undisturbed, a surface organic mat underlain by silty sand with variable gravel and possibly increased silt content. Random and discontinuous organic zones can be encountered. The potential for degraded permafrost exists in isolated areas, particularly in undisturbed areas with thicker surface or near surface organics.



The terrain units are predicated primarily on our interpretation of undisturbed in-place soil and ground thermal states from the geotechnical data we reviewed for this submittal. Surface and near surface fill and development is expected to mask the underlying in-place soils particularly along roadways, airstrips, and other developments.

Groundwater depths (elevations) should be expected to vary seasonally and in response to storm/precipitation events. Accordingly, groundwater may be encountered in areas of the planned improvements during the water distribution replacement phase.

Due to the granular nature of both the in-place soils and fill, seasonal frost may extend relatively deep in some areas. Construction scheduling should consider relict seasonal frost considerations.

Permafrost soil and rock conditions are present in the Unalakleet area. However, developed areas and areas with reduced organic mat cover are considered lower risk, but not absent, of permafrost soil conditions. Degraded permafrost, mostly likely discontinuous or possibly isolated, may be present throughout the planned improvement area with an increased potential to encounter permafrost in the elevated floodplain terrain area. It may also be challenging to discern deep relic seasonal frost conditions from degrading permafrost conditions in this area.

We understand the water pipelines will be insulated HDPE or similar placed in trenches approximately four feet below finish grade. Select backfill will be placed and compacted around the entire pipeline. We recommend a minimum 12-inch zone of select backfill around the pipelines, or as recommended by the civil engineer.

The base of the trench excavation should be visually inspected to ensure organics, soft/yielding soil, ice or other deleterious materials are absent prior to select fill and pipeline placement. The exposed trench base subgrade soils should be scarified and proof compacted to a firm, non-yielding state prior to select backfill and pipeline placement.

Select backfill (pipe bedding) should be well graded sand and gravel with 100-percent passing the ¾-inch sieve size. All select backfill should meet the US Army Corps of Engineers Non Frost Susceptible (NFS) frost classification. The civil engineer may provide alternative select backfill (pipe bedding) gradation and soil frost susceptibility criteria.

All backfill should be placed in a fully thawed and moisture conditioned state in loose lifts not exceeding 12-inches thick. Each lift should be mechanically compacted to at least 95-percent of the material's maximum dry density as determined by ASTM D-1557. Trench fill above the select backfill may vary depending on final site use, in particular if the fill is within the roadway prism or other load bearing areas. The civil engineer will provide guidance on trench backfill and surfacing. Health and safety for all trench work is the responsibility of the contractor.

We also advise installation of 'trench plugs' at appropriate locations along the pipeline alignment to aid in controlling groundwater movement and piping of finer soil particles along the pipeline and within the trench backfill. Bentonite and other trench plug materials can be considered. We can assist the civil engineer with geotechnical considerations for trench plugs during the design phase for this project.

Construction phase dewatering may be required. If so, dewatering and all appropriate permits is considered the responsibility of the contractor.

This submittal is provided to assist the CRW and CE2 with planning and conceptual geotechnical considerations for the replacement water distribution system in Unalakleet, Alaska. We will need to continue our geotechnical design analysis and recommendations as key project planning and design advances. Our geotechnical considerations summarized above are not considered final design recommendations.

Variable and unanticipated soil, groundwater, ground thermal and ice conditions have been encountered throughout the Unalakleet area and cannot be determined by a historic data review effort that was used for this submittal. Such unexpected conditions frequently result in additional design and possible construction costs. Therefore, a contingency for unanticipated conditions should be included in the planning and construction budget and schedule.

The work program followed the standard of care expected of professionals undertaking similar work in Alaska under similar conditions relying on historic geotechnical data. No warranty expressed or implied is made. If a more refined geotechnical assessment is desired, a site and project specific geotechnical investigation and laboratory testing program is advised. We can assist you with a scope and estimated fee for such upon request.

We appreciate the opportunity to assist you with this project. Please contact Richard Mitchells, PE with questions or comments.

WSP USA Inc.

Richard Mitchells, PE
Vice President, Director