REQUEST FOR PROPOSAL FOR

Geotechnical Site Investigation

RFP No.: AACS-KTISPGFS/2019-0002

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Geotechnical Site Investigation for KTISPG

COMPANY'S BACKGROUND

AACS Consulting is a management solutions and professional services firm providing various clients services of global standards in local settings. Innovative approach, technical know-how and a focus on results define the work done at AACS Consulting where a capable team of national and international experts passionately design effective solutions to various international trade and development challenges.

For nearly a decade, AACS Consulting has delivered services to a wide range of government, United Nations, international development, and business institutions. These services have been offered in areas of Research and Survey, Monitoring and Evaluation, Business Development, and Audit and Tax Advisory.

INTRODUCTION

The Strengthening Watershed and Irrigation Management (SWIM) Project in coordination to MAIL and MEW conduct the feasibility study of Khush Tepa canal in Kunduz province in support of its strategic plan to enhance the sustainable use of water in agriculture.

The Project is located in the northern Afghanistan province of Kunduz, approximately 300 km northwest of Kabul. The proposed irrigation scheme will be around 200 km long and will be irrigating the cultivated catchment area of (500,000 ha). The extent of this area will depend mainly on water and soil availability as well as environmental constraints that will be identified through the Feasibility Study.

The purpose of this investigation Phase is to provide an initial geotechnical and geological assessment of the suitability of the proposed;

- Main Canal, intake structure, regulator hydraulic structures, canal slopes (urgent phase - I)
- Dam site for water impoundment, associated structures, pumping station, and potential borrow materials (foreseen phase -II)

for pre-visibility study of Kush-Tepa Irrigation Schem & Energy Generation (KTISEG), Plate 1.

The scope of the geotechnical site investigation included:

1) a limited field investigation to assess subsurface conditions at specific, widely-spaced boring locations and obtaining representative samples for classification and testing,

2) a laboratory testing program to aid in the classification of the substrata and to provide parameters for preliminary bearing capacity, seepage and embankment slope stability assessments,

3) engineering analyses and evaluations of the results of the field and laboratory data to aid in assessing the geology and geotechnical engineering characteristics of the proposed dam site, associated structures, pumping station, hydraulics structures, borrowing area and nearby impoundment area.

Field sampling, laboratory testing, soil classifications and strata descriptions are in general accordance with methods, procedures, and practices set by the American Society for Testing and Materials, Annual Book of ASTM Standards, where applicable.

FIELD INVESTIGATION

Subsurface conditions to be explored by a number of core borings advanced to depths ranging from 10 up to 50 m and number of open pits ranged from 3-5m in depth below existing grade.

Site No.	Site name	No. Location	No. of BHs	Total No.	Depth(m)	Lengths(m)	B.H. Marks
Phase I (Urgent) with total of 80 B.Hs. of lengths eq. 1100 m							
1	Hydraulic Structures	30	2	60	15	900	L1-R1, H1-H58
2	Canal Paths	1	20	20	10	200	C1-C20
Phase II (For possible implementation)							
3	Main Dam and HP	1	2	2	50	100	D1-D2
4*	Spillway	1	2	2	30	60	D3-D4
		1	2	2	30	60	S1-S2
5*	Pumping St.	1	3	3	30	90	P1-P3
6	Open pits for Borrow areas	4	5	20	3-5	80	B1-B20
	Total for both phases			89		1490	

*Ref. to map for locations of B.Hs. for each hydraulic structure and along path of canal

Phase I, Borings (H1-H40) will be drilled in different locations along canal for all hydraulic structures. While borings (C1-C20) will be drilled along the canal centerline distributed as indicated in plate 1.

Phase II The two deep borings (D1, D2) to be drilled at near dam abutment at the proposed dam site. Borings (D3,D4) to be drilled in the river channel near the proposed centerline of the dam centerline. Borings (S1,S2) will be drilled in the area of the proposed emergency spillway. Borings (P1-P3) will be drilled in the area of the pumping station location. The approximate boring locations are shown on Plate 2. Open pits in 3 borrow sites (B1-B15) to be excavated to a depth ranged from 3-5 m.

The borings to be conducted via drill rig equipped with;

1) continuous flight and/or hollow stem augers for advancing the holes dry and recovering disturbed samples of soil (ASTM D 1452),

2) seamless steel push-tubes for obtaining samples of cohesive soil strata (similar to ASTM D 1587, but thicker wall),

3) split-barrel samplers and drive-weight assembly for obtaining representative samples and measuring penetration resistance (N-values) of non-cohesive soil strata (ASTM D 1586), and

4) double-tube wireline core barrels equipped with diamond and/or carbide bits for obtaining 2-inch diameter rock and rock-like cores (ASTM D 2113). Rock samples to be placed in boxes, photo 1.

Detailed descriptions of subsurface materials encountered to be presented on the boring logs. Pocket penetrometer values in tons per square foot or kg/square cm, standard penetration test N-values in blows per foot (30.5cm), and core recovery and Rock Quality Designation (RQD) (ASTM D 6032) values in percent, are also shown on the logs of borings. The borings were logged in the field by a staff geotechnical/geology engineer and in the laboratory by a staff engineer/geologist.

A geotechnical site investigation must consider the following, where applicable:

Boreholes

Test borings must be located in the footprint of the embankment, spillway excavation and appurtenant structures. Boreholes must extend to sound bedrock or at least to the depth equal to the height of the dam. When the boreholes are extended to bedrock, coring of the bedrock must be performed following ASTM Standard D2113 to assess its quality and characteristics. The borehole logs must record the depths of any problems such as borehole instability (cave in, squeezing hole, flowing sands), cobbles, lost drilling fluid, lost ground, obstruction, fluid return color changes and equipment problems, and a discussion of the problem must be provided in the geotechnical report. The geotechnical report must provide details of the drilling method, drilling fluid, size of

boreholes and the ground elevations at the top of the boreholes. Groundwater table to be measured after completion and after 24 hrs.

Test Pits or Trenches

Supplemental test pits or trenches must be located appropriately to provide visual inspection of soil layers, measurement of bedrock orientation and collection of bulk samples. Test pits and trenches must be logged. Collection of bulk samples must be performed according to ASTM Standard D7015. The geotechnical report must provide details of the method used for excavating test pits and the test pit logs must record any excavation problem observed such as instability of cut (sloughing, caving, etc.), depth of refusal, difficulty of excavating, etc.

FIELD TESTS

Standard Penetration Tests (SPT):

The standard penetration test must follow ASTM Standard D1586. Standard penetration resistance (SPT N or N value) is the number of blows of a 140 lbm hammer falling 30 in. required to produce 1-foot of penetration of a specified (standard) 2-in. outside diameter, 13/8-in. inside diameter sampler into soil, after an initial 0.5 feet seating. A penetration test that does not meet these requirements is not a SPT and the penetration resistance must not be reported as a SPT N-value or N-value and care must be taken with its use for correlating soil properties. Published correlations for SPT N-value cannot be used for non-SPT blow count numbers. If SPT N-values are used for the assessment of liquefaction potential, the SPT N-values must be normalized according to ASTM Standard D6066.

Field Permeability Tests:

If a field permeability test is performed, details of the test method, calculations and interpretation must be included along with the results.

Packer tests:

Unlined borehole single and double packer tests to be conducted below the proposed reservoir elevation of 360m (amsl) in the bedrock strata in borings B1, B2, B3 and B4. The procedure consists of seating an inflatable rubber packer at the top and bottom of the test zone for the double packer test, and pumping water into the test zone through a metering system. For the single packer test, only one packer is used at the top of the test zone and the bottom of the boring is used in place of the bottom packer. A constant pressure was applied to the water entering the test zone and maintained for a specified time period. Water loss into the test zone was recorded. The test duration ranged from 5 minutes to 10 minutes and the gauge pressure at the top of the boring varied from 5 to 20 psi. The total applied pressure in the test zone is the gauge pressure plus the head of water in the pipe. A schematic for the double packer setup is shown on Plate 3. The test

procedure and calculations for hydraulic conductivity (k) are in general accordance with U.S. Bureau of Reclamation procedures.

Measurement of Water Level in Boreholes:

Water level must be measured in boreholes and test pits and shown accordingly on logs of the boreholes and test pits. The water level must be recorded during drilling and after the ground water table is stabilized. Both water levels must be provided on borehole logs along with the time of measurement. Elevation of the water table must be established based on the project datum and shown on the ground profile of the dam site.

Strata Descriptions

Descriptions of strata made in the field at the time the borings were drilled were modified in accordance with results of laboratory tests and visual examination. All recovered soil samples were classified in general accordance with ASTM D 2487 and described as recommended in ASTM D 2488. Rock strata were classified in general accordance with "Rock Classification and Description", Classification of soils and finalized descriptions of both rock and soil strata are shown on the boring logs.

Photo 1 Rock core samples to be set in boxes

Sample Collection for Laboratory Testing:

a. The sample collection program must be designed to meet the requirements of the laboratory tests planned for the project. Some laboratory tests require relatively undisturbed samples while others can use disturbed samples so long as the properties of the sample is preserved. Sample collection, preservation, transportation and handling must be described in the geotechnical report. ASTM Standards D4220 and D5079 must be followed to prevent samples from experiencing excessive disturbance during transportation and handling.
b. Disturbance of samples inherent to sampling techniques must be recognized. Soil samples that are obtained by driving samplers with a hammer such as the standard penetration test (ASTM Standard D1586) and penetration of samplers lined with rings (ASTM Standard D3550) are considered highly disturbed. This must be recognized when interpreting and presenting results from laboratory tests based on these samples. If the soil samples for the laboratory tests were reconstituted in the laboratory, the method of sample preparation must be explained in detail.
c. Samples collected by a Thin-Walled Tube Sampler (ASTM Standard D1587) and other samplers specifically designed to minimize disturbance during sample collection process are recognized as undisturbed samples. Description of the sampler and sample collection method must be provided.
d. For block samples, the method of collection, preservation, transportation and handling must be described in the geotechnical report. If the method complies with ASTM standard D7015, the block samples will be considered undisturbed.
e. Rock samples must be collected following the procedures outlined in ASTM Standard D2113. Rock Quality Designation (RQD) determination of rock core must follow ASTM Standard D6032.

Soil Classification:

a. Soil classification must follow the Unified Soil Classification System as provided in ASTM Standard D2487.

b. Rock-mass classification must follow ASTM Standard D5878. A discussion must be provided on the selection of the classification system.

LABORATORY TESTING

The laboratory testing program of the materials recovered from the borings included the following conventional geotechnical tests: water contents, Atterberg limits, sieve analyses, unconfined compression tests, and unit dry weights. Durability tests (specific gravity, absorption, abrasion and soundness) were conducted on individual and composite samples of the rock in the area of the proposed emergency spillway excavation for preliminary evaluation of these materials as dam embankment rockfill and riprap. Brief descriptions of the physical laboratory tests are presented in the following subsections. The lab tests were conducted in general accordance with the basic requirements of the ASTM or other specification listed in parenthesis.

Natural Water Content (ASTM D 2216)

Natural water content tests were performed on samples in which classification and/or strength tests were performed. Each sample was visually classified in the laboratory. Natural water contents are tabulated at sample depth on the boring logs.

Consistency tests, Atterberg Limits (ASTM D 4318)

Atterberg limit tests are classification tests that determine the liquid limit and plastic limit of the soil fraction finer than the No. 40 sieve. The Atterberg limits are approximate water contents at which the soil tested behaves in a specified manner. The liquid limit is determined by measuring, in a standard device, the water content and number of blows required to close a specific width groove cut in a remolded soil sample a specified length. The plastic limit is determined by measuring the water content when threads of soil 1/8-inch in diameter begin to crumble. The plasticity index, defined as the difference between the liquid and plastic limits, indicates the degree of plasticity or the magnitude of the water content over which the soil remains plastic. Liquid limit and plasticity index values are tabulated at sample depth on the boring logs.

Sieve Analysis (ASTM D 422)

Grain-size characteristics of the natural soils were investigated by the determination of the percent of soil passing the No. 4, 40 and 200 sieves. These tests were performed by washing or sieving material through the respective sieves. The results are tabulated at sample depth on the boring logs for the percent passing the Nos. 4 and 200 sieves.

Unconfined Compression Test for Soil (UC Test) (ASTM D 2166)

The unconfined compression test can be used to estimate the undrained shear strength of saturated, fine-grained foundation materials. The UC Test is applicable only for cohesive soils which will not expel or bleed water during the loading portion of the test and which will retain intrinsic strength after removal of confining pressures, such as clays or cemented soils. Dry and crumbly soils, fissured or varved soils, silts, peats, and sands cannot be tested with this method to obtain valid unconfined compression strength values. The test must follow ASTM Standard D2166. This test generally provides conservative strength parameters for the end-of-construction loading condition. In the

unconfined compression test, a cohesive soil specimen is subjected to a compressive load without any lateral restraint. The specimen is sheared in compression without drainage at a constant rate of axial deformation of about ½ to 2 percent strain per minute to produce failure in a test time not to exceed about 15 minutes. The soil samples tested had diameters of about 2.8 inches and heights of about 5.6 inches. The measured applied load was recorded for selected increments of deformation. The sample is tested to failure or 15 percent strain, whichever occurs first. Results of these tests, including compressive strength, water content and unit dry weights, are tabulated on boring logs at specimen recovery depth.

One-Dimensional Consolidation Test (Oedometer Test) (ASTM Standard D5333)

Oedometer tests are performed on clayey soils to obtain consolidation parameters required for the estimation of consolidation settlement. Undisturbed soil samples are required for this test. The test specimen must be fully saturated. ASTM Standards D2435 and D4186 provide the test methods, analysis and reporting of results. If the oedometer is used for evaluating collapse potential of soils, follow ASTM Standard D5333.

Permeability Test (ASTM Standard D2434)

The sample preparation and the test method of the permeability test must be discussed in the report. ASTM Standard D2434 provides the methodology for the constant head test on granular soils. If the falling head test is used, it must be stated as such in the report. Relative density of the granular soil specimen must be reported with the result.

Direct Shear Test (Consolidated Drained Shear Test) (ASTM Standard D3080)

The direct shear test is one of the most popular shear strength tests as it provides relatively rapid determination of shear strength parameters and is less expensive to perform. However, the limitations of the test are often not recognized and/or the test method is not followed appropriately on many occasions making the test results of little value. ASTM Standard D3080 provides the test methodology and discusses specimen requirements, selection of appropriate shearing rate and presentation of the results. This standard must be followed to obtain credible shear strength parameters.

Dispersibility Test

ASTM Standards D4647 and D4221 provide methods of evaluating dispersive properties of clay soils. A description of the sample preparation and test method must be included in the report along with the discussion of the results.

Collapse Potential Test

ASTM Standard D5333 provides the methodology for evaluating collapse potential of soils. This standard must be followed for the test and interpretation of the results.

Compaction Tests

ASTM Standards D698 and D1557 provide methods for the Standard Proctor and Modified Proctor, respectively, for the laboratory evaluation of compaction characteristics of soils containing up to 30 percent coarse materials by weight retained on the ¾-inch sieve. If the soil contains over 5 percent coarse particles retained on the ¾-inch sieve and the coarse particles are not included in the Proctor tests, it must be mentioned in the test results and a correction for the oversize particles must be suggested as provided in ASTM Standard D4718. The compaction curves must show all the data points along with the interpreted curve. The 100-percent saturation curve (zero air voids curve) must also be shown on the graph with the compaction curve. The sample preparation and test method must also be explained. If the soil contains more than 30 percent oversize particles retained on the ¾-inch sieve or the soil particles break during the compaction test changing gradation significantly compared to the field compaction, or the soil is gap graded, concurrence must be obtained in advance from the OSE Dam Safety Bureau on the approach and the method to be used for the compaction evaluation of such soils.

Specific Gravity, Absorption, Abrasion and Soundness (ASTM D 6473, C 88, C 131)

Specific gravity and absorption tests on individual core samples, and abrasion and soundness tests on composite core samples were conducted to evaluate the durability of the limestone proposed for use as embankment rockfill and riprap. It should be noted that size limitations of core samples prevented strict adherence to size and gradation requirements of the ASTM procedures.

Compressive Strength of Intact Rock Core Specimens (ASTM D 7012)

In the unconfined compression test of intact rock core specimens, a laterally unsupported cylindrical rock specimen is loaded axially in compression to failure. The axial load is applied at a constant rate of deformation to produce failure in a test time between 2 and 15 minutes. The cores tested were approximately 2 inches in diameter by 4 inches in length. The measured applied load at failure is recorded. Natural water contents and unit dry weights were determined as routine parts of the test procedures in the compression tests. Results of these tests, including unconfined compressive strength, water content, and unit dry weights, are tabulated on the boring logs at core recovery depth.

GEOTECHNICAL SITE INVESTIGATION REPORT

The site investigation report must include, but not be limited to, the following:

a. A topographic map of the all sites showing locations of boreholes, test pits, trenches, and other field tests with the footprint of different structure and its location.

b. Logs of boreholes and test pits. ASTM Standard D5434 may be used as guidance and a checklist. Ground elevation of the borehole and test pits locations must be provided based on the datum established for the project. Also, provide a record of any problems such as borehole instability (cave in, squeezing hole, flowing sands), cobbles, lost drilling fluid, lost ground, obstruction, fluid return color changes, and equipment problems in the logs.

c. Details of the drilling method, drill rig, drilling fluid, sample collection method, measurement of water table etc.

d. Details of the field tests such as SPT and permeability including description of equipments and test methods along with calculations, discussion and interpretation of results.

e. Details of the laboratory tests including descriptions of equipments, sample preparation, test methods, calculations and a discussion of the results. ASTM standards provide guidelines on reporting individual tests. Following those guidelines will suffice in reporting the laboratory and field tests.

f. Locations of borrow material with properties based on the field and laboratory tests.

g. Subsurface ground profiles based on borehole and test pit logs, field and laboratory tests. At least one profile must be shown along the dam axis, spillway, pumping station, hydraulic structures, canal path and borrow areas.

h. Discussion of site conditions based on the investigation, any design challenges, possible and recommended solutions. Discussion must include, if warranted, recommendation for any further investigation or analysis.

Bill Of QUANTITIES (BOQ)

Subsurface conditions to be explored by a number of core borings advanced to depths ranging from 10 up to 50 m and number of open pits ranged from 3-5m in depth below existing grade.

No.	Item	No. Locations	No. of BHs	Total No.	Depth(m)	Lengths (m)	Remarks
Phase I, Field Auger drilling							
1	Auger drilling in soils, B.Hs. L1, R1, H1-H58 for Hydraulic Structures, Annex 1	30	2	60	15	900	Split-barrel, Thin-Walled Tube
2	Auger drilling in soils, B.Hs. C1-C20 for Canal Path, Annex 2	1	20	20	10	200	
Phase II, Field Core and Auger drilling and Open pits							
3	Core drilling in rocks, B.Hs. D1-D2 for Dam and HP	1	2	2	50	100	
4	Core drilling in rocks, B.Hs. D3-D4 for Dam and HP	1	2	2	30	60	Double core tube
5	Core drilling in rocks, B.Hs. S1-S2 for saddle dam and spillway	1	2	2	30	60	
6	Auger drilling in soils, B.Hs. P1-P3 Pumping St.	1	3	3	30	90	Split-barrel, Thin-Walled Tube
7	Open pits for Borrow areas	4	5	20	3-5	80	

No.	Item	No. Locations	No. of BHs	No. tests /B.Hs.	Total No. of Tests	Depth(m)	
I. Field Tests							
8	Packer test at different depths for B.Hs. D1-D4	1	4	10	40	Up to end of B.Hs.	
9	Packer test at different depths for B.Hs. S1-S2	1	2	10	20	Up to end of B.Hs.	
10	Field Permeability test for B.Hs. P1-P3, H1-H40 & C1-C20	41	63	3	189	3m up-to end of B.Hs.	

No.	Item	Sites	Total No. of Tests	Strata type	
II.Laboratory tests and reporting					
11	Moisture water contents	All B.Hs. and Open Pits	100	Clayey soil	
12	Atterberg Limits		200		
13	Sieve Analysis		200	Sandy soil	
14	One dimensional consolidation		50	Clayey soil	
15	Direct shear test		50	Sandy soil	
16	Unconfined compression test for soil		50	Clayey soil	
17	Dispersibility		20	Clayey soil	
18	Collapse Potential Test		10	Cemented sand	
19	Specific Gravity, Absorption, Abrasion and Soundness		50	Rock	
20	Unconfined compression test for rock		50	Rock	
21	Water quality Analysis		30		
22	Compaction test	Open pits only	40	Clayey soil	

CONTRACTOR'S REQUIREMENTS

The bidder should submit detail of tests, methods and procedures that they proposes to be used in achieving the above objective. The bidder should also submit limitations it foresees in application of the test and procedures.

This Request for Proposal is no way obligates AACS Consulting to award a contract nor does it commits AACS Consulting to pay any costs incurred in the preparation and submission of a proposal.

AACS Consulting bears no responsibility for data errors resulting from transmission or conversion processes.

Methodology and Work Plan

The bidder is requested to write their detailed work plan and methodology.

Detailed Budget

The bidder is requested to break the costs into details which are required for the project.

Previous Experience

The bidder is requested to write in details their previous experiences in the field and projects which are implemented by.

Timeline

The work must be finished within two and a half months (phase I) after awarding the contract. Therefore, the bidder is requested to provide a comprehensive timeline for the project.

In case of awarding phase II, during the implementation of phase I, total duration for two phases not to exceed three and a half months.

Investigation and other Equipment's Mobilization to Project Sites:

AACS Consulting will not bear any responsibility for the deployment and mobilization of any sort of investigation and required analysis equipment's to project site, contractor will be responsible to handle it.

Security, Custodian and other matters

AACS Consulting will not take any responsibility for security of contractor personnel, equipment's and any other matters of custodian and providing accommodation to contractor personnel, contractor will be responsible for the entire prospective to make all possible arrangement.

Withholding Taxes and other Applicable duties:

Government withholding Tax: Pursuant to Article 72 in the Afghanistan Tax law effective March 21, 2009, AACS Consulting is required to withhold "contractor" taxes from the gross amount payable to all Afghan for-profit subcontractor/vendors with aggregate amount of AFN 500,000.00 or greater and transfer this to the Ministry of Finance. In accordance with this requirement, AACS Consulting shall withhold 2% tax from all gross invoices from subcontractors/vendors under this Agreement with active and relevant business license issued by Ministry of Commerce. For subcontractors /vendors without active or irrelevant business licenses, AACS Consulting shall withhold seven percent 7% "contractor" tax per current Afghanistan Tax law.

Eligibility Requirements

To qualify for this Request for Proposal a vendor must (note: incomplete bids will not be considered for evaluation):

- Hold a valid business license / registration with municipality (be a legal entity)
- Should have ABA Valid Certification.
- Should have US Army Corps of Engineers Active Certification as an approved construction lab and testing company in Afghanistan.
- Certify the ability to deliver requested Services for the period of agreement
- Having more than 8 years of experience.

- Provide copies of three smellier project agreements complete in the past.
- Audited Financial Reports for the last three years.
- Letter of assurance on financial soundness of company.

Those Vendors who do not meet the above minimum eligibility requirements, WILL NOT BE CONSIDERED for further evaluation.

Disclaimers and Protection Clauses

- AACS Consulting may cancel RFP and not award.
- AACS Consulting may reject any or all responses received.
- The issuance of solicitation does not constitute award commitment of AACS.
- AACS reserves the right to disqualify any offer based on offeror failure to follow Request for Proposal - RFP instructions
- AASC Consulting will not compensate offerors for responses to solicitation
- AACS Consulting reserves the right to issue award based on initial evaluation of offers without further discussion
- AACS Consulting may choose to award only part of the activities in the request for proposal, or issue multiple awards based on the solicitation activities.
- AACS Consulting reserves the right to waive minor proposal deficiencies that can be corrected prior to award determination to promote competition.
- AACS Consulting will be contacting offerors to confirm contact person, address and that bid was submitted from RFP.

PROPOSAL SUBMISSION GUIDELINES

Interested contractor and services providers should provide the cover letter and proposal signed by the person or persons authorized to sign on behalf of the vendor. Electronic bids are permitted and need to be submitted to logistics@aacs-consulting.com, the quotations must be stamped and signed by the offeror's authorized representative and the scanned copy will need to be submitted to AACS Consulting through following above email address. Please reference the RFP number in any response to this RFQ. Offers received after the specified time and date will be considered late and will be considered only at the discretion of AACS Consulting.

QUESTIONS CONCERNING RFP

Questions regarding the technical or administrative requirements of this RFP may be submitted no later than 04:00 PM local Kabul time on March 20, 2019, by email to asoliman@aacs-consulting.com. Questions must be submitted in writing; phone calls will not be accepted. Only the written answers issued by AACS Consulting will be considered official and carry weight in the RFP process and subsequent evaluation. Any verbal information received from employees of AACS Consulting or any other entity should not be considered as an official response to any questions regarding this RFP.

REQUIRED DOCUMENTS WITH PROPOSAL

In order to assist bidder in preparation of proposal, the following list summarizes the documentation to include an offer in response to this RFP, if any bidder failed to submit the following documents will be disqualified from evaluation process:

1. Cover Letter Signed and Stamped by Authorized Representative of bidder.
2. Copy of bidder Legal Registration or Business License
3. Copy of bidder summary of relevant capability, experience and Past Performance with their Contact Details.

Annex 1 Location of Boreholes for location of intake and regulator structures

Serial	B.H. Code	Coordinate of B.H. for Hyd. Structures	
		Latitude	Longitude
1	Intake L	415710.73140	4086495.96560
2	Intake R	415621.03290	4086491.24470
3	H 1	416462.370	4079150.000
4	H 2	416336.713	4077890.000
5	H 4	414996.373	4078730.000
6	H 3	415205.801	4079820.000
7	H 5	411854.951	4071110.000
8	H 6	410347.068	4070980.000
9	H 8	397948.922	4079780.000
10	H 7	396943.666	4080190.000
11	H 9	383414.608	4079990.000
12	H 10	382786.324	4079990.000
13	H 11	378597.761	4078770.000
14	H 12	378095.133	4078480.000
15	H 14	373739.027	4076840.000
16	H 13	373320.171	4076470.000
17	H 16	363141.963	4072700.000
18	H 15	362764.992	4072110.000
19	H 17	353969.010	4084800.000
20	H 18	353298.840	4085260.000
21	H 20	341528.978	4090920.000
22	H 19	340733.151	4091340.000
23	H 22	331643.969	4097410.000
24	H 21	331057.571	4098000.000
25	H 24	311622.638	4107800.000
26	H 23	310868.697	4107840.000
27	H 26	306261.278	4110560.000
28	H 25	305423.565	4110690.000
29	H 28	272417.689	4117140.000
30	H 27	271370.548	4117390.000
31	H 30	267391.413	4116470.000
32	H 29	266637.472	4116550.000
33	H 32	257296.976	4115000.000
34	H 31	258218.460	4115000.000
35	H 34	254490.639	4115460.000
36	H 33	253694.812	4115250.000
37	H 36	249925.105	4113160.000
38	H 35	248919.850	4113160.000

39	H 38	242595.120	4113540.000
40	H 37	241883.064	4113580.000
41	H 40	230029.431	4112320.000
42	H 39	229359.261	4112360.000
43	H 42	222531.903	4110650.000
44	H 41	221736.076	4110390.000
45	H 44	222448.132	4108760.000
46	H 43	221359.106	4107920.000
47	H 46	217003.000	4104320.000
48	H 45	216207.173	4104150.000
49	H 48	210008.100	4103780.000
50	H 47	209044.730	4103820.000
51	H 49	205568.223	4103570.000
52	H 50	204856.167	4103860.000
53	H 51	194677.959	4107040.000
54	H 52	193798.361	4107130.000
55	H 54	185002.379	4105620.000
56	H 53	184039.009	4105700.000
57	H 56	186677.804	4104700.000
58	H 55	185546.892	4104490.000
59	H 58	180771.930	4103360.000
60	H 57	180059.874	4103230.000

Annex 2 Location of Boreholes along the main canal path

Serial	B.H. Code	Coordinate of B.H. along Canal Path	
		Latitude	Longitude
1	C 7	415907.000	4080320.000
2	C 12	416094.000	4075270.000
3	C 22	407864.000	4073390.000
4	C 32	398908.000	4078130.000
5	C 45	387611.000	4079160.000
6	C 66	367192.000	4072670.000
7	C 76	359397.000	4078080.000
8	C 82	355528.000	4082700.000
9	C 90	349155.000	4088350.000
10	C 116	331978.000	4096020.000
11	C 125	324052.000	4103030.000
12	C 135	314894.000	4107120.000
13	C 155	294294.000	4113850.000
14	C 165	284698.000	4115600.000
15	C 175	274952.000	4115560.000
16	C 188	259176.000	4116020.000
17	C 213	231227.000	4111970.000
18	C 230	212600.000	4103580.000
19	C 244	196475.000	4105670.000
20	C 265	173022.000	4098470.000

Plate 1 Location of B.Hs. for Intake & Hydraulic Structures and Canal paths

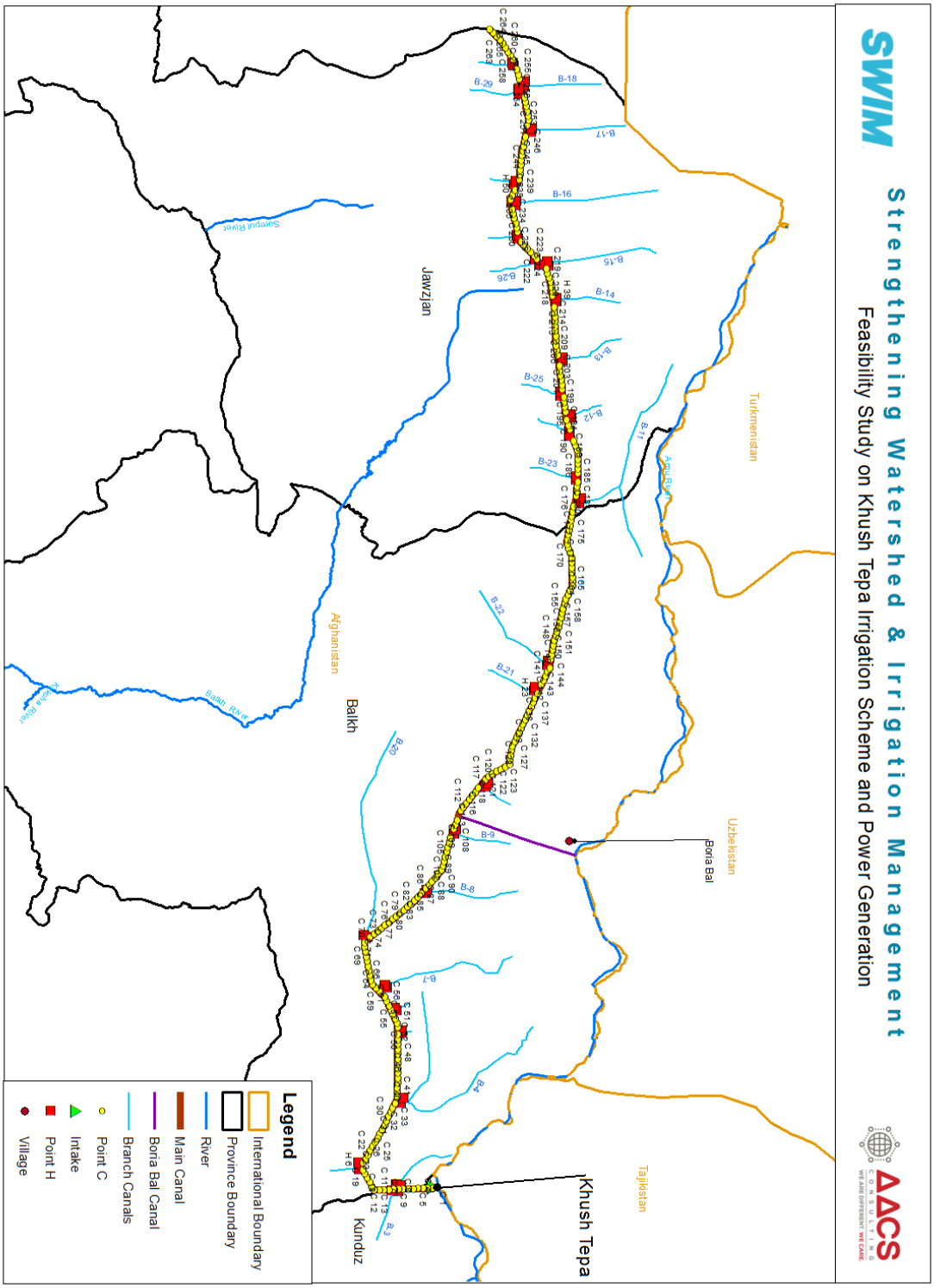

Plate 2 Location of B.Hs. for Dam, HP, Spillway & Open pits

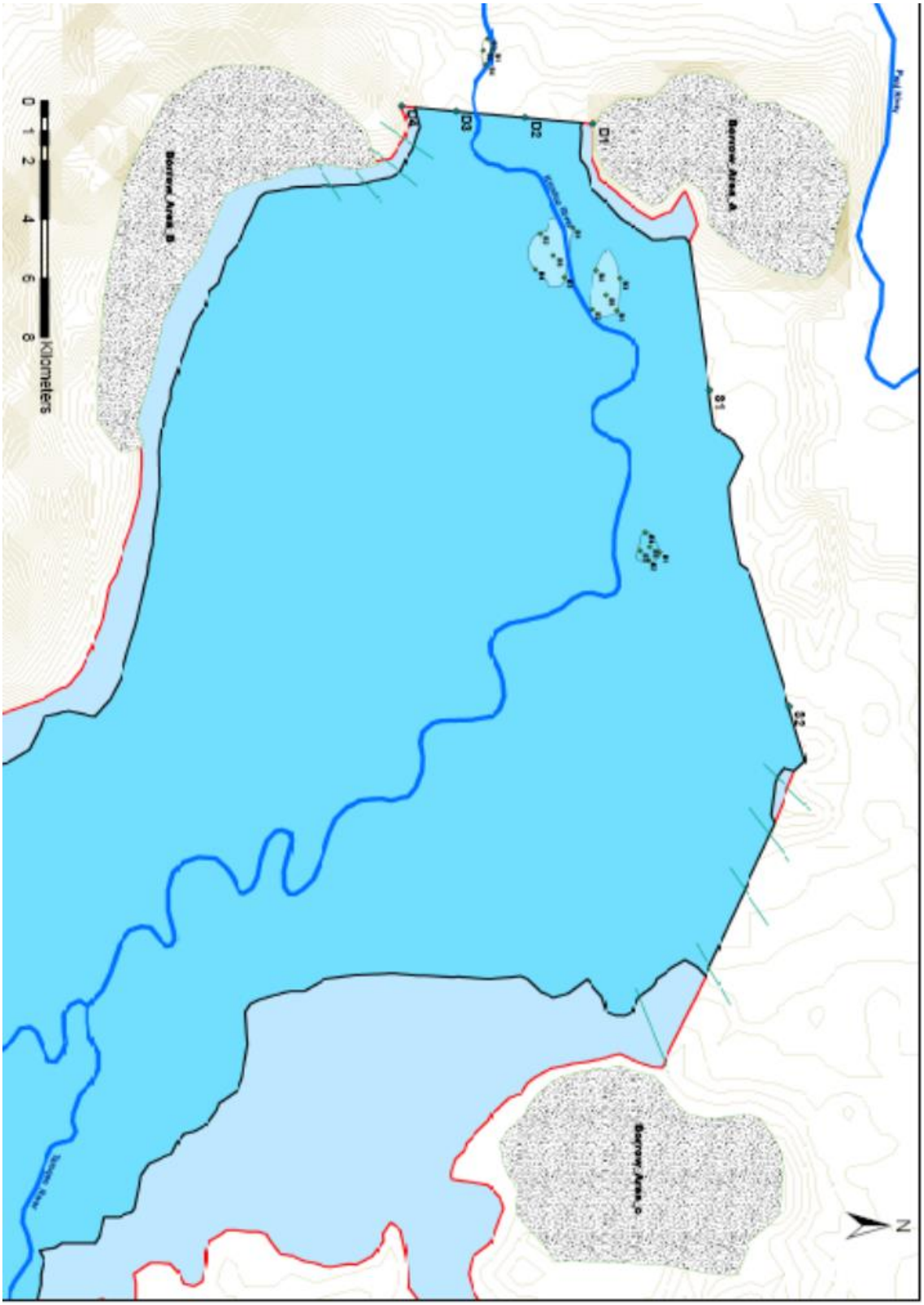

Plate 3 Schematic of double packer test