

January 19, 2022

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Navajo Tribal Utility Authority (NTUA)
Attn: Adrian Showalter, NTUA – HQ, W/WW
P.O. Box 170
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**SUBJECT: LCS & NHA Offsite Waterline, Lukachukai AZ – NTUA Review – BHI
Response**

Ms. Jodie,

Bohannon Huston, Inc. (BHI) has received and reviewed the pre-final submittal comments provided by the Navajo Tribal Utility Authority. The following document reiterates the comments received as well as the response to comments, which are in **bold**. These comments are submitted along with the sealed plans and specifications.

General Comments:

1. Route N.12 Highway ROW: Show the highway right-of-way lines on each plan sheet (typ).

Response: Comment Incorporated.

Sheet G-01 (Cover Sheet):

1. Title: Update the project title to include reference of the NHA project as shown on the cover sheet.

Response: Comment Incorporated.

Sheet C-01 (P&P Sta. 10+00 to Sta. 21+00):

Plan:

1. Ex. 6" PVC C900 W/L: Adjust/fix the ex. 6" transmission line alignment as shown on the plan sheet.

Response: Comment Incorporated.

2. Show the required PRV data table on this Sheet C-01. The table shall include the PRV name/number, the size(s) which include the bypass, and the inlet and outlet settings.

Response: Comment Incorporated. Blank table added for Contractor to populate as part of record drawings.

3. Plan Keyed Notes #4 & #20: Justify the additional pressure relief valve & vault. (Surge Relief Valve Station per Dwg. 2353 on Sheet D-04) See Waterline Connection Detail review comments below.

Engineering ▲

Spatial Data ▲

Advanced Technologies ▲

Response: Incoming pressure anticipated to be 170 psi. If PRV fails the pipe below the PRV may be compromised with excessive pressure. In email received January 10, 2022, NTUA directed pressure relief valve to be maintained

4. Ex. 2" PVC W/L label: Also callout to be 'abandoned in-place' as shown on the plan sheet.

Response: 2" PVC W/L to remain activate. Project scope is only for the installation of the 6-inch W/L. Existing customers to remain on 2" W/L. Discussed at review meeting December 29, 2021.

5. Sta. 20+05.00 (Proposed in-line 6" Gate Valve): Remove this proposed G.V. as it will not be required per IHS design standard for gate valve installations at 5,280-ft (1 mi.) segment increments or a change in design grade elevation of more than >50-ft vertically, or major alignment P.I./bend areas.

Response: Comment Incorporated.

6. Keyed Notes: Make corrections to the key note descriptions as shown on the plan sheet.

Response: Comment Incorporated.

Waterline Connection Detail:

1. Sta. 10+00 (Tapping Pt.): Tapping saddle not approved. Utilize 6" Tee, DI, MJ, w/ Thrust Block. Hot tap not approved, the ex. 6" high-pressured transmission line must be isolated and depressurized before tapping with the new 6" tee w/ transition piping & couplings as shown on the detail comments.

Response: Comment Incorporated.

2. The ex. 6" high-pressured transmission line's current dynamic/static pressures must be checked and verified. Install the appropriate pressure rated PVC C900 pipe. Ductile iron application not approved.

Response: Assumed PRV inlet pressure to remain 170 psi and ductile iron as shown is approved, per January 10, 2022 email. Change not incorporated.

3. Sta. 10+49.96 (Proposed 6" PRV w/in Manhole): Justify the additional pressure relief valve & vault. (Surge Relief Valve Station per Dwg. 2353 on Sheet D-04) These facilities are not required per the planned PRV @ Sta. 10+62.13 which should suffice the high-pressure incoming flow to the new 6" PVC C900 waterline. This is not an NTUA standard. The operating District Office will not operate & maintain (O&M) this facility.

Response: Incoming pressure anticipated to be 170 psi. If PRV fails the pipe below the PRV may be compromised with excessive pressure. The

PRV is designed to protect the 6-inch W/L from excessive pressures downstream in this event. NTUA directed PRV to be maintained in email received January 10, 2022.

4. Edit/add the additional minor text items/labels on the detail, as shown.

Response: Comment Incorporated.

Profile:

1. Proposed 11.25 Bends (Sta's 11+36, 11+56, 11+60, 11+78): Justify why these proposed bends are being installed at these Sta's. These bends are not shown on the plan view. If the bends are per vertical realignments for what looks to be a minor local drainage ditch, also callout on the plan view.

Response: These bends are proposed to maintain existing flow lines along the drainage ditch and to prevent scour. Bends to remain as discussed during December 29, 2021 review meeting.

Sheet C-02 (P&P Sta. 21+00 to Sta. 32+00):

Plan:

1. Ex. 2" PVC W/L: Callout the ex. 2" waterline only from Sta. 21+00 to Sta. 26+30(+/-). This approximate Sta. area is where the ex. 2" waterline ends. Adjust/fix the ex. 2" waterline alignment to end here, as shown on the plan sheet. Also, callout to be 'abandoned in-place' as shown. Delete/erase the shown ex. 2" waterline alignment that is shown from Sta. 26+30(+/-) to Sta. 32+00, which is the matchline for this sheet. This does not exist in the field.

Response: 2" W/L extents modified per plan. 2" W/L to remain in service. Only 6" W/L is within current contract. 6"x1" and 6"x2" service saddles to be placed per NTUA field direction to facilitate future connection or re-connection of existing customers as part of a separate project.

2. EOL for ex. 2"W/L: Blow up the EOL area with a detail bubble as shown on the plan sheet. Show/add the detail bubble review comments as shown per the ex. water facilities near the EOL.

Response: Blow up of EOL area has not been included as existing 2" W/L will not be modified. NTUA mark-ups were to provide clarity to re-establish a service connection for the 2" W/L to the 6" W/L.

3. Ex. Curb Stop at ex. Homesite: The ex. curb stop to remain, protect in-place. The new 6"x1" saddle tap on the new 6" water main will align directly in-line w/ the ex. curb stop location. Future water service re-connection will utilize the ex. curb stop. Also, label the House No. # and/or Homeowner name (typ).

Response: Existing curb stop will remain active and connected to the 2" W/L. Service saddles will be installed as directed by NTUA in the field.

House No. # and Name will be collected and included as part of the Record Drawings.

4. New 6" PVC C900 W/L alignment: At or near Sta. 26+40(+/-), align the new 6" water main into the centerline of the new 30-ft water easement/ROW here. See plan sheet/detail bubble for reference.

Response: Comment Incorporated.

5. Planned/future bends on the new 6" water main: The Sta. locations of the bends will change per the shift of the 6" water main into the center of the 30-ft water easement. Adjust the Sta. locations.

Response: Comment Incorporated.

6. Sta. 26+38.08 (6"x2" service saddle): Where/who will this 2" water service alignment be routing to?

Response: 6"x2" service saddle will be installed in field per NTUA direction. This feature is to facilitate connection to a future service.

7. Sta. 30+05.00 (Proposed 6" in-line Gate Valve): Move/revise this gate valve to 3-ft downstream of the revised bend area once the 6" water main alignment shifts to the centerline of the 30-ft water easement, as shown in the requested future detail bubble of the EOL area of the ex. 2" waterline.

Response: Comment Incorporated.

8. Ex. Frontier telecommunications/fiber line: Upon visual field verification, there looks to be an underground (UG) telecommunications line field marked w/ orange marking paint and ex. pedestals. Show this ex. Frontier line in relation to the planned 6" water main on the plan. May require coordination with the local Frontier utility office. The line looks to be following the NHA survey stakes going northbound to the next homesite residence. Possible conflict and/or Frontier relocation.

Response: A fiber line has been shown in the plans to serve existing customer. Per discussion with Cullen Zion of FCI, utility will be field located and Contractor will coordinate with Utility Owner as needed. FCI believes utility parallels Navajo Highway 12.

9. Keyed Notes: Make corrections to the keynote descriptions as shown on the plan sheet.

Response: Comment Incorporated.

Profile:

1. Planned fitting symbols: Show/label the saddle and bend symbols in the profile, as shown.

Response: Comment Incorporated.

Sheet C-03 (P&P Sta. 32+00 to Sta. 43+00):

Plan:

1. Non-existing 2" PVC W/L: Delete/erase the shown ex. 2" waterline alignment that is shown from Sta. 32+00 to Sta. 43+00, which are the matchlines for this sheet. This does not exist in the field.

Response: Comment Incorporated.

2. New 6" PVC C900 W/L alignment: From Sta. 32+00 to Sta. 43+00 (matchlines for this sheet), align the new 6" water main at the centerline of the new 30-ft water easement/ROW.

Response: Comment Incorporated.

3. Sta. 40+05.00 (Proposed 6" in-line Gate Valve): Move/revise this gate valve to 3-ft downstream of the planned 45° degree bend at Sta. 39+25.67

Response: Comment Incorporated.

4. Future Homesite water service: Label the House No. # and/or Homeowner name (typ). Note: this residence is not presently served. No current water service or meter. The keyed note callout #9 for the new 6"x1" service saddle is approved.

Response: Comment Incorporated.

5. Ex. Frontier telecommunications/fiber line: Upon visual field verification, there looks to be an underground (UG) telecommunications line field marked w/ orange marking paint and ex. pedestals. Show this ex. Frontier line in relation to the planned 6" water main on the plan. May require coordination with the local Frontier utility office. The line looks to be following the NHA survey stakes going northbound to the next homesite residence. Possible conflict and/or Frontier relocation.

Response: A fiber line has been shown in the plans to serve existing customer. Per discussion with Cullen Zion of FCI utility, it will be field located and Contractor will coordinate with Utility Owner as needed. FCI believes utility parallels Navajo Highway 12.

6. Keyed Notes: Make corrections to the key note descriptions as shown on the plan sheet.

Response: Comment Incorporated.

Profile:

1. Planned fitting symbols: Show/label the saddle and bend symbols in the profile, as shown.

Response: Comment Incorporated.

Sheet C-04 (P&P Sta. 43+00 to Sta. 54+00):

Plan:

1. Non-existing 2" PVC W/L: Delete/erase the shown ex. 2" waterline alignment that is shown from Sta. 43+00 to Sta. 47+05(+/-), which is from the left matchline of this sheet to the area where the ex. 2" waterline comes in from the north and bends w/a 45° degree heading southwest towards the EOL of this ex. 2" waterline. This segment does not exist in the field.

Response: Comment Incorporated.

2. New 6" PVC C900 W/L alignment: From Sta. 43+00 (left matchline) to Sta. 46+45(+/-): Align the new 6" water main at the centerline of the new 30-ft water easement/ROW.

Response: To maintain typical bends waterline between Station 44+06 and Station 46+69 gradually get closer to east side of easement.

3. From Sta. 46+45(+/-) to Sta. 54+00 (right matchline for this sheet), align the new 6" water main on the eastern side of the incoming northern ex. 2" waterline (5 to 6-ft offset) within the ex. 30-ft water easement/ROW. This is per initial coordination w/ the NHA and its surveyors to minimize encroachment into the ex. Homesites within this alignment area.

Response: Comment Incorporated.

4. Ex. northern 2" PVC W/L label (from Sta. 47+05(+/-) to right matchline Sta. 54+00): Also, callout this particular waterline to be 'abandoned in-place' as shown on the plan sheet.

Response: 2" W/L to remain active. Current scope does not include any work to the 2" W/L. Comment not incorporated.

5. The ex. 2" waterline segment after the 45° bend to the EOL that serves the ex. Homesite with the maroon roof near Sta. 45+00 is to remain. Show this ex. 2" waterline and the ex. 30-ft water easement/ROW on the plan as shown. Also show the ex. flush valve and ex. curb stop at the EOL.

Response: Comment Incorporated.

6. The reconnection of the ex. 2" waterline (Line "B") to the new 6" water main shall be accomplished by installing a new 6"x2" Tee at/near Sta. 47+00 and a new 2" Gate Valve at 3-ft downstream of the new tee as shown on the plan sheet. After the new gate valve, install new 2" PVC SDR-21 pipe as needed to where the new 2" branch intersects with the ex. 2" waterline alignment. At this point, install a new 45° bend w/a min. 5-ft segment of 2" PVC SDR-21 transition piping w/ appropriate 2" coupling to re-connect back to the ex. 2" waterline serving the Homesite at the EOL. It is requested to blow up this new P.I. area with a detail

bubble as shown on the plan sheet. Show/add the detail bubble review comments as shown per the ex./new water facilities near this P.I.

Response: Comment not incorporated. Outside of current contract scope.

7. Ex. Shed at/near Sta. 47+10(+/-) right: The ex. shed assembly will be required to be moved/relocated for the installation of the new 6" water main. The input/advice of the Homesite owner will be requested for the relocation of the shed to an alternate site outside the ex. 30-ft water easement/ROW.

Response: Comment Incorporated.

8. Sta. 50+05.00 (Proposed 6" in-line Gate Valve): Move/revise this gate valve to 3-ft downstream of the revised reconnection branch of the ex. 2" waterline that is to remain, at/near Sta. 47+00(+/-).

Response: Comment Incorporated.

9. Ex. Curb Stops at ex. Homesites: The ex. curb stops are to remain, protect in-place. The new 6"x1" saddle taps on the new 6" water main will align directly in-line w/ the ex. curb stop locations. Future water service re-connections will utilize the ex. curb stops. Also, label the House No.'s. # and/or Homeowners names (typ).

Response: Existing curb stops to remain active and tied to 2" W/L. 6"x1" saddle tap to be placed in field per NTUA. House No.'s/Name Incorporated.

10. Ex. 2" Gate Valve on the ex. 2" waterline (Line "8") to be abandoned at/near Sta. 53+05(+/-) is to be removed and salvaged back to the NTUA Chinle District Office.

Response: Comment not incorporated. Outside of current contract scope.

11. Keyed Notes: Make corrections to the key note descriptions as shown on the plan sheet.

Response: Comment Incorporated.

Profile:

1. Planned fitting symbols: Show/label the new service saddles and all bend symbols in the profile, as shown.

Response: Comment Incorporated.

Sheet C-05 (P&P Sta. 54+00 to Sta. 65+00):

Plan:

1. New 6" PVC C900 W/L alignment: From Sta. 54+00 to Sta. 63+45 (+/-), align the new 6" water main on the eastern side of the incoming northern ex. 2" waterline (5

to 6-ft offset) within the ex. 30-ft water easement/ROW. This is per initial coordination w/ the NHA and its surveyors to minimize encroachment into the ex. Homesites within this alignment area. Then after the second 45° bend at/near Sta. 63+50(+/-) to Sta. 65+00 (right matchline for this sheet), align the new 6" water main at the centerline of the new 30-ft water easement/ROW. (The shown ex. 2" waterline does not exist after the 45° bends aligning toward the road crossing for Route N12. –

Response: Comment Incorporated utilizing standard bends.

2. Non-existing 2" PVC W/L: Delete/erase the shown ex. 2" waterline alignment that is shown from the non-existing 2"x 90° bend to Sta. 65+00, which is from the right matchline of this sheet. This segment does not exist in the field.

Response: Comment Incorporated

3. Also show the existing 2" waterline (Line "TW-B") that continues to run northbound as shown on the plan sheet. It is requested to enlarge the viewport in this area to show the ex. Homesite to the north. (House #H-364A - Caroline Jim) Once the new 6" water main is in-service and operational, this ex. 2" waterline will end at 10-ft past the ex. water service connection point. At this point a new 2" Flush Valve will be installed for the new EOL.

Response: Existing 2" W/L shown in plans. Future connection and House H-364A connections outside of project scope and not incorporated.

4. Ex. 2" PVC W/L label: Also callout this particular waterline to be 'abandoned in-place' as shown on the plan sheet.

Response: Comment not incorporated. 2" W/L to remain active as part of this project.

5. Sta. 60+05.00 (Proposed 6" in-line Gate Valve): Move/revise this gate valve to 3-ft upstream of the first 45 degree bend at/near Sta. 63+45 (+/-).

Response: Comment Incorporated.

6. Adjust the Sta's for the planned 45 bends once the 6" water main alignment shifts to the center of the 30-ft water easement as shown. Also show the fitting symbols in the profile below.

Response: Comment Incorporated.

7. Show the future Homesite near Sta. 59+00/60+00 as shown, but label the homesite not to be served w/ new service saddle as it is not currently connected to the ex. 2" waterline.

Response: Comment Incorporated.

8. Keyed Notes: Make corrections to the key note descriptions as shown on the

plan sheet.

Response: Comment Incorporated.

Profile:

1. Planned fitting symbols: Show/label the bend symbols in the profile, as shown.

Response: Comment Incorporated.

Sheet C-06 (P&P Sta. 65+00 to Sta.76+00):

Plan:

1. Non-existing 2" PVC W/L: Delete/erase the shown ex. 2"waterline alignment that is shown from Sta. 65+00 to Sta. 76+00, which are the matchlines for this sheet. This does not exist in the field.

Response: Comment Incorporated.

2. New 6" PVC C900 W/L alignment: From Sta. 65+00 to Sta.76+00 (matchlines for this sheet), align the new 6" water main at the centerline of the new 30-ft water easement/ROW.

Response: Comment Incorporated.

3. General Comment: Show the highway right-of-way lines on each plan sheet (typ).

Response: Comment Incorporated.

4. Show the requested 100-ft expanded road crossing for boring operations. Coordinate this expanded crossing permit w/ the BIA Chinle Agency DOT.

Response: Comment Incorporated.

5. Show and callout the planned steel casing from highway ROW-to-ROW as shown.

Response: Comment Incorporated in profile and keyed note.

6. Planned Gate Valves at End-of-Casing locations: Move/revise the road crossing gate valve locations to 3-ft min. outside highway ROW lines, as shown.

Response: Gate valves located either side of casing. Refer to sheet for final locations.

7. Plan Keyed Notes #14 (Bore Pit): On the plan, show/label the bore pit descriptions on the keyed note (Launch Pit/Receiving Pit) as shown.

Response: Comment Incorporated.

8. Sta. 70+05.00 (Proposed 6" in-line Gate Valve): Move/revise this gate valve to 3-ft downstream of the second 45° degree bend at/near Sta. 69+14.09 (+/-).

Response: Valve deleted due to proximity of valves for casing.

Profile:

1. Planned fitting symbols: Show/label the bend symbols in the profile, as shown.

Response: Comment Incorporated.

Sheet C-07 (P&P Sta. 76+00 to Sta. 87+00):

Plan:

1. Non-existing 2" PVC W/L: Delete/erase the shown ex. 2" waterline alignment that is shown from Sta. 76+00 to Sta. 87+00, which are the matchlines for this sheet. This does not exist in the field.

Response: Comment Incorporated.

2. New 6" PVC C900 W/L alignment: From Sta. 76+00 to Sta. 87+00 (matchlines for this sheet), align the new 6" water main at the centerline of the new 30-ft water easement/ROW.

Response: Comment Incorporated.

3. General Comment: Show the highway right-of-way lines on each plan sheet(typ).

Response: Comment Incorporated.

4. Ex. Waterlines not-shown: Show and label the ex. waterlines that exist in the field as shown on the plan sheet.

Response: Comment Incorporated.

5. Sta. 80+05.00 (Proposed in-line 6" Gate Valve): Remove this proposed G.V. as it will not be required at this location.

Response: Comment Incorporated.

Profile:

1. Ex. 6" waterline crossing: Show/label the ex. waterline in the profile, as shown.

Response: Comment Incorporated.

Sheet C-08 (P&P Sta. 87+00 to Sta. 92+60):

Plan:

1. Non-existing 2" PVC W/L: Delete/erase the shown ex. 2" waterline alignment that is shown from Sta. 87+00 to Sta. 92+60. This does not exist in the field.

Response: Comment Incorporated.

2. New 6" PVC C900 W/L alignment: From Sta. 87+00 to Sta. 92+60, align the new 6" water main at the centerline of the new 30-ft water easement/ROW.

Response: Comment Incorporated.

3. General Comment: Show the highway right-of-way lines on each plan sheet (typ).

Response: Comment Incorporated.

4. Show the requested 100-ft expanded road crossing for boring operations. Coordinate this expanded crossing permit w/ the BIA Chinle Agency DOT.

Response: Comment Incorporated.

5. Show and callout the planned steel casing from highway ROW-to-ROW as shown.

Response: Comment Incorporated in profile and keyed note.

6. Planned Gate Valves at End-of-Casing locations: Move/revise the road crossing gate valve locations to 3-ft min. outside highway ROW lines, as shown.

Response: Gate valves located either side of casing. Refer to sheet for final locations.

7. Plan Keyed Notes #14(Bore Pit): On the plan, show/label the bore pit descriptions on the keyed note (Launch Pit/Receiving Pit) as shown.

Response: Comment Incorporated.

8. Sta. 90+84.19 (Proposed CAV): Remove this CAV as it will not be required at this location.

Response: Comment Incorporated. CAV removed.

9. Callout new Hydrant also on plan view at Sta. 90+07.31 LT. Flush valve not approved.

Response: Comment Incorporated.

10. Callout the future NHA water main downstream of the 6" cross area.

Response: Comment Incorporated.

11. Question: Who will be designing this offsite NHA waterline? Coordination may be required w/ the NHA and its client engineer.

Response: Design Engineer has not been disclosed.

12. Keyed Notes: Make corrections to the key note descriptions as shown on the

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plan sheet.

Response: Comment Incorporated.

Waterline Cross Detail:

1. Edit/add the additional minor text items/labels on the detail, as shown.

Response: Per Review Meeting 12/29/21, cross has been replaced with two tees.

Profile:

1. Delete/erase the shown ex. 2" waterline, as it does not exist here.

Response: Comment Incorporated.

Please let us know if NTUA has any questions or comments related to the seal drawings and/or response to comments.

I can be reached at (505) 823-1000 or at nroberts@bhinc.com.

Sincerely,



Nathan Roberts, PE
Vice President Water Systems

NR/ab
Attachments