## ENVIRONMENTAL ASSESSMENT DOCUMENT

**A. Project Identification:**

**Applicant:** City of York **Project No.** C317766
**City:** York **County:** York **State:** Nebraska
**Total Project Amount:** $19,865,000
**SRF Loan Funds:** $19,335,000 **Other Funds:** $510,000 City Funds for land acquisition

**B. Community Description:**

**Location:** The City of York is located in York County in eastern Nebraska approximately 50 miles west of Lincoln and three miles north of Interstate 80.

**Population, Present and Projected, and Design Year:** The current population (2010 census) served by City sewer is 7766. The Bureau of Business Research projects an increase in population of four percent over the next 20 years. The design population for year 2036 is 8080.

**Current Methods of Waste Treatment:** York collects and treats approximately 1.2 million gallons of wastewater each day from 2771 residencies and 473 businesses. Their sanitary sewer collection system consists of about 62 miles of sewer mains and four lift stations. The existing WWTF utilizes head works, solids settling, fixed-film processes (roughing filters and rotating biological contactors), and chemical disinfection. Bio-solids are processed with a gravity thickener followed by anaerobic digestion then storage prior to land application. Majority of the WWTF components are 35 years old or older and are past their 20-year design life. The City's NPDES permit effective October 1, 2013, follow technology based standards for BOD and TSS limits; whereas, Ammonia, E. coli and Total Residual Chlorine (TRC) follow water quality standards. Ammonia limits vary with the season, and the summer limit is the most stringent with a monthly limit of 2.15 mg-N/L and a daily maximum limit of 4.32 mg/l. The City has occasionally exceeded the E. coli numerical limit.

**Receiving Stream:** York's WWTF effluent is discharged to Beaver Creek, Segment BB3-10400 of the Big Blue River Basin. The Nebraska Water Quality Standards assign the following beneficial uses to Segment BB3-10400: Class B warm water aquatic life, Class A agricultural and aesthetics. Aquatic life in this segment is impaired. The City's National Pollutant Discharge Elimination System (NPDES) permit effective October 1, 2013, follow technology based standards for BOD and TSS limits; whereas, Ammonia, E. coli and Total Residual Chlorine (TRC) follow water quality standards. Ammonia limits vary with the season, and the summer limit is the most stringent with a monthly limit of 2.15 mg-N/L and a daily maximum limit of 4.32 mg/l.

**C. Project Description**

**Purpose (What this project hopes to achieve):** Majority of the wastewater treatment plant components are 35 years old or older and are past their 20 year design life. The project will replace an aging WWTF. The proposed WRF is designed for nitrogen and phosphorus removal. The proposed project will meet the long term wastewater treatment needs.

**Type:** The influent pump station at the existing WWTF will be maintained and upgraded for use with the new WRF. A forcemain/gravity sewer will transport sewage from the existing WWTF to the proposed BNR WRF. A few components (replacement of rectangular configuration clarifier mechanism in existing tankage and related minor work and replacement of existing motor starters, motor controllers and panel boards) at the existing WWTF will be repaired in order to maintain NPDES compliance during construction of the new BNR WRF. The proposed conveyance pipe extends from the existing WWTF east along Road 12 to Road O where it extends south to the proposed WRF. The site for the proposed

WRF is approximately 34 acres in size, approximately 0.9 miles south of Road 12 along the west side of Road O in York County. The proposed BNR WRF will include fine screening and grit removal. Fine screening will be accomplished using a perforated plate screen. Grit removal will be accomplished using either a forced vortex grit unit or a multi-tray vortex grit removal unit. A manual screen will be located in a bypass channel adjacent to the in-channel fine screen in the head works facility at the new plant site. This will allow flow to bypass the fine screen and grit removal equipment, for maintenance or emergencies. An Activated Sludge BNR without primary clarification was selected as the treatment process. The treatment process consists of anaerobic, anoxic, and aeration basins and mixed liquor return (MLR) streams. The anoxic MLR stream brings effluent from the anoxic zone to the anaerobic zone to promote the biological phosphorus removal process. The aerobic MLR stream recycles from the aerobic zone to the anoxic zone. This MLR allows for denitrification of the nitrified aeration basin contents and for nitrogen reduction. The BNR treatment process will be followed by two 60-foot secondary clarifiers. Chlorination/dechorination will be used for disinfection of the effluent. A holding pit adjacent to the head works at the new treatment plant will be available to receive septage. Septage will be pumped into the influent flow stream at the head works of the WRF. Bio-solids from the treatment plant will be first directed to an aerobic solids holding tank where the waste solids will undergo partial aerobic digestion. A reed bed system is proposed to be used for final bio-solids treatment. This system consists of beds upon which liquid bio-solids are applied and native phragmites reed plants are grown. The reeds take up nutrients and moisture from the liquid solids for sustenance and thus reduce the bulk of the material. The bio-solids from the aerobic holding tank will be pumped to a multi-cell reed bed system, which will store, dewater, and stabilize the solids with a resultant storage volume of approximately 10 years.

**Design Factors:** The proposed WRF is designed for parameters mentioned in the following table:

| **Parameter** | **Proposed Design Basis (mg/L)** | **Proposed Design Basis (pounds/day)** |
|---|---|---|
| **Flow** | | |
| Average | | 1.40 MGD |
| Max Month | | 1.60 MGD |
| Peak Day | | 3.00 MGD |
| Peak Hour | | 5.30 MGD |
| **BOD5** | | |
| Average | 270 | 3,170 |
| Max Month | 345 | 4,630 |
| Peak Day | | 6,100 |
| **TSS** | | |
| Average | 265 | 3,100 |
| Max Month | 375 | 5,000 |
| Peak Day | | 6,910 |
| **Ammonia** | | |
| Average | 25 | 290 |
| Max Month | 40 | 530 |
| Peak Day | | 760 |
| **TKN** | | |
| Average | 40 | 460 |
| Max Month | 60 | 820 |
| Peak Day | | 1180 |

TP

| | | |
|---|---|---|
| Average | 10 | 117 |
| Max Month | 11 | 144 |
| Peak Day | | 170 |

**Reserve Capacity:** The proposed WRF is designed for an annual average hydraulic flow of 1.40 mgd. This is approximately 18% more than the current annual average flow 1.20 mgd.

## D. Alternatives Considered:

**Types**

Three alternatives were considered as follows:

1. Existing Facility Fixed Film Upgrade
2. Existing Facility MBR Upgrade
3. New Biological Nutrient Removal Facility

**Reasons for Selection of Proposed Alternative:** A life cycle cost analysis for the three alternatives concluded that the New Biological Nutrient Removal Facility had the lowest overall present worth cost.

## E. Environmental Impact Summary:

**Primary**

**Construction:** Significant impact is not expected. Slight noise and air pollution associated with earthwork construction will occur during work hours. Minor soil erosion and vegetation losses will occur during construction. No burning, blasting, herbicides or defoliants will be permitted in clearing the site.

**Environmental:** Any negative impact due to disturbing the existing landform during construction will be temporary. A construction storm water runoff permit and related erosion control provisions will be required by NDEQ for this project since more than one acre of land will be disturbed. The City can designate the General Contractor as the authorized representative after providing the storm water permit notice of intent to NDEQ. Positive impact should be gained for the surface water quality. Filling in Waters of the US will be negligible, primarily from the installation of a new buried outfall line to Beaver Creek. Anticipated impacts will be permittable under the Clean Water Action, Section 404 Nationwide Permit.

**Financial:** Based on procedures established in the 2016 IUP, the City of York is eligible to receive $19,355,000 in CWSRF loan funds at an interest rate of 1.50% plus the 1.00% administration fee on the outstanding principal balance per year for a 20-year term. The impact to York's sewer user charge is estimated as follows: York's current residential sewer user charge is a Bi-Monthly Customer Charge of $30.00 plus a usage charge of $1.21 per 100 cubic feet. Ordinance No. 2136 implemented this sewer user charge on October 15, 2015. Revenues generated by sewer user rates will be used to pay the debt service due to the CWSRF loan. The City proposes to implement annual sewer rate increases in the next 5 years using the recommendations in the rate study prepared by Utility Financial Solutions dated July 23, 2015. Sewer user rates in year 2020 are estimated to be a Bi-Monthly Customer Charge of $48.25 plus a usage charge of $1.95/100cubic feet. Projected Typical Bi-Monthly sewer rate for a residential customer in 2020 is estimated to be $72.33.

**Secondary**

**Population Impacts:** No impact is expected on the population density but the project would serve the estimated 4.00% growth in population over the next 20 years.

**Land Use and Trends:** Minor impact is expected as approximately 30 acres of existing land would be taken from production. A portion of the proposed site (approximately 20 acres) is designated as prime farmland by the Natural Resources Conservation Service.

**Environmental:** HDR sent out ten requests for comment to related state and federal agencies, seven responses were received. The Nebraska Department of Natural Resources (NDNR) indicated that surface water appropriation A12282R is appurtenant to the proposed project location. NDNR indicated that, there is one public supply and six registered wells within the 1000-foot spacing. NDNR also indicated that the project is located within the 100 year floodplain and /or the floodway. The Natural Resource Conservation Service (NRCS) reviewed the area (34 acres) for the proposed WRF and determined that the site involved prime farmland. Approximately 80 percent (27.14 of 33.48 acres) of the impacted site is or has been farmed (managed for a scheduled harvest or timber activity) more than five of the past ten years. A Farmland Conversion Impact Rating was requested by NRCS. The Nebraska State Historical Preservation Office (NESHPO) indicated that the proposed project has some potential to impact cultural resources listed on the National Register or eligible for such listing. NESHPO requested that the entire 34 acres for the proposed WRF be surveyed by a professional archaeologist, with the resulting report then reviewed by NESHPO. The U.S. Fish and Wildlife Service (Service) indicated that the project may impact the northern long-eared bat (NLEB). To avoid impacting NLEB, the Service recommends tree clearing activities outside of the pup season from June 1 through July 31. The Department of Army, Corps of Engineers indicated that a Clean Water Act Section 404 permit is required to place fill material into any water of the United States in the project area. The Pawnee Nation of Oklahoma indicated that effective April 1, 2014; the Pawnee Nation Office of Historic Preservation implemented a new Research Fee schedule for all new Section 106 consultations and undisturbed collocated sites. The Nebraska Game & Parks Commission (NGPC) indicated that the park adjacent to the existing WWTF is encumbered under the Land and Water Conservation Fund Act (LCWF) Section 6(f)(3). The proposed project includes all lines to be underground near Beaver Creek Park property, therefore; as long as lines are buried as presented in the plans NGPC has received and as long as the parkland is returned to its pre-existing condition, if encroached upon, there is no further action needed to proceed under LWCF Section 6(f)(3). The NGPC provided permission to continue with the project as outlined in the project plan.

**Environmental Justice:** This project has been planned for treating wastewater from all connections to the sanitary sewer system equally. No segment of the community's population suffers disproportionately from unequal sanitary treatment or its environmental effects on human health.

**Mitigation measures necessary to eliminate adverse environmental effect:** The proposed WRF will be designed and constructed such that the WRF will be constructed outside the 100-year floodplain. The appropriate flood plain permit for construction of the proposed WRF will be obtained from the area flood plain administrator, if necessary. The proposed project is a mechanical WRF and should therefore not impact the area wells in an adverse manner. The only component of the proposed WRF, which could have any impact to area wells are the Reed Beds. The Reed Beds will have an under drain and liner system that will direct the filtrate to the head works and therefore should not have an adverse impact on area groundwater. The Farmland Conversion Impact Rating form AD-1006 was completed by the NRCS and HDR. The proposed

WRF in York County scored 80 out of 160 points on the Farmland Conversion Impact Rating Form. Further coordination with NRCS is not necessary. HDR completed an Endangered Species Habitat survey. The survey resulted in the identification of potential NLEB and whooping crane habitat. No other protected species, or associated habitat, was identified. To avoid impacting NLEB, the City may restrict tree clearing activities outside of the pup season from June 1 through July 31 as recommended by USFWS. Whooping crane would likely avoid project construction during its migration periods of March 10 through May 10 and September 16 through November 16. If sighted, the contractor will be required to avoid disturbance and should contact USFWS to notify them of the sighting. Historic property background research was conducted for a one-mile Study Area surrounding the project's Area of Potential Effects (APE). Additionally, pedestrian inventory and subsurface testing was conducted on approximately 32 acres of proposed project land to identify potential archaeological resources that may be eligible for listing on the National Register of Historic Places (NRHP). One archeological site (25YK35) was identified during subsurface testing. Site 25YK35 consists of a prehistoric lithic isolated find. The site has no characteristics of significance that would make it eligible for listing on the NRHP. Based on applied research and investigation, the WRF project is provided a finding of No Historic Properties Affected. The archaeologist's report was provided to the NESHPO and Pawnee Nation Office of Historic Preservation. HDR prepared a Wetland Delineation Report. Delineations identified fourteen (14) wetlands, totaling 0.66 acre, and seven (7) defined stream channels/waterways. The majority of identified wetlands occur in roadside ditches along the proposed conveyance pipeline. Only two wetlands, totaling 0.036 acre, occur north/east of Beaver Creek and within the study area of the proposed facility. Based on these findings, and preliminary discussions with the U.S. Army Corps of Engineers, the ultimate project will likely qualify for Clean Water Act Section 404 Nationwide Permit (NWP) authorization via either NWP 7: Outfall Structures and Associated Intake Structures, or NWP12: Utility Line Activities.

**Irreversible and Irretrievable Commitment of Resources:** The resources committed to the project include construction materials and energy needed to build and operate the new WRF.

**F. Measure Taken to Insure Environmental Soundness:**

**Public Involvement:** The City conducted a public hearing on this project on October 29, 2015, having the required 30 day advertised notice. Twelve citizens attended the public hearing. The Engineering Consultant (HDR) and the City presented the project and the associated impact to the sewer rates. The citizens had several questions regarding the project and the associated impact on the environment.

**Public Opposition or Opinions:** The questions/issues and the associated responses are presented as follows:

**a**. What measures will the City undertake in case the native phragmites in the reed beds get infected with the non-native noxious weeds?

Response: The City will monitor the growth in the reed beds. The difference in the non-native and native phragmites is quite apparent. Elimination of an invasion of non-native phragmites could, in an extreme case, require the replanting of the contaminated reed bed if the development of an overall management plans to maintain the reeds within the reed beds and not worry about which phragmites is growing is not acceptable.

**b.** Is it possible that the reed beds can contaminate the local sorghum crops and if so how will the City address that possibility?

Response: Past studies have indicated that the phragmites rarely spread by seed production. The primary

means for spreading is through the transportation of rhyzomes from existing plant material via equipment or stream flow.

**c.** Are the reeds the same plant as the ones that are being sprayed along the Platte?

Response: The phragmites used for the reed beds are not the same plant as the ones being sprayed along the Platte River.

**d.** What are the impacts on flow of water in Beaver Creek?

Response: There will be no net increase in water in the creek due to the new plant since the existing plant already discharges into Beaver Creek.

**e.** What are the impacts on overland flow on Beaver Creek? The public expressed concern regarding how the runoff from the adjacent crop land will be handled and asked that this be reviewed to ensure no increase in the magnitude of Beaver Creek flows during storm events.

Response: Questions regarding "streamlining" the rate at which runoff reaches Beaver Creek if the runoff becomes more channelized or piped to the Creek were noted.

**f.** The public asked the City to consider adding trees or other plantings that could visibly screen the plant from along Road O.

Response: Duly noted.

**g.** After the construction and footprint of the forcemain was presented, the public noted portions of Nobles Road were completely closed during the water main installation. The public advised that County Roads Department needs to be informed and consulted about the project including the increased traffic and condition of Road which the public noted becomes almost impassable at times during the winter and heavy rain.

Response: Duly noted.

**Coordination and Documentation with Other Agencies and Special Interest Groups**

**Facilities Plan** Dated May2011, Kirkham Michael, Omaha

**2014 Wastewater Treatment Facilities Plan – Phase 1** Dated September 19, 2014, HDR, Inc.

**2015 Wastewater Treatment Facilities Plan – Phase 2 Engineering Study**, Dated May 27, 2015, HDR, Inc.

**Water Reclamation Facility, Wetland Delineation Report**, Dated October 2015, HDR, Inc.

**Water Reclamation Facility, Threatened and Endangered Species Habitat Report**, Dated October 2015, HDR, Inc.

**Water Reclamation Facility, Archaeological Resources Assessment**, Dated November, 2015, HDR, Inc.

**Federal:** U.S. Fish & Wildlife Service, September 16, 2015 letter
Department of the Army, Corps of Engineers, October 13, 2015 letter
U.S. Dept. of Agriculture, Natural Resources Conservation Service, September 29, 2015 email

**State:** Nebraska Department of Natural Resources, October 1, 2015 memo
Nebraska State Historical Society, September 8, 2015 letter
Nebraska Game & Parks Commission, September 25, 2015 letter

**Consulting Engineers:** HDR Engineering Inc. Omaha, NE

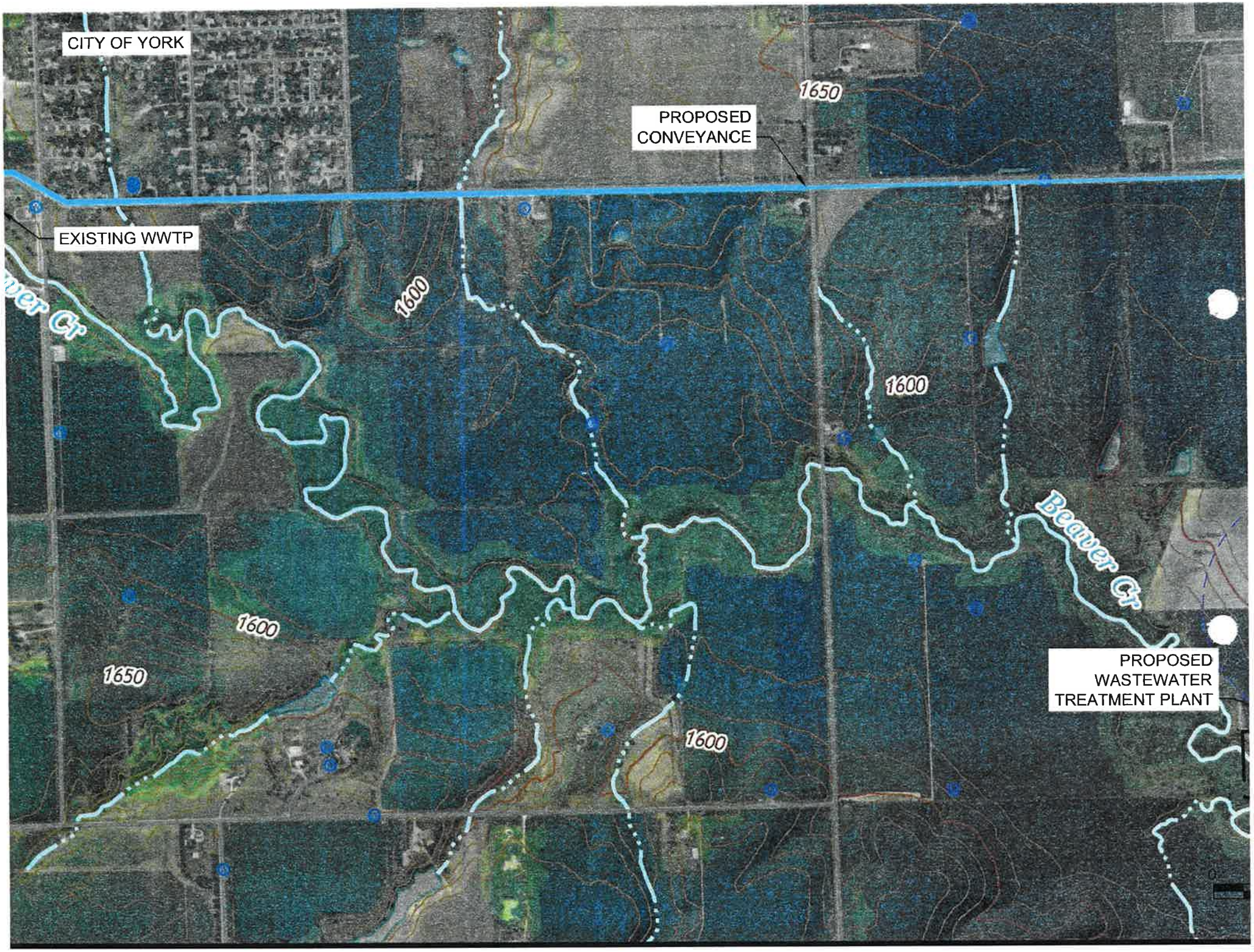
**Public Groups:** City of York residents
Pawnee Nation of Oklahoma

**G. Positive Environmental Effects to be realized from the Proposed Project:** Area surface water quality should improve as a result of the project.

**H. Reasons for concluding there will be no Significant Impacts:** No adverse impact occurs on wetlands, floodplain, or recorded historical resources. Provisions included in the construction contract will protect nesting migratory birds and possibly bats, if necessary. No potential recreation and open space opportunities exist. Minor change in land use will occur, as approximately 27 acres of agricultural land will be taken out of production. There should be no adverse impact on community growth patterns.

Reviewing NDEQ Engineer [signature] PE

Date: 11/20/15


CITY OF YORK
PROPOSED CONVEYANCE
EXISTING WWTP
1650
1600
1600
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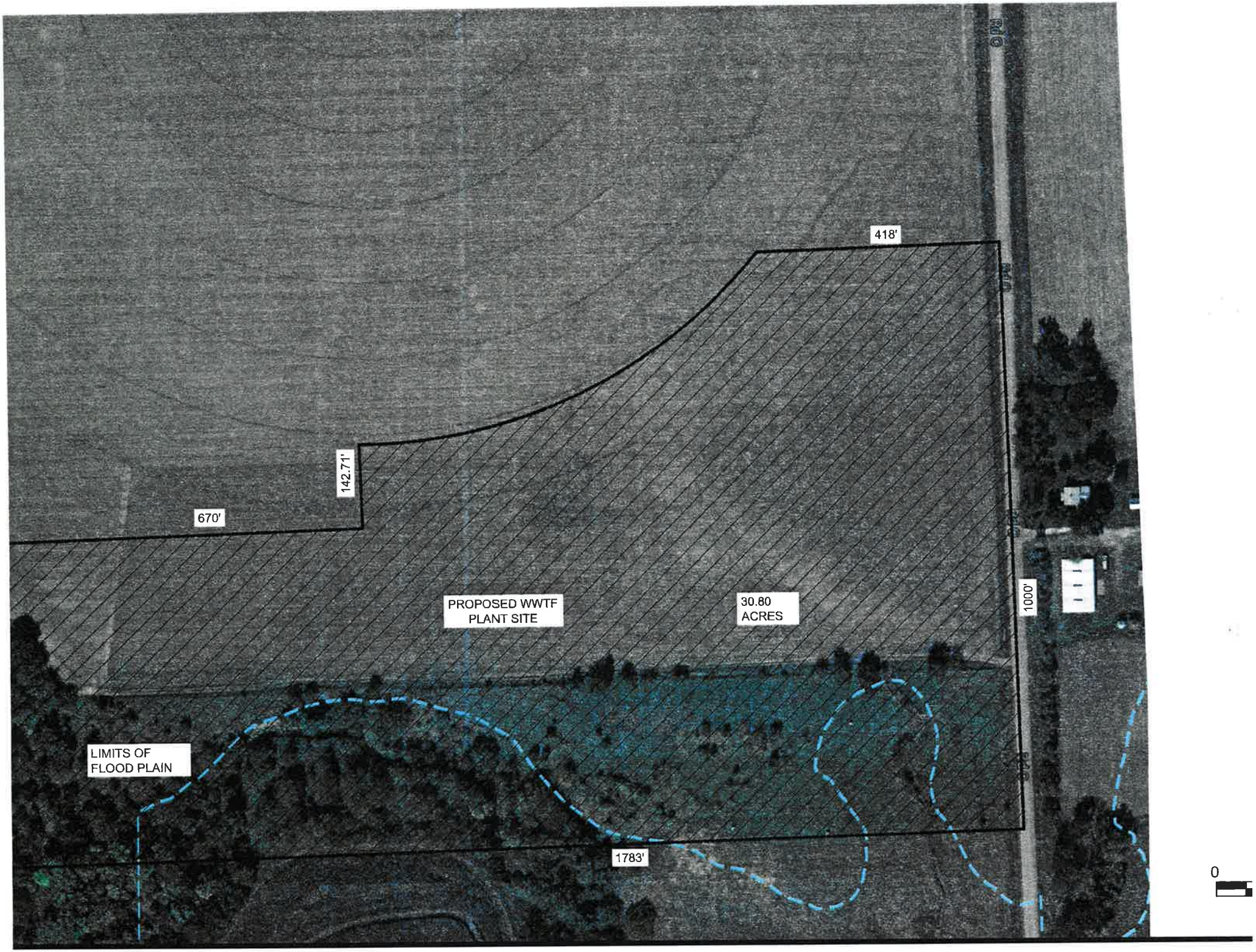
Beaver Cr
PROPOSED WASTEWATER TREATMENT PLANT


418'
142.71'
670'
PROPOSED WWTF
PLANT SITE
30.80
ACRES
1000'
LIMITS OF
FLOOD PLAIN
1783'
0

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