



## Technical Memorandum

**Project:** Wastewater System Improvements – Proposed Bar-Screened Lift Station  
**To:** The City of Clinton / The Clinton Public Works Authority, Custer County, Oklahoma  
**Project Number:** CVE25-030  
**Date:** September 25, 2025

### **Introduction**

This memorandum presents the basis for constructing a new bar-screened lift station for the wastewater system. The improvements are intended to resolve issues with the existing 27-inch concrete sanitary sewer main that is failing due to hydrogen sulfide (H<sub>2</sub>S) corrosion, as well as safety and maintenance concerns associated with the existing bar screen and lift station at the wastewater treatment plant. The proposed improvements also provide a layout compatible with future upgrades and rehabilitation of the wastewater treatment facility.

### **Existing Conditions**

The existing 27-inch reinforced concrete gravity sewer main, which conveys all of the City's wastewater to the plant, is in advanced structural failure and regulatory noncompliance. Key issues include:

**Collapse and Regulatory Violation:** In May 2025, a major collapse occurred south of Interstate 40, causing a sanitary sewer overflow (SSO) and unpermitted discharge of raw sewage. The overflow potentially impacted agricultural land and the Washita River. As a result, the Oklahoma Department of Environmental Quality (ODEQ) issued Notice of Violation No. S-10804-25-1 on July 1, 2025. DEQ is currently drafting a Consent Order.

**Ongoing Structural Degradation:** Field observations confirmed visible concrete deterioration due to prolonged exposure to H<sub>2</sub>S gas. Soil and grit intrusion indicate infiltration through failed pipe joints and fractures.

**Below-Minimum Slope:** The existing main has an average slope of 0.06%, which is below the minimum 0.08% required for 24-inch gravity sewers under OAC 252:656-5-2(b)(11).

**Inadequate Flow Velocity:** The deteriorated pipe surface has a roughness coefficient of approximately 0.017, reducing full-pipe velocity to 1.46 feet per second (ft/s), below the 2.0 ft/s self-cleansing threshold. This condition contributes to sedimentation and odor issues.

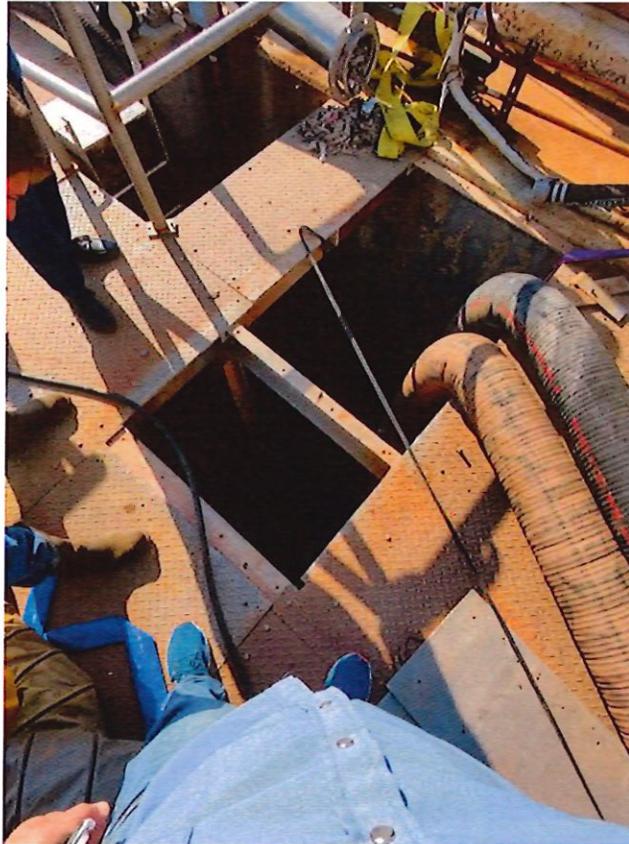
**Noncompliant Appurtenances:** Existing manholes exceed the maximum allowable spacing under OAC 252:656-5-4(g). These structures show signs of infiltration and are located in difficult-to-access areas.

**Depth:** The existing gravity main is 30-feet deep in areas complicating maintenance and repair and resulting in high replacement costs.



The current influent structure at the treatment plant has significant operational and safety issues:

- **Confined Space Hazards:** The existing structure requires ladder access for maintenance. Operators are exposed to confined space entry risks, including the presence of hydrogen sulfide gas.
- **Bar Screen Maintenance Challenges:** When the existing bar screen becomes clogged, it can only be cleared through manual intervention. This requires maintenance personnel to enter a deep, confined structure where they are exposed to significant fall hazards and dangerous atmospheric conditions. See photograph below to view access ladder.
- **Existing pumps:** the pumps have been in service beyond their useful life and are exposed to excessive grit due to condition of 27-inch pipe. More efficient solids handling pumps are available.



### Proposed Improvements

Construction of a new bar-screened lift station is proposed on city-owned property north of Interstate 40. The planned improvements include the following:

- **New Splitter Box and Intercept:**
  - Construct a new splitter box to receive and combine the two sewer main lines approaching from the west and feed to the proposed lift station.
  - Install a new manhole to intercept the line coming from the north and direct its flow into the proposed lift station.
- **New Bar-Screened Lift Station:**
  - Construct a new lift station with bar screen facilities on the north side of Interstate 40.
  - Pump screened sewage via a new force main back to the treatment plant.
  - Reuse the existing bar screen at the new location to reduce project cost if feasible.
  - Construct bar screen access stairwell pit designed to eliminate exposure to fall and confined space hazards.

### **Benefits**

The proposed bar-screened lift station will provide the following benefits:

- **Eliminates the failing 27-inch sewer main**, which is up to 30 feet deep and has already collapsed, reducing future maintenance risk and safety hazards. It further eliminates the low velocities which leads to solids accumulation in the line.
- **Improves worker safety** by removing confined space access at the existing bar screen and lift station.
- **Enhances hydraulic performance** with a new, corrosion-resistant PVC pipe and bar-screened lift station layout.
- **Pumping Improvements:** Replaces antiquated pump and components with higher efficiency solids handling submersible pumps.
- **Supports future WWTP upgrades** by relocating key infrastructure to a more accessible and compatible location.

### **Engineer's Opinion of Probable Project Cost**

See attached.



**Engineers Opinion of Project Costs**

Sewer System Improvements- Main Collector Main I-40 to Plant

City of Clinton, Custer County, Ok

CVE25-030

Sunday, July 13, 2025

Item	Quantity	Unit	Description	Unit Cost	Total Cost
<b>Alternative 4- Lift Station and Forcemain</b>					
1	1	LSUM	Lift Station Wet Well	\$ 650,000.00	\$ 650,000.00
2	1	LSUM	Valve Vault	\$ 175,000.00	\$ 175,000.00
3	4	E.A.	Submersible Pumps (30-hp)	\$ 85,000.00	\$ 340,000.00
4	4	EA	Variable Frequency Drives (35-hp)	\$ 35,000.00	\$ 140,000.00
5	1	LSUM	Influent Channel	\$ 325,000.00	\$ 325,000.00
6	1	E.A.	Mechanical Bar Screen	\$ 450,000.00	\$ 450,000.00
7	1	E.A.	Manual Bar Screen	\$ 45,000.00	\$ 45,000.00
8	4	E.A.	Sluice Gates w/ Motor Operators	\$ 60,000.00	\$ 240,000.00
9	1	LSUM	Miscellaneous Metals	\$ 100,000.00	\$ 100,000.00
10	8865	L.F.	12" Forcemain C900 DR21	\$ 85.00	\$ 753,525.00
11	2504	L.F.	Embedment Material	\$ 80.00	\$ 200,320.00
12	1	LSUM	Generator and Automatic Transfer Switch	\$ 175,000.00	\$ 175,000.00
13	3	E.A.	6' Diameter Manholes (0-6')	\$ 12,000.00	\$ 36,000.00
14	50	V.F.	Additional Depth (6' M.H.)	\$ 450.00	\$ 22,500.00
15	150	L.F.	24" PVC SDR 26	\$ 75.00	\$ 11,250.00
16	150	L.F.	Trench Depth (15-20-ft)	\$ 250.00	\$ 37,500.00
17	1	LSUM	Bypass Pumping	\$ 7,500.00	\$ 7,500.00
18	1200	S.Y.	Site Paving	\$ 85.00	\$ 102,000.00
19	400	L.F.	Site Fencing	\$ 85.00	\$ 34,000.00
20	1	LSUM	Electrical System	\$ 250,000.00	\$ 250,000.00
21	12000	C.Y.	Structural Excavation	\$ 15.00	\$ 180,000.00
22	1	LSUM	Dewatering	\$ 25,000.00	\$ 25,000.00
<b>Total Estimate</b>				<b>\$</b>	<b>4,299,595.00</b>
<b>Contingecies</b>				<b>\$</b>	<b>437,905.00</b>
<b>Engineering</b>				<b>\$</b>	<b>320,000.00</b>
<b>Survey and Staking</b>				<b>\$</b>	<b>67,500.00</b>
<b>Inspection</b>				<b>\$</b>	<b>175,000.00</b>
<b>TOTAL ESTIMATED PROJECT COST</b>				<b>\$</b>	<b>5,300,000.00</b>

Please be advised that the Engineer's estimations of potential Construction Costs rely on their experience, qualifications, and overall knowledge of the construction sector. It is important to note that the Engineer lacks control over labor, material, equipment costs, services provided by external entities, contractors' pricing methodologies, competitive bidding, and market conditions. Therefore, the Engineer cannot assure or guarantee that proposals, bids, or the final Construction Cost will align precisely with the initially estimated Construction Cost opinions.