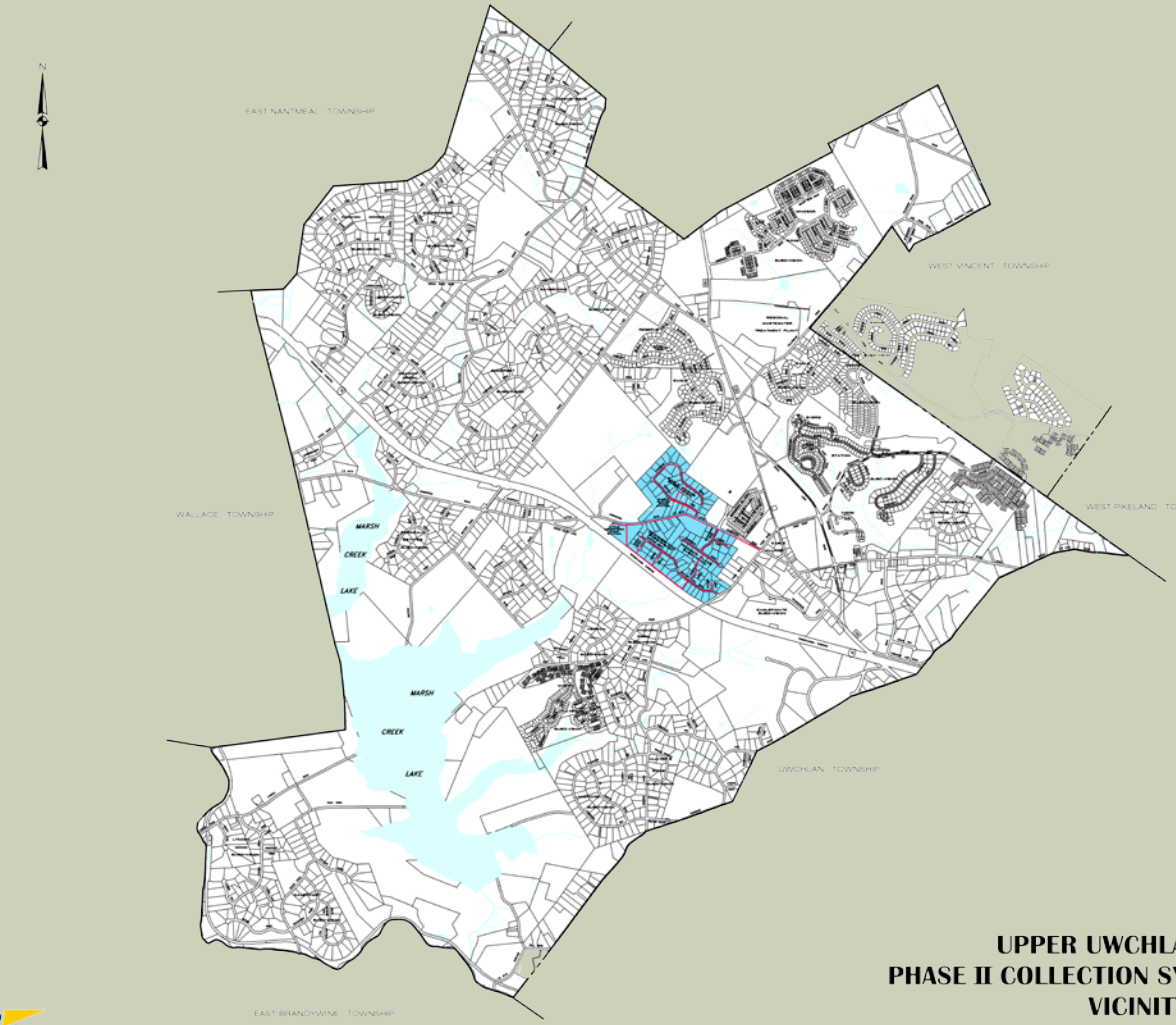
Phase II Wastewater Expansion Project

Phase II Collection System Improvement Vicinity Map



ARRO

BACKGROUND

- 1999 Act 537 Plan Amendment
  - PA DEP Requirement
  - 20-year plan
  - Program for Sewage Disposal in Township
- Route 100 Wastewater System Construction
  - Phase I – completed
  - Phase II – initiated
  - Phase III – future Township needs

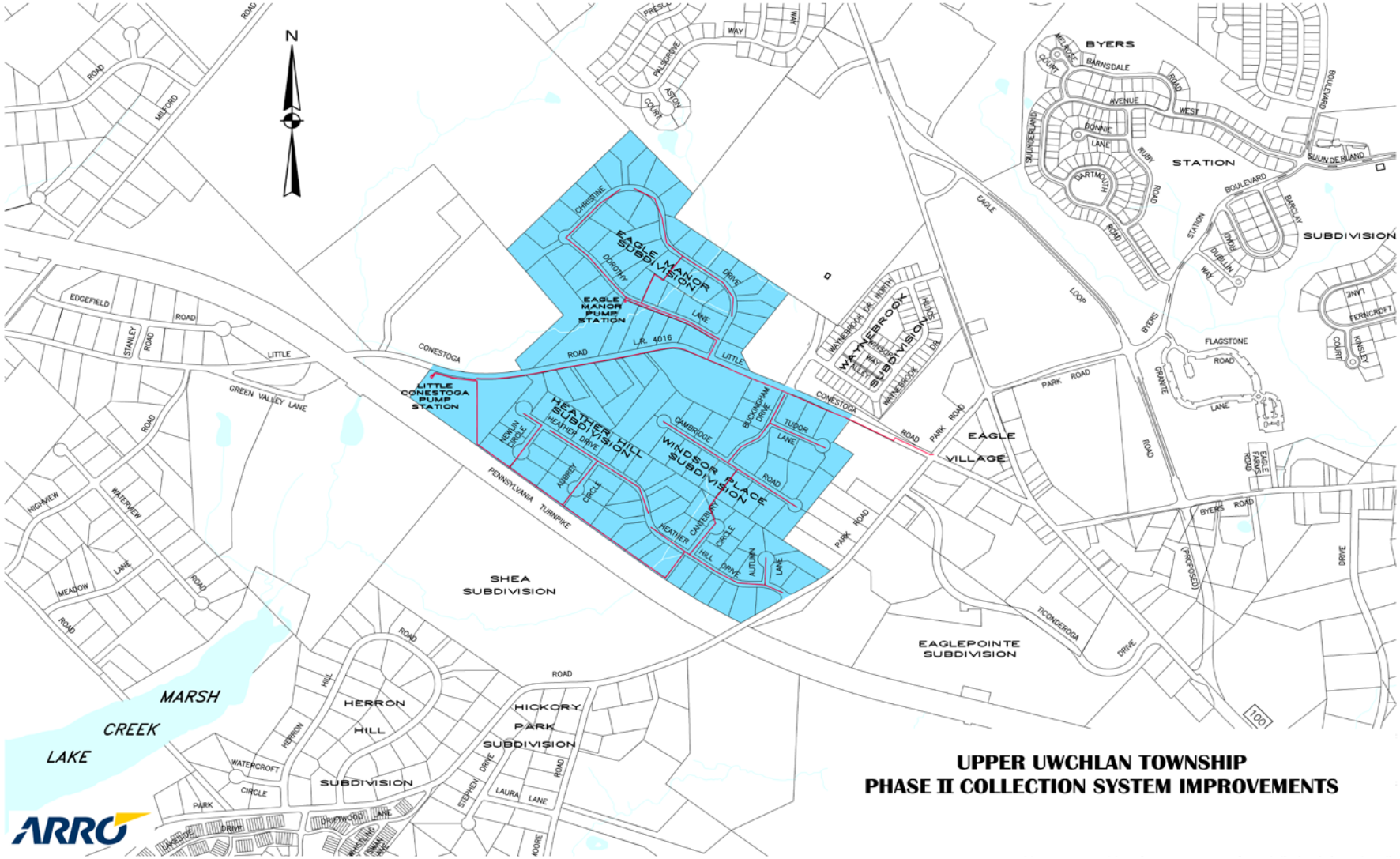
BACKGROUND (cont.)

- Assist with failing septic systems within the Township – Individual and COLDS
- Recognize High Quality (HQ) Watersheds in Marsh Creek and Pickering Creek

PROJECT

- Expansion of Route 100 WWTF from 300,000 gallons per day (gpd) to 600,000 gpd
- Extension of Sewer Main from the Village of Eagle to adjacent residential developments
  - Eagle Manor
  - Windsor Place
  - Heather Hill
  - Portion of Little Conestoga Road

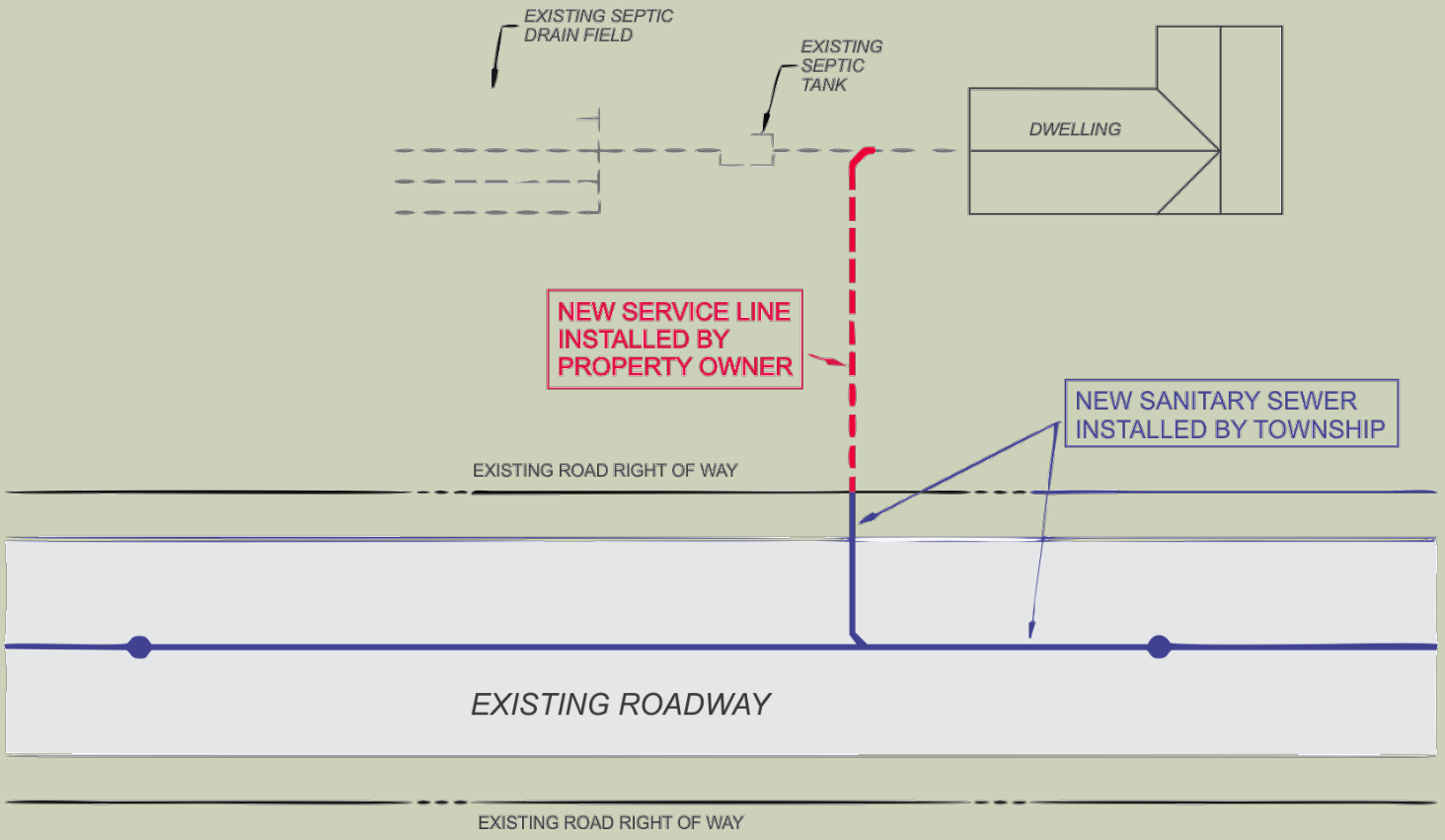
Phase II Collection System Improvements



SEWER EXPANSION PROJECT

- Gravity Mains where possible
- Utilize Public Roads where possible
- Two Pumping Stations
  - Eagle Manor Subsurface Station
  - Little Conestoga Pump Station
- Township/Municipal Authority contracts
  - Little Conestoga Pump Station and Force Main
  - Sewage Collection System
- Contractor to install right-of-way laterals
- Homeowners to connect to right-of-way lateral

Typical Residential Service Line Installation



INITIAL STEPS

- Meet with all property owners
  - Locate Lateral Route
- Meetings scheduled between October 20th and November 21st, 2014
- Designated Time for each development
- Online sign-up
  - Evening and weekend hours

INITIAL STEPS (cont.)

- Time Allowance for those who can't schedule on designated week
- Township/Municipal Authority to select right-of-way lateral location
- Include right-of-way laterals in design documents

SCHEDULE

- Advertise for Bids – November 25, 2014
- Receive Bids – December 23, 2014
- Award Contracts – January 27, 2015
- Begin Construction – (est.) March 16, 2015
- Substantial Completion of Phase II Sewer Extension– October 1st, 2015

SCHEDULE (Cont.)

- Home connections begin September 1, 2015 or when Phase II at WWTF is substantially complete
- Date of Note:
  Substantial completion of
  Phase II WWTF Expansion
  expected September 1, 2015

Installing Your Home Connection

- Township/Municipal Authority requires use of a state registered contractor
- Home connections require permit and inspections
- Home connections to be installed in accordance with the UUTMA technical guidelines

COSTS

- Total Cost estimated for gravity connections: $9,000 - $12,000 per home
- Cost breakdown:
  - Tapping fee: $6,945.72 /home
  - Home connection: est. $2,000 - $4,000/home
  - Septic System Abandonment: $200 - $500/home
- Tapping Fee payable to Municipal Authority on or before September 1, 2015
- Sewer Fees: $175 per quarter, per home
- Township/Municipal Authority to solicit assistance from local banks for homeowners

FUNDING

- Township closed on a $6,000,000 General Obligation Bond
- Sewer fees ($175 per quarter) from Municipal Authority to cover debt service on Bond
- Municipal Authority to prepay Tapping Fees to developers constructing the Phase II WWTF expansion
- Collection of Tapping Fees reimburses Municipal Authority

INFORMATION

- Township website – www.upperuwchlan-pa.gov
  - Municipal Authority – www.upperuwchlan-pa.gov/index.aspx?nid=101
  - Facebook/Twitter
  - Sign up for text/email notification
- Authority Administrator
  - G. Matthew Brown, P.E., DEE
  - (610) 646-7015
  - authority@upperuwchlan-pa.gov

  Office Hours by appointment
  - Tuesday & Thursday – 3:00 pm to 6:00 pm
  - Select Saturdays
- Municipal Authority Public Meetings
  - 4th Tuesday each month at Township Building

QUESTIONS?

SEPTIC VS. WWTP

- According to the 1990 US Census, approximately 27% of all housing units, or 1.3 million homes, in Pennsylvania used on-lot septic (OLS) systems to dispose of their wastewater (Day, Yuanhong, Bruce, & Franklin, 2008). Most OLS systems are three-stage treatment systems, composed of a septic tank, distribution piping, and a soil absorption area. US EPA estimates that "10 to 20 percent of these systems malfunction each year, causing pollution to the environment and creating a risk to public health (Septic Onsite/Decentralized Systems, 2014)".
- When functioning properly, OLS systems can remove considerable amounts of pollutants. These pollutants present health and environmental concerns, particularly through groundwater contamination. Pathogens can cause disease through direct or indirect contact, and through ingestion of contaminated water or shellfish. Excessive nitrogen and phosphorus contributes to loss of dissolved oxygen in water systems, while high nitrogen levels in drinking water can cause health concerns for pregnant women and infants.
- Although OLS systems remove some pollutants, they do not effectively reduce BOD, nitrogen, and pathogens to the same concentrations that a WWTP does. Unlike OLS, WWTP's are regulated by the state and federal government. When a WWTP malfunctions, operators are required to report the incident to PADEP so that potential health hazards can be mitigated. They have stringent effluent limitations and are required to do frequent testing to ensure that the treated water being discharged into the environment meets safe levels.

SEPTIC VS. WWTP (CONT.)

- Table 1 shows the typical raw wastewater (influent) concentrations, typical treated water concentrations from septic systems, and typical treated water concentrations from the Route 100 WWTP. Again, the OLS-treated concentrations reflect a properly functioning septic system. Systems that are not maintained can discharge much higher concentrations of pollutants, similar to the raw water characteristics. Based on these average concentrations, the WWTP removes 16% more TSS, 41% more BOD, 77% more TN, and the reductions in bacteria are logarithmic.

Table 1: Typical Wastewater Concentrations - Raw, OLS Treated, and WWTP Treated

Component	Typical Raw Water Concentration	Typical OLS-Treated Concentration	Average Monthly Route 100 WWTP Concentration
Total Suspended Solids, TSS	250 mg/L	60 mg/L	20 mg/L
5-Day Biochemical Oxygen Demand, BOD_5	250 mg/L	120 mg/L	17 mg/L
Total Nitrogen, TN	60 mg/L	60 mg/L	14 mg/L
Fecal Coliform Bacteria	10^9 CFU/100mL	10^6 CFU/100mL	200 CFU/100mL

[1] The 1990 US Census is the most recent census with information on wastewater systems.
[2] Concentrations
[3] Calculated. Effluent limitations are based on $CBOD_5$ which is, on average, 1.5 times higher than BOD_5.

WORKS CITED

- *Septic Onsite/Decentralized Systems*. (2014, September 19). Retrieved October 6, 2014, from United States Environmental Protection Agency: http://water.epa.gov/infrastructure/septic/
- Day, R. L., Yuanhong, Z., Bruce, S., & Franklin, A. (2008). *An Examination of Failing Private Septic Systems in Pennsylvania.* Harrisburg: The Center for Rural Pennsylvania.