Preliminary Engineering Report

for the

New London WWTP

Howard County, Indiana

presented to:

Howard County Commissioners
and the
Town of Russiaville

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NEW LONDON
HOWARD COUNTY, INDIANA

CHAPTER 1 - INTRODUCTION

A. General

New London is an unincorporated community located in southwest Howard County in central Indiana. Indianapolis is approximately 50 miles to the south, and Kokomo is approximately 8 miles to the northeast. State Road 26 passes approximately 2 miles south of the community in Russiaville. The community is located on the Russiaville Quadrangle map, Township 23 N, Range 2 E, Section 14. The community has an approximate population of 125 in an estimated 55 occupied households and 3 commercial businesses. This study investigates the current condition of the existing wastewater system in the community, considers alternatives to address identified problems and recommends improvements for the community to implement to address these issues.

Sanitary sewers and a wastewater treatment plant were constructed in New London in 1995. At that time, the New London Conservancy District was established to own, operate and maintain the wastewater facilities. In 2013, the District was formally dissolved and the Town of Russiaville took over the ownership and operation of the utility.

The wastewater treatment plant in New London is reaching the end of its useful life. The tankage is metal, and has started rusting. Holes in the tankage have recently been repaired. The walkway and handrails are unsafe, and some of the piping has rusted through. Many of the air diffusers are non-operational.

This report outlines, from an engineering perspective, the options for addressing these issues. Once the options are evaluated, a selected plan and associated budget that include pursuing funding from State Revolving Loan Program (SRF) and/or USDA Rural Development (RD) and a proposed project schedule are presented.

CHAPTER 2 - PROJECT PLANNING AREA

A. Location

The project planning area is located in southwest Howard County in central Indiana. Indianapolis is approximately 50 miles to the south, and Kokomo is approximately 8 miles to the northeast. State Road 26 passes approximately 2 miles south of the community in Russiaville. Within the community, it is primarily single-family housing with a few small commercial operations scattered throughout. The surrounding land uses are dominated by row crop agriculture where most of the area would be considered prime farmland. Figure No. 2-1, contained in Appendix A, provides a USGS topographic map with the project location. An aerial map of the study area can be seen on Figure No. 2-2 in Appendix A. Table No. 2-1 below summarizes the project location information.

Table 2-1
Project Location Information

USGS Topographical Quadrangle Map Name	Russiaville
Township	23 N
Range	2 E
Section	14, 23
Civil Township	Monroe

B. Environmental Resources Present

Disturbed And Undisturbed land

A majority of the construction will take place within previously disturbed county road right of way. The force main will be installed in road right of way. It will be installed by trenching, which will minimize surface disturbances.

Historic/Architectural Resources

Figures 2-3 and 2-4, contained in Appendix A, identify the historic structures in New London, Russiaville, and along the force main route. The data has been obtained from the IDNR SHAARD website. While there are several historical structures within the two communities, based on the information available, it appears that there are no known architectural or archeological sites within the project area that will be adversely affected.

Surface Waters

The project will not adversely affect waters of high quality listed in 327 lAC 2-1-2(3), exceptional use streams listed in 312 lAC 2-1-11 (b), Natural, Scenic and Recreational Rivers and Streams listed in 312 lAC 7-1, Salmonid Streams listed in 3271AC 2-1.5-5(a)(3), or waters on the Outstanding Rivers list (Natural Resources Commission Non-rule Policy Document).

There are no stream crossings associated with the proposed force main route.

Groundwater

Groundwater supplies, sole source aquifers, and drinking water supplies will not be negatively impacted by this project. The depth to seasonal high groundwater is greater than 4 feet at the proposed construction sites. If dewatering is required, dewatering flows will be settled prior to discharge, and will not introduce solids to the surface waters.

Floodplain

Floodplain resources are not present in New London. Honey Creek and Wildcat Creek, located north of the community, have floodplain resources; however, these two creeks are not impacted by the proposed construction.

A Floodplain Map of the area is provided in Figure No. 2-5, contained in Appendix A.

Wetlands

A National Wetlands Map (NWM) of the project area indicates that there are no wetlands within the proposed construction area. Figure No. 2-6, in Appendix A, also identifies no wetland resources in the project area.

Soil

Figure No. 2-7, the soil survey map of the area shows the soil types found in proposed project area. All of Howard County is within the Tipton Till Plain. The topography of the area can be described as generally flat to gently sloping with grades of one to two percent.. The soils in the New London area are generally of the Miami-Russell-Morley association. This association is described as gently sloping to strongly sloping, deep, well drained, medium textured to moderately fine textured soils. These soils are rated moderate to severe for septic tank absorption fields as a result of the slow permeability. Drainageways in the nearly level plain are weak or undeveloped and natural drainage is poor.

Prime Farmland

The preliminary force main route from New London to Russiaville is along County Road right of way. The project will not cause a conversion of prime farmland from crop production to non-agricultural uses.

Air Quality

The area is in compliance with ozone and other airborne pollutants. This project will not introduce any additional pollutants into the atmosphere. Malodorous fumes and gases will not be discharged into the air as a result of the construction activities or the operation of the proposed work. The construction and operation of this work will not adversely affect ozone levels and will not increase or decrease airborne pollutants. Short-term negative impacts to air quality will include noise and dust during the construction period. There will be no long-term negative impacts to air quality. The contractor will be required to maintain all equipment in good working order to mitigate noise and air pollution caused by faulty operating equipment. If dust becomes an issue, the contractor will be required to water the construction zones to keep airborne particulate to a minimum.

Open Space and Recreational Opportunities

Open space and recreational opportunities will not be affected by the construction or the operation of the proposed project.

National Natural Landmarks and Lake Michigan Coastal Program

There are no classified lands (monuments, landmarks, wild/scenic rivers, wilderness areas, state/national parks, reservations, recreational areas, or Lake Michigan Coastal Zone) located in the project area.

Indirect Impacts

The Town of Russiaville, through the authority of its Board, will ensure that future development, as well as future collection system or treatment works projects connecting to SRF-funded facilities will not adversely impact archaeological/historical/structural resources, wetlands, wooded area, or other sensitive environmental resources. The Town will require new development and treatment works projects to be constructed within the guidelines of the U.S. Fish and Wildlife Service, IDNR, IDEM, and other environmental review authorities.

Mitigation Measures

The project will be designed and implemented to minimize soil erosion and mitigation measures cited in comment letters from governing agencies will be implemented. Erosion control measures including seeding, sodding, inlet protection, silt fence, stone construction entrance and dust control may be implemented in accordance with current soil erosion control practices at the time of construction to reduce/eliminate erosion of the soils.

To mitigate construction noises and the subsequent resident complaints, construction will only be allowed from 7:00 am to 5:00 pm Monday through Friday. Appropriate erosion control measures will be implemented during construction to abate dust and airborne dirt particles. The contractor will be required to maintain all equipment in good working order to mitigate noise and air pollution caused by faulty operating equipment.

C. Population Trends

New London has approximately 62 available customers within the service area. Of these 62, there are 55 residential and 3 commercial that are billed. The commercial customers consist of the new London Friends Church, the New London Lodge, and a tax service.

For a wastewater collection and treatment system to effectively serve New London it must be properly sized to handle the current as well as the projected future average and peak flows in the proposed service area. Consequently, it is necessary to estimate the number of people served under both current and future conditions. Historical population growth trends and the projected population of Howard County, Monroe Township, and New London are shown in Table No. 2-2.

A review of the period from 1970-1990 showed that Monroe Township population generally increased, while county population decreased. Population projections for 2025 and 2035, from STATS Indiana show the population of the County decreasing. Since the majority of land use around New London is farmland, the growth of town should more closely resemble the township. Thus, New London population for 2025 and 2035 were calculated by correlating with the Township growth rate. A population of 169 appears reasonable for estimating wastewater needs of the community.

TABLE 2-2
Population Trend

Year	New London	% Change Per Year	Monroe Township	% Change Per Year	Howard County	% Change Per Year
1970		-	973	-	83,198	-
1980		-	1,241	2.8	86,896	0.4
1990		-	1,397	1.3	80,827	-0.7
2000	136 (c)	-	1,387	-0.1	84,964	0.5
2010	145 (c)	0.7	1,407	0.1	82,752	-0.3
2015	144	-0.1	1,399	-0.1	82,556	-0.05
2025	160 (d)	1.1	1,556 (b)	1.1	80,706 (a)	-0.2
2035	169 (d)	0.5	1,639 (b)	0.5	78,059 (a)	-0.3

Source: www.stats.indiana.edu

NOTE: Estimated population data from 1970 through 2014 was obtained from STATS Indiana, except for New London

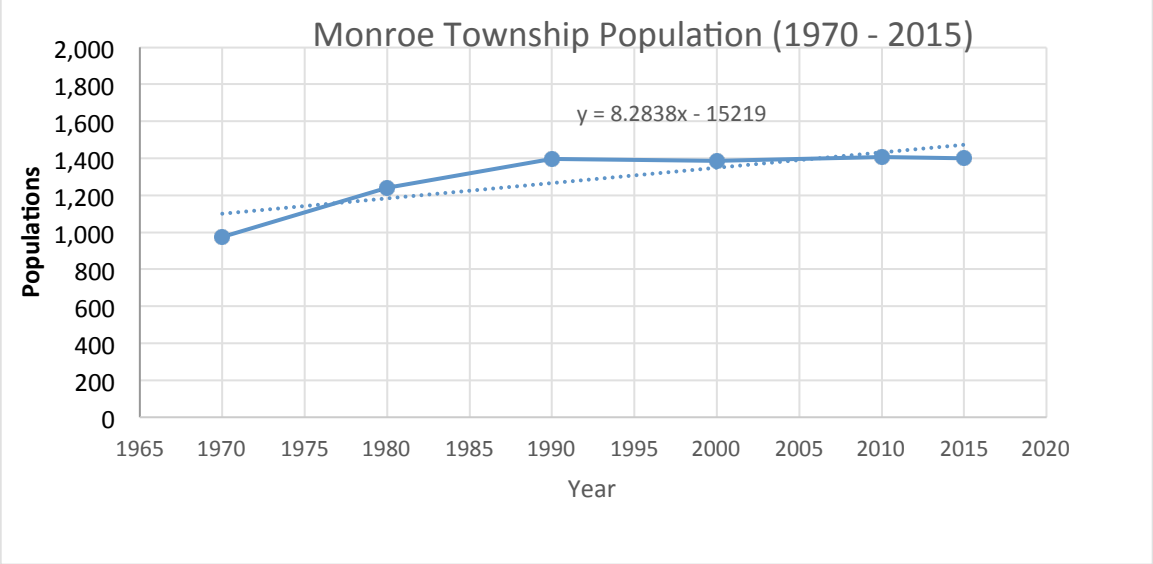
* STATS Indiana does not provide population projections for individual town/year

(a) Howard County population projections was obtained from STATS Indiana

(b) Monroe Township population for the year of 2025 & 2035 was calculated using linear regression y = 8.2838x - 15219 (Equation was obtained from the percentage change of Monroe township population per year and population STATS from 1970 - 2015)

(c) New London population data was obtained from census block that incorporated New London by using 2000 and 2010 census block

(d) New London 2025 and 2035 population projections was calculated by assuming New London has the same percentage change per year in population as for Monroe Township



D. Community Engagement

A public hearing will be held to discuss this report and its findings after submittal to and authorization by IOCRA. The documentation from the Public Hearing will be included in Appendix B.

TABLE 3-6
NEW LONDON OPERATION AND MAINTENANCE EXPENSES 2015

2015	Duke	Chemicals	Testing	Repairs	Sludge Hauling	Permits	Loan Repayment	Taxes	Insurance	PO Box	Income Survey for Grant
January	$589.07	$51.82		$100.00			$537.50				
February	$543.64	$234.36		$850.00	$1,086.00	$700.00	$537.50				
March	$490.54	$299.86	$13.00			$50.00	$537.50				
April	$864.00			$2,823.18			$537.50	$41.09		$55.00	$650.00
May	$546.62	$416.52					$537.50				
June	$605.86	$114.64					$4,865.30		$1,911.00		$250.00
July	$543.94						$537.50				
August	$511.79						$537.50				
September	$539.76	$226.50					$537.50		$1,911.00		$250.00
October	$1,100.00			$2,717.46			$537.50				
November	$516.03						$537.50				
December							$14,865.30				
Totals	$6,851.25	$1,343.70	$13.00	$6,490.64	$1,086.00	$750.00	$25,105.60	$41.09	$3,822.00	$55.00	$1,150.00
TOTAL EXPENSES		$46,708.28									

CHAPTER 3 – EXISTING FACILITIES

A. Location Map

Figure 3-1, contained in Appendix A, provides a USGS Topographical Map with the service area and treatment plant location identified. Also included on Figure 3-1 is the existing New London wastewater collection system that was drawn from the existing plans and has not been field verified.

B. History

The New London Conservancy District was established in 1995 to provide wastewater service to the residents of the community. The District was dissolved at the end of May 2013 and the Town of Russiaville now operates the New London wastewater utility serving a population of approximately 144 people and 58 customers. Potable water is obtained from private residential wells. The Town of Russiaville also owns and operates its own wastewater collection and treatment facility within two miles of the New London Conservancy District boundaries.

Sanitary sewers and a wastewater treatment plant were constructed in New London in 1995. It was stated in a public meeting that the plant was purchased used at the time it was installed; however, no documentation could be located to support this. According to the design summary submitted to IDEM at the time of installation, the treatment plant is rated to treat 20,000 gpd with a peak design flow of 100,000 gpd.

The sanitary sewer system is a separate system consisting of approximately 7,050 lineal feet of 8-inch PVC gravity sewer pipe, 27 manholes, 8 cleanouts, 2 grinder pump lift stations, and approximately 3,425 lineal feet of 2-inch through 3-inch diameter force main. Table 3-1 identifies the sanitary sewer system in New London. Piping quantities and sizes were taken from construction plans and have not been field verified. The depth of the gravity sewers ranges from 4 to 12 feet.

TABLE 3-1
NEW LONDON SANITARY SEWER COLLECTION SYSTEM

PIPE SIZE (INCH)	TYPE	MATERIAL	LENGTH (FEET)
8	Sanitary	PVC	7,050
8	Effluent	PVC	383
6	Effluent	PVC	870
2	Force Main	PVC	210
2.5	Force Main	PVC	1,993
3	Force Main	PVC	1,220

The collection system is in relatively good condition. A previous smoke testing study, completed in 2003, did not find any significant sources of infiltration or inflow. Five clean outs, five manholes, one sump pump, and one catch basin were identified as potential sources of clear water. Based on the flows to the WWTP, identified in Table 3-2, it appears that the collection system is tight.

The two pump stations, designated the South and North Pump Stations, are rated to pump 50 gpm and 40 gpm respectively. The South Pump Station has two 5 hp pumps that each run on average 1.5 hours per day. The North Pump Station has one operating 2 hp pump that runs on average 1.4 hours per day. The effluent pipe from the South Pump Station is connected to the effluent force main downstream of the North Pump Station.

Appendix C to this report contains a copy of the Town's NPDES discharge permit. Appendix D provides the original construction permit for the treatment plant and collection system. Figures 3-2 and 3-3, in Appendix A, are copies of the plan and profile sheets of the New London Wastewater Treatment Plant. Table 3-2 summarizes the plant operation for the most recent 12 months available.

TABLE 3-2
NEW LONDON
WWTP OPERATIONS SUMMARY

MONTH	TOTAL FLOW	RAW CBOD	RAW TSS	RAW AMMONIA	FINAL CBOD	FINAL TSS	FINAL AMMONIA
Sep '15	0.0094	175	88	69.1	2.7	2.8	0.044
Oct '15	0.0092	188	87	49.32	2.4	3.0	0.032
Nov '15	0.0086	173	179	62.25	1.7	2.9	0.030
Dec '15	0.0092	201	130	42.68	2.5	2.1	0.551
Jan '16	0.0094	173	133	47.15	2.1	2.7	1.762
Feb '16	0.0077	185	138	55.28	2.8	2.8	4.321
Mar '16	0.006	190	194	57.22	2.1	3.2	0.076
Apr '16	0.0084	154	119	50.68	3.4	4.8	0.017
May '16	0.0087	150	115	61.45	4.4	6.0	0.022
Jun '16	0.0094	188	134	62.62	3.7	6.3	0.299
July '16	0.0099	174	162	20.13	3.4	4.9	0.013
Aug '16	0.0127	225	231	58.15	3.1	3.6	0.886
Average	0.0091	181.33	142.50	53.00	2.86	3.76	0.671
Permit Limits	.020			Summer	20.0	24.0	2.5
				Winter	25.0	30.0	3.8

During the 12-month period, the treatment plant exceeded NPDES permit limits for ammonia one time. This was the only violation reported.

Table 3-3 provides the average daily concentrations and loadings for the monitored wastes for the 12-months ending august 2016. Table 3-4 identifies the calculated average flows at the WWTP that would be expected based on Ten States Standards.

TABLE 3-3
WWTP CONCENTRATIONS AND LOADINGS

	INFLUENT		EFFLUENT	
PARAMETER	Conc. (mg/l)	Daily Load (lbs)	Conc. (mg/l)	Daily Load (lbs)
CBOD5	181	13.7	2.9	.22
TSS	142	10.8	3.8	.28
NH3-N	53	4.0	.7	.05

TABLE 3-4
CALCULATED FLOW SUMMARY

Plant Design Flow	20,000 gpd	
Peak Design Flow	100,000 gpd per design summary	
Domestic (D)	9,520	Based on 70 gpcd and 144 people
Commercial/Institutional (C)	0	
Industrial (I)	0	
Total DCI	9,520	
Peak Sustained Infiltration mile	4,270	Based on 400 gallons per inch-diameter
Total Existing Flow	13,790	
Peak Anticipated DCI	40,027	Based on Ten States Standards
Peak Recorded DCI	23,000	

C. Condition of Existing Facilities

The wastewater treatment plant consists of a package extended aeration facility using coarse bubble diffusers, a comminutor no longer in service, secondary clarification, a Parshall flume and ultrasonic flow meter, disinfection by hypochlorite tablet, dechlorination by sodium bi-sulfite, and an aerobic digester. An emergency generator is on the plant site. Digested sludge is transported to Kokomo for ultimate disposal. According to documentation at the Indiana Department of Environmental Management (IDEM), the plant is rated to treat 20,000 gallons per

day (gpd); however, the Operations and Maintenance Manual indicates that the plant is rated for 30,000 gpd. Based on engineering calculations and using Ten States Recommended Standards for Wastewater Treatment as the design basis, the plant capacity is 30,000 gpd. Ten States Recommended Standards for Wastewater Treatment is the recommended standard used by the State of Indiana for wastewater treatment plant design.

The structure of the wastewater treatment plant is rusting, and plates have been welded to keep the tankage intact. Most of the air lines are rusting, and several of the diffuser are not operational. The catwalk and railing are unsafe and cannot be used for maintenance of the plant. One of the blowers is original to the plant and needs to be replaced. It has outlived its useful life and can no longer provide the air necessary for the efficient operation of the plant.

One extended aeration tank provides biological treatment of the organic wastes. The aeration basin is 32.5 feet by 12 feet by 10.5 feet deep, and can hold a total of 30,630 gallons. Utilizing a recommended organic loading of 15 lbs BOD/1000 cf per Ten States Standards, the aeration basin is capable of treating 51,480 gpd based on an average daily loading of 143 mg/l of BOD. Several of the diffusers in the aeration basins are nonfunctional and need to be replaced.

The purpose of the secondary clarifier is to provide detention time and equipment to separate and remove settleable solids. The secondary clarifier is a round clarifier that measures 12 feet diameter by 10.25 feet SWD. Based on current design standards, the clarifier is sized to treat the design flow of 45,200 gpd based on a surface overflow rate of 400 gpd/sf, and are rated to treat a peak hourly flow of 113,000 gpd at a surface overflow rate of 1000 gpd/sf.

Final treatment at the plant consists of chlorination for disinfection and dechlorination by sodium bi-sulfite. The chlorine contact tank measures 5’ by 10’ by 4’ SWD, and the size allows for a detention time of 107 minutes at design flows. Standards require a minimum detention time during peak flows of 15 minutes, which calculates to a peak flow capacity of 143,600 gpd.

Biosolids (sludge) management at the wastewater treatment plant is handled by one aerobic digester. The tank is 10.67' by 12' by 10.5’ deep with a volume of 10,050 gallons. This size provides a storage capacity of 113 days at 2% solids, which exceeds the recommended standard of 90 days storage.

The plant is being operated efficiently and is meeting NPDES limits. The biggest problem is the limited number of customers and therefore, the insufficient funding available for operations and maintenance. Currently, Russiaville is providing all labor to operate the plant at no cost to the customers of New London. This

generosity on the part of the neighboring community is not a permanent solution to the problem.

D. Financial Status of Existing Facilities

The rate structure for New London provides for a monthly rate based on the number of people living in the house, as identified following:

TABLE 3-5
RATE STRUCTURE

One Person	$78.16
Two People	$82.07
Three People	$85.96
Four People	$89.87
Five People	$93.79
Six People	$97.70
Commercial Account	$97.70

There is no minimum payment for a vacant structure, and the maximum payment per month is $97.70.

Russiaville maintains separate and independent records for the New London System. When all aspects of utility operation are taken into consideration, the system is operating at a loss. Table 3-6, on the following page, identifies the expenses incurred by the New London system in 2015. Please note that Russiaville is not charging any labor costs to the residents of New London for the operation and maintenance of the plant. Russiaville estimates that the operator spends approximately 10% of his time at the New London plant.

The total costs expended by the New London System in 2015 were $46,708, exclusive of labor costs. The total billing in the same period was $51,279 and payments received was $46,334. The receipts indicate that approximately 5 customers, or almost 10%, are not paying on a regular basis. The payments received did not cover maintenance expenses.

The Financial Advisor's Report is provided in Appendix E.

E. Water/Energy/Waste Audits

There have not been any water, energy, and/or waste audits conducted for the New London Utility.

CHAPTER 4 - NEED FOR PROJECT

A. Health, Sanitation and Security

The New London Conservancy District dissolved in May of 2013. Since that time, the Town of Russiaville took over ownership of the facility and has been operating and maintaining the New London Wastewater Treatment Plant and collection system. Russiaville has not been charging the customers of the New London system for the time involved in the operation and maintenance of the plant. As identified in Chapter 3, the residents of New London are already paying a high monthly fee to maintain the plant and collection system.

Improvements are needed at the plant to keep the plant operating in compliance with its NPDES Discharge Permit and to enhance the safety of the operators.

B. Aging Infrastructure

The New London treatment plant is over twenty years old and parts are nearing the end of their useful life. As previously discussed, the tankage is rusting and has been reinforced with welded steel plates. Most of the piping is rusting away. The catwalk and handrails are unsafe and cannot be used for the maintenance of the equipment.

C. Reasonable Growth – Flow and Loading Projections

As addressed in Chapter 2, the twenty-year population projections for the Community indicate moderate growth with a projected population of 169 in the year 2035. Table 4-1 provides a projection of the future flows and wasteloads from the projected population of 169. The table provides the projected flows using *Ten States Standards.*

TABLE 4-1
PROJECTED WASTEWATER FLOWS AND LOADINGS

	NEW LONDON	RUSSIAVILLE	TOTAL
Population	169 people	1,121 people	1,290 people
Projected Flow (1)	16,900 gpd	112,100 gpd	129,000 gpd
Projected BOD (2)	28.7 pounds	190.6 pounds	219.3 pounds
Projected SS (3)	33.8 pounds	224.2 pounds	258.0 pounds
Projected Ammonia (4)	5.9 pounds	39.2 pounds	45.15 pounds
(1) Based on 100 gpcd			
(2) Based on .17 lbs/person/day			
(3) Based on .20 lbs/person/day			
(4) Based on 0.35 lbs/person/day			

The Russiaville Wastewater Treatment Plant is rated to treat an average daily flow of .2 mgd and a peak flow of .45 mgd. The average daily flow to the plant for the 12 months ending October 2016 was .1273 mgd. With the addition of New London flows, the Russiaville WWTP will continue to have additional capacity for projected future growth.

CHAPTER 5 – ALTERNATIVES CONSIDERED

Several options exist and will be considered in this section for the resolution of the sanitary wastewater collection and treatment problems in Romney. The alternatives includes:

A. No Action

B. Treatment Alternatives
   1. Regionalization with Russiaville
   2. New Treatment Plant
   3. Plant Rehabilitation

A. NO ACTION ALTERNATIVE

The "No Action" alternative suggests that New London will retain its wastewater treatment plant in its current condition. As previously described, the plant is nearing, or has reached, the end of its useful life. If no action is taken, the plant will continue to deteriorate until the structure rusts completely through and a spill event is unavoidable. In its current state, it is unsafe for the operators to utilize the catwalks and handrails.

B. TREATMENT ALTERNATIVES

Alternative No. 1 – Regionalization (Offsite Treatment)

Description

Regionalization is the transfer of sanitary waste to the nearest available wastewater treatment system. The nearest system to New London is Russiaville, approximately 1.5 miles south and west. The Russiaville WWTP has the capacity and is willing to accept the flows.

Offsite treatment by Russiaville would require construction of the forcemain to connect New London with Russiaville. The residents of New London would have to pay the cost of the force main and treatment by Russiaville in addition to the payment of the existing bonds.

Design Criteria

The forcemain and LS pumps would be sized to maintain a minimum velocity of 2 feet per second in the forcemain. The design would also include provisions for odor control and air release valves along the forcemain route in accordance with *Ten State Standards.*

Advantages/Disadvantages

The primary advantage of the regionalization option for treatment is New London would not be responsible for the operation and maintenance cost associated with its own treatment facility. Along this line, the customers in New London would not be responsible for repairs to the treatment plant if a breakdown occurred. Instead, New London would be charged an established fee for treatment, in addition to the bond costs related to the construction of its initial system and the proposed construction.

The primary disadvantage of this option is the overall construction cost. Aside from the treatment fee established by Russiaville, New London would bear all the cost to construct a line running approximately 1.5 miles away. This is in addition to the costs the residents are already paying for bonds issued for the construction of its current collection and treatment system.

System Map

The Russiaville pumping route alignment is shown on Figure No. 5-1 This alternative will utilize the existing pump stations and redirect the flow from the North Pump Station to the South Pump Station. The South Pump Station structure will be utilized to pump the flows to Russiaville. The pumps in both stations will need to be replaced to meet the new head conditions. Figure 5-2 provides a schematic of the existing flow direction and the proposed flow for Alternative 1.

Environmental Impacts

As previously indicated in Chapter 2, a majority of the construction will take place within previously disturbed county road right of way. The force mains will be installed in road right of way using trenching, which will minimize surface disturbances. The trench width will be 2 feet or less.

There are several historical structures within New London and Russiaville, however, based on the information available, it appears that there are no known architectural or archeological sites within the project area that will be adversely affected.

There are no stream crossings associated with the proposed force main route.

Groundwater supplies, sole source aquifers, and drinking water supplies will not be negatively impacted by this project. The depth to seasonal high groundwater is greater than 4 feet at the proposed construction sites. If dewatering is required, dewatering flows will be settled prior to discharge, and will not introduce solids to the surface waters.

The proposed force main routing will not impact floodplains or wetlands.
The preliminary force main route from New London to Russiaville is along County Road right of way. The project will not cause a conversion of prime farmland from crop production to non-agricultural uses.

The area is in compliance with ozone and other airborne pollutants, and this project will not introduce any additional pollutants into the atmosphere.

Open space and recreational opportunities will not be affected by the construction or the operation of the proposed project.

There are no classified lands (monuments, landmarks, wild/scenic rivers, wilderness areas, state/national parks, reservations, recreational areas, or Lake Michigan Coastal Zone) located in the project area.

Land Requirements

It is the intent to directionally drill the force main in County Road Right of Way. Temporary construction easements may be required from some property owners along the force main route.

Potential Construction Problems

The main potential construction problems for this alternative are the possibility of conflicts with other utilities in the County Road Right of Way or the potential for bedrock. These potential problems will be mitigated by the use of soil borings and utility locates during design.

Sustainability Considerations

Energy efficiencies may be obtained by utilizing variable frequency drives on the lift station pumps. The largest energy savings will be realized by eliminating the wastewater treatment plant and the associated energy demand.

Cost Estimate

The estimated construction cost for regionalization with Russiaville is included in Table 5-1. The total estimated construction cost includes an estimated of 25% for non-construction costs. An estimated O&M cost table is included in Table 5-2.

TABLE 5-1
REGIONALIZATION WITH RUSSIAVILLE
CONSTRUCTION COST ESTIMATE

ITEM No.	ITEM	UNIT	QUANTITY	UNIT PRICE	TOTAL PRICE
1	New 6" Sewer Forcemain (HDD)	LF	7,350	$50	$367,500
2	Air Release Valve & Structure	EA	7	$7,000	$49,000
3	Sanitary Manhole	EA	1	$7,000	$7,000
4	Manhole Lining	VF	20	$400	$8,000
5	Existing Force Main Piping Modifications	LS	1	$20,000	$20,000
6	South Lift Station Improvements	LS	1	$40,000	$40,000
7	North Lift Station Improvements	LS	1	$20,000	$20,000
8	WWTP Abandonment	LS	1	$60,000	$60,000
9	Maintenance of Traffic	LS	1	$30,000	$30,000
10	Erosion and Sediment Control	LS	1	$20,000	$20,000
11	Tree Removal	EA	1	$2,000	$2,000
12	Restoration	LS	1	$30,000	$30,000
13	Mobilization / Demobilization (Max. 5% of Bid)	LS	1	$25,000	$25,000

TOTAL	$678,500
Contingencies	$67,850
Construction Subtotal	**$746,350**
Engineering	$99,500
Legal/Financial	$60,800
Grant Administration	$53,000
Total Project	**$959,650**

TABLE 5-2
REGIONALIZATION WITH RUSSIAVILLE
O, M & R COST ESTIMATE

Power/Energy (Cost based on $0.08/kWhr)				
Item	***Description***	***Horsepower***	***Est. Run Time (hrs/yr)***	***Annual Cost***
1	Pump Stations - Power	3.5	1600	$340
			Subtotal	***$340***
Labor Costs				
Item	***Description***	***Time (hrs/year)***	***Unit Cost (per hour)***	***Annual Cost***
1	Lift Station Pump Repairs	160	$40	$6,400
2	Pipe Repairs	60	$25	$2,400
			Subtotal	***$8,800***
Materials/Supplies Costs				
Item	***Description***			***Annual Cost***
1	Generator Fuel			$500
2	Lift Station Parts			$1,000
			Subtotal	***$1,500***
Administrative Costs				
Item	***Description***			***Annual Cost***
1	Costs Billing, Accounting, Insurance, Taxes, etc.			$5,000
			Subtotal	***$5,000***
Repairs/Outside Services				
Item	***Description***			***Annual Cost***
1	Generator Servicing			$500
2	Russiaville Treatment Costs			$26,200
			Subtotal	***$26,700***
Replacement Costs				
Item	***Description***	***Useful Life in Years***	***Present Cost***	***Annual Cost***
1	Lift Station No. 1 Pump	10	$15,000	$1,500
2	Lift Station No. 2 Pump	10	$10,000	$1,000
3	Generator	20	$35,000	$1,750
			Subtotal	***$4,250***
			TOTAL ANNUAL OM&R COSTS (Rounded)	***$46,600***

Alternative No. 2 – Replacement of the Existing WWTP

Description

Instead of transporting wastewater to Russiaville for treatment, Alternative No. 2 proposes construction of a new treatment plant with extend aeration treatment to replace the existing plant. The proposed plant will utilize the activated sludge process for wastewater treatment. Process comprises a single structure, concrete packaged plant, divided into different treatment sections, which includes a bar screen selector tank, aeration chamber, surge tank clarification chamber, disinfection system, and digester.

The treatment process generally has raw wastewater flowing through an influent screen to remove any large inorganic solids and then into the aeration chamber. After a set amount of time in the aeration chamber, the wastewater flows into the clarification chamber. After solids are allowed to settle in the clarifier, the treated wastewater is discharged into a disinfection system and finally out to the receiving stream. Excess solids that settle in the clarifier are pumped to the digester, where they are aerated. When digester tank is at capacity, the solids are pumped to a dewatering system and either land applied or landfilled.

Because the existing plant will need to remain in service during construction, a complete new plant will be required for the replacement. The new plant will be located adjacent to the existing treatment plant.

Design Criteria

The WWTP design parameters are required to meet *Ten State Standards*. Aeration and clarifier chamber dimensions will be determined based on the anticipated loadings and discharge limits, respectively.

The discharge limits for the plant would be the same as the existing NPDES permit. However, with the construction of a new plant, phosphorous removal may be required.

Advantages/Disadvantage

The primary advantages of New London constructing a new mechanical treatment plant is that Russiaville will not be giving up capacity at their plant for the customers in New London. Packaged plant equipment is pre-manufactured and installed in a single compartmentalized tank, simplifying the installation and reducing the over-all footprint. This process is also well established and well known by local operators.

The primary disadvantage of mechanical treatment for a small community is the high annual operation and maintenance cost. Another consideration is the need for a skilled

operator. The facility is required to be checked on a daily basis to ensure that the equipment is functioning properly. The operator in Russiaville is currently performing this function at no charge to the residents of New London. In the future, Russiaville will have to start charging for the operator's time.

-

System Map

A process flow schematic for a typical WWTP with Extended Aeration Treatment is shown in Figure No. 5-3. Significant steps in the treatment process are shown starting from the screening of plant influent to final sludge disposal. Figure No. 5-4 shows the actual plant layout at the proposed site.

Environmental Impacts

For this option, all of the construction will take place at the previously disturbed site of the existing WWTP.

While there are several historical structures within New London, based on the information available, it appears that there are no known architectural or archeological sites within the project area that will be adversely affected.

Groundwater supplies, sole source aquifers, and drinking water supplies will not be negatively impacted by this project. The depth to seasonal high groundwater is greater than 4 feet at the proposed construction site. If dewatering is required, dewatering flows will be settled prior to discharge, and will not introduce solids to the surface waters.

Construction at the WWTP will not impact floodplains or wetlands, nor will it cause a conversion of prime farmland from crop production to non-agricultural uses.

The area is in compliance with ozone and other airborne pollutants, and this project will not introduce any additional pollutants into the atmosphere.

Open space and recreational opportunities will not be affected by the construction or the operation of the proposed project.

There are no classified lands (monuments, landmarks, wild/scenic rivers, wilderness areas, state/national parks, reservations, recreational areas, or Lake Michigan Coastal Zone) located in the project area.

Land Requirements

Land is available at the current WWTP site, and additional property will not be required.

Potential Construction Problems

The existing WWTP will need to be kept in operation during construction.

Sustainability Considerations

Energy efficiencies may be obtained by utilizing variable frequency drives on the lift station pumps. The largest energy savings will be realized by eliminating obsolete equipment and replacing it with new, higher efficiency equipment.

Cost Estimate

The construction costs for the alternative is included in Table 5-3. The estimated construction cost includes the replacement treatment plant. Also included in the table is non-construction cost, which is estimated as 25% of total construction cost. The anticipated operation, maintenance, and replacement costs are included in Table 5-4.

TABLE 5-3
WASTEWATER TREATMENT PLANT REPLACEMENT
CONSTRUCTION COST ESTIMATE

Item	Quantity	Unit	Unit Price	Total Price
Excavation	1100	CY	$25	$27,500
Granular Backfill	100	CY	$25	$2,500
Treatment Plant Concrete	138	CY	$800	$110,400
Treatment Plant Equipment	1	LS	$180,000	$180,000
Equipment Installation	1	LS	$144,000	$144,000
Site Piping	1	LS	$20,000	$20,000
Electrical Modifications	1	LS	$20,000	$20,000
Demolition of Existing	1	LS	$40,000	$40,000
Site Restoration	1	LS	$20,000	$20,000
Mobilization/Demobilization	1	LS	$28,200	$28,200
Sub-Total				$592,600
Contingencies (10%)				$59,260
Total Estimated Construction				$651,860
Non-Construction (25%)				$169,484
Grant Administration				$53,000
Estimated Total Project (Rounded)				$875,000

TABLE 5-4
WASTEWATER TREATMENT PLANT REPLACEMENT
O, M & R COST ESTIMATE

Power/Energy (Cost based on $0.08/kWhr)				
Item	*Description*	*Horsepower*	*Est. Run Time (hrs/yr)*	*Annual Cost*
1	Power	14.75	8760	$7,708
			Subtotal	*$7,708*
Labor Costs				
Item	*Description*	*Time (hrs/year)*	*Unit Cost (per hour)*	*Annual Cost*
1	System Certified Operator (8hrs per week)	416	$40	$16,640.00
			Subtotal	*$16,640*
Materials/Supplies Costs				
Item	*Description*			*Annual Cost*
1	Chemicals/Testing			$1,500
			Subtotal	*$1,500*
Administrative Costs				
Item	*Description*			*Annual Cost*
1	Costs Billing, Accounting, Insurance, Taxes, etc.			$6,000
			Subtotal	*$6,000*
Repairs/Outside Services				
Item	*Description*			*Annual Cost*
1	Generator Servicing			$1,000
2	Equipment Repairs			$4,000
3	Screenings Disposal			$1,000
4	Sludge Disposal			$2,000
			Subtotal	*$8,000*
Replacement Costs				
Item	*Description*	*Useful Life in Years*	*Present Cost*	*Annual Cost*
1	Treatment Equipment (Blowers and Controls)	15	$106,000	$7,067
2	Treatment Equipment (Compressor & Drain, Submersible Pump)	10	$15,000	$1,500
3	Chemical Feed Equipment	30	$25,000	$833
4	Flow Meters	20	$5,000	$250
5	Well Pump	15	$1,000	$67
6	Emergency Generator	30	$60,000	$2,000
			Subtotal	*$11,717*
			TOTAL ANNUAL OM&R COSTS (Rounded)	*$51,600*

Alternative No. 3 – Rehabilitation of the Existing Plant

Description

This alternative is not a feasible alternative. The structure of the existing plant is rusting and has been repaired numerous times. It has outlived its useful life and is in danger of causing illegal discharges. A new containment structure, in addition to interior equipment is needed, resulting in the replacement of the entire plant.

CHAPTER 6 - SELECTION OF AN ALTERNATIVE

A. Present- Worth/ Life Cycle Cost Analysis

Present worth analysis provides a means to compare not only the construction cost of an alternative, but also brings future anticipated costs such as operation and maintenance to today's dollars. Non-construction costs include engineering fees for design and construction observation and contract management, legal, financial, geotechnical evaluation, survey, archaeological reconnaissance, highway and railroad permitting, and preparation of operations and maintenance manuals are also incorporated into present worth calculations for feasible waste water collection and treatment system alternatives.

It should be noted that the cost estimates are preliminary in nature and are presented to determine the financial feasibility of the proposed project and establish the financing requirements. The final project costs as well as user rates are dependent on the actual design and construction costs.

Table No. 6-1 provides a summary of the present worth calculations for the feasible treatment system alternatives for New London.

Based on those factors, it is recommended that New London regionalize with Russiaville for the treatment of its wastewater.

B. Non-Monetary Factors

Regionalization has the lowest present worth value. Non-monetary factors to be considered in making the final recommendation include future operation and maintenances costs and environmental aspects. Non-monetary advantages of the regionalization option include the elimination of a small wastewater treatment plant discharging to the waterways.

TABLE 6-1
NEW LONDON
PRESENT WORTH COST SUMMARY

	Construction Cost	Contingency (10%)	Non-Constr. Cost	**Total Capital Cost:**	Annual Cost (O,M&R):	Present Worth of Annual Cost:	**Total Present Worth:**
Treatment Alternatives							
Alternative No. 1 -Regionalization	$678,500.00	$67,850.00	$213,300.00	**$959,650.00**	$46,600.00	$824,200.00	**$1,783,850.00**
Alterative No. 2 - Plant Replacement	$592,600.00	$59,260.00	$222,484.00	**$875,000.00**	$51,600.00	$1912,700.00	**$1,787,700.00**

*The interest rate used for determining the present worth is 1.2%, which is the "real" federal discount rate for 2016 as determined from Appendix C** of the Office of Management and Budget (OMB) Circular A-94 as recommended by RUS Bulletin 1780-3. The term used is 20 years.
**https://www.whitehouse.gov/omb/circulars_a094/a94_appx-c

Salvage Values are presumed to be zero for both alternates. While there will be remaining life on the piping and lift station structures in Alternative 1 at the end of 20 years, it is unlikely that anybody would go to the effort of trying to salvage the materials. It is more likely that the pipe and structures will be abandoned in place. The same argument can be made for the structures in Alternative 2. The mechanical equipment in Alternative 2 will have a life less than 20 years and will have no inherent salvage value. Equipment that has a life longer than 20 years, such as the emergency generator, has already been in use for 20 years and is not included in the cost estimate.

CHAPTER 7 - PROPOSED PROJECT (RECOMMENDED ALTERNATIVE)

A. Project Design

As described in Chapter 6, the recommended alternative for New London is to regionalize with Russiaville for the treatment of its wastewater. This alternative will redirect the flow from the North Pump Station to the South Pump Station utilizing the existing force main that currently takes the flow from the South Pump Station to the North Pump Station discharge. The pumps in the South Pump Station will be upsized and will be utilized to take all of the flows from New London to the Russiaville WWTP. A new 6" diameter force main will be directionally drilled to carry the flows from New London to Russiaville.

New pumps will be required for both the existing North and South Pump Stations in New London. Approximately 7,500 lineal feet of 6-inch diameter force main will be required to take the flows from the South Pump Station to the Russiaville Wastewater Treatment Plant. The connection point will be the existing manhole at the Russiaville WWTP. The existing wastewater treatment plant in New London will be abandoned by pumping the tanks, removing the existing equipment, cutting the underground tankage below ground surface, and burying the tanks on site.

B. Funding Options

The proposed improvements can be financed using local money, grants or loans. Loan money and grant money may be available from Rural Development. The IOCRA offers grants of up to $500,000 for qualifying communities, and a minimum ten percent match is required. This project qualifies for an IOCRA grant up to $450,000 as prescribed by the Community Development Block Grant Program through the Howard County Commissioners.

The RD also offers grants; however, RD will not accept the income survey completed for IOCRA. Based on census data, Monroe Township does not qualify for an RD grant based on income levels. Loans are available from the RD at a low interest rate for a period of up to 40 years. The process for obtaining RD money can be very time consuming and may take several years.

The State Revolving Loan Fund, through the Indiana Finance Authority, provides low interest loans for a period up to twenty years for wastewater and water facilities. The SRF may also provide grant monies to qualifying communities to "buy down" sewage rates to $75 per month. These grants and loans are provided on a first come first serve basis, but historically there has not been a problem in receiving loan funding. The grant money is obligated early in the year. Certain forms are required to be signed for SRF funding. These forms are located in Appendix G.

C. Project Schedule

The anticipated schedule for the project as follow:

Review and Approve Report by Council and County	January 2017
Hold Public Hearing	March 2017
Make Application and Submit PER to SRF and/or RD	April 2017
Submit Application to IOCRA	July 2017
Complete Environmental Review	August 2017
Plans & Spec Submittal to IDEM	February 2018
Plan & Spec Approval	April 2018
Bid Construction Contracts	May 2018
Close RD/SRF Financing	July 2018
Award Construction Contracts and Begin Construction	August 2018
Substantial Completion	April 2019
Start Up	April 2019
Final Completion	May 2019

D. Permit Requirements

The following permits are anticipated to be needed for the project:

a) IDEM Facility Construction Permit
b) Howard County Legal Drain Crossing
c) Howard County Highway Crossing and Right of Way Permit

E. Sustainability Considerations

a. *Green Infrastructure* – The project will eliminate the power requirements of the existing wastewater treatment plant and will also eliminate a discharge to the receiving stream.

F. Total Project Cost Estimate

This section identifies the total project cost summary for the selected plan, including engineering fees, administrative and legal fees, and other non-construction costs.

Table 7-1 provides the Project Cost Summary for the project. Also, **Chapter 5** and **Appendix E** of this report provide the detailed breakdowns of the construction costs.

TABLE 7-1
PROJECT COST SUMMARY

System	Cost
Construction Costs:	
Regionalization	$678,500.00
Sub-Total Construction	$678,500.00
Construction Contingency @10%	$67,850.00
Total Construction	**$746,350.00**
Non-Construction Costs:	
Engineering Fees:	
Surveying	$15,000.00
Design and Bidding	$35,000.00
Construction Administration	$12,000.00
Resident Project Representative (Inspection)	$35,000.00
Soil Borings	$2,500.00
Totals for Engineering Fees	**$99,500.00**
Administrative Fees:	
Legal and Financial	$60,800.00
Grant Administrator/Labor Standards/Environmental Review	$53,000.00
Total For Administrative Fees	**$113,800.00**
Total Project Cost (Rounded)	**$960,000.00**

G. Annual Operating Budget

a. *Income* - Income for the recommended project would be generated from monthly billing of the sewer users. Each customer's bill would include a portion for repayment of the debt and debt service reserved incurred as a result of this project. Another portion of the bill would include the cost of annual operation, maintenance and replacement of the system for this project.

b. *Operation, Maintenance and Replacement (OM&R) Costs* - Once the community has completed construction of the recommended project, there must be operation, maintenance, and periodical replacement of the investment. The following identifies the various components of the OM&R for the system.

- Power/Energy
- Labor Costs
- Materials or Supplies Costs
- Administrative Costs
- Outside Services
- Replacement Costs

The categories above are broken down in more details in the estimated annual operation, maintenance, and replacement costs for alternatives that can be found in **Chapter 5** and **Appendix F** of this report. **Tables 7-2, and 7-3** provide the Annual Replacement Costs and the Annual Operation, Maintenance and Replacement costs for the project.

TABLE 7-2
ANNUAL REPLACEMENT COST SUMMARY

Pump Stations	$2,500
Emergency Generator	$1,750
Total Annual Replacement Cost	$4,250

TABLE 7-3
ANNUAL OPERATION, MAINTENANCE AND REPLACEMENT COST SUMMARY

Power and Energy	$340
Labor	$8,800
Materials and Supplies	$1,500
Administrative	$5,000
Repairs/Outside Services	$500
Treatment Costs	$26,200
Replacement Costs	$4,250
TOTAL OM&R (Rounded)	$46.600

H. Project Financing

Table 7-4 provides the Project Financing Options. The options considered include SRF and RD as previously discussed. Both of these options include an IOCRA grant. With the exception of the IOCRA grant, additional grant funding is not included in Table 7-4. The Financial Advisor's Report, in Appendix E, provides an analysis of user rates with varying grant possibilities from SRF.

TABLE 7-4
FINANCING OPTIONS

COST SUMMARY			**Funding Entity**	
Force Main Costs (Including 10% Contingencies)		$680,350.00	IOCRA/RD/SRF	
WWTP Demolition Costs (Including 10% Contingencies)		$66,000.00	IOCRA	
Professional Fees (Engineering, Legal, Accounting, etc.)		$160,300.00	RD/SRF	
Grant Administration		$53,000.00	IOCRA	
Total Project Cost		**960,000.00**		
IOCRA Grant		**$450,000.00**		
SRF Financing			**USDA Financing**	
Proposed Amount:	$510,000.00		Proposed Amount:	$510,000.00
Interest Rate:	2.00%		Interest Rate:	2.625%
Amortizing Period:	20		Amortizing Period:	38
Grant Money:	$0.00		Grant Money:	$0.00
Bond Issue:	**$510,000.00**		**Bond Issue:**	**$510,000.00**
Debt Service:	$31,189.93		Debt Service:	$21,371.32
Debt Service Reserve (25%):	$7,797.48		Debt Service Reserve(10%):	$2,137.137
Total Debt Payment	**$38,987.41**		**Total Debt Payment**	**$23,508.46**
ANNUAL O,M&R COSTS:	**$46,600.00**			
(Operation, Maintenance & Replacement Costs)				
USER RATE ESTIMATE				
No. of EDU's or Conn. 58				
	SRF	**USDA**		
Total Monthly Payment:	$122.97	$100.73		

TABLE 7-5
SRF PROJECT FINANCE SHEET

Project Cost Summary	
Collection/Transportation System	$500,500
Treatment System Costs (Plant Demolition)	$60,000
Non-Point-Source Costs	$0
Sub Total Construction	$560,500
Contingencies	$56,050
Non-Construction Cost	$213,400
Total Project Cost	$830,000
Total Ineligible – SRF	$113,000
Other Funding Sources (IOCRA)	$450,000
Total SRF Loan Amount	$380,000

Financial Advisor

Contact: Steve Brock

Firm: Therber, Brock & Associates

Telephone # (include area code): (317) 457-5680

Fax: (317) 686-9102

E-mail Address: stevenkbrock@aol.com

Bond Counsel

Contact: Jerimi Ullom

Firm: Barnes and Thornburg

Telephone # (include area code): (317) 231-7739

Fax: (317) 231-7433

E-mail: jerimi.ullom@btlaw.com

CHAPTER 8

PUBLIC PARTICIPATION

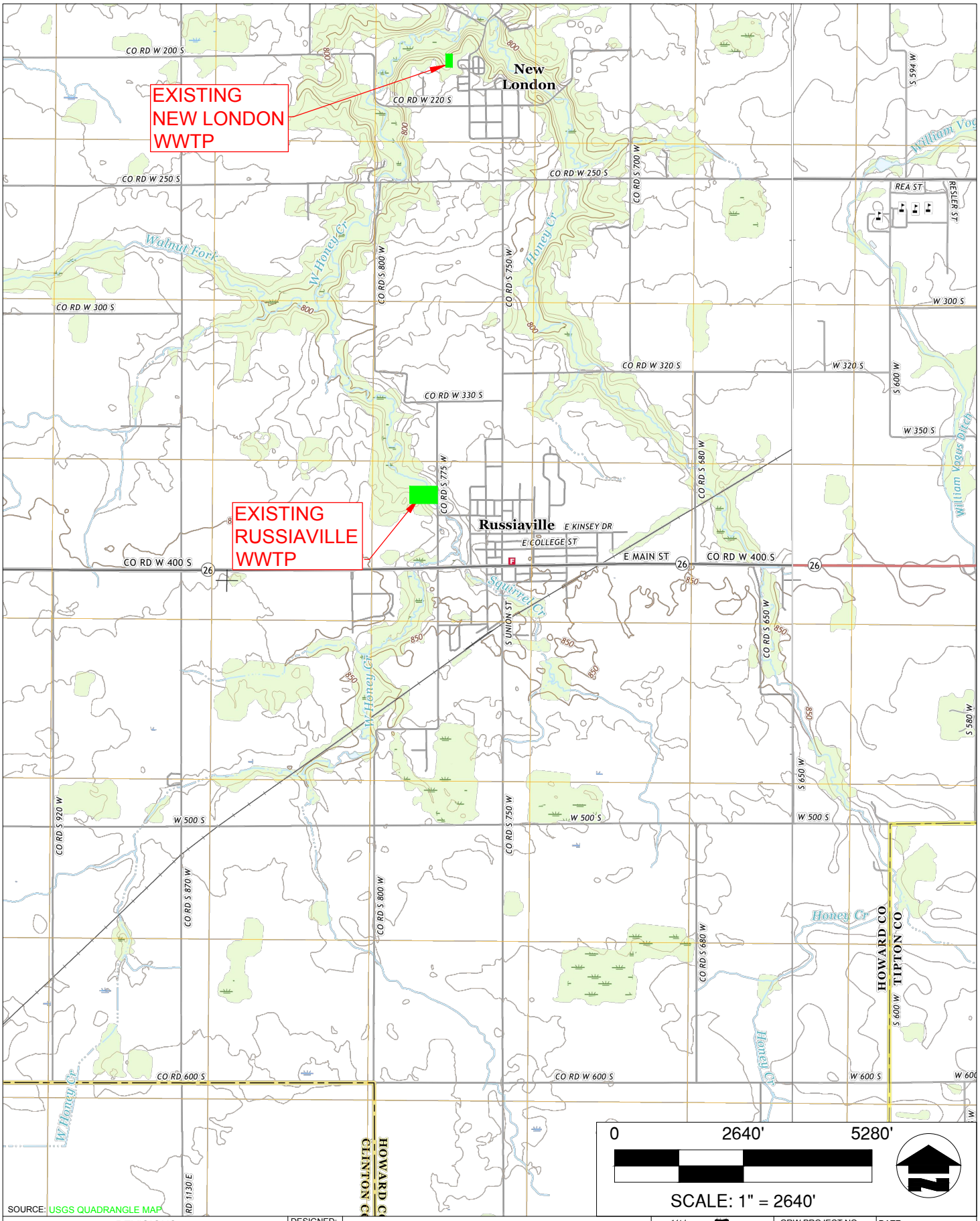
8.0 Public Meeting

In accordance with IOCRA Requirements, the Town of Russiaville held a public hearing on April 17, 2017 after review and approval of the Wastewater System Preliminary Engineering Report by IOCRA.

Following the public hearing, the hearing record will be kept open for a period of 5 days to accept additional written comments. No written comments were received.

A copy of the Legal Notice, Publisher's Affidavit, Attendance List, Project Summary handout and transcript is provided in **Appendix B.**

EXHIBIT A
FIGURES



SOURCE: USGS QUADRANGLE MAP

0 2640' 5280'

SCALE: 1" = 2640'

REVISIONS			
NO.	DESCRIPTION	DATE	BY

SCALE CHECK: THIS MARK SHOULD MEASURE EXACTLY 1/2" WHEN PLOTTED

DESIGNED: JPT
DRAWN: JAJ
REVIEWED: EM
APPROVED: JPT

USGS TOPOGRAPHIC MAP

PRELIM. ENGINEERING REPORT
FOR NEW LONDON WWTP
HOWARD COUNTY, INDIANA

HomeTown Engineering, LLC
5610 UNIVERSITY AVENUE
INDIANAPOLIS, IN 46219
PH: (317) 780-8805 CELL: (317) 213-3961
E-mail: hometowneng@iquest.net

GRW PROJECT NO. 4568
CLIENT PROJECT NO.
DATE: NOV. 2016
SCALE: 1"=2640' (0.5 MI.)

FIGURE NO. 2-1

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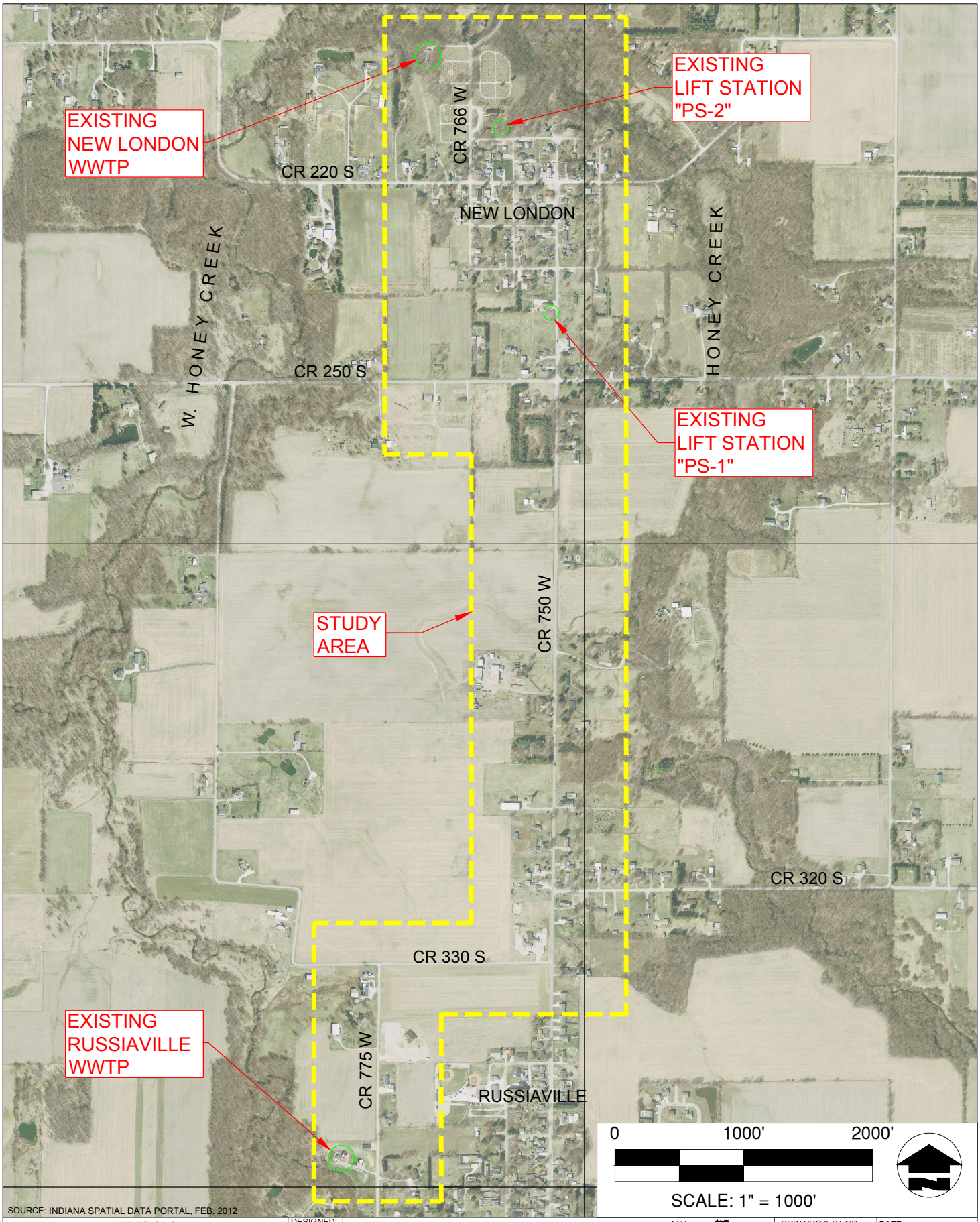

SOURCE: INDIANA SPATIAL DATA PORTAL, FEB. 2012

REVISIONS			
NO.	DESCRIPTION	DATE	BY

SCALE CHECK: THIS MARK SHOULD MEASURE EXACTLY 1/2" WHEN PLOTTED

DESIGNED: JPT
DRAWN: JAJ
REVIEWED: EM
APPROVED: JPT

COMMUNITY / STUDY AREA MAP

PRELIM. ENGINEERING REPORT
FOR NEW LONDON WWTP
HOWARD COUNTY, INDIANA

HomeTown Engineering, LLC
5610 UNIVERSITY AVENUE
INDIANAPOLIS, IN 46219
PH: (317) 780-8805 CELL: (317) 213-3961
E-mail: hometowneng@iquest.net

GRW PROJECT NO. 4568
CLIENT PROJECT NO.
DATE: NOV. 2016
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FIGURE NO. 2-2

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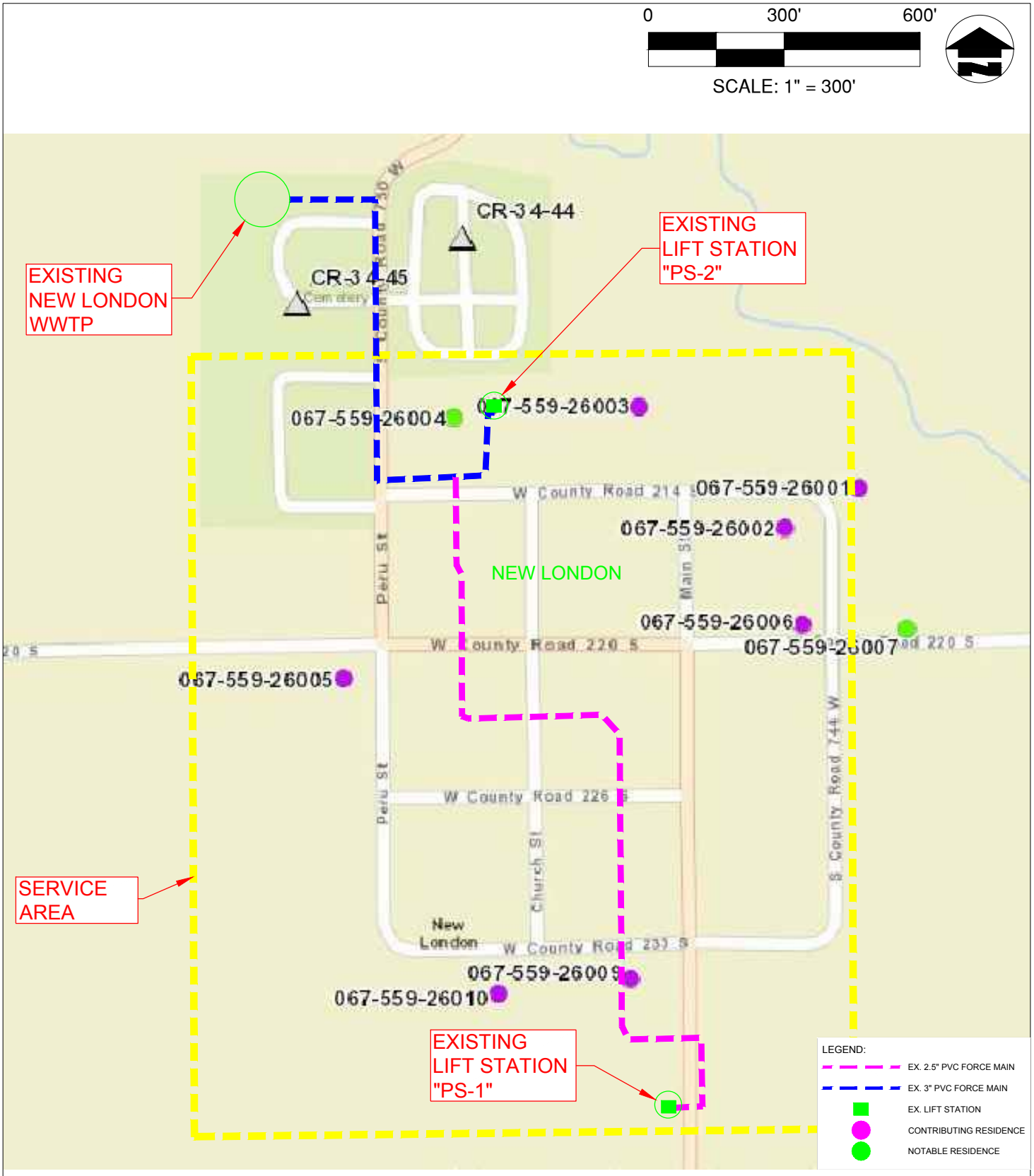

SOURCE: IDNR SHAARD GIS MAP

REVISIONS			
NO.	DESCRIPTION	DATE	BY

SCALE CHECK: THIS MARK SHOULD MEASURE EXACTLY 1/2" WHEN PLOTTED

DESIGNED: JPT
DRAWN: JAJ
REVIEWED: EM
APPROVED: JPT

IDNR SHAARD HISTORIC STRUCT.
NEW LONDON, IN
PRELIM. ENGINEERING REPORT
FOR NEW LONDON WWTP
HOWARD COUNTY, INDIANA

HomeTown Engineering, LLC
5610 UNIVERSITY AVENUE
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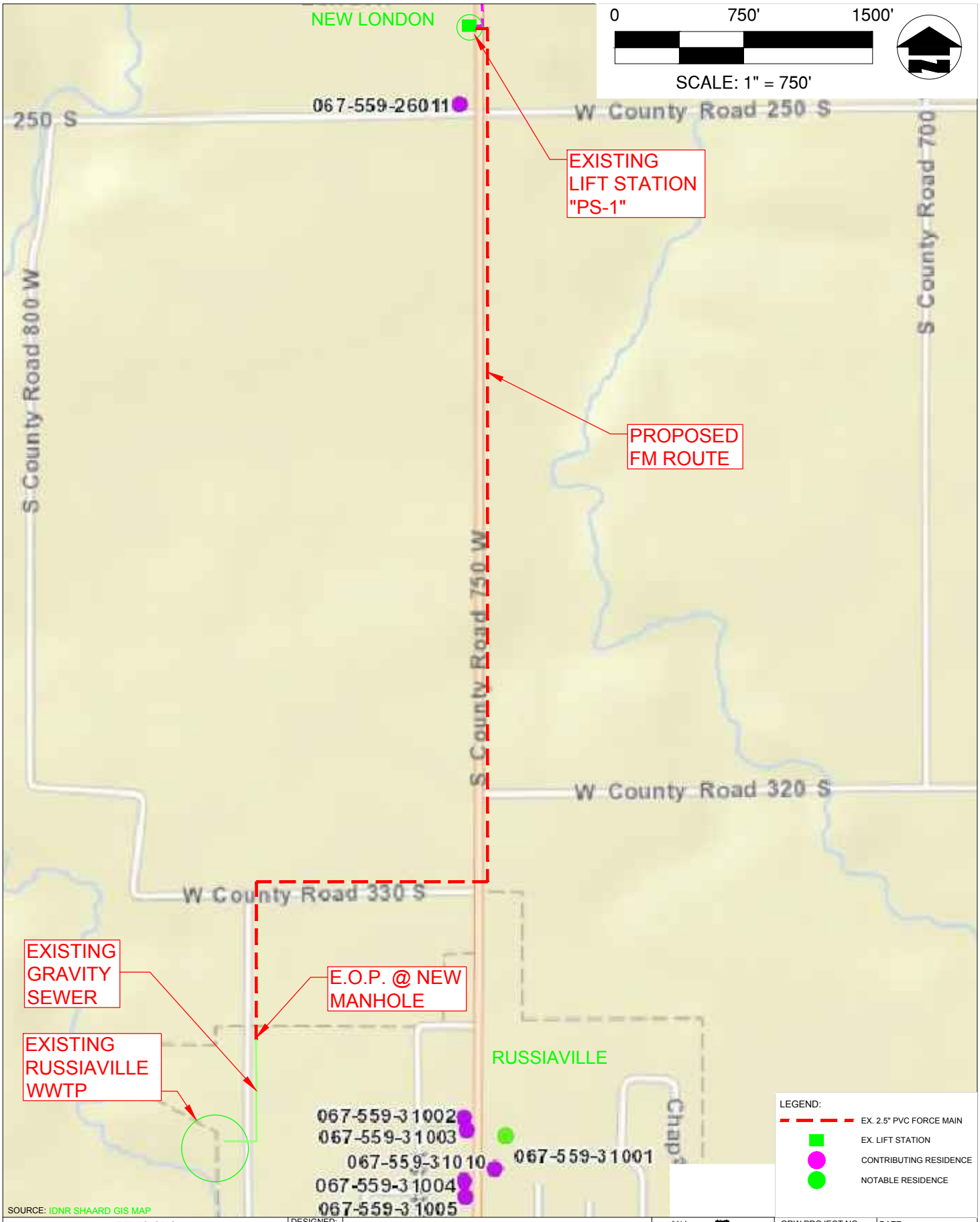
GRW PROJECT NO. 4568
CLIENT PROJECT NO.
DATE: NOV. 2016
SCALE: 1" = 300'
FIGURE NO. 2-3

FILE NAME: G:\4568-New London\Reports and Manuals\4568 Resource Maps.dwg



SOURCE: IDNR SHAARD GIS MAP

REVISIONS			
NO.	DESCRIPTION	DATE	BY

SCALE CHECK: |—— THIS MARK SHOULD MEASURE EXACTLY 1/2" WHEN PLOTTED

DESIGNED: JPT
DRAWN: JAJ
REVIEWED: EM
APPROVED: JPT

IDNR SHAARD HISTORIC STRUCT.
FORCEMAIN ROUTE
PRELIM. ENGINEERING REPORT
FOR NEW LONDON WWTP
HOWARD COUNTY, INDIANA

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E-mail: hometowneng@iquest.net

GRW PROJECT NO. 4568
CLIENT PROJECT NO.
DATE: Rev. Feb. 2018
SCALE: 1" = 750'
FIGURE NO. 2-4

FILE NAME: G:\4568-New London\Reports and Manuals\4568 Resource Maps.dwg