



# North Side Regional Lift Station and Force Main Improvements

## Preliminary Engineering Report

City of West Lafayette, Indiana  
Wastewater Treatment Utility

June 2012



**GREELEY AND HANSEN**



*Joseph M. Teusch*  
Seal Affixed  
June 15, 2012

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## Section 1 Project Location

### 1.1 Project Location

**Figure 1-1** shows the project location in the West Lafayette Quadrangle Sections 1 and 6, Township 23 North, Ranges 4 and 5 West of Tippecanoe County. The proposed North Side Regional Lift Station (NSRLS) and service area is shown on **Figure 1-2**.

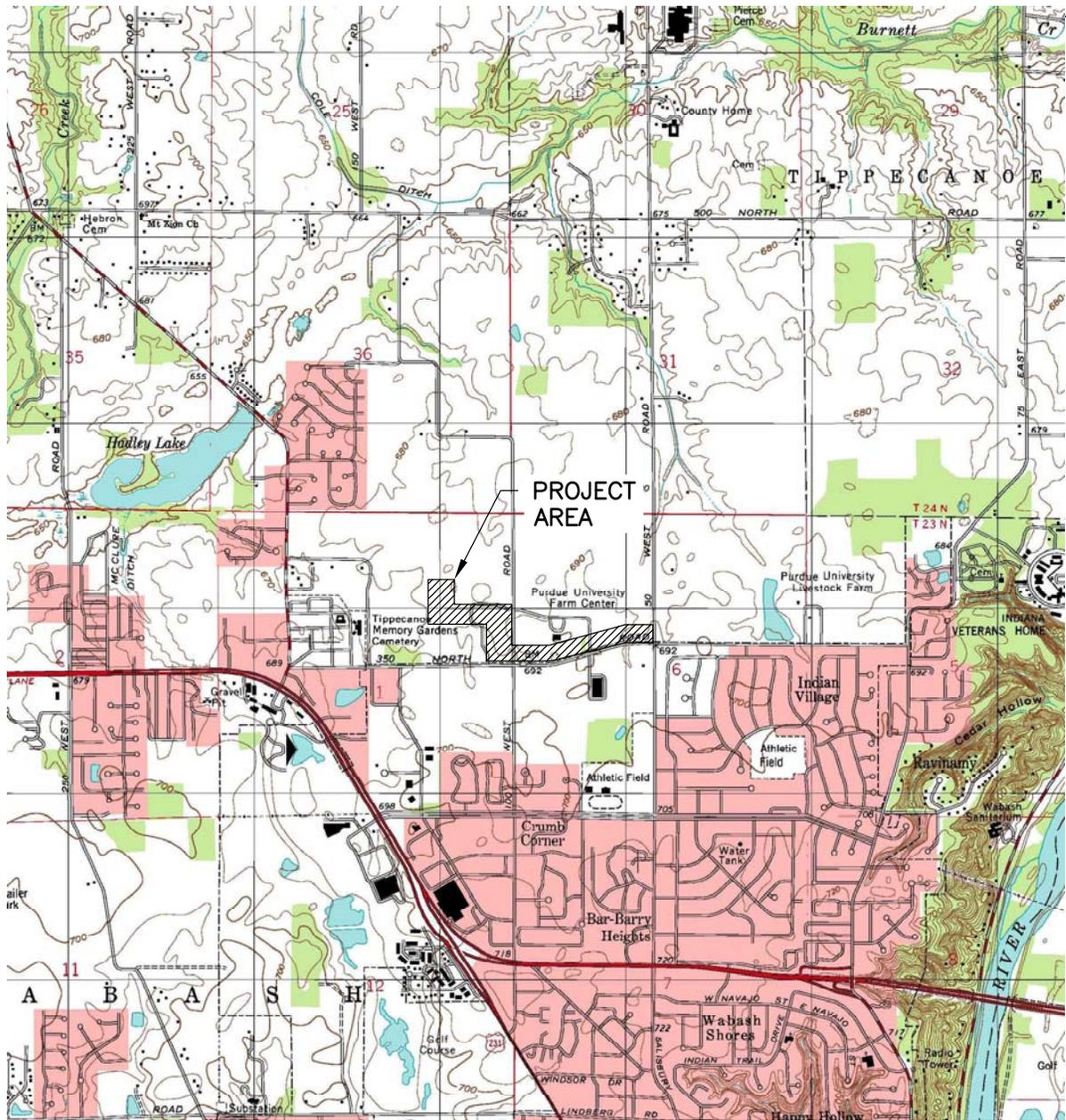
### 1.2 Background

In August 2006, the City of West Lafayette annexed 1,173 acres north of the city limits. The annexed land is north of Kalberer Road and includes the Purdue Research Foundation (PRF) business park Phases III and IV, Prophet's Ridge and Lauren Lakes subdivisions, and other undeveloped land zoned for residential development.

### 1.3 Project Description

The proposed project will provide a wastewater lift station and force main to serve this area so that less desirable septic systems are not installed. The lift station would be designed to facilitate phased construction to more efficiently and effectively convey near-term and ultimate development wastewater flow rates.

The proposed lift station and force main will be constructed on platted property within the Purdue Research Foundation business park and within existing road right-of-way.

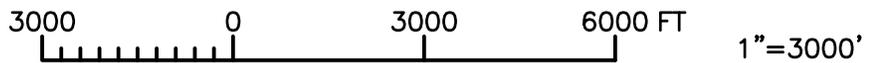


**LEGEND**

 - PROJECT AREA

**PROJECT LOCATION**

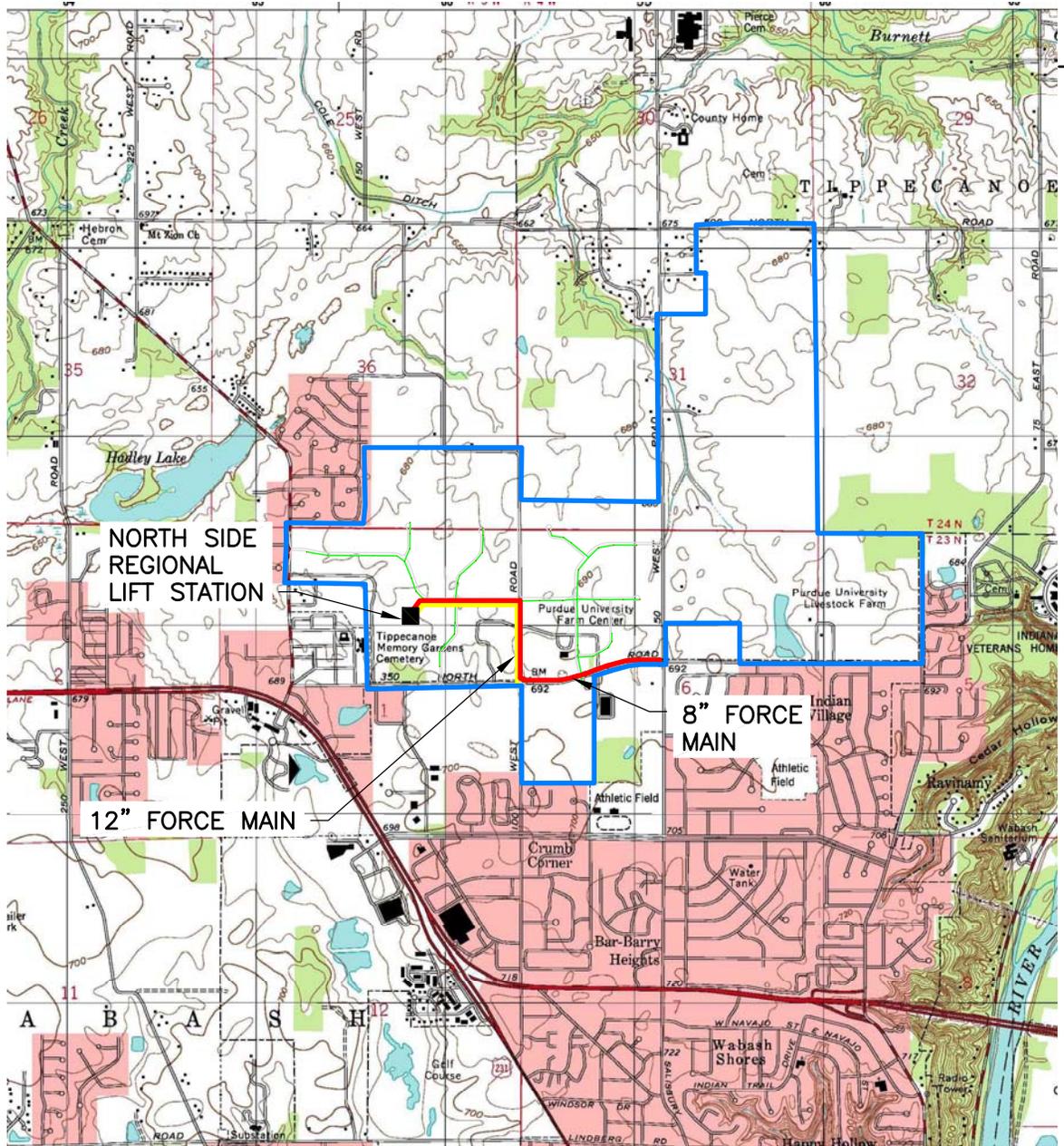
SCALE: 1"=3000'



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NORTH SIDE REGIONAL LIFT STATION  
AND FORCE MAIN IMPROVEMENTS

FIGURE 1-2



**LEGEND**

- - 8" FORCE MAIN
- - 12" FORCE MAIN
- - STUDY AREA
- - LIFT STATION

**STUDY AREA**

SCALE: 1"=3000'



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## Section 2 Current Situation

### 2.1 Wastewater Facilities

The wastewater collection system consists of both combined sewers and separate sanitary sewers. **Figure 2-1** shows the existing sewer service area.

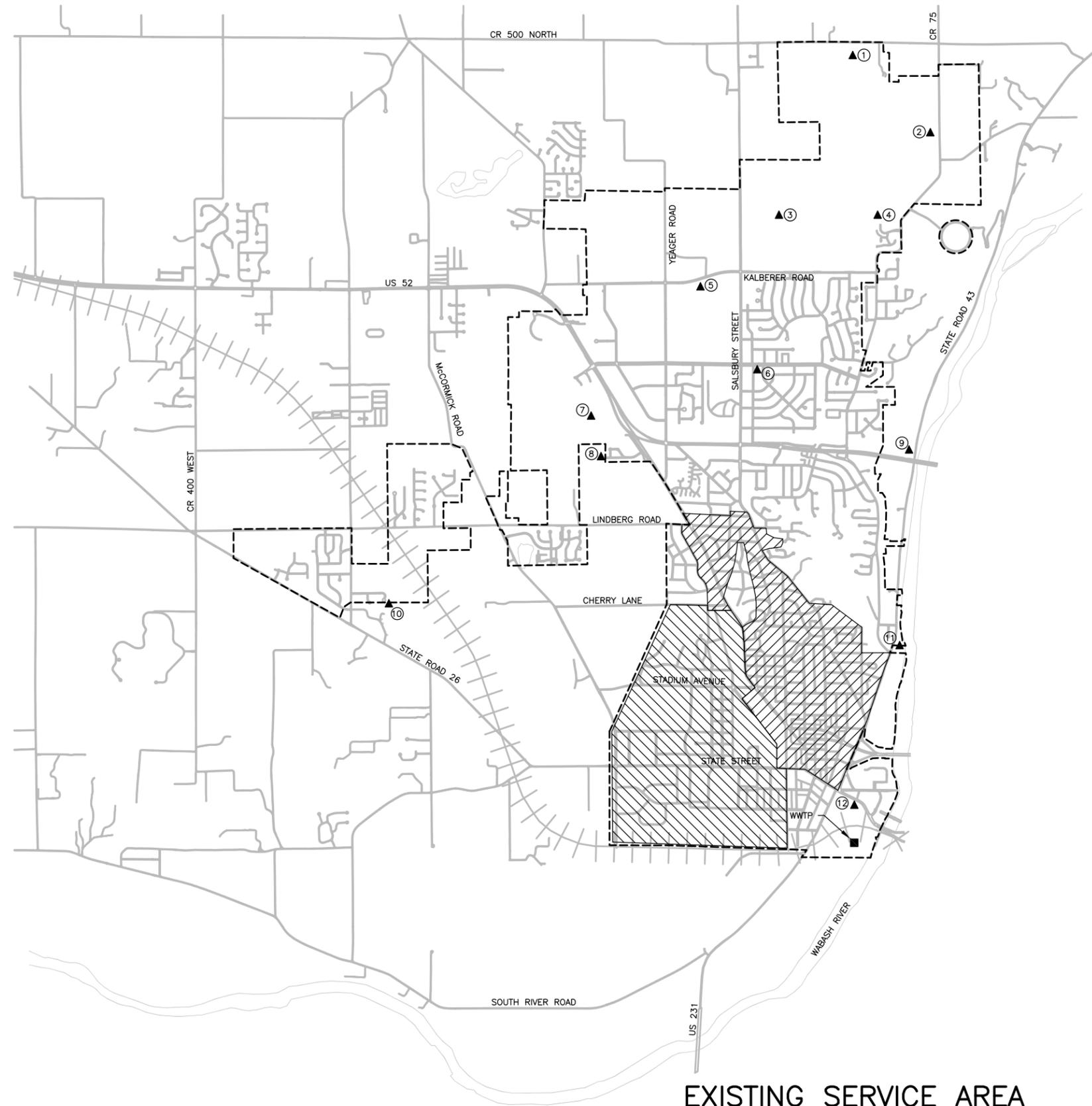
In general, the service area north of Lindberg Road and east of Salisbury Street are served by the North River Road Interceptor and Happy Hollow Interceptor. These interceptor sewers discharge to the North River Road Lift Station. The flow is pumped to the River Road Interceptor (combined sewer) upstream of the Dehart Street and North River Road intersection.

The service area south of Lindberg Road, between Northwestern Avenue and Salisbury Street, is served by combined sewers. The exception is the Hills and Dales neighborhood which is served by separate sanitary sewers. Flow from this area enters the River Road Interceptor (combined sewer) at the Dehart Street intersection.

Wastewater from Purdue University is also tributary to the River Road Interceptor (combined sewer) with connections to the West Lafayette sewer system at Quincy Street, Wood Street and Williams Street intersections.

**Table 2-1** contains a listing of West Lafayette's twelve (12) lift stations and related pumping capacities. There are four permitted discharges to the Wabash River, including the plant outfall, wet weather treatment facility, and combined sewer overflow (CSO) outfalls at Dehart Street and Quincy Street. **Figure 2-2** shows the major wastewater conveyance systems and CSO outfalls.

The wastewater treatment plant is a Class IV secondary treatment facility with a design annual average flow capacity of 9.0 million gallons per day (mgd) and a peak flow capacity of 22.5 mgd. Flows above 22.5 mgd are screened and conveyed to the wet weather treatment facility which includes a 500,000-gallon rectangular storage basin and sodium hypochlorite disinfection and

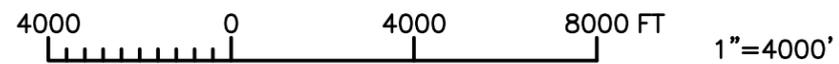


**LEGEND**

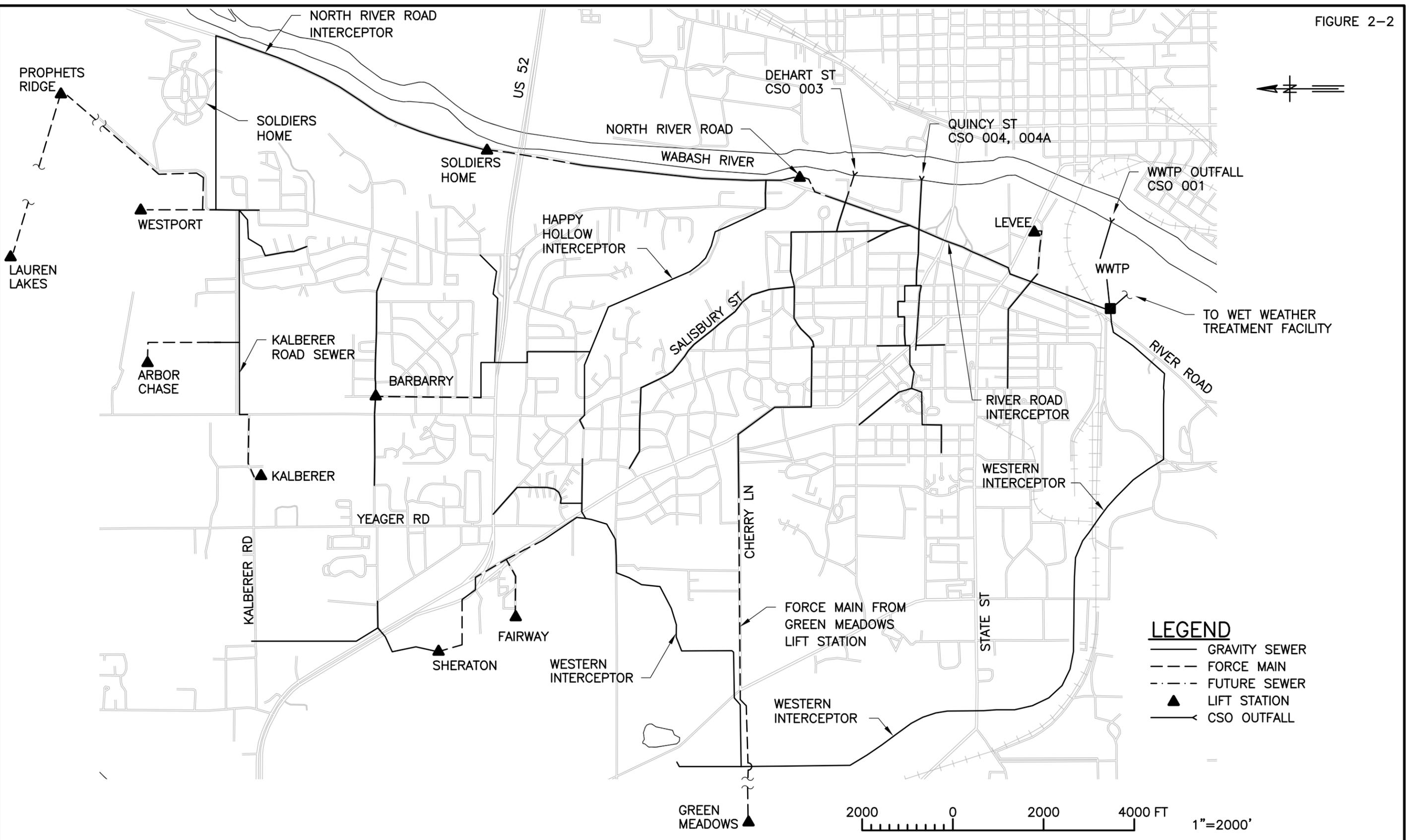
- EXISTING SERVICE AREA
- COMBINED SEWER AREA
- PURDUE SEWERS
- ▲ LIFT STATION
- ① LAUREN LAKES
- ② PROPHETS RIDGE
- ③ ARBOR CHASE
- ④ WESPORT
- ⑤ KALBERER
- ⑥ BARBARRY HEIGHTS
- ⑦ SHERATON
- ⑧ FAIRWAY
- ⑨ SOLDIERS HOME
- ⑩ GREEN MEADOWS
- ⑪ NORTH RIVER ROAD
- ⑫ LEVEE

**EXISTING SERVICE AREA**

SCALE: 1"=4000'



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- LEGEND**
- GRAVITY SEWER
  - - - FORCE MAIN
  - · - · FUTURE SEWER
  - ▲ LIFT STATION
  - CSO OUTFALL

2000 0 2000 4000 FT  
1"=2000'



**EXISTING WASTEWATER CONVEYANCE FACILITIES**  
SCALE: 1"=2000'

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sodium bisulfite dechlorination. The wet weather treatment facility has a design hydraulic capacity of 42 mgd with a peak hydraulic capacity of 113.5 mgd.

**Table 2-1  
Lift Station Design Summary**

<u>Lift Station</u>	<u>No. of Pumps</u>	<u>Capacity</u>	
		<u>Each Pump (gpm)</u>	<u>Firm (gpm)</u>
North River Road	4	2,400	7,200
Barbarry Heights	3	790	1,580
Fairway Knolls	2	350	350
Soldiers Home	2	1,600	1,600
Sheraton	2	740	740
Green Meadows	2	2,300	2,300
Westport	2	210	210
Levee	2	795	795
Kalberer Road	2	350	350
Prophet's Ridge	2	409/950 <sup>(1)</sup>	409/950
Arbor Chase	2	300 <sup>(2)</sup>	300
Lauren Lakes	2	344/527 <sup>(3)</sup>	344/527

<sup>(1)</sup> The initial and ultimate design capacities are 409 gpm and 950 gpm, respectively.

<sup>(2)</sup> The design capacity of the lift station includes the 45 acres of undeveloped land west of the Estates of Arbor Chase subdivision.

<sup>(3)</sup> The initial and ultimate design capacities are 344 gpm and 527 gpm, respectively.

## 2.2 Estimated Sewer Flows

Estimated sewer flows are based on flow data provided by utility staff and information from recent system-wide temporary flow monitoring for the CSO Long-Term Control Plan Update. Estimated wastewater flows to key interceptor sewers and lift stations are as follows:

**Table 2-2  
Estimated Sewer Flows**

<u>Item Description</u>	<u>Average Day (mgd)</u>	<u>Peak (mgd)</u>
Kalberer Road Sewer	0.35	1.40
North River Road Interceptor – <i>at Soliders Home Lift Station</i>	0.40	1.50
North River Road Interceptor – <i>at NRR Lift Station</i>	1.70	6.70

<sup>(1)</sup> Taken from Wastewater Collection System Master Plan Update, Greeley and Hansen, 2009.

## 2.3 Sewer and Lift Station Capacities

The capacities of existing sewers, interceptors and lift stations are shown below:

**Table 2-3  
Sewer and Lift Station Capacities**

<u>Item Description</u>	<u>Pipe Size (in)</u>	<u>Pipe Slope (%)</u>	<u>Capacity (mgd)</u>
Kalberer Road Sewer	24	0.08	4.1
North River Road Interceptor	24	0.08	4.1
Soldiers Home Lift Station	--	--	4.1
North River Road Lift Station	--	--	10.4 <sup>(1)</sup>

<sup>(1)</sup> Firm pumping capacity based upon largest pump out of service.

## 2.4 Sewer Capacity Observations

A comparison of estimated sewer flows to existing sewer capacity shows reserve capacity available to serve the proposed project.

### 2.4.1 Inflow and Infiltration Reduction

In 2006, the City of West Lafayette completed a condition assessment of its North River Road Interceptor, *North River Road Interceptor Condition Assessment* (Greeley and Hansen, 2006). A project consisting of the rehabilitation of 3,000 feet of 24" sewer pipe and 14 manholes was completed in 2011.

## 2.5 Wastewater Treatment

The average influent flow to the wastewater treatment plant is approaching the annual average design flow capacity of 9.0 mgd. The current organic loading rates relative to BOD, TSS and Ammonia are also at their respective design loadings rates. Despite this, the wastewater treatment plant continues to perform very well meeting all effluent permit limitations.

The City has begun construction on improvements to the wastewater treatment plant that will increase the annual average capacity from 9.0 mgd to 10.5 mgd. The project is scheduled to be substantially completed by December 2012.

## Section 3 Future Situation

### 3.1 Service Area

**Figure 3-1** shows the study area where much of the future growth and development is anticipated. The study area consists of approximately 432 acres of land zoned for general business and 354 acres zoned for residential development.

### 3.2 Estimated Wastewater Flow

**Table 3-1** shows the estimated wastewater flow from build-out of the study area.

**Table 3-1  
Estimated Wastewater Flows**

<u>Area<sup>(1)</sup></u>	<u>Gross Area (acres)</u>	<u>Land Use (Type)</u>	<u>Population<sup>(2)</sup> (capita)</u>	<u>Average Flow<sup>(3)</sup> (gpd)</u>	<u>Peak Flow<sup>(4)</sup> (gpd)</u>
A	432	Business	--	640,000	2,300,000
B	<u>354</u>	Residential	<u>2,689</u>	<u>330,000</u>	<u>1,130,000</u>
	786		2,689	970,000	2,900,000

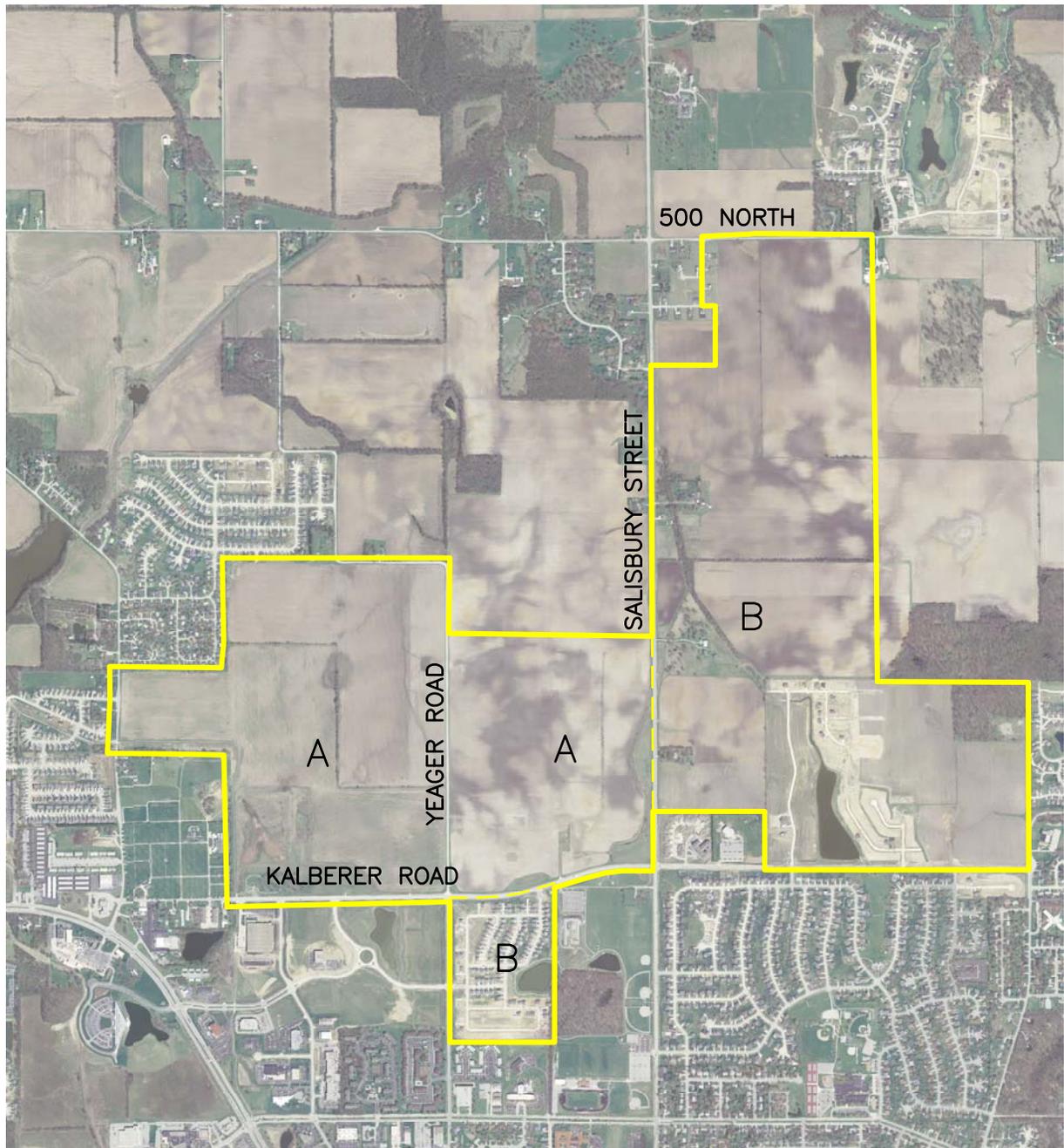
<sup>(1)</sup> From Figure 3-1.

<sup>(2)</sup> Gross acres x 70 percent development rate x 3.5 units per net acre x 3.1 residents per home.

<sup>(3)</sup> For Residential → Population multiplied by 80 gallons per person per day + 250 gpd/net acre for infiltration.  
For Business → Gross acres x 85 percent development rate x 1,500 gpd/net acre + 250 gpd/net acre for infiltration.

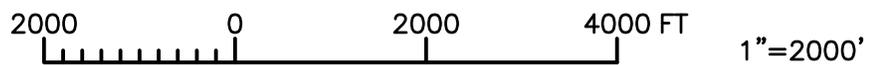
<sup>(4)</sup> Average flow x the Babbitt Peaking Factor. Note: Peak flow to the lift station is less than the sum of the projected peak flows from each tributary area

FIGURE 3-1



**FUTURE SERVICE AREA**

SCALE: 1"=2000'



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### 3.3 20-year Population and Flow Projection

Population is the most commonly used basis for estimating future water/wastewater use. The 1990, 2000 and 2010 Census populations for the City of West Lafayette and Tippecanoe County were used to develop the 20-year population projections. Purdue University student enrollment from 2000 through 2010 was obtained from the Office of the Registrar.

The growth rate for the City of West Lafayette from 2000 to 2010 was 6.6 percent. The growth rate for Tippecanoe County from 2000 to 2010 was 16.0 percent. The expected enrollment growth for Purdue University, for the next 20 years, was based on the 2000-2010 growth rate of 6.2 percent. **Table 3-2** shows the future service population for the year 2032.

**Table 3-2  
Future Service Population**

<u>Year</u>	<u>West Lafayette</u>	<u>Outlying Service Area</u>	<u>Purdue University</u>	<u>Total</u>
1990	26,257 <sup>(1)</sup>	1,920 <sup>(2)</sup>	14,259 <sup>(3)</sup>	42,436
2000	28,778 <sup>(1)</sup>	2,596 <sup>(2)</sup>	15,143 <sup>(3)</sup>	46,517
2010	29,596 <sup>(1)</sup>	3,011 <sup>(4)</sup>	16,082 <sup>(5)</sup>	48,689
2012	29,987 <sup>(6)</sup>	3,108 <sup>(4)</sup>	16,282 <sup>(5)</sup>	49,377
2032	34,203 <sup>(6)</sup>	4,268 <sup>(4)</sup>	18,424 <sup>(5)</sup>	56,895

-----  
(1) U.S. Census Bureau data

(2) From Wastewater Collection System Master Plan Update, Greeley and Hansen, 2009.

(3) Purdue University Office of the Registrar. Data assumed 40% of students living in on-campus housing.

(4) Projections based on Tippecanoe County population growth (16.0%) from 2000 to 2010.

(5) Projections based on Purdue University enrollment growth (6.2%) from 2000 to 2010.

(6) Projections based on West Lafayette population growth (6.6%) from 2000 to 2010.

**Table 3-3** shows the additional annual average wastewater flow for the year 2032. The 20-year population projection suggests that the City’s Wastewater Treatment Plant be expanded to treat an additional 1.3 mgd of flow over the next 20 years. Construction is underway at the City’s wastewater treatment plant to increase the annual average capacity from 9.0 mgd to 10.5 mgd which should accommodate the anticipated growth for the next 20 years.

**Table 3-3  
20-Year Flow Projection**

<u>Item Description</u>	<u>Population Increase/ PRP Development</u>	<u>Unit Flow</u>	<u>Flow Increase</u>
West Lafayette	4,216 capita	100 gpd/capita	421,600 gpd
Outlying Areas	1,160 capita	100 gpd/capita	116,000 gpd
Purdue University	2,142 capita	100 gpd/capita	214,200 gpd
Purdue Research Park	432 ac (367 net ac)	1,500 gpd/net ac	<u>550,500 gpd</u>
		TOTAL	1,302,300 gpd
		<b>SAY</b>	<b>1.3 mgd</b>

**3.4 Ability to Transport and Treat**

According to Tippecanoe County Area Plan Commission data, from 1990 to 2010 the average rate of single-family home construction in West Lafayette has been 51 per year. For a 20-year planning period if all residential development occurred in the study area, the average and peak wastewater flows from residential construction would be 0.25 mgd and 1.0 mgd, respectively.

For this report, it was assumed that 373 of the 432 acres in the Purdue Research Park would develop within a 20-year period. The average and peak wastewater flows from the PRP development would be 0.5 mgd and 2.0 mgd, respectively.

**Table 3-4** shows that the existing sanitary sewers and lift stations have adequate capacity to convey wastewater flows from the study area for at least 15 years.

**Table 3-4  
Sewer and Lift Station Capacity Analysis**

<u>Item Description</u>	Current Flows <sup>(1)</sup>		Sewer Capacity (mgd)	Reserve Capacity <sup>(3)</sup> (mgd)	Capacity Service Life <sup>(4)</sup> (years)
	Avg. (mgd)	Peak (mgd)			
Kalberer Road Sewer	0.35	1.4	4.1	2.3	15
North River Road Interceptor	0.40	1.5	4.1	2.2	14
Soldiers Home Lift Station	0.40	1.5	4.1	2.2	14
North River Road Lift Station	1.70	6.7	10.4 <sup>(2)</sup>	2.7	17

<sup>(1)</sup> Refer to Section 2, Table 2-2.

<sup>(2)</sup> Firm pumping capacity based upon largest pump out of service.

<sup>(3)</sup> 90 percent of sewer capacity minus current peak flow.

<sup>(4)</sup> Reserve capacity divided by the sum of residential growth (310 gpd per home x 51 homes per year x 4 peaking factor) and PRP development (1,500 gpd x 18 acres per year x 0.85 x 4 peaking factor).

As development within the study area occurs and wastewater flow increases and sewer capacity is approached, the City can construct a new force main to discharge flow to the Western Interceptor which was designed to receive all of the flow from the study area.

## Section 4 Evaluation of Alternatives

### 4.1 Description of Alternatives

The project alternatives included the following:

- Alternative 1 – No Action
- Alternative 2 – Gravity Sewer
- Alternative 3 – Lift Station and Force Main

### 4.2 Alternative 1 – No Action

The ‘no action’ alternative is not feasible since the wastewater collection and conveyance is needed to serve the proposed study area.

### 4.3 Alternative 2 – Gravity Sewer

Alternative 2 considered installation of a gravity sewer to convey wastewater flows from the study area to the existing sanitary sewer system. The study area is located at the extreme northern limits of the City’s existing service area. The nearest point of discharge from the study area to an existing sanitary sewer is at the intersection of Kalberer Road and Salisbury Street. The study area topography was reviewed and the contours show the site sloping from east to west and sloping from both the north and south to the middle (i.e., like a “bowl”). The natural low point of the study area is approximately 20 feet or more below the invert elevation of the existing sanitary sewer at the Kalberer and Salisbury intersection. Consideration was also given to constructing a gravity sewer to the existing Kalberer Road Lift Station but the wet well was not deep enough to serve the study area west of Yeager Road. The existing lift station would have also required an increase in pumping capacity. Consequently, the study area cannot be served effectively by gravity sewer.

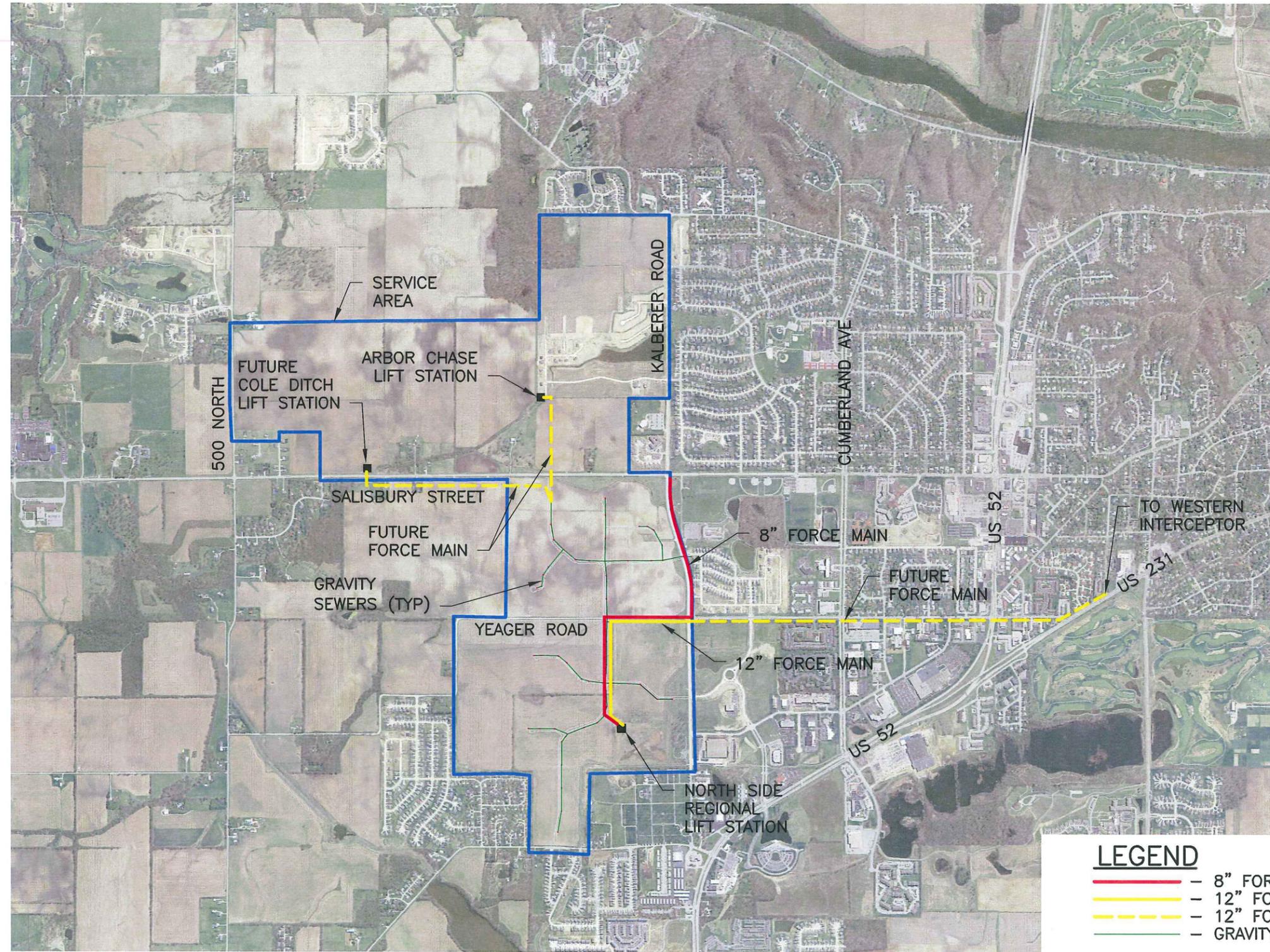
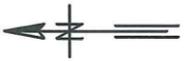
#### 4.4 Alternative 3 – Lift Station and Force Main

Alternative 3 would provide a new lift station and force main to serve the study area. The location of the lift station was coordinated with representatives of the Schneider Corporation, the site developer for the Purdue Research Park. The wastewater interceptor within the business park would be designed to serve the entire study area not just the business park.

The lift station would include a standby generator for reliable operation in the event of power failure and would include dual force mains. A smaller 8-inch force main would be provided for near-term flows to attain velocities of at least 2.5 feet per second. The near-term force main would discharge to the existing sanitary sewer at the Kalberer and Salisbury intersection.

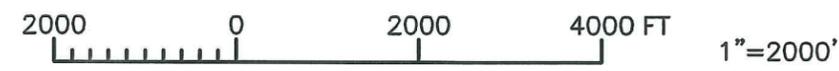
As the study area develops and wastewater flow increases, a larger 12-inch force main would be provided to convey flows for the build-out condition and it would discharge to the Western Sanitary Sewer Interceptor at Yeager Road and U.S. 52. This is consistent with the City's combined sewer overflow long-term control plan.

**Figure 4-1** shows the recommended proposed lift station and force main.



- LEGEND**
- 8" FORCE MAIN
  - 12" FORCE MAIN
  - - - 12" FORCE MAIN (FUTURE)
  - GRAVITY SEWER (BY DEVELOPER)

**ALTERNATIVE 3**  
**NORTH SIDE REGIONAL LIFT STATION**  
 SCALE: 1"=2000'



## Section 5 Evaluation of Environmental Impacts

### 5.1 Disturbed/Undisturbed Land

The proposed project area consists of a sanitary sewer lift station and force main. **Figure 5-1** shows the project site relative to the USDA soils map. An archeological field reconnaissance of the proposed project site was completed by Pioneer Consulting Services, Inc. and a copy of the December 2, 2010 report is included in **Appendix A**.

No archaeological sites were located during the reconnaissance and it was recommended that the project proceed.

### 5.2 Historic/Architectural Resources

Review of the Tippecanoe County Interim Report by the Historic Landmark Foundation indicates that the proposed project will not impact any historic or architectural sites. **Figure 5-2** shows the project site and the historic sites in the area. One site that is in close proximity to the project is listed below.

From Page 22 of Tippecanoe County Interim Report

<u>Site, I.D.</u>	<u>Rating</u>	<u>Site Description</u>
017	C	Purdue University Farm Center, 350 N, Barn, Silos, c.1920

All of the visible structures (i.e., barn and silos) associated with this historic site have been removed.

In addition to the Tippecanoe County Interim Report, the following Division of Historical Preservation and Archeology (DHPA) website addresses were also checked for possible additions of historic sites or structures since the Tippecanoe County Interim Report published in 1990.

- Indiana Properties Listed on the State and National Registers:  
[www.in.gov/dnr/historic/files/hp-nrlist.pdf](http://www.in.gov/dnr/historic/files/hp-nrlist.pdf)

FIGURE 5-1



NORTH SIDE REGIONAL LIFT STATION

12" FORCE MAIN

8" FORCE MAIN

**LEGEND**

- 8" FORCE MAIN
- 12" FORCE MAIN
- STUDY AREA
- SOIL TYPE

**SOILS MAP**

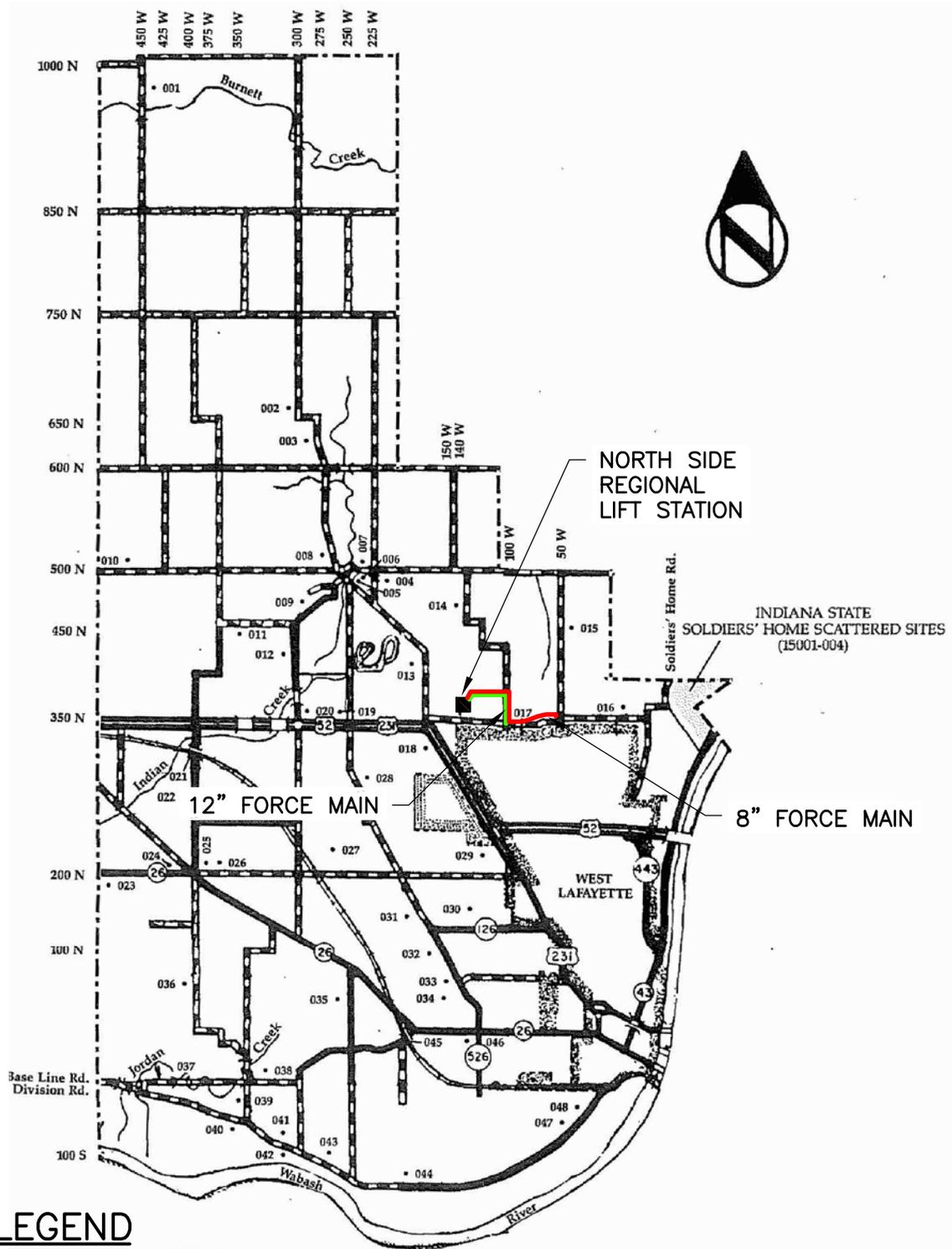
SCALE: 1"=1000'



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AND FORCE MAIN IMPROVEMENTS

FIGURE 5-2



**LEGEND**

- 8" FORCE MAIN
- 12" FORCE MAIN

**NOTES:**

1. WABASH TOWNSHIP MAP TAKEN FROM TIPPECANOE COUNTY INTERIM REPORT.

**HISTORIC AND ARCHITECTURAL SITES**

SCALE: NOT TO SCALE



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AND FORCE MAIN IMPROVEMENTS

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- Indiana Properties Listed only in the State Register:  
[www.in.gov/dnr/historic/files/hp-srlist.pdf](http://www.in.gov/dnr/historic/files/hp-srlist.pdf)
- Preserving Indiana Newsletters 2004-2009:  
[www.in.gov/dnr/historic/4202.htm](http://www.in.gov/dnr/historic/4202.htm)
- Indiana's National Historic Landmarks:  
[www.nps.gov/history/nhl/designations/List/IN01.pdf](http://www.nps.gov/history/nhl/designations/List/IN01.pdf)

No additional historic sites were found.

### 5.3 Wetlands

The project will not adversely impact any wetlands. **Figure 5-3** shows the project area relative to wetlands listed on the Wetlands Inventory Map.

### 5.4 Surface Waters

The project will not adversely affect waters of high quality listed in 327 IAC 2-1-2(3), exceptional use streams listed in 327 IAC 2-1-11(b), Natural, Scenic and Recreational Rivers and Streams listed in 312 IAC 7-(2), Salmonid Streams listed in (327 IAC 2.1.5-5(a)(3), or waters on the Outstanding Rivers list (Natural Resources Commission Non-Rule Policy Documents).

### 5.5 Groundwater

The project will not adversely affect local wells or the water table. The construction of below grade structures may require dewatering during excavation, but the local groundwater table will be restored to normal levels following construction.

### 5.6 100-Year Floodplain

The project area is not within the 100-year floodplain. **Figure 5-4** shows the project area relative to 100-year flood elevation of surrounding streams and rivers.

### 5.7 Plants and Animals

The project will not adversely impact plant and animal habitat. The project will be implemented to minimize impact to non-endangered species and their habitat. Mitigation measures cited in

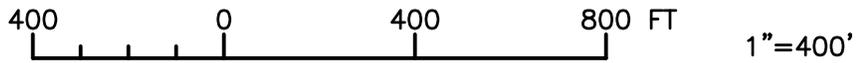


**LEGEND**

- - 8" FORCE MAIN
- - 12" FORCE MAIN
- - LIFT STATION
- WETLAND

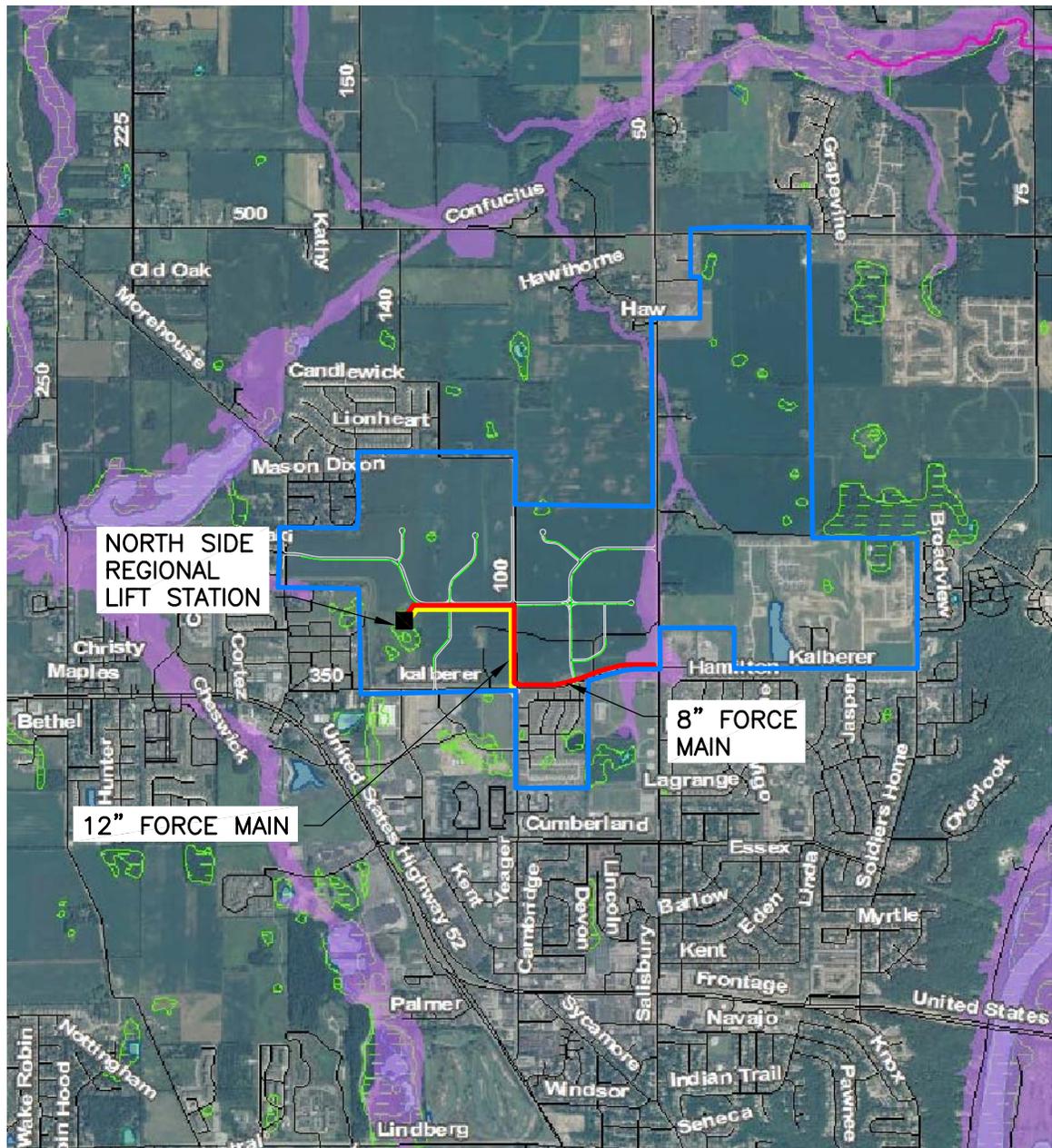
**WETLANDS MAP**  
**NORTH SIDE REGIONAL LIFT STATION**

SCALE: 1"=400'



**GREELEY AND HANSEN**

CITY OF WEST LAFAYETTE  
 NORTH SIDE REGIONAL LIFT STATION  
 AND FORCE MAIN IMPROVEMENTS



NORTH SIDE REGIONAL LIFT STATION

8" FORCE MAIN

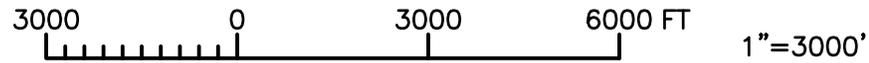
12" FORCE MAIN

**LEGEND**

- - 8" FORCE MAIN
- - 12" FORCE MAIN
- - RIVERINE WETLANDS
- - STUDY AREA
- - FLOODPLAIN
- WETLAND
- - LAKES/RIVERS
- - LIFT STATION

**FLOODPLAIN AND WETLANDS MAP**

SCALE: 1"=3000'



**GREELEY AND HANSEN**

CITY OF WEST LAFAYETTE  
NORTH SIDE REGIONAL LIFT STATION  
AND FORCE MAIN IMPROVEMENTS

comment letters from the Indiana Department of Natural Resource and the U.S. Fish and Wildlife Services will be implemented.

#### 5.8 Prime Farmland Impacts and Geology

The NRCS office in Indianapolis has reviewed the Farmland Conversion Impact Rating submitted by Greeley and Hansen relative to the project site. The project will result in the conversion of prime farmland. The project site is currently being leased for row crops. A copy of the impact rating forms and the total point scoring is included in **Appendix B**.

Mitigation measures for soil erosion and sedimentation will be developed during the design and implemented during construction under a Rule 5 Permit required for the project.

#### 5.9 Air Quality

Construction of the project will result in increased dust and noise in the vicinity of the project during the length of the proposed construction period. The Contractor will be required to control dust in accordance with methods described in the project specifications. Construction activities will only be allowed during the City's approved hours to limit the adverse effect of noise to residents near the construction site. The proposed project will not add any new airborne pollutants.

#### 5.10 Open Space and Recreational Opportunities

The project will neither create nor destroy open space and recreational opportunities since the construction is either within existing right-of-way or land owned by the Purdue Research Foundation. Pedestrian walk/bike paths are planned for the future business park.

#### 5.11 National Natural Landmarks Impacts

The project will not impact any national natural landmarks.

## 5.12 Mitigation Measures

The following specific mitigation efforts will be made:

1. Any land grading and excavating will be kept to a minimum in order to reduce erosion and sediment transport.
2. Use appropriate structural (i.e., sediment traps, staked hay bales, rip rap, silt fencing) or agronomic (i.e., seeding, fertilizing, mulching, liming,) practices to control runoff and sedimentation during and after construction.
3. Construction traffic will be directed to use access routes and entrances to the project site in an effort to minimize impacts on areas adjacent to the site. Construction entrances, roadways, and staging areas will be stabilized prior to construction with crushed stone to reduce sediment transport, and will be maintained throughout construction to comply with Rule 5 permit requirements.
4. Construction equipment will be muffled where possible and the construction will be scheduled for daylight hours only.

## Section 6 Selected Plan

### 6.1 Description

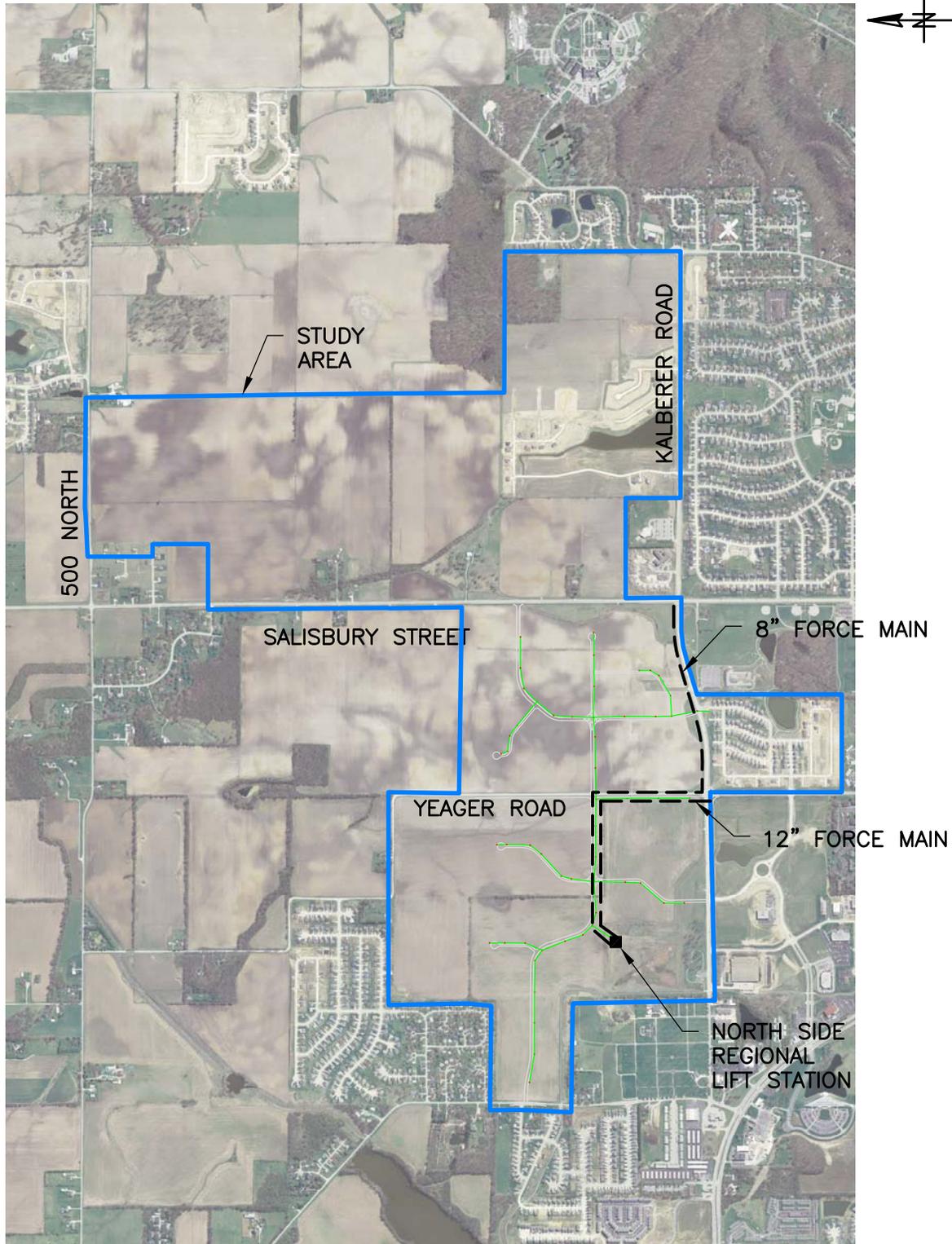
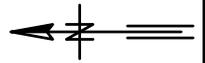
The proposed project consists of a lift station with standby generator and dual force mains to convey wastewater from the study area to the City of West Lafayette's sanitary sewer system.

**Figure 6-1** shows the proposed selected plan.

The lift station wet well will have space for three pumps so that it can be expanded and serve as a regional lift station. The wet well will include an interior wall with sluice gate to isolate the wet well for cleaning and will improve operation during the initial development (207 acres) years when lower flows are expected. Two submersible pumps, each with a capacity of 1.1 mgd, will be provided to serve initial development. As flow rates increase over time, the pumping equipment and standby generator can be upgraded as necessary to meet the ultimate development (786 acres) peak flow rate estimated to be 2.9 mgd. The project will also include dual force mains to meet initial and future flow requirements, while maintaining minimum velocities in the force mains above 2.5 feet per second. There will be approximately 6,000 feet of 8-inch force main pipe to meet the initial development flows. It is recommended to install a portion (approximately 4,000 feet) of the 12-inch force main with the planned roadway and grading improvements for the Phase III Research Park. This would allow for more cost-effective construction now and prevent disrupting the business park, tenants, site landscaping and roadways later. The 12-inch force main would be constructed from the lift station to the intersection of Yeager Road and Kalberer Road.

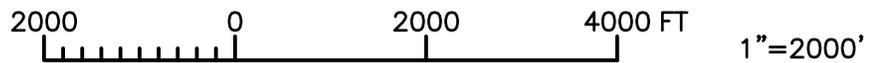
When the capacity of the 8-inch force main is approached, a future project extending the 12-inch force main to discharge to the Western Interceptor at Yeager Road and U.S. 52 will be required. It is estimated that this project could be deferred for up to 10 years depending on the rate of development.

FIGURE 6-1



**SELECTED PLAN**

SCALE: 1"=2000'



FILE: J:\Projects\0791C W Laf North Side Regional LS\21 CADD Files\21.30 Study and Reports\0791COR02 1:1 06/14/12 10:34 GH-H



**GREELEY AND HANSEN**

CITY OF WEST LAFAYETTE  
NORTH SIDE REGIONAL LIFT STATION  
AND FORCE MAIN IMPROVEMENTS

**Preliminary Engineering Report**

## Section 6

The selected project will also include a Vactor truck for sewer and lift station maintenance as well as for maintenance of pervious gravel pavers at the lift station site. A street sweeper will also be included to control the amount of sediment, salt and debris from reaching the City's storm sewer.

The Indiana Department of Environmental Management Facility Construction Section has approved the City's construction permit for the proposed project included in **Appendix C**.

## 6.2 Estimated Project Cost

The estimated total project cost for the proposed project is shown below.

**Table 6-1  
Estimated Project Cost**

<u>Item Description</u>	<u>Estimated Cost</u>
Sitework	\$1,250,000
Concrete and Masonry	\$750,000
Metals, Doors, and Thermal Protection	\$260,000
Instrumentation and Control	\$100,000
Equipment	\$165,000
Mechanical	\$75,000
Electrical	\$600,000
Vactor	\$325,000
Street Sweeper	<u>\$200,000</u>
Subtotal	\$3,525,000
Construction Contingency	<u>\$300,000</u>
Total Estimated Construction Cost	\$3,825,000
Financial and Legal	\$50,000
Construction Phase Engineering	<u>\$510,000</u>
<b>Total Project Cost</b>	<b>\$4,385,000</b>

### 6.3 Project Schedule

The proposed project schedule is shown below.

**Table 6-2  
Project Schedule**

<u>Milestone</u>	<u>Date</u>
Submit PER	June 2012
Approval of PER	July 2012
Receive Bids	August 2012
Begin Construction	September 2012
Complete Construction	September 2013

## Section 7 Legal, Financial, and Managerial Capabilities

### 7.1 Resolutions

The Signatory Authorization and PER Acceptance Resolutions are provided in **Appendix D**.

### 7.2 SRF Project Cost/Financing Information

The City of West Lafayette intends that the Project be funded principally through the State Revolving Fund (SRF) program administered by the Indiana Finance Authority. The SRF project financing information sheet is provided in **Appendix E**.

The City of West Lafayette retained the accounting firm of O. W. Krohn & Associates to assess the impact of the proposed project on wastewater sewer user rates. The existing sewer user rates will remain \$28.05 per 5,000 gallon usage.

### 7.3 Letters of Intent

SRF loan program requires letters of intent from parties affected by the proposed project. The following are considered to be potentially affected parties:

- Land/easement owners
- Significant flow/waste load contributors
- Contract operators

The proposed project will take place on public right-of-way or right-of-way granted by Purdue Research Foundation. No significant flow/wasteload contributions are being added to the system. There are no contract operators currently or proposed for the project. Therefore, no letters of intent are required for the project.

### 7.4 Inter-local Governmental Agreement

There are no inter-local governmental agreements or intent to enter such agreements related to this project.

## Section 8 Public Participation

### 8.1 Public Hearing

A public hearing on the North Side Regional Lift Station and Force Main Project will be held on Month Day, 2012. Copies of the public notice and proof of publication, agenda, sign-up sheet, and meeting notes will be included in **Appendix F**.

### 8.2 Public Comment and Response

In accordance with the requirements of the SRF Program the public notice and a statement at the public hearing advised that the written comments would be accepted for a period of five days following the public hearing. Copies of the written comments received from the public and the responses will be provided in **Appendix F**.

## Section 9 Green Project Reserve

### 9.1 Introduction

The SRF loan program's Green Project Reserve (GPR) offers communities an opportunity to receive an interest rate break for incorporating project elements that are sustainable, energy efficient and environmentally innovative. Depending on the level of qualifying GPR elements, the Indiana Finance Authority may reduce the City's interest rate by up to one-half of a percent.

### 9.2 GPR Project Elements

The Green Project Reserve elements for this project include:

- Local materials such as crushed limestone used for pipe bedding and to provide support for structural foundations.
- Recycled materials in concrete and use of steel purchased within 300 miles of the site.
- Permeable surfaces (porous grass and gravel pavers) and landscaping to reduce storm water runoff.
- Use of a canopy as both an architectural element and functional element to shade the generator and electrical building.
- Ventilation and exhaust fans to provide ambient cooling of equipment versus mechanical cooling.
- High efficiency lighting transformers in the electrical room and LED lighting outdoors.
- Variable frequency drives to efficiently match pumping electrical requirements to actual wastewater flows.
- Supervisory control and data acquisition (SCADA) system to minimize the number of trips to the site for routine monitoring.
- Vactor truck and street sweeper to maintain permeable surfaces and to reduce the amount of debris and salt entering the City's storm sewers.

### 9.3 GPR Costs

The estimated installed cost and associated engineering relative to the GPR components are summarized below:

**Table 9-1  
Estimated GPR Cost**

<u>Item Description</u>	<u>Estimated Cost</u>
Local Materials	\$50,000
Permeable Materials and Landscaping	\$35,000
Shade Canopy	\$40,000
Ventilation (ambient equipment cooling)	\$5,000
LED/energy efficient lighting	\$15,000
Variable frequency drives	\$35,000
SCADA system automation	\$10,000
Vactor	\$325,000
Street Sweeper	<u>\$200,000</u>
Subtotal	\$715,000
Engineering for GPR Items	<u>\$25,000</u>
<b>Total GPR Cost</b>	<b>\$740,000</b>

## APPENDIX A

### Archeological Report – Pioneer Consulting Services, Inc.



# PIONEER

Consulting Services

December 2, 2010

Greeley and Hansen  
6640 Intech Boulevard, Suite 180  
Indianapolis, Indiana 46278  
att: Mr. Joseph Tuesch

Mr. Tuesch:

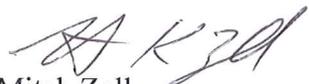
Please forward one copy of the report and a cover letter to:

The Indiana Department of Natural Resources  
Division of Historic Preservation and Archaeology  
att: Ms. Karie Burdis  
402 West Washington Street, Room W274  
Indianapolis, Indiana 46204

After they have commented on the report, I will incorporate their directives and provide you with additional bound copies of the final report.

Thank you for the opportunity to work with you on this project. If you have any questions or concerns please contact me.

Sincerely,



Mitch Zoll  
V.P. Operations

**Archaeological Field Reconnaissance  
North Side Regional Lift Station and Force Main  
Tippecanoe County, Indiana**

*Prepared for:*  
Greeley and Hansen  
6640 Intech Boulevard, Suite 180  
Indianapolis, Indiana 46278

*Prepared by:*

Mitchell K. Zoll



Mitchell K. Zoll  
*Principal Investigator*

Pioneer Consulting Services, Inc.  
2620 West Kilgore Avenue  
Muncie Indiana 47304  
(765) 284-0459  
[mzoll2@gmail.com](mailto:mzoll2@gmail.com)

December 2, 2010

PCS Project # 10FR71

## **Management Summary**

An archaeological field reconnaissance has been completed for the North Side Regional Lift Station and Force Main Project located in Tippecanoe County, Indiana. An archaeological field reconnaissance of the project area was completed in compliance with guidelines provided by the Indiana Department of Natural Resources, Division of Historic Preservation and Archaeology. The goals of the field reconnaissance were to locate archaeological sites that would be affected by the project and to evaluate their potential eligibility for nomination to the State and National Registers of Historic Places. This investigation was conducted on behalf of Greeley and Hansen. All work was completed in accordance with all applicable State and Federal guidelines. No archaeological sites were located by the reconnaissance and it was recommended that the project be allowed to proceed.

## **Introduction**

In response to a request from Greeley and Hansen, an archaeological field reconnaissance has been completed for the proposed North Side Regional Lift Station and Force Main project, located in Wabash Township, Tippecanoe County, Indiana (Figure 1). The project area is located in Section 1, Township 23 North, Range 5 West as shown on the USGS 7.5' Lafayette West, Indiana Quadrangle (Figure 2).

The proposed project involves the construction of a new sewage lift station and force main. Land within the project area is presently grass and agricultural. The area examined by the archaeological field reconnaissance consisted of a 3100' by 60' wide force main corridor and an area measuring 100' by 100' for the lift station.

The records check was conducted at DHPA by Mitch Zoll on November 4, 2010. The records check used site records, maps and materials on file at the Indiana Department of Natural Resources, Division of Historic Preservation and Archaeology to locate, identify and evaluate the known and expected archaeological resources within the project area. The records search was conducted to evaluate the potential impact of the project upon archaeological resources.

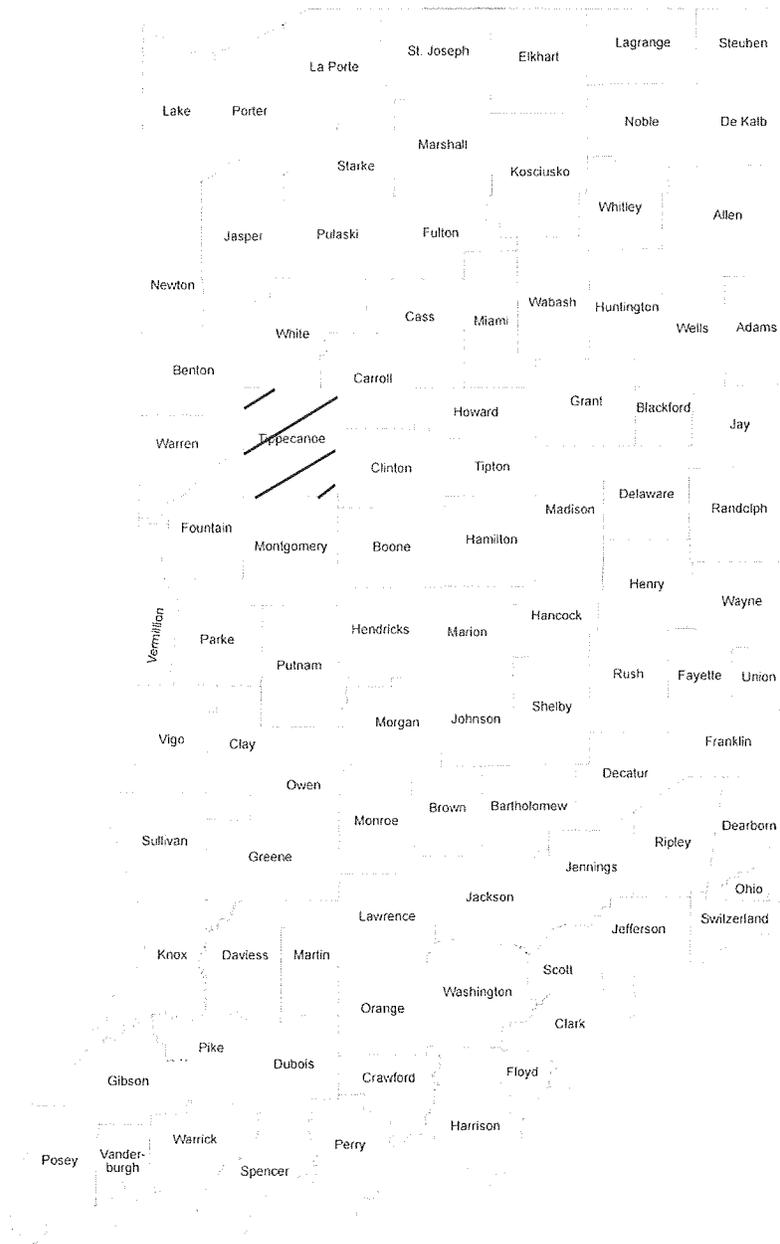


Figure 1: Map of Indiana showing the location of Tippecanoe County.

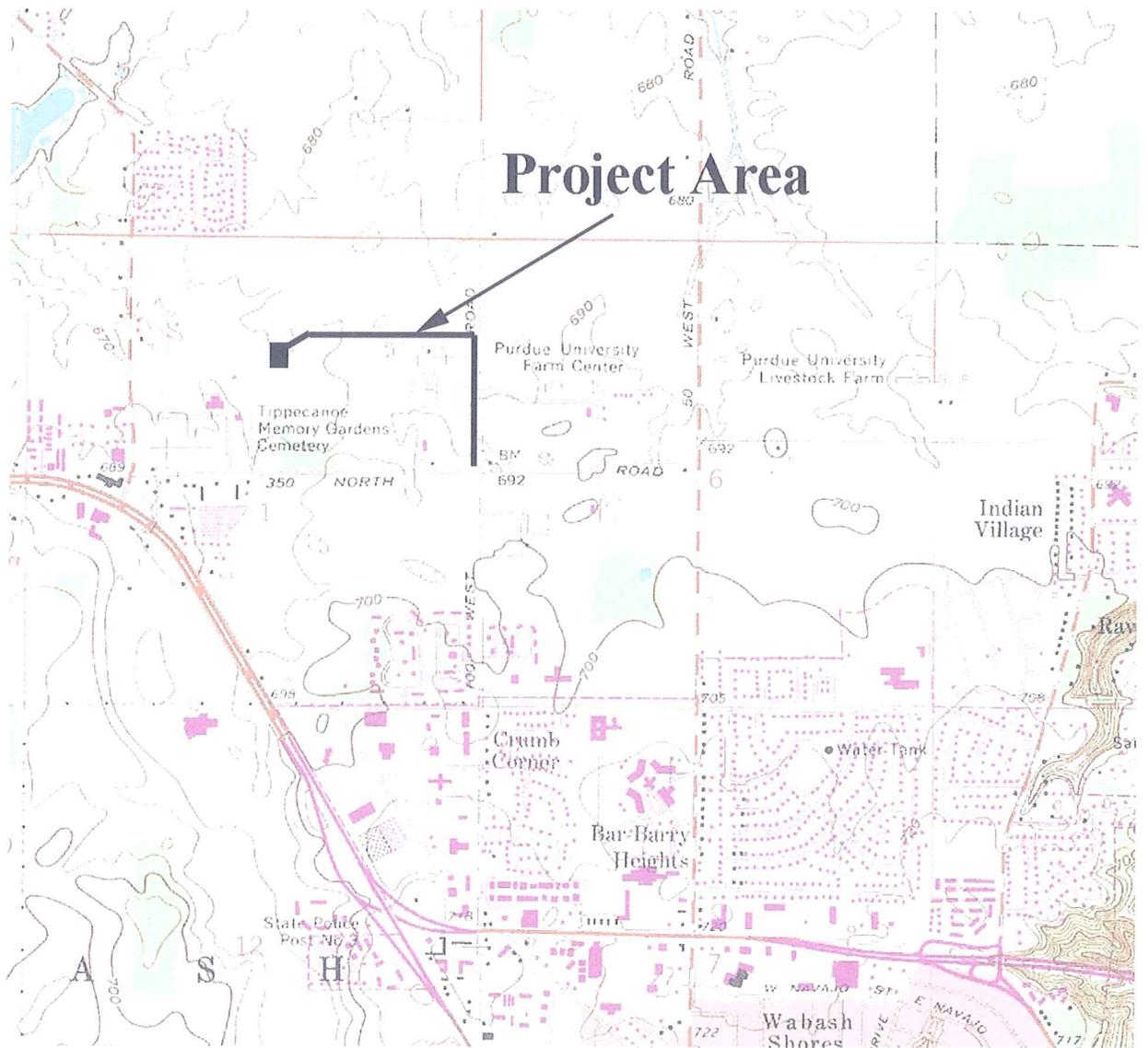
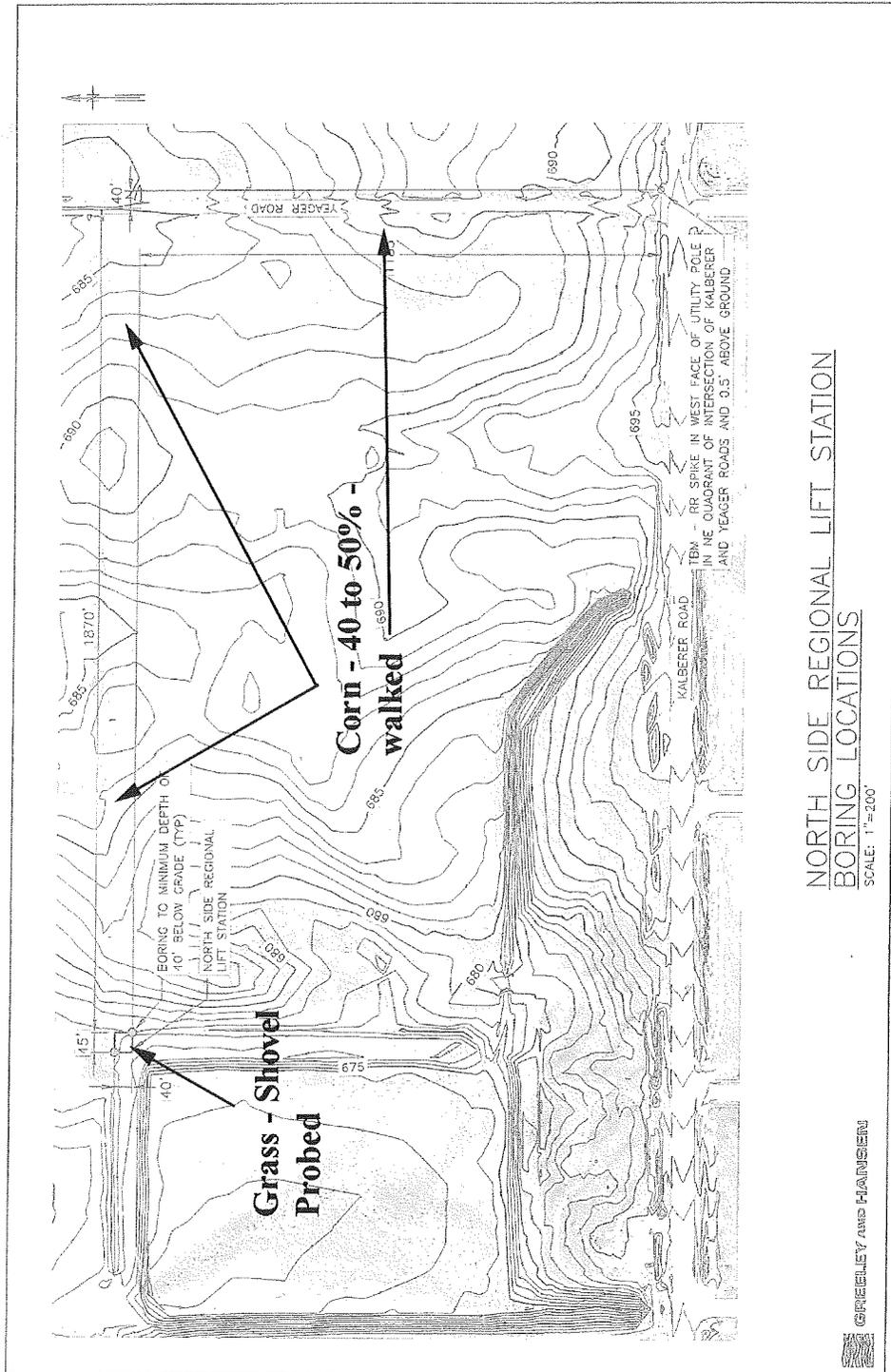


Figure 2. A portion of the USGS 7.5' Lafayette West, Indiana Quadrangle showing the project area.



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Figure 3. An aerial of the project area showing shovel probed and walked areas.

## **Physiographic Setting and Historical Background**

### **Setting**

The project area is within the general physiographic unit known as the Tipton Till Plain (Gray 2000). Surface deposits in the area are within the unnamed members of the Cartersburg Till Member of the Trafalgar Formation (Wayne 1966: 26) and in the bedrock physiographic unit known as the Scottsburg Lowland (Schneider 1966: 54). The closest chert source to the project area is Attica chert which outcrops in Warren County (Cantin 2008). The topography of Wabash County was affected by the advance and retreat of the Illinoian and Wisconsin glaciers (Schneider 1966: 54). The project area is in the Wabash River above Lafayette watershed, as shown on the Indiana Department of Natural Resources Hydrologic basins map.

Specific soils in the project area consist of Drummer soils, which are poorly drained and located on recessional moraines or till plains; Thockmorton silt loam, 1-3% slopes, which is moderately well drained and located on recessional moraines; and Toronto-Milbrook complex, which is somewhat poorly drained and located on till plains (NRCS 2010).

The presettlement vegetation of the area was predominantly beech-maple forest (Petty and Jackson 1966:280). Climate, the main determinate of plant and animal life, has varied in Madison County since the retreat of the glaciers from Indiana about 12,000 years ago.

### **Background**

No archaeological sites or field reconnaissance projects are recorded within a mile of the proposed project area. DHPA records show that the area under consideration has not been covered by an archaeological reconnaissance. The SHARD database at DHPA lists 1162 archaeological sites in Tippecanoe County as of December 2, 2010. Thirty-one archaeological sites are located within one mile of the project area. These sites consisted of isolated artifacts, lithic scatters and farmsteads with Early, Middle and Late Archaic; Early, Middle and Late Woodland and Historic components.

Sites representing the known prehistoric culture history of Indiana are on record from the region (Kellar 1983, Swartz 1981). Tippecanoe County was first settled in 1836. The map of Tippecanoe County in Maps of Indiana counties in 1876 (Andreas 1968) shows a school house east of the project area, Newtons Retreat Post Office northwest of the project area and the towns of Fairfield (Lafayette), Chauncey and West Lafayette south of the project area. Wepler (1980) shows one Delaware village site within Tippecanoe County, which is not near the project area.

## **Archaeological Field Reconnaissance**

### **Methodology**

The author and Lucas Denny examined the project area on November 12, 2010. Ground cover within the project area was grass at the lift station area and agricultural within the force main line. Visibility ranged from 0 to 50% within the project area. The lift station portion of the project area was examined by shovel probes measuring approximately 35cm by 35cm. These probes were excavated to a depth of approximately 43cm. and were placed approximately 15 meters apart (Figure 3). The force main portion of the project area was examined by two pedestrian transects spaced approximately 10 meters apart.

### **Results**

The archaeological reconnaissance found no archaeological sites. Shovel probes placed in the grass covered portion of the project area contained silty clay loam to a depth of approximately 34cm followed by sandy clay loam to a depth of 43cm.

### **Conclusions and Recommendations**

An archaeological field reconnaissance conducted for Greeley and Hansen in Tippecanoe County found no archaeological sites. Therefore, it is our recommendation that the project be allowed to proceed without additional archaeological assessment. In the unlikely event that subsurface archaeological deposits are encountered during construction, the project must be halted and the Indiana Department of Natural Resources, Division Historic Preservation and Archaeology contacted for an evaluation before the project resumes.

## References Consulted

- Andreas, Alfred Theodore  
1968 Illustrated Historical Atlas of the State of Indiana in 1876. Chicago: Baskin, Forster.
- Cantin, Mark  
2008 Provenience, Description, and Archaeological Use of Selected Chert Types of Indiana. Indiana State University: Terre Haute, IN.
- Gray, Henry H.  
2000 Physiographic Divisions of Indiana. Indiana University, Indiana Geological Survey Special Report 61: Bloomington, Indiana.
- Kellar, James H.  
1983 An Introduction to the Prehistory of Indiana. Indiana Historical Society: Indianapolis.
- Lindsey, Alton A., ed.  
1966 Natural features of Indiana. Indianapolis: Indiana Academy of Science.
- Natural Resources Conservation Service  
2010 Soil Survey of Wabash County, Indiana. U.S. Department of Agriculture, Soil Conservation Service: Electric document. <http://websoilsurvey.nrcs.usda.gov/app/>, accessed October 10<sup>th</sup>, 2010.
- Petty, R.O. and M.T. Jackson.  
1966 Plant Communities. *In* Lindsey 1966, pp. 264-296.
- Schneider, Allan F.  
1966 Physiography. *In* Lindsey 1966, pp. 40-56.
- Swartz, B.K., Jr.  
1981 Indiana's Prehistoric Past. Revised edition. Ball State University: Muncie, IN.
- Wayne, William J.  
1966 Ice and land. *In* Lindsey 1966, pp. 21-39.
- Wepler, William R.  
1980 Historical Delaware (Lenape) Villages in Indiana. MS on file at Archaeological Resources Management Service.

**Appendix A**  
**Digital Images of the Project Area**



Force main area, facing west.



Lift Station area, facing southwest.

## APPENDIX B

### Prime Farmland Preservation



United States Department of Agriculture



Natural Resources Conservation Service  
6013 Lakeside Blvd.  
Indianapolis, IN 46278

November 22, 2010

FILE  
COPY

Joseph Teusch, P.E.  
Greeley and Hansen  
6640 Intech Blvd., Ste 180  
Indianapolis, IN 46278

Dear Mr. Teusch:

The project to make north side regional lift station and force main improvements in the City of West Lafayette, Tippecanoe County, Indiana, as stated in your letter received November 8, 2010, will cause a conversion of prime farmland.

The attached packet of information is for your use in completing Part VI and VII of the AD-1006. After completion the federal funding agency needs to forward one copy to NRCS for our records.

If you need additional information, please contact Lisa Bolton at 317-290-3200, extension 342.

Sincerely,

TN

JANE E. HARDISTY  
State Conservationist

Enclosures



**GREELEY AND HANSEN**

100 S. Wacker Drive, Suite 1400  
Chicago, Illinois 60606  
p 312 558 9000  
f 312 558 1986  
[www.greeley-hansen.com](http://www.greeley-hansen.com)

December 13, 2010

Ms. Lisa Bolton  
Natural Resources Conservation Service  
6013 Lakeside Blvd  
Indianapolis, IN 46278

Subject: City of West Lafayette, Indiana  
North Side Regional Lift Station and Force Main Improvements Project –  
Farmland Conversion Impact Rating

Dear Ms. Bolton:

Enclosed is the Farmland Conversion Impact Rating form AD-1006 with Parts VI and VII completed as requested in the NRCS letter dated November 22, 2010.

If you have any questions regarding this project please contact me at (312) 578-2409.

Yours very truly,

Greeley and Hansen LLC

Keith Gardner  
Project Engineer

KWG/jmt

U.S. Department of Agriculture

# FARMLAND CONVERSION IMPACT RATING

<b>PART I</b> (To be completed by Federal Agency)	Date Of Land Evaluation Request 11/8/10
Name Of Project North Side Regional LS and FM Improvements	Federal Agency Involved IDEM
Proposed Land Use Provide Sanitary Sewer to Business Park	County And State Tippecanoe County, West Lafayette, Indiana

<b>PART II</b> (To be completed by NRCS)		Date Request Received By NRCS 11-8-10
Does the site contain prime, unique, statewide or local important farmland? (If no, the FPPA does not apply -- do not complete additional parts of this form).		Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Major Crop(s) Corn	Farmable Land In Govt. Jurisdiction Acres: 291,520 % 91	Acres Irrigated Average Farm Size 288
Name Of Land Evaluation System Used LESA	Name Of Local Site Assessment System	Amount Of Farmland As Defined in FPPA Acres: 261,770 % 81
		Date Land Evaluation Returned By NRCS 11-22-10

PART III (To be completed by Federal Agency)	Alternative Site Rating			
	Site A	Site B	Site C	Site D
A. Total Acres To Be Converted Directly	0.0			
B. Total Acres To Be Converted Indirectly	0.0			
C. Total Acres In Site	0.0	0.0	0.0	0.0

PART IV (To be completed by NRCS) Land Evaluation Information				
A. Total Acres Prime And Unique Farmland	.1			
B. Total Acres Statewide And Local Important Farmland				
C. Percentage Of Farmland In County Or Local Govt. Unit To Be Converted	<0.001>			
D. Percentage Of Farmland In Govt. Jurisdiction With Same Or Higher Relative Value	14			

<b>PART V</b> (To be completed by NRCS) Land Evaluation Criterion Relative Value Of Farmland To Be Converted (Scale of 0 to 100 Points)	100	0	0	0
--------------------------------------------------------------------------------------------------------------------------------------------	-----	---	---	---

PART VI (To be completed by Federal Agency)	Maximum Points				
Site Assessment Criteria (These criteria are explained in 7 CFR 658.5(b))					
1. Area In Nonurban Use	15	10			
2. Perimeter In Nonurban Use	10	10			
3. Percent Of Site Being Farmed	20	20			
4. Protection Provided By State And Local Government	20	0			
5. Distance From Urban Builtup Area	15	1			
6. Distance To Urban Support Services	15	0			
7. Size Of Present Farm Unit Compared To Average	10	0			
8. Creation Of Nonfarmable Farmland	10	10			
9. Availability Of Farm Support Services	5	3			
10. On-Farm Investments	20	0			
11. Effects Of Conversion On Farm Support Services	10	0			
12. Compatibility With Existing Agricultural Use	10	5			
<b>TOTAL SITE ASSESSMENT POINTS</b>	160	59	0	0	0

PART VII (To be completed by Federal Agency)					
Relative Value Of Farmland (From Part V)	100	100	0	0	0
Total Site Assessment (From Part VI above or a local site assessment)	160	59	0	0	0
<b>TOTAL POINTS (Total of above 2 lines)</b>	260	159	0	0	0

Site Selected:	Date Of Selection	Was A Local Site Assessment Used? Yes <input type="checkbox"/> No <input type="checkbox"/>
----------------	-------------------	-----------------------------------------------------------------------------------------------

Reason For Selection:

## APPENDIX C

### IDEM Facility Construction Permit Approval





INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
*We Protect Hoosiers and Our Environment.*

*Mitchell E. Daniels, Jr.*  
Governor

*Thomas W. Easterly*  
Commissioner

May 21, 2012

100 North Senate Avenue  
Indianapolis, Indiana 46204  
(317) 232-8603  
Toll Free (800) 451-6027  
www.idem.IN.gov

VIA CERTIFIED MAIL 91 7190 0005 2710 0021 4096

Mr. David Henderson  
Wastewater Treatment Plant Utility Director  
City of West Lafayette  
500 South River Road  
West Lafayette, Indiana 47906

Dear Mr. Henderson:

Re: 327 IAC 3 Construction  
Permit Application  
Plans and Specifications for  
Sanitary Sewer  
North Side Regional Lift Station and  
Force Main Improvements  
Permit Approval No. 20239  
West Lafayette, Indiana  
Tippecanoe County

The application, plans and specifications, and supporting documents for the above-referenced project have been reviewed and processed in accordance with rules adopted under 327 IAC 3. Enclosed is the Construction Permit (Approval No. 20239), which applies to the construction of the above-referenced proposed sanitary sewer system to be located near the north side of the City of West Lafayette in Tippecanoe County. New sanitary sewer and a new sanitary sewer lift station will be constructed near the northwest corner of the intersection of Yeager Road and Kalberer Road. Two (2) parallel sanitary sewer force mains will be installed from the new lift station to Yeager Road approximately 1,400 feet north of the intersection with Kalberer Road and along Yeager Road to the intersection with Kalberer Road. A single sanitary sewer force main will be installed along Kalberer Road between the intersection with Yeager Road and the intersection with Salisbury Street.

Please review the enclosed permit carefully and become familiar with its terms and conditions. In addition, it is imperative that the applicant, consulting architect/engineer (A/E), inspector, and contractor are aware of these terms, conditions, and reporting and testing requirements.

It should be noted that any person affected or aggrieved by the agency's decision in authorizing the construction of the above-referenced facility may, within fifteen (15) days from date of mailing, appeal this permit by filing a request with the Office of Environmental Adjudication for an adjudicatory hearing in accordance with IC 4-21.5-3-7 and IC 13-15-6. The procedure for appeal is outlined in more detail in Part III of the attached construction permit.

Plans and specifications were prepared by Greeley and Hansen, certified by Mr. Joseph M. Teusch, P.E., and submitted for review on March 27, 2012, with additional information submitted on April 19, April 25 and April 27, 2012.

Any questions concerning this permit may be addressed to Mr. Mike Miles, P.E., of our staff, at 317/232-6548. Questions concerning appeal procedures should be addressed to the Office of Environmental Adjudication, at 317/232-8591.

Sincerely,



Dale T. Schnaith, Chief  
Facility Construction and  
Engineering Support Section  
Office of Water Quality

MWM/pb

Project No. M-20594

Enclosures

cc: Tippecanoe County Health Department  
Tippecanoe County Commissioner  
Greeley and Hansen  
Purdue Research Foundation  
WEBUILD, LLC  
West Lafayette Board of Parks and Recreation  
City of West Lafayette  
Amberleigh Village Homeowners Association, Inc.  
Hausecker, Paul Russell & Brenda  
Debertodano, Martin Lopez & Anca Maria Lopez  
Bagchi, Saurabh & Charterji Somali  
Wali, Salman A. & Rashida S  
Citation Partners, LLC  
Federal Home Loan Mortgage Corp.  
Wiese, David B. & Michelle  
Kim, Chang H.  
Scott, Daniel P. & Michelle J.  
Omonode, Rex A. & Rebecca  
Raghunathan, Vijay & Vijay Sulini  
Lin, David Yin-Wei

Setzler, Brian & Blythe S.  
Run, Dae-Jin & You Kyung Hee  
Jiang, Yiewi  
Slaven Paul A. & Anita M.  
Hume, Gladys C. Etal  
Whitehead, Virginia F.

INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
AUTHORIZATION FOR CONSTRUCTION OF  
SANITARY SEWER SYSTEM  
UNDER 327 IAC 3

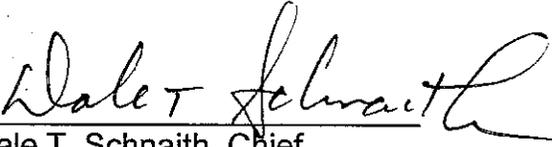
DECISION OF APPROVAL

The City of West Lafayette, in accordance with the provisions of IC 13-15 and 327 IAC 3 is hereby issued a permit to construct the sanitary sewer system to be located near the north side of the City of West Lafayette in Tippecanoe County. New sanitary sewer and a new sanitary sewer lift station will be constructed near the northwest corner of the intersection of Yeager Road and Kalberer Road. Two (2) parallel sanitary sewer force mains will be installed from the new lift station to Yeager Road approximately 1,400 feet north of the intersection with Kalberer Road and along Yeager Road to the intersection with Kalberer Road. A single sanitary sewer force main will be installed along Kalberer Road between the intersection with Yeager Road and the intersection with Salisbury Street. The permittee is required to comply with requirements set forth in Parts I, II and III hereof. The permit is effective pursuant to IC 4-21.5-3-4(d). If a petition for review and a petition for stay of effectiveness are filed pursuant to IC 13-15-6, an Environmental Law Judge may be appointed for an adjudicatory hearing. The force and effect of any contested permit provision may be stayed at that time.

NOTICE OF EXPIRATION DATE

This permit and the authorization to initiate construction of this sanitary sewer system shall expire at midnight June 1, 2013. In order to receive authorization to begin construction beyond the date of expiration, the permittee shall submit such information and forms as are required by the Indiana Department of Environmental Management at least sixty (60) days prior to the expiration date.

Signed this 21st day of May, 2012, for the Indiana  
Department of Environmental Management.

  
Dale T. Schnaith, Chief  
Facility Construction and  
Engineering Support Section  
Office of Water Quality

### SANITARY SEWER SYSTEM DESCRIPTION

The proposed project shall consist of approximately 70 feet of 18-inch diameter PVC (ASTM F679) sanitary sewer, a new sanitary sewer lift station, approximately 6,000 feet of 8-inch diameter PVC (ASTM D2241 SDR-21) sanitary sewer force main and 4,000 feet of 12-inch diameter PVC (AWWA C900 DR-18) sanitary sewer force main. The proposed project will provide service for Phase III of the Purdue Research Park located near the north side of the City of West Lafayette. The expected initial (existing) average daily wastewater flow into the new lift station is 300,000 gpd.

Approximately 50 feet of the new 18-inch diameter PVC ASTM F679 sanitary sewer will be connected to the new lift station. Approximately 20 feet of the new 18-inch diameter PVC ASTM F679 sanitary sewer will be connected to an existing 18-inch diameter sanitary sewer stub located at the intersection of Kalberer Road and Salisbury Street. It is expected that additional sanitary sewer will be installed in a future project. The new sanitary sewer lift station located near the northwest corner of the intersection of Yeager Road and Kalberer Road shall consist of:

- Two (2) submersible pumps that will have a capacity of 764 gpm at approximately 133 feet of total dynamic head (TDH) for the expected near term peak daily flow of 1,100,000 gpd. The new 8-inch diameter PVC (ASTM D2241 SDR-21) sanitary sewer force main will be utilized for the expected near term wastewater flow and it will connect the lift station to a new manhole on the new and the existing 18-inch diameter sanitary sewer located near the intersection of Kalberer Road and Salisbury Street.
- Space for a third future submersible pump for the expected future peak daily flow of 2,880,000 gpd. Two (2) of the upgraded future lift station pumps running together in parallel will have a combined capacity of 2,000 gpm at approximately 200 feet of TDH. The new 12-inch diameter PVC AWWA C900 DR-18 sanitary sewer force main will be utilized for the expected future flow. The new 12-inch diameter force main will extend from the lift station, be installed parallel to the 8-inch diameter force main and capped near the intersection of Yeager Road and Kalberer Road. A variance was issued on April 25, 2012, for the 12-inch diameter PVC force main that will not be connected to the existing sanitary sewer system in this project. It is expected that the 12-inch diameter force main will be connected to a future sanitary interceptor sewer that will have a connection to the existing sanitary sewer system.

- Variable frequency drives (VFDs) installed on each of the lift station pumps to control the pump rotational speed (RPM). The VFDs will maintain a minimum fluid velocity of 2.5 to 3.0 feet per second in the sanitary sewer force mains.

Inspection during construction and installation of the new 18-inch diameter sanitary sewer, the lift station and the two (2) force mains will be provided by the City of West Lafayette. Maintenance after completion of construction will be provided by the City of West Lafayette. Wastewater treatment will be provided by the City of West Lafayette.

CONDITIONS AND LIMITATIONS TO THE AUTHORIZATION FOR  
CONSTRUCTION OF SANITARY SEWERS

During the period beginning on the effective date of this permit and extending until the expiration date, the permittee is authorized to construct the above described sanitary sewer system. Such construction shall conform to all provisions of State Rule 327 IAC 3 and the following specific provisions:

PART I

SPECIFIC CONDITIONS AND LIMITATIONS TO THE CONSTRUCTION PERMIT

Unless specific authorization is otherwise provided under the permit, the permittee shall comply with the following conditions:

1. All local permits shall be obtained before construction is begun on this project.
2. If pollution or nuisance conditions are created, immediate corrective action will be taken by the permittee.
3. The separation of sanitary sewers from water mains and drinking water wells must comply with 327 IAC 3-6-9.
4. All gravity sewer pipe must be leak tested using either a hydrostatic test or air test in accordance with 327 IAC 3-6-19(d). If using a hydrostatic test, the rate of exfiltration or infiltration shall not exceed 200 gallons per inch of pipe diameter per linear mile per day. Air test shall be as prescribed.

5. The results of the gravity sewer leakage test and/or force main leakage test on the completed sewer shall be submitted to this office within three months of completion of construction.
6. A drop pipe must be provided for all sewers entering a manhole at an elevation of 24 inches or more above the manhole invert.
7. Deflection tests must be performed on all flexible pipe after the final backfill has been in place at least 30 days. No pipe shall exceed a vertical deflection of 5%. Deflection test results shall be submitted with the infiltration/exfiltration test results. (The following are considered nonflexible pipes: vitrified clay pipe, concrete pipe, ductile iron pipe, cast iron pipe, asbestos cement pipe.)
8. Manholes shall be air tested in accordance with ASTM C1244-93, Standard Test Method for Concrete Sewer Manholes by the Negative Air Pressure (Vacuum) Test. The manhole test results shall be submitted with the gravity sewer leakage test results.
9. An audio-visual alarm shall be installed for the proposed lift station.
10. Air relief valves shall be installed at high points in the force main.
11. All force mains must be pressure and leak tested in accordance with 327 IAC 3-6-19(e).

Failure to submit test results within the allotted time period or failure to meet guidelines as set forth in the above conditions could be subject to enforcement proceedings as provided by 327 IAC 3-5-3.

PART II

GENERAL CONDITIONS

1. No significant or material changes in the scope of the plans or construction of this project shall be made unless the following provisions are met:
  - a. Request for permit modification is made 60 days in advance of the proposed significant or material changes in the scope of the plans or construction;
  - b. Submit a detailed statement of such proposed changes;
  - c. Submit revised plans and specifications including a revised design summary; and
  - d. Obtain a revised construction permit from this agency.
2. This permit may be modified, suspended, or revoked for cause including, but not limited to the following:
  - a. Violation of any term or conditions of this permit:
  - b. Obtaining this permit by misrepresentation or failure to disclose fully all relevant facts.
3. Nothing herein shall be construed as guaranteeing that the proposed sanitary sewer system shall meet standards, limitations or requirements of this or any other agency of state or federal government, as this agency has no direct control over the actual construction and/or operation of the proposed project.

PART III

APPEALS PROCEDURE

Anyone wishing to challenge this agency's decision for authorizing the construction of this facility may do so, provided that a petition for administrative review is filed as required by IC 4-21.5-3-7. The petition must be submitted within fifteen (15) days of the date of mailing of this permit notification. The petition must include facts demonstrating that you are either the applicant, a person aggrieved or adversely affected by this decision, or otherwise entitled to review by law. Additionally, IC 13-15-6-2 requires that your petition include:

1. The name and address of the person making the request;
2. The interest of the person making the request;
3. Identification of any persons represented by the person making the request;
4. The reasons, with particularity, for the request;
5. The issues, with particularity, proposed for consideration at the hearing; and
6. Identification of the permit terms and conditions which, in the judgement of the person making the request, would be appropriate in the case in question to satisfy the requirements of the law governing permits of the type granted or denied by the Assistant Commissioner's action.
7. Pursuant to IC 4-21.5-3-1(f), any document serving as a petition for review or review and stay must be filed with the Office of Environmental Adjudication. Filing of such a document is complete on the earliest of the following dates:
  - a. The date on which the petition is delivered to the Office of Environmental Adjudication, Indiana Government Center North, 100 North Senate Avenue, Room 501, Indianapolis, Indiana 46204;
  - b. The date of the postmark on the envelope containing the petition, if the petition is mailed by United States mail; or
  - c. The date on which the petition is deposited with a private carrier, as shown by a receipt issued by the carrier, if the petition is sent by private carrier.

APPENDIX D  
SRF Resolutions

APPENDIX E  
SRF Project Financing

## SRF PROJECT FINANCING INFORMATION

### City of West Lafayette North Side Regional Lift Station and Force Main Improvements Preliminary Engineering Report

June 2012

#### 1. Project Cost Summary

a. Collection/transport system cost	\$	3,525,000
b. Treatment System cost	\$	0
c. Non-Point-Source (NPS) cost (septic tank removal)		<u>0</u>
Subtotal Construction Cost	\$	3,525,000
d. Capacity Reservation Fees		0
e. Contingencies (10%)	\$	300,000
f. Non-construction Costs	\$	<u>560,000</u>
g. <b>Total Project Cost</b> (lines a+b+c+d+e+f)	\$	<b>4,385,000</b>
h. Total ineligible SRF costs	\$	0
i. Other funding sources		
(1) Local Funds	\$	0
(2) Cash on hand		0
(3) CDBGrant – CFF		0
(4) USDA Rural Development (RD)		0
(5) Other		<u>0</u>
<b>Total Other Funding Sources</b>	\$	<b>0</b>

**2. SRF Loan Amount** (line g minus line item h+i)      \$      **4,385,000**

#### 3. Financial Advisor

a. Firm	O. W. Krohn & Associates
b. Name	Mr. Jim Treat
c. Address	231 E. Main Street Westfield, IN 46074
d. Phone Number	317.867.5888
e. Fax	317.867.5898
f. E-mail	jtreat@owkcpa.com

#### 4. Bond Counsel (TBD)

- a. Firm
- b. Name
- c. Address
- d. Phone Number
- d. Fax Number

## APPENDIX F

### Public Participation Documents

