



# ECONOMIC AND FISCAL IMPACT ANALYSIS

# 08

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# ECONOMIC AND FISCAL IMPACT ANALYSIS

Economic and fiscal impact modeling are tools used to determine the economic impact resulting from a development project. For economic impacts, an econometric modeling system (i.e., Minnesota IMPLAN) estimates the cumulative effects of economic change. The analysis conducted for this study is based on the proposed conceptual site designs and estimated project costs. The econometric modeling captures both the construction phase of the project (one-year impacts) and the operational phase (on-going, annual impacts), including direct and indirect job creation.

The fiscal impact analysis estimates the recurring general fund revenues to Susquehanna Township and the Susquehanna Township School District, and Dauphin County that would be realized from implementation of the development concept for each of the four lots. More simply, it is a projection of annual tax and fee revenues from future build-out.



## ABOUT THE ANALYSES

The major sources of revenue calculated include real estate taxes, Act 511 taxes (earned income tax), deed transfer, per capita Local Services, and the County's Hotel Tax. Other sources include fees and forfeitures, licenses and permits, charges for services, and other local taxes.

The analysis methodology was based on the following:

- Dauphin County's revenues from its 2020-21 Approved Budget were used to develop per capita revenue factors for these other revenues.
- The assessed valuations used to calculate the real estate tax were based on the Concept Summary Cost Estimates (facility costs) prepared by the consultant team Michael Baker.
- Median household incomes were taken from the Federal Financial Institutions Examination Council's data for census tracts neighboring the lots.
- Household incomes were used to estimate the County's and Township's earned income tax.

The economic impact analysis (total economic output and jobs) output and fiscal impact analysis (taxes) were completed for the build-out of each of the four lot concepts. While a true fiscal impact analysis estimates the net impact on government for a particular project by projecting both incremental tax revenue and the additional cost on the local government (e.g., providing public services to the site, impact on the school district, etc.), a full fiscal impact analysis is beyond the scope of this study. A partial fiscal impact analysis estimating the impact on tax generation is provided. The results of the economic and fiscal impact analyses are summarized in the following tables.

The pro-forma results are based on the best information currently available and that the future performance of the development concepts proposed will be largely conditioned on economic and market factors prevailing at the time of development.

## SUMMARY OF FINDINGS

Based on the development concepts of the four lots, redevelopment of the DGS Annex property will create an estimated 3,220 direct, new full-time equivalent positions in Susquehanna Township, Dauphin County. Based on 2018 employment data from the U.S. Census Bureau, Center for Economic Studies, LEHD tool, the Township's existing employment base is currently 25,035. Development of the concept plans, accordingly, has the potential to increase direct, net employment in the Township by 12.9%. The 3,220 new jobs are estimated to provide \$188.9 million in annual employee wage compensation, which will be infused into the local economy through increased consumer spending and purchasing power. Additionally, one time construction activity is estimated to generate 5,056 direct, temporary construction jobs for local companies.

On the fiscal side, the development concepts would generate \$18.6 million annually in new local taxes for the Township, County, and School District. The School District would receive the greatest benefit, receiving an estimated \$10.6 million annually in new revenue.

# ECONOMIC IMPACT ANALYSIS

**Table 15. Economic Impact by Lot**

	LOT 13		LOT 14		LOT 15		LOT 16	
	Construction (one-time)	Operational (annual)	Construction (one-time)	Operational (annual)	Construction (one-time)	Operational (annual)	Construction (one-time)	Operational (annual)
<b>Economic Impact</b>								
Direct	\$374,944,034	\$59,987,456	\$183,277,937	\$82,243,088	\$18,500,174	\$12,619,635	\$133,602,542	\$92,131,968
Indirect	\$84,989,146	\$27,385,555	\$49,315,572	\$46,533,486	\$5,139,327	\$7,140,243	\$36,100,109	\$30,554,328
Induced	\$109,497,798	\$40,868,411	\$47,551,197	\$54,476,927	\$4,458,286	\$7,110,888	\$34,343,496	\$27,245,692
<b>Total Output Impact</b>	<b>\$569,430,978</b>	<b>\$128,241,422</b>	<b>\$280,144,706</b>	<b>\$183,253,501</b>	<b>\$28,097,787</b>	<b>\$26,870,766</b>	<b>\$204,046,146</b>	<b>\$149,931,988</b>
<b>Employment Compensation</b>								
Direct	\$198,064,267	\$42,692,755	\$82,628,026	\$84,367,205	\$7,701,743	\$12,945,567	\$59,635,136	\$48,968,063
Indirect	\$32,174,536	\$11,619,463	\$18,745,317	\$20,117,919	\$1,959,400	\$3,086,956	\$13,727,506	\$11,244,685
Induced	\$39,568,262	\$14,731,675	\$17,180,761	\$19,660,122	\$1,610,564	\$2,567,839	\$12,408,430	\$9,825,525
<b>Total Employee Compensation</b>	<b>\$269,807,065</b>	<b>\$69,043,893</b>	<b>\$118,554,104</b>	<b>\$124,145,247</b>	<b>\$11,271,708</b>	<b>\$18,600,361</b>	<b>\$85,771,073</b>	<b>\$70,038,272</b>
<b>Employment Impacts</b>								
Direct	2,889	845	1,195	1,336	110	205	861	834
Indirect	469	178	269	300	27	46	195	191
Induced	720	269	313	357	29	47	226	179
<b>Total Job Creation</b>	<b>4,079</b>	<b>1,293</b>	<b>1,777</b>	<b>1,993</b>	<b>166</b>	<b>298</b>	<b>1,283</b>	<b>1,203</b>



**Table 16. Total Economic Impact for All Four Lots**

AGGREGATE OF FOUR LOTS		
	Construction (one-time)	Operational (annual)
<b>Economic Impact</b>		
Direct	\$710,324,687	\$246,982,147
Indirect	\$175,544,153	\$111,613,612
Induced	\$195,850,777	\$129,701,918
<b>Total Output Impact</b>	<b>\$1,081,719,617</b>	<b>\$488,297,677</b>
<b>Employment Compensation</b>		
Direct	\$348,029,172	\$188,973,590
Indirect	\$66,606,760	\$46,069,023
Induced	\$70,768,017	\$46,785,160
<b>Total Employee Compensation</b>	<b>\$485,403,949</b>	<b>\$281,827,774</b>
<b>Employment Impacts</b>		
Direct	5,056	3,220
Indirect	960	716
Induced	1,289	852
<b>Total Job Creation</b>	<b>7,304</b>	<b>4,787</b>

**Notes:**

(1) All model results are in year 2021 dollar values.

(2) A countywide model of Dauphin County, Pennsylvania was the basis of analysis. Therefore, all results reflect county impacts.

(3) Operational impacts reflect the benefits of a development when it is in operation. Employment impacts reflect the jobs created and/or supported by the project at full build-out. All compensation impacts are assumed to recur on an annual basis.

(4) Employment impacts reflect the total number of jobs created and/or supported by the project including part time employment. Full time equivalent

(FTE) are calculated as a national average of the ratio of IMPLAN projected employment to FTE for each industry sector.

Source: IMPLAN 2021

# FISCAL IMPACT ANALYSIS

**Table 17.** Fiscal Impact of All Four Lots at Build-Out (All Jurisdictions)

Real Estate Tax		Concepts private facility costs (\$1,000) at build-out				TOTAL
		LOT 13	LOT 14	LOT 15	LOT 16	
Assessed Value (\$1,000's)		\$301,045	\$142,720	\$15,393	\$73,785	
<b>COMBINED MILLAGE</b> (see Dauphin County 2021 Millage Rates)		31.0186				
Annual Real Estate Tax Revenue		\$9,337,994	\$4,426,975	\$477,469	\$2,288,707	<b>\$16,531,146</b>
Real Estate Transfer Tax		\$15,693	\$7,440	\$802	\$3,846	<b>\$27,782</b>
<b>Act 511 Earned Income</b>						
Income of DSG Residents		\$23,680,000	\$10,320,000	\$0	\$3,420,000	
Employment income (Non-DSG Residents) (1)		\$19,447,267	\$38,408,192	\$3,591,700	\$20,855,438	
Resident rate 1.000%		\$236,800	\$103,200	\$0	\$34,200	<b>\$374,200</b>
Hotel Tax (County only)		\$524,688				<b>\$524,688</b>
Non-Resident Rate 1.000%		\$194,473	\$384,082	\$35,917	\$208,554	<b>\$823,026</b>
<b>Local Services</b>						
DSG Residential Population		1,243	602	-	200	
LSG Per Resident (Susquehanna Township) \$47.00		\$58,421	\$28,294	\$0	\$9,377	<b>\$96,092</b>
LSG Per Resident (Susquehanna School District) \$5.00		\$6,215	\$3,010	\$0	\$998	<b>\$10,223</b>
<b>Per Capita</b>						
Susquehanna Township \$5.00		\$6,215	\$3,010	\$0	\$998	<b>\$10,223</b>
Susquehanna School District \$5.00		\$6,215	\$3,010	\$0	\$998	<b>\$10,223</b>
Residents Tax (Susquehanna School District) \$5.00		\$6,215	\$3,010	\$0	\$998	<b>\$10,223</b>
<b>Employment Tax</b>						
DSG Employment		844	1,336	205	834	
Occupation Tax (Susquehanna Township) \$65.00		\$54,891	\$86,836	\$13,341	\$54,224	<b>\$209,292</b>
Occupation Tax (Susquehanna School District) \$270.00		\$228,010	\$360,703	\$55,415	\$225,239	<b>\$869,366</b>
Other Township General Fund Revenues		\$3,710	\$2,830	\$229	\$1,374	<b>\$8,143</b>
Other County General Fund Revenues		\$30,487	\$23,250	\$1,879	\$11,289	<b>\$66,905</b>
Total Projected Revenues, all jurisdictions		\$10,710,027	\$5,435,649	\$585,052	\$2,840,800	<b>\$19,571,529</b>

**Notes:**

(1) 50% of employees at DSG are assumed to be non-residents, employees who are residents are not counted twice



**Table 18.** Fiscal Impact of All Four Lots by Jurisdiction

TOTAL PROJECTED GENERAL FUND REVENUES	LOT 13	LOT 14	LOT 15	LOT 16	TOTAL
Susquehanna Township	\$1,713,369	\$1,162,177	\$114,795	\$604,678	<b>\$3,595,018</b>
Dauphin County	\$2,740,876	\$1,059,452	\$113,638	\$546,996	<b>\$4,460,961</b>
Susquehanna Township School District	\$6,015,343	\$2,847,298	\$301,204	\$1,461,893	<b>\$10,625,738</b>

**Susquehanna Township Notes:**

- (1) Concepts private facility construction costs at build-out
- (2) Assume 50 percent non-resident employees.
- (3) Susquehanna Township Adopted Budget
- (4) Assumes 50% of employees are non-residents, employees who are residents are not counted twice

**Dauphin County Notes:**

- (1) Concepts private facility construction costs at build-out
- (2) Assume 50 percent non-resident employees.
- (3) Dauphin County 2021 Approved Budget

**Susquehanna Township School District Notes:**

- (1) Concepts private facility construction costs at build-out

# PRO FORMA ANALYSIS

## About the Analysis

The financial performance risk for the final proposed development concept plan was evaluated through a conceptual pro forma analysis. The conceptual pro forma analysis projects the anticipated financial return on investment that a proposed real estate development project is likely to create. The analysis is based on various assumptions, including the highest and best use land development scenarios, the timing of each phase of development, projected development costs, and market analysis information.

Given that the development concept plan represents hypothetical real estate development scenarios for each of the four lots, the pro forma analysis provides a starting point for evaluating public-private partnership opportunities for the successful redevelopment of the DGS Annex Property and initiating such partnership discussions with a private real estate investment and/or development entity having interest in the project. Such partnership opportunities will help DCRA and their redevelopment partners determine – among other policy decisions – the types of public funding investments that are most needed to help strengthen the financial performance of the proposed development scenarios.

## Analysis Assumptions

The pro forma analysis is based on a series of underlying assumptions driven by the proposed development concept plan. These assumptions include the following:

### Concept Plans

Each of the four development concept plans represent a hypothetical real estate development scenario yielding a mix of residential and non-residential uses for each of the four lots. In addition to stakeholder inputs, the development concepts were informed by the real estate market analysis as previously discussed. The conceptual reuse plans represent a planning-level analysis of each lot's proposed reuse strategy and do not represent engineering design plans such as those that would be prepared and submitted to Susquehanna Township pursuant to the applicable land use regulations and standards. As such, the planning-level analysis presented herein represents the anticipated financial performance of the proposed private development uses proposed for the DGS Annex Property and the need for public financing to augment a private developer's investment into the project.

This emphasizes the public-private partnership role that DCRA will need to consider in concert with the ultimate owner/developer(s) of the DGS Annex Property. At that time, DCRA will have a clear understanding of the private development project(s) and its need for public financing assistance based on the developer's independent pro forma analysis. A developer's independent pro forma analysis will identify a specific sequence (phasing) for the proposed development types and determine how their respective cash flows will be used to finance other phases of the project.

### Real Estate Market Study

The real estate market study provides specific insights to the various land use types that could feasibly be supported by the redevelopment of the DGS Annex Property. Among other insights, the analysis specifies certain absorption and market-rate costs (for-sale and lease rates) that were used to help inform the pro forma analysis for each concept plan and respective development type.



## Probable Cost Estimates

Probable cost estimates for surface transportation and utility infrastructure improvements were calculated based on the development concept plan. As stated above, the concept development plan is a planning-level drawing and, therefore, the cost estimates are current projections and will be further refined and finalized through the preliminary and final engineering and design processes for each lot.

## Agreement of Sale

As previously discussed in the Sale of Commonwealth-Owned Property section above, an AOS between the Commonwealth (Seller) and DCRA (Buyer) specifies the terms and conditions for conveying the four lots to DCRA. According to the AOS, the Buyer's purchase price is \$1.00. The pro forma assumes a land and building acquisition cost to the third-party developer(s), which would be paid from the developer(s) to DCRA.

## Results

Based on the above assumptions, individual pro forma analysis models were completed in Microsoft Excel for each of the four lots. These pro forma analysis models were provided to DCRA for its future use and ongoing modeling needs that includes its communications with prospective development partners.

Each pro forma analysis projects the anticipated financial return that the proposed development scenario is likely to create. For the purpose of this DCRA Reuse Planning Study, the anticipated financial return is based on the developer's Internal Rate of Return (IRR) value calculated for each scenario's private development use program. The IRR is the rate at which an investment in a project promises to generate a return during its useful life. The IRR is often the measure used to evaluate the financial attractiveness of a specific investment or project (i.e., the higher a project's IRR, the more desirable it is to undertake). The IRR is uniform for investments of varying types, such as the residential and non-residential components of each lot's proposed development program.

The table below presents the IRR values calculated for each lot's proposed use type(s) along with the projected public subsidy value necessary to achieve such returns. IRR values above 10 percent demonstrate use types that are anticipated to be financially feasible and present low to moderate financial risk. Reuse options with IRR values below 10 percent are indicative of greater financial risk and would require DCRA to consider a variety of public funding and financing options beyond the public subsidies indicated below. Such additional public funding and financing options would help lower the overall private development investment costs and improve the project's overall financial performance.

**Table 19.** Pro Forma Summary of Findings

LOT	PROPOSED USE	INTERNAL RATE OF RETURN (IRR)	PROJECTED PUBLIC SUBSIDY NEED
13	For Sale Single Family Dwellings	25.46%	\$63,000,000
	For Sale Townhomes	22.16%	
	Apartments	7.58%	
	Mixed Use	4.17%	
	Grocery	3.29%	
	Hotel & Conference Center	13.67%	
	Suites Hotel	12.79%	
13B	Casual Dining Restaurant	8.59%	
	Indoor Sports Complex	4.42%	
14	For Sale Single Family Dwellings	15.62%	\$59,000,000 (Note the CAT Facility share of surface transportation costs is estimated to be \$21,000,000)
	For Sale Townhomes	22.43%	
	Mixed Use	1.01%	
15	Mixed Use	3.45%	\$3,000,000
16	For Sale Single Family Dwellings	2.21%	\$59,000,000
	Industrial	5.49%	

Reuse options with IRR values below 10 percent are indicative of greater financial risk and would require DCRA to consider a variety of public funding and financing options beyond the public subsidies indicated below.













# REUSE PLAN RECOMMENDATIONS 09

## IN THIS SECTION

**PRE-ACQUISITION  
RECOMMENDATIONS**

**PUBLIC FUNDING  
RECOMMENDATIONS**

**CONCLUSION**



# REUSE PLAN RECOMMENDATIONS

The Commonwealth of Pennsylvania, as the current owner of the DGS Annex Property, consisting of Lots 13, 14, 15, and 16, intends to transfer ownership of these to DCRA through an AOS in 2023.

There are already several entities involved that have a stake and a critical role in the redevelopment of the DGS Annex Property.

## **1. Commonwealth's Agreement of Sale (AOS)**

Pursuant to the AOS, the Commonwealth (the Seller) has certain obligations relative to the transfer of the property including subdivisions, separation of utilities, specific roadway improvements, and other financial considerations. DCRA (the Buyer) has certain obligations to the Commonwealth once the property is transferred including demolition of non-usable buildings, environmental remediation of remaining issues, site preparation work, marketing and redevelopment of the property, land use regulations, and particular sales payments.

## **2. Capital Area Transit's Proposed New Facility on Lot 14**

PennDOT and CAT have expressed interest in locating a new CAT administration, operations, and maintenance facility on a portion of Lot 14. This new facility will replace CAT's current facility located on Cameron Street in the City of Harrisburg. Having PennDOT and CAT be the potential first development project that will include potentially \$21 million in related surface transportation improvements will be a significant benefit to DCRA's marketing and promotion of the overall redevelopment of the DGS Annex Property redevelopment effort.

## **3. Proposed Hotel/Entertainment Development on Lot 13**

DCRA has been negotiating with a prospective developer to build a ~100 room suites style hotel on Lot 13B, which fronts Cameron Street across from the Pennsylvania Farm Show Complex and Expo Center. In addition, discussions with the Hershey Harrisburg Sports & Events Authority expressed continued interest in the opportunity of building an associated indoor multi-purpose sports facility that could augment youth basketball and volleyball tournaments held at the Farm Show Complex and Expo Center.

Beyond the potential opportunity with PennDOT and CAT, DCRA will need to secure partnerships with private sector developers to accomplish redevelopment of all four lots. This Reuse Planning Study provides DCRA and its prospective partners with a baseline of the proposed highest and best uses for each lot, and accordingly provides:

- A projection of potential job creation and revenue generation associated with redevelopment;
- Hurdles to redevelopment that will have to be overcome;
- Infrastructure improvements that will be needed; and
- Connectivity that is recommended to accomplish a cohesive redevelopment of the four lots.

The *DCRA Reuse Planning Study* also informs the development of land use plans and their reviews by incorporating significant public and stakeholder engagement as part of the reuse planning process.

Individual sections of this *Reuse Planning Study* have provided specific recommendations especially related to infrastructure and other site improvements necessary to support redevelopment. The following sections outline a series of next step actions that DCRA and other public sector partners may take to foster strong economic development and community revitalization of the DGS Annex Property.

## PRE-ACQUISITION RECOMMENDATIONS

- Coordinate with Susquehanna Township on its continued development of the proposed land use regulations that will support the Reuse Planning Study's implementation. Encourage completion of the Township's new zoning and land use regulations before the end of 2021.
- Secure early subdivision and acquisition of Lot 13B and Lot 14 to facilitate ready-to-go projects including the CAT facility construction. Enlist state and local stakeholders to encourage early release of these two lots in order to generate a positive revenue stream for investment into lots that require more robust site preparation work.
- Assure the improvements to Azalea Drive, Dogwood Avenue, and Sycamore Drive are made consistent with the Reuse Planning Study's recommended transportation improvements and in accordance with Township specifications. Construction of roadway improvements that do not support successful connectivity and redevelopment efforts could require additional investment to "fix" the new road(s), or could limit redevelopment potential of the overall property.
- Develop an implementation strategy and timeline for utility and infrastructure projects to support the anticipated first phases of development. Use the high-level costs developed in the pro forma for this Reuse Planning Study to determine high-level budgets for necessary utility and infrastructure improvements for the initial phase of redevelopment.
- Use high-level implementation budgets to develop a public funding strategy and begin pursuit of necessary funding. Given the amount and diversity of public funding that will be needed, it is recommended that DCRA secure the services of a public funding consultant to assist with development of a strategy, writing of grants, and assistance with grant management.
- Consider the use of county and local incentives, such as Tax Increment Financing, to attract private sector development partners.

## PUBLIC FUNDING RECOMMENDATIONS

It is recognized that a redevelopment of this magnitude will likely occur over several years or decades and will typically be accomplished in a phased approach. The next step of the DGS Annex Property redevelopment effort is for DCRA and its partners to identify the initial development phases that currently include both the proposed CAT facility on Lot 14 and the hospitality/entertainment development of Lot 13B – and outline a strategy for facilitating those first successful redevelopment efforts. Part of that strategy will be to identify potential funding sources for supporting the implementation of the recommendations made throughout the Reuse Plan Study. The following Funding Recommendations and Funding Matrix outlines potential and traditional funding sources that can be pursued to accomplish implementation of the recommendations made throughout the Reuse Planning Study.

### Recommendation #1

#### Position DCRA to serve as a Public Conduit for Grant and Loan Funding

Under certain federal and state programs, private companies are not eligible grantees for funding, but are often eligible sub-recipients. Accordingly, some programs require a private organization to use a public applicant (e.g., DCRA) to serve as the grantee and pass through for funding. Cooperation agreements are required between the parties to delineate roles and responsibilities.

To help strengthen the financial viability of the project, DCRA should proactively prepare to serve as a public conduit for grant and loan funds and identify additional public sector partners, such as Susquehanna Township and Tri-County Regional Planning Commission, to also serve as potential applicants for public funding. Roles of DCRA and other public sector partners include:

- Identify grant and loan programs and the windows for application based on eligible uses of funds that could support infrastructure development.
- Secure organizational approval to serve in the role as the public applicant for funds, whereby the grant funding flows through DCRA or other public sector partners, and then to the real estate developer (e.g., sub-grantee). As the public applicant, DCRA or other public sector partners would be responsible for compliance reporting and the disbursement of funds to the sub-grantee.
- Provide grant writing staff support to prepare and submit applications or funding.

In this way, a project is strengthened through a public-private partnership where the public-sector is helping to secure grant and loan funds.

In terms of funding sources, many of Pennsylvania's signature grant and loan programs are excellent sources to consider for the redevelopment of the DGS Annex Property. DCRA should follow these programs closely in the coming years, and advocate for funding increases with the Pennsylvania General Assembly and the Governor's Office.

- The Pennsylvania Office of the Budget's Redevelopment Assistance Capital Program (RACP) is Pennsylvania's signature funding source for vertical construction projects. While grants are typically under \$5 million, the Commonwealth's invested interest in this redevelopment may provide the opportunity for larger grants.
- The Pennsylvania Department of Community and Economic Development's (DCED) Business in Our Sites (BOS) program would be a target program to support the light industrial uses on Lot 16. The program hasn't been open in recent years, but would provide a substantial low-interest, patient loan option for a developer as well as grant opportunities for DCRA.
- Pennsylvania's Multimodal Transportation Fund programs administered by PennDOT and DCED would serve as state-grant funding to match federal transportation dollars. On the federal side, the Rebuilding American Infrastructure with Sustainability and Equity (RAISE) program would provide up to \$25 million in a federal transportation grant. Significant coordination with project advocates is important to help position the project for favorable consideration.
- The U.S. Economic Development Administration's (EDA) Public Works grant program is also a federal program that supports public facilities and economic development projects. Early and ongoing dialogue with the Regional Representative based in the City of Philadelphia is recommended to help identify a specific project phase that aligns with EDA's funding priorities. Note the program does have higher funding levels at this time due to the American Rescue Program Act (ARPA).
- PennDOT and several other Pennsylvania agencies have trail specific programs that could be utilized. These programs, however, have small funding levels that are generally under \$1 million.

## Recommendation #2

### Secure an Additional Capital Budget Line-Item for the Project

Pennsylvania's signature economic development grant program, the Redevelopment Assistance Capital Program (RACP), requires a Capital Budget line-item to be eligible to apply. While Dauphin County likely has existing line-items that could be used, to ensure funding capacity through the duration of a phased development, which assumedly will take many years, securing additional line-items for the project would be advantageous.

## Recommendation #3

### Begin Project Advocacy with State and Federal Leadership

While the development scenarios for each lot are conceptual in nature, the Reuse Planning Study illustrates the tremendous potential of the site to generate significant economic benefits for the County, Township, School District and entire region. It also encapsulates the vision of the local community that, through cooperative agreement with the end developer(s), can come to fruition through a phased development process.

To help position the project for grant and loan funding, DCRA should begin a grassroots advocacy strategy in the near-term to build awareness, excitement, and ultimately commitments from the state and federal delegations to support future requests for public funding. A series of state legislative delegation and federal congressional meetings should be scheduled on an annual basis to provide updates on the project. In addition, DCRA should meet with public funding program staff to generate awareness of the project. Particularly with federal grant programs (e.g., U.S. Economic Development Administration), it would be beneficial to begin advocacy in the near-term.

## Recommendation #4

### Advocate with Local Stakeholders to Position the Project for Tax Increment Financing (TIF)

Tax Increment Financing (TIF), pursuant the Tax Increment Financing Act of July 11, 1990 as amended, 53 P.S. 6930.1 et seq., is a tax abatement economic development tool that can be used by municipalities and their authorities to finance redevelopment projects by issuing bonds where:

- New incremental taxes generated by the redevelopment project are utilized to pay debt service on the bonds.
- The current taxes being paid on the property continue to be paid; only the incremental taxes are served for debt service payment.

In Pennsylvania, a potential TIF generally has to be approved by the three taxing bodies: the municipality, county, and school district. For this reason, project advocacy and the adoption process can require significant lead time. Since the former DGS Annex Property has been vacant for some time, the incremental taxes generated by redevelopment will be significant and could be an excellent local tool for helping advance the project. DCRA should begin working with Susquehanna Township and School District to generate support for a TIF District using the potential revenue projections prepared in the fiscal impact analysis.



## Recommendation #5

### Maximize utilization of the current influx of federal funding that exist at all levels of government.

It should be noted that the Commonwealth of Pennsylvania, Dauphin County, the City of Harrisburg and Susquehanna Township all currently have allocations of American Rescue Act (ARPA) funding that could potentially be utilized to implement some of the Reuse Planning Study's recommendations. Federal agencies such as EPA and EDA have either launched new grant programs or increased funding in existing programs to support COVID recovery efforts. In addition, it is likely the federal administration will be enacting infrastructure-related legislation in late 2021 that will contain many applicable funding sources for implementation. The influx of federal funding over the next three years will provide a once-in-a-lifetime opportunity for very large tranches of resources for transformational projects such as the redevelopment of the DGS Annex Property.

## CONCLUSION

Throughout the DGS Annex Property reuse planning process, redevelopment of the DGS Annex Property was described as a "once in a lifetime" opportunity for the region. The potential to generate new tax revenue, create new jobs, establish exceptional recreation amenities, and build a live-work-play community is well-supported by this study. The community must be patient and recognize that redevelopment of a site of this size will happen in phases and will likely take a decade or more to complete.

As the future property owner, DCRA will have significant roles to play in establishing a favorable development atmosphere, managing community expectations, serving as a funding conduit, and robustly championing the success of the redevelopment effort. Implementation of the recommendations proposed in this Reuse Planning Study can begin now and set the stage for realizing the highest levels of success for redevelopment of the DGS Annex Property.









## APPENDIX

# A

## EXISTING CONDITIONS

### IN THIS SECTION

**TOPOGRAPHIC AND  
GEOLOGICAL**

**ENVIRONMENTAL**

**TRANSPORTATION**

**MULTIMODAL  
INFRASTRUCTURE NEEDS  
AND CONNECTIVITY  
ANALYSIS**

## TOPOGRAPHIC AND GEOLOGICAL

Topographic and geological site conditions presented below are sourced from the DGS Annex Disposition Report (2017) and online environmental databases stated below. Aside from updated mapping, no new additional analysis was completed given the sites have remained unchanged since 2017 when the DGS Report was prepared.

Asylum Run, a tributary to Paxton Creek, is located along the southern portion of the site. There are also two unnamed tributaries to Asylum Run present on the site. An existing 100-year floodplain associated with Asylum Run has been identified; however, there is no known detailed hydraulic study of this feature.

Approximately 50% of the site is concentrated urban land consisting of shale materials and is of little agricultural importance or value. The remaining area is designated as prime farmland of agricultural value, which largely consists of floodplain valleys disrupted by bands of eroded shaly silt land throughout. Specific topographic and geological data for each lot are included below.

### Lot 13

The United States Department of Agriculture (USDA)-National Resource Conservation Service (NRCS) Web Soil Survey describes the underlying soils of the site as belonging to the Atkins series, Berks series, Chavies series, Duncannon series, Philo series, Weikert series and Urban land. Soil of the Atkins series is considered a floodplain landform soil but has a very high runoff class and is poorly drained. The water table can be found between the surface and 12" deep, which contributes to frequent flooding. Areas with Atkins series soil should be maintained in a vegetative cover to prevent erosion and sedimentation during flooding events, thereby improving water quality. The Berks series consists of moderately deep, well-drained soils formed in residuum weathered from shale, siltstone and fine-grained sandstone on rounded and dissected uplands. Permeability is moderate to moderately rapid. The Chavies series consists of very deep, well drained soils. The Duncannon series consists of deep, well-drained soils that formed in silty to very fine sandy loam material, and presumed to be aeolian, overlying a variety of residuum materials, stream deposits and glacial deposits. The soils are found on nearly level to moderately steep uplands and terraces. Permeability is moderate. The Philo series consists of very deep, moderately well drained soils. They are considered a floodplain landform type of soil with a low runoff class. The depth to water table is 18-24" and flooding frequency is occasional. Philo series soils formed in recent alluvium derived mainly from sandstone and shale. Permeability is moderate to moderately rapid. Urban land consists of deep, upland soils that are well-drained to somewhat poorly drained. They formed in material weathered from crystalline rocks. The Weikert series consist of shallow, well drained soils formed in material that weathered from interbedded gray and brown acid shale, siltstone, and fine-grained sandstone on gently sloping to very steep areas on uplands. Permeability is moderately rapid.

Based on a review of geologic mapping contained in the document entitled Atlas of Preliminary Geologic Quadrangle Maps of Pennsylvania, dated 1981, published by the Pennsylvania Department of Environmental Resources (PADER), the bedrock underlying the site is classified as the graywacke of the Hamburg sequence bedrock. The graywacke of the Hamburg sequence bedrock is a type of sandstone marked by large detrital quartz and feldspars set in a fine-grained matrix. This formation is further described in the document entitled Engineering Characteristics of the Rocks of Pennsylvania, dated 1982, published by the PADER, as being a dark-gray impure sandstone. The formation is thick and well-bedded and is expected to exhibit low to moderate secondary porosity, fair cut slope stability, and moderate resistance to weathering. The formation is a good quality foundation for structures when excavated to sound material beneath any potential fill.

The United States Geological Survey (USGS) 7.5-Minute Topographic Quadrangle Map for Harrisburg East and Harrisburg West, Pennsylvania indicate that the site has an average elevation of approximately 410' above mean sea level (amsl). The northeastern end of the site has a maximum elevation of approximately 460' amsl and the southwestern end of the site has a minimum elevation of approximately 340' amsl. Based on a review of the USGS topographic quadrangle map, groundwater beneath the site is estimated to occur between 0 and 60' below ground surface (bgs) across the site. Based on the topography of the site and the surrounding area, groundwater flow is presumed to be generally flowing southward in the southern part of the site towards Asylum Run, and northward and westward in the northern part of the site towards an unnamed tributary of Asylum Run. Local fracture patterns and any groundwater pumping effects may alter the natural groundwater elevation and flow direction.

## Lot 14

The USDA-NRCS Web Soil Survey describes the underlying soils of the site as belonging to the Berks series and Weikert series. The Berks series consists of moderately deep, well drained soils formed in residuum weathered from shale, siltstone and fine-grained sandstone on rounded and dissected uplands. Permeability is moderate to moderately rapid. The Weikert series consist of shallow, well-drained soils formed in material that weathered from interbedded gray and brown acid shale, siltstone, and fine-grained sandstone on gently sloping to very steep areas on uplands. Permeability is moderately rapid.

Based on a review of geologic mapping contained in the document entitled Atlas of Preliminary Geologic Quadrangle Maps of Pennsylvania, published by the PADER and dated 1981, the bedrock underlying the site consists of the Hamburg Sequence. This formation is described in the document entitled Engineering Characteristics of the Rocks of Pennsylvania, published by the PADER and dated 1982, as being gray, greenish-gray, and maroon shale, which is moderately well-bedded, with well-developed, highly abundant fractures which are close, open, and steeply dipping. The bedrock is moderately resistant to weathering and is reported to be moderately to highly weathered at a deep depth, resulting in loose rubble of pencil-like fragments to rectangular plates. This sequence is reported to have good surface drainage, with joint and bedding plane openings providing a secondary porosity of moderate magnitude. Foundation stability is described as good but should be excavated to sound material before development. Cut slope stability is fair, due to disintegration when exposed to moisture for a relatively short time.

The USGS 7.5-Minute Topographic Quadrangle Map for Harrisburg East and Harrisburg West, Pennsylvania indicate that the site has an average elevation of approximately 460'. Based on a review of the USGS topographic quadrangle map, groundwater beneath the site is estimated to occur between 10 and 40' bgs across the site. Based on the topography of the site and the surrounding area, groundwater flow is presumed to be generally to the west towards Paxton Creek. Local fracture patterns and any groundwater pumping effects may alter the natural groundwater elevation and flow direction.



## Lot 15

The USDA-NRCS Web Soil Survey describes the underlying soils of the site as belonging to the Berks shaly silt loam series. The Berks series consists of moderately deep, well drained soils formed in residuum weathered from shale, siltstone and fine-grained sandstone on rounded and dissected uplands. Permeability is moderate to moderately rapid.

Based on a review of geologic mapping contained in the document entitled Atlas of Preliminary Geologic Quadrangle Maps of Pennsylvania, published by the PADER and dated 1981, the bedrock underlying the site is classified as belonging to limestone of the Hamburg sequence. Limestone of the Hamburg sequence bedrock consists of interbedded limestone and micaceous shale and siltstone. This formation is further described in the document entitled Engineering Characteristics of the Rocks of Pennsylvania, published by the PADER and dated 1982, as also containing minor beds of limestone conglomerate and red shale. Massively bedded calcarenite is commonly associated with the limestone; its thickness is unknown.

The USGS 7.5-Minute Topographic Quadrangle Map for Harrisburg East and Harrisburg West, Pennsylvania indicate that the site has an average elevation of approximately 420' amsl. Based on a review of the USGS topographic quadrangle map, groundwater beneath the site is estimated to occur between 10 and 40' bgs across the site. Based on the topography of the site and the surrounding area, groundwater flow is presumed to be generally to the west towards Paxton Creek. Local fracture patterns and any groundwater pumping effects may alter the natural groundwater elevation and flow direction.

## Lot 16

The USDS-NRCS Web Soil Survey describes the underlying soils of the site as belonging to the Berks shaly silt loam series, Weikert shaly silt loam series, and dump material. The Berks series consists of moderately deep, well-drained soils formed in residuum weathered from shale, siltstone and fine-grained sandstone on rounded and dissected uplands. Permeability is moderate to moderately rapid. The Weikert series consist of shallow, well-drained soils formed in material that weathered from interbedded gray and brown acid shale, siltstone, and fine-grained sandstone on gently sloping to very steep areas on uplands. Permeability is moderately rapid. Dump material is considered to be mine spoil or earth fill.

Based on a review of geologic mapping contained in the document entitled Atlas of Preliminary Geologic Quadrangle Maps of Pennsylvania, published by the PADER and dated 1981, the bedrock underlying the site is classified as the graywacke of the Hamburg sequence bedrock. The graywacke of the Hamburg sequence bedrock is a type of sandstone marked by large detrital quartz and feldspars set in a fine-grained matrix. This formation is further described in the document entitled Engineering Characteristics of the Rocks of Pennsylvania, published by the PADER and dated 1982, as a dark-gray impure sandstone. The formation is thick and well-bedded and is expected to exhibit low to moderate secondary porosity, fair cut slope stability, and moderate resistance to weathering. The formation is also a good quality foundation for structures when excavated to sound material.

The USGS 7.5-Minute Topographic Quadrangle Map of Harrisburg East, Pennsylvania indicates that the site has an average elevation of approximately 440' amsl. The low-lying areas of the site including the unnamed tributary of Paxton Creek is approximately 340' amsl while the higher elevations of the site are approximately 460' amsl. Based on a review of the USGS topographic quadrangle map, groundwater beneath the site is estimated to occur between 0 and 60' bgs across the site. Based on the topography of the site and the surrounding area, groundwater flow is presumed to be generally to the north-northwest towards an unnamed tributary of the Paxton Creek. Local fracture patterns and any groundwater pumping effects may alter the natural groundwater elevation and flow direction.







## ENVIRONMENTAL

As part of the disposition process, DGS, DCRA, and various stakeholders have completed 10 separate environmental reports for the four lots, including at least one Phase 1 Environmental Site Assessment (ESA) study for each lot between 2016 and 2019. For the *DCRA Reuse Planning Study*, each report was reviewed to prepare a holistic summary of findings.

**Of the four lots, lots 13 and 16 contain the largest environmental impacts and required mitigation measures to allow for future reuse.**

.....

### Lot 13

Abatement of asbestos-containing materials, lead-based paint, and mold in many of the buildings on Lot 13.

### Lot 16

Mitigation of the landfill prior to construction for site stabilization and impact mitigation.



### Environmental studies utilized to conduct the analysis of Existing Environmental Conditions included:

1. Phase 1 Environmental Site Assessment, Lot 13  
DGS Annex Complex, Harrisburg, Pennsylvania 17110  
Prepared for: RGS Associates and Pennsylvania  
Department of General Services,  
Prepared by: ARM Group Inc.  
August 2016.
2. Phase 1 Environmental Site Assessment, Lot 13  
DGS Annex Complex, Harrisburg & Susquehanna  
Township, Pennsylvania, 17110  
Prepared for: County of Dauphin, Dauphin County  
Redevelopment Authority  
Prepared by: TRC Environmental Corporation  
June 2019
3. Phase 1 Environmental Site Assessment, Lot 14  
DGS Annex Complex, Harrisburg, Pennsylvania 17110  
Prepared for: RGS Associates and Pennsylvania  
Department of General Services  
Prepared by: ARM Group Inc.  
August 2016
4. Phase 1 Environmental Site Assessment, Lot 14  
DGS Annex Complex, Harrisburg & Susquehanna  
Township, Pennsylvania, 17110  
Prepared For: County of Dauphin, Dauphin County  
Redevelopment Authority  
Prepared By: TRC Environmental Corporation  
April 2019
5. Phase 1 Environmental Site Assessment, Lot 15  
DGS Annex Complex, Harrisburg, Pennsylvania 17110  
Prepared for: RGS Associates and Pennsylvania  
Department of General Services  
Prepared by: ARM Group Inc., August 2016
6. Phase 1 Environmental Site Assessment, Lot 15  
DGS Annex Complex, Harrisburg & Susquehanna  
Township, Pennsylvania, 17110  
Prepared For: County of Dauphin, Dauphin County  
Redevelopment Authority  
Prepared By: TRC Environmental Corporation  
May 2019
7. Environmental Site Investigation Summary, Lot 16  
PSECU Kohn Road Site (Lot 16)  
Prepared for: PSECU  
Prepared by CMX Engineering  
October 2007 and March 2008
8. Phase 1 Environmental Site Assessment, Lot 16  
DGS Annex Complex, Harrisburg, Pennsylvania 17110  
Prepared for: RGS Associates and Pennsylvania  
Department of General Services  
Prepared by: ARM Group Inc.  
August 2016
9. Phase 1 Environmental Site Assessment, Lot 16  
DGS Annex Complex, Harrisburg & Susquehanna,  
Township, Pennsylvania, 17110  
Prepared For: County of Dauphin, Dauphin County  
Redevelopment Authority  
Prepared By: TRC Environmental Corporation  
May 2019
10. Site Assessment Summary Report, Lot 16  
DGS Annex Complex – Tax Parcel 62-026-004  
Prepared for: Susquehanna Township and Dauphin County  
Prepared by HRG, September 2019



## Lot 13

An Asbestos and Lead-Based Paint Inspection Report was prepared in August 2016 for all buildings located on Lot 13. All the on-site buildings were constructed prior to 1956 and the report confirmed the presence of asbestos containing materials and lead-based paint in most of the buildings. Additionally, a Phase 1 Environmental Site Assessment (ESA) was conducted as part of the *DGS Annex Disposition Report* in 2016. The Phase 1 ESA concluded there is “no evidence of Current Recognized Environmental Conditions, Historic Recognized Environmental Conditions, or Controlled Recognized Environmental Conditions in connection with the property...” with no further environmental investigations recommended. In 2019, a DCRA commissioned Phase 1 ESA was completed by a separate consultant. While similar to the findings of the 2016 Phase 1 ESA, the 2019 Phase 1 ESA did categorize several issues as Current and Historical Recognized Environmental Conditions, indicating some mitigation actions may be warranted.

In alignment with the 2016 Asbestos and Lead-Based Paint Inspection Report, the 2019 Phase 1 ESA also found a potential presence of asbestos-containing materials, lead-based paint, and mold in many of the buildings on Lot 13. Asbestos, lead-based paint, and mold remediation represent consequential impacts to future redevelopment and will require abatement prior to either demolition or building rehabilitation. **The identified Historic Recognized Environmental Conditions (HRECs) do not require any further investigation or action prior to site redevelopment.**

## 2019 PHASE 1 ESA FINDINGS

### CURRENT

#### Recognized Environmental Conditions at Lot 13

- Three of the four Current Recognized Environmental Conditions observed were related to active and inactive exterior and interior electric transformers and ancillary electric equipment which, absent a “dry-type transformer” label, have the potential to contain dielectric fluids with Polychlorinated Biphenyls.
- Numerous industrial, commercial, and consumer-grade chemicals and substances during site reconnaissance were identified, and may be considered hazardous materials or substances, e.g., water treatment chemicals, fuel, oil, and solvent canisters, hydraulic fluids, and bulk industrial cleaning supplies.

The presence of an x-ray machine which may contain hazardous substances was noted in building 23. These materials and substances should be disposed of in accordance with applicable regulations if no longer being used.

### HISTORICAL

#### Recognized Environmental Conditions at Lot 13

- Based on files obtained from the PA Department of Environmental Protection (PA DEP), an 8,000-gallon Underground Storage Tank (UST) (009) containing diesel fuel for an emergency generator was identified as the source of a leak at Buildings 41-43 - Willow Oak in April 1994. In April 1996, documentation in the PA DEP file review indicated the UST was removed and replaced by the current Above Ground Storage Tank.
- Based on files obtained from PA DEP, an oil sheen was observed on Asylum Run near Building 44 (Power Plant) on June 10, 1998 which was attributed to one of the two 20,000-gallon Underground Storage Tanks of fuel oil located in front of the power plant. On June 13, 1998, both 20,000-gallon tanks were removed. Based on the disposal records and Closure Report, 684.47 tons of impacted soil was removed for recycling. Following soil removal, post-excavation soil and groundwater samples were collected from the excavation, with results below applicable standards.



## Lot 14

The 2016 Phase 1 Environmental Site Assessment (ESA) conducted as part of the *DGS Annex Disposition Report* concluded there is “no evidence of Current Recognized Environmental Conditions, Historic Recognized Environmental Conditions, or Controlled Recognized Environmental Conditions in connection with the property...” with no further environmental investigations recommended.” The 2019 Phase ESA came to similar conclusions.

However, both studies identified the following risks and potential impacts to redevelopment:



**Landfill Location on Lot 14**

- A portion of the site has been used to stockpile compost, soil and asphalt waste. The stockpile of asphalt waste is not considered to be a Current Recognized Environmental Condition because the materials observed consisted of inert materials that would not impact the soils and/or groundwater of the site. The presence of these materials is a Business Environmental Risk because they should have been disposed of in accordance with applicable state and local regulations if they had been stockpiled for more than a year.
- There is anecdotal evidence of some solid waste disposal on a portion of Lot 14. The anecdotal evidence of solid waste disposal on the property is not considered to be a Current Recognized Environmental Condition because there was no direct evidence of any such activities following a detailed review of the available historical aerial photographs, topographic maps, or site inspection. This information is considered to be a Business Environmental Risk because undocumented solid waste disposal is known to have occurred on adjacent properties, and the presence of buried waste materials could influence site development options and/or require extra costs to properly manage such materials.
- A natural gas regulator station is located on the site. The natural gas regulator station operated by UGI on the site is not considered to be a risk because, due to the chemical properties of natural gas, any releases from this station would volatilize to the air and therefore not impact the soils and/or groundwater of the site.
- The site is located in an area of high radon propensity (i.e., potential radon concentrations of greater than 4 pCi/L). This is not considered to be a Current Recognized Environmental Condition nor is it currently considered to be a potential Business Environmental Risk because radon is typically only a concern in subsurface, poorly ventilated spaces (e.g., basements).

Both the 2016 and 2019 Phase 1 ESAs identified potential landfilling on the site as either a Current Recognized Environmental Condition or a Business Environmental Risk. The 2019 Phase 1 ESA categorized the landfilling as a Current Recognized Environmental Condition due to the potential for the debris to contain hazardous materials. The two identified areas of potential landfilling are identified in Figure 5 – Lot 14 Site RECs from the TRC Phase 1 report.

It is recommended that debris be removed from all areas of Lot 14 and disposed of prior to redevelopment. The potentially landfilled areas should be further investigated to determine if debris has impacted the constructability of the site via a Ground Penetrating Radar survey.

## Lot 15

The 2016 Phase 1 Environmental Site Assessment (ESA) conducted as part of the *DGS Annex Disposition Report* concluded there is “no evidence of Current Recognized Environmental Conditions, Historic Recognized Environmental Conditions, or Controlled Recognized Environmental Conditions in connection with the property...” with no further environmental investigations recommended.” The study did not find that the area has high radon potential. The 2019 Phase 1 ESA had similar conclusions.

## Lot 16

A site investigation was performed in 2007 and 2008 by CMX Engineering as part of a feasibility for Pennsylvania State Employees Credit Union (PSECU) who were considering construction of their new headquarter building on Lot 16. The site investigation consisted of a geophysical survey to evaluate the horizontal and vertical extent of the landfill and a subsurface soil and groundwater investigation to characterize the buried materials and assess the potential for environmental impacts.

Investigators concluded that the landfill footprint was approximately 22 acres, with a maximum waste depth of 58 feet below ground surface. Waste encountered consisted of office, household, and construction waste, debris, appliances, insulation, household-type chemical containers, and yard waste. Several pits and borings encountered materials dated from the early 1960s through 1970s (**See Lot 16 Landfill Boundaries**).





**Lot 16 Landfill Boundaries**

Soil sampling results did not indicate any exceedances of PA DEP Act 2 Nonresidential Standards. The groundwater investigation concluded that chloromethane was detected at concentrations which exceeded both the Chapter 250 Residential and Non-Residential Medium Specific Concentrations in two of the monitoring wells sampled onsite. Surface water samples collected at the site had iron and manganese concentrations above the human health secondary standards for surface water.

Based on the findings of the site assessment and preliminary site development designs, CMX developed probable costs for the mitigation of the impacts associated with the landfill prior to construction of the building and supporting site facilities for PSECU. CMX estimated a cost of \$7.3M to \$12.1M for site stabilization and impact mitigation.

Since the 2007-2008 site investigation, three additional environmental studies have been completed for Lot 16, including a 2016 and 2019 Phase 1 Environmental Site Assessment (ESA0 and a 2019 Site Assessment Summary Report.

While findings primarily relate to the 22-acre landfill, additional findings from the three studies include:

- The historic use of the site for unpermitted solid waste disposal activities is considered to be a Current Recognized Environmental Condition because of the potential for the release of hazardous chemicals into the environment. The unpermitted landfill is not currently in violation of the Solid Waste Management Act, but poses risks associated with vapor intrusion to indoor air and chemical migration to groundwater and surface water. The solid waste landfill is also considered to be a Business Environmental Risk because it presents significant limitations on the future use of the property and/or may require significant costs to remove or mitigate for any future site development.
- The surficial solid waste/debris located on the site is not considered to be a Current Recognized Environmental Condition because the materials that were observed consisted of inert materials that would generally not be expected to impact the soils and/or groundwater of the site.
- The potential presence of wetlands on the site is considered to represent a Business Environmental Risk because the presence of wetlands could limit the use of these portions of the site (i.e. additional setbacks may be required) and/or a permit may be required for any proposed disturbances to wetland areas.
- The location of the site in an area of high radon potential (i.e., potential radon concentrations greater than 4 pCi/L) is not considered to be a Current Recognized Environmental Condition.. The location of the site in an area of high radon potential is not considered to be a Business Environmental Risk because radon is typically only a concern in subsurface, poorly ventilated spaces (e.g., basements) and there are no on-site buildings.
- One de minimis condition: A small area in the southwest corner of the Site appears to be used for sporadic dumping, with small piles of tires, fencing, and other limited miscellaneous materials.
- The presence of a heating oil tank at a home on-site was unconfirmed, which given the age of the property, is likely to exist and would likely require removal and decommissioning in accordance with applicable regulations.
- The September 2019 Site Assessment Summary Report prepared for Dauphin County Parks & Recreational Department in partnership with Susquehanna Township contained the following recommendations should the lot be reused for public park space:
  - Perform Phase II groundwater sampling at the five existing monitoring wells to evaluate current groundwater quality.
  - Enter into Pennsylvania's voluntary Act 2 Cleanup Program which would provide a PA DEP signoff and environmental liability protection for groundwater following up to eight consecutive quarterly monitoring events. If the data shows attainment of the Statewide Heath Standard, nothing more than a final report is required. If the data shows that some cleanup standards are exceeded, it may be possible to demonstrate attainment of the Site Specific (risk based) Standard. In that case a deed covenant would be placed on the property. The covenant would include activity and use limitations such as mandatory connection to public water or the prohibition of private wells to eliminate contact with impacted groundwater.

The presence of the landfill in the center of the most developable portion of Lot 16 is the biggest potential hurdle to reuse of the parcel. However, any additional environmental work should be directly prescribed by the intended end use of the parcel. For example, the CMX effort yielded probably mitigation costs of \$7M to \$12M for an office building complex, while other studies concluded that the landfill could be capped and support different types of end uses for a much lower investment.

The need to enter the site in the PA DEP Act 2 Voluntary Cleanup Program is dependent on the end use and future ownership. If Lot 16 is owned by a public sector entity such as Susquehanna Township or Dauphin County, both entities have statutory liability protection so the benefit of undertaking and completing the Act 2 process may have limited value. However, if the site is purchased and developed by a private sector entity, there is a potential for environmental liability if the site is developed for any use that PA DEP considers “residential.” PA DEP residential end uses include housing, schools, and recreational facilities. Since previous investigations revealed concentrations of contaminants in both soil and water that exceed residential cleanup standards, private sector developers would likely want to complete the Act 2 process to secure liability protection.

## TRANSPORTATION

The existing roadway characteristics for the DGS Annex Property are summarized below. Currently, the four lots have limited access roads. While Cameron Street (SR 0022) and Elmeron Avenue (SR 3026) are heavily utilized state routes that offer direct access to the interstate network, the actual access into the sites from these two roadways is quite limited. The Concept Plan explores off-site and on-site transportation improvements to better connect the four lots with both internal and external traffic.

### Access and Internal Street Network in the Area of Lot 13 and Lot 14

- Lot 13 is bounded by Azalea Drive and Dogwood Drive to the north of the property, Sycamore Drive to the east, Arsenal Boulevard (SR 0022) to the south, and Cameron Street (SR 0022) to the west. Azalea Drive, Dogwood Drive, and Sycamore Drive are private roadways owned and maintained by the DGS. Arsenal Boulevard (SR 0022) and Cameron Street (SR 0230/0022) are both state highways under the ownership and maintenance of PennDOT. Lot 13 also contains an existing extensive pavement network, with multiple parking areas and driveways. The site contains four existing paved access points. The main access point to Lot 13 is Azalea Drive, which leads out to a signalized intersection at Cameron Street (SR 0022). Secondary driveways exist along Dogwood Drive, Cherry Road, and Pine Drive. Dogwood Drive and Cherry Road lead out to Sycamore Drive, which connects to Elmerton Avenue (SR 3026). Pine Drive leads out to Arsenal Boulevard (SR 0022) south of Lot 13.
- Lot 14 is bounded by Sycamore Drive to the west and State Farm Road along the east. Both roads are roads that are owned and maintained by Susquehanna Township. A private gravel access road branches off Dogwood Drive on the southern side of the property providing access to the existing water tanks and maintenance areas. Lot 14 currently has access points to Sycamore Drive and State Farm Road in close proximity to Elmerton Avenue (SR 3026).

### Access and Internal Street Network in the Area of Lot 15 and Lot 16

- Lot 15 is bounded by Bamberger Road, a Susquehanna Township-owned road, to the east and Elmerton Avenue (SR 3026), a PennDOT-owned road to the south. The site is located at an existing signalized intersection in the northwest quadrant. Lot 15 is currently farmland and does not have any access points to either Bamberger Road or Elmerton Avenue (SR 3026).
- Lot 16 is bounded by Interstate 81 to the north, Kohn Road to the east, and Bamberger Road to the west. Lot 16 is currently not developed and does not have any access points, but there are plans to construct a new driveway leading out to Kohn Road.



**Table A1. Roadway Characteristics**

	Arsenal Boulevard	Azalea Drive	Bamberger Road	Cameron Street	Cherry Road	Dogwood Avenue	Elmerton Avenue	Kohn Road	Pine Drive	State Farm Road	Sycamore Drive
Ownership	PennDOT	Dept. of General Service	Susquehanna Township	PennDOT	Dept. of General Service	Dept. of General Service	PennDOT	PennDOT	Dept. of General Service	PennDOT	Dept. of General Service
Functional Classification	Arterial Highway	Local Road	Local Road	State Freeway/Expressway	Local Road	Local Road	Major Collector Roadway	Local Road	Local Road	Major Collector Roadway	Local Road
Posted Speed Limit (MPH)	35	25	25	35	25	25	40	25	25	25	25
AADT	6,800 Vehicles	N/A	300 Vehicles	17,300 Vehicles	N/A	N/A	8,300 Vehicles	2,300 Vehicles	N/A	2,300 Vehicles	N/A
% Heavy Vehicle	2.00%	N/A	10.00%	11.00%	N/A	N/A	2.50%	1.10%	N/A	4.30%	N/A
Number of Lanes	4	2	2	4	2	2	2	2	2	2	2
Average Lane Width	11ft	13ft	12ft	11ft	13ft	12ft	14ft	12ft	15ft	12ft	12ft
Signalized Intersections	2	1	1	3	0	0	4	1	1	0	1
Stop Controlled Intersections	2	5	1	1	3	2	2	6	2	1	1
Intersects With Driveways	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
Shoulder Width	10ft	-	3ft	4-10ft	-	-	4-6ft	4ft	-	7ft	-
Presence of Sidewalk	No	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No	No
Pedestrian Crossings	No	Yes	Yes	Yes	No	No	No	Yes	No	Yes	No

## Transportation Improvement Program

The following projects are planned for the area surrounding the DGS Annex Property as part of the Harrisburg Area Transportation Study's (HATS) Transportation Improvement Program (TIP):

- Intersection improvements are being made to the Cameron Street (SR 0022) and Maclay Street Intersection, with the project being added to the 2019 TIP.
- A resurfacing project has been set up for Cameron Street (SR 0022) from Wildwood Park Drive to Maclay Street, with the project currently in development. The estimated let date is 2022.
- A resurfacing project has been set up for Elmerton Avenue (SR 3026) from US 22 to Bamberger Road, with the project currently in development. The estimated let date is 2024.
- Intersection, traffic signal, and pedestrian facilities improvements are planned along Cameron Street (SR 230) from Paxton Street (SR 3009) to Elmerton Avenue (SR 3026). The project is in development, with an estimated let date 2023.
- The Lancaster Phase 4 ITS project will provide fiber optics along Elmerton Avenue (SR 3026).

## Traffic Signal Conditions

Within the study area, the following eight intersections are signalized, which include two signal systems and one isolated signalized intersection:

- Elmerton Avenue (SR 3026) & Kohn Road (*isolated system*)
- Elmerton Avenue (SR 3026) & Sycamore Drive/Bamberger Road (*Farm Show interconnected signal system*)
- Elmerton Avenue (SR 3026) & Crooked Hill Road (*Farm Show interconnected signal system*)
- Cameron Street (SR 0022) & Elmerton Avenue (SR 3026)/Wildwood Park Drive (*Farm Show interconnected signal system*)
- Cameron Street (SR 0022) & Farm Show Drive/Azalea Drive (*Farm Show interconnected signal system*)
- Cameron Street (SR 0022) & Arsenal Boulevard (SR 0022)/Maclay Street (*Farm Show interconnected signal system*)
- Wildwood Park Drive & Farm Show Drive/HACC Drive (*Farm Show interconnected signal system*)
- Arsenal Boulevard (SR 0022) & 17th Street/Pine Drive (*Harrisburg Master 3 closed loop system*)

Of the eight signalized intersections, six make up the Farm Show interconnected signal system, which consists of radio communication between the signals shown below. The master controller for the signal system is located at the Cameron Street (SR 0022) & Elmerton Avenue (SR 3026)/Wildwood Park Drive intersection. The Elmerton Avenue (SR 3026) & Kohn Road signal is isolated. The Arsenal Boulevard (SR 0022) & 17th Street/Pine Drive signal is part of the Harrisburg Master 3 closed loop system. The communication method at this intersection is hardwire buried.

Traffic operations along the Cameron Street (SR 0022) corridor consist of heavy southbound traffic flow during the morning peak hour, with heavy northbound traffic flow during the evening peak hour. The longest queues along the corridor follow the same flow during peak hours. The Farm Show signal system has been designed to continuously move traffic along Cameron Street (SR 0022).

Side street traffic, particularly Elmerton Avenue (SR 3026) and Azalea Drive, also experiences heavy traffic and queuing along the Cameron Street (SR 0022) corridor during peak hours of the day. The Elmerton Avenue (SR 3026) westbound approach at Cameron Street (SR 0022) experiences heavy left-turn queuing during peak hours, while heavy traffic enters and exits Azalea Drive at Cameron Street (SR 0022) during peak hours due to the existing government facilities.

In addition to the regular traffic conditions along Cameron Street (SR 0022), the PA Farm Show Complex hosts special events throughout the year that greatly impact the traffic system. The events cause additional traffic and queuing present along Cameron Street (SR 0022) and adjacent side streets. Any additional development along the corridor would be additive to the current traffic conditions, with the system being close to maximum capacity. The Farm Show signal system, servicing traffic accessing the Farm Show Complex & Expo Center, is a responsive system designed to account for traffic variations related to event traffic.



**TRAFFIC CONDITIONS IMAGE CAPTION**

## Crash Data

Crash data over the latest five-year period (2015-2019) was reviewed to identify any trends or crash clusters at intersections or along corridors within the study area that would need to be addressed prior to any additional development. The identified road segments that were reviewed included the following:

- Elmerton Avenue (SR 0326)
- Cameron Street/Arsenal Boulevard (SR 0022)
- Kohn Road
- State Farm Road

No crash clusters were identified within the study area. Based on the crash analyses, there are no crash mitigation improvements proposed along any of the study area road segments.

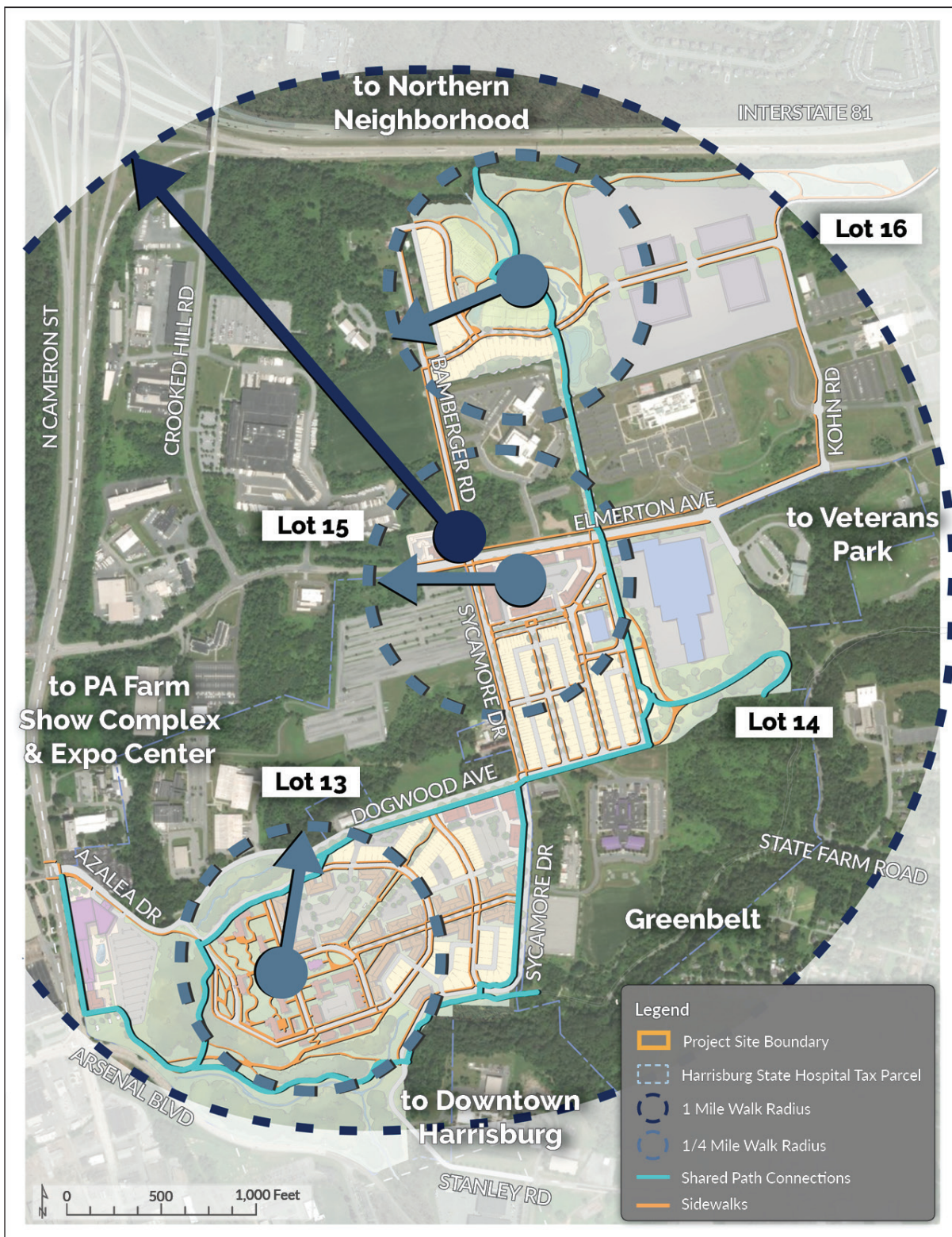


## MULTIMODAL INFRASTRUCTURE NEEDS AND CONNECTIVITY ANALYSIS

The four lots included in the DGS Annex Property are accessed by 11 roadways, including two major roads: Cameron Street (SR 0022) and Elmerton Avenue (SR 3026). All 11 roads are primary vehicular routes and provide minimal access for pedestrians and bicyclists. Speed and traffic volumes, particularly on Cameron Street (SR 0022) and Elmerton Avenue (SR 3026), are not conducive to a safe walkable experience. Sidewalks are not present in most areas. Where sidewalks do exist on Bamberger Road and a stretch of Cameron Street, they are sporadic and without continuous connectivity.

Crosswalks are provided across Cameron Street to the PA Farm Show Complex and at the intersection of Sycamore Drive and Elmerton Avenue. In both locations, the width of the street results in a long pedestrian crossing distance. Multimodal paths on or along streets are not provided or marked and there is no designated space or protection for bicycles.

The *DCRA Reuse Planning Study* process revealed a clear opportunity for improved multimodal connectivity. Providing additional pedestrian infrastructure will enable existing users better access to other uses in the immediate vicinity and support the market for new uses included in the area's redevelopment. As new infill development occurs on the four lots, completing the sidewalk network will make both existing and future buildings more accessible and walkable. The current limited access to the four lots from highly used roads highlights a benefit for new development to provide internal pathways to enhance walkability. Furthermore, interconnections between the new development enables travel between the lots without a car and therefore decreases traffic generation from short distance trips.



Illustrative Walkshed Map



## Trail Connectivity

Trail connectivity to the four lots includes two primary opportunities: the Capital Area Greenbelt and Paxton Creek. To connect all four lots to the Capital Area Greenbelt and Paxton Creek, the *DCRA Reuse Planning Study* planning process identified Bamberger Drive/Sycamore Road as an essential spine for multimodal connectivity. The connective spine will link redevelopment of the four parcels with each other, the Capital Area Greenbelt, and the proposed Paxton Creek Restoration.

- The **Capital Area Greenbelt** runs directly through Lot 13 and passes just south of the corner of Lot 14. This major trail connection serves multimodal users across Dauphin County and is used for commuting as well as recreational travel. Proximity to the Greenbelt is a major asset to encourage multimodal access and connectivity across all four parcels. Extending sidewalks and multimodal infrastructure to and from the Greenbelt into each parcel will allow new development to be easily accessed on foot or by bike, a feature which increases their marketability.
- There are future plans to add a trail network along **Paxton Creek**, which runs just west of the four parcels. In 2018, PennDOT prepared the Paxton Creek Restoration Master Plan, which provides a comprehensive strategy to restore the natural ecological function of the creek. This master plan followed a 2016 Transit Oriented Development (TOD) Master Plan for the Harrisburg Transportation Center. Both plans recognized Paxton Creek as an environmental asset to the County and the City of Harrisburg. The Paxton Creek Restoration Master Plan studied how the creek could be restored and complemented with active and passive uses and paths, turning it into a recreational and ecological destination. While Paxton Creek does not directly intersect with the Capital Area Greenbelt until several blocks further north, it's located within a block of the Greenbelt trail next to Lot 13. The vision for Paxton Creek is an urban greenway and linear park connecting nearby neighborhoods and communities to multimodal transportation services and Downtown Harrisburg.

Additionally, Asylum Run is a tributary of Paxton Creek that runs alongside the Capital Area Greenbelt through Lot 13. Redevelopment of Lot 13 presents an opportunity to enhance the Run's appearance and develop it as an amenity for users along the Greenbelt.







## Parks and Recreational Amenities

There are five primary parks and recreational amenities in the vicinity of the four lots, including:

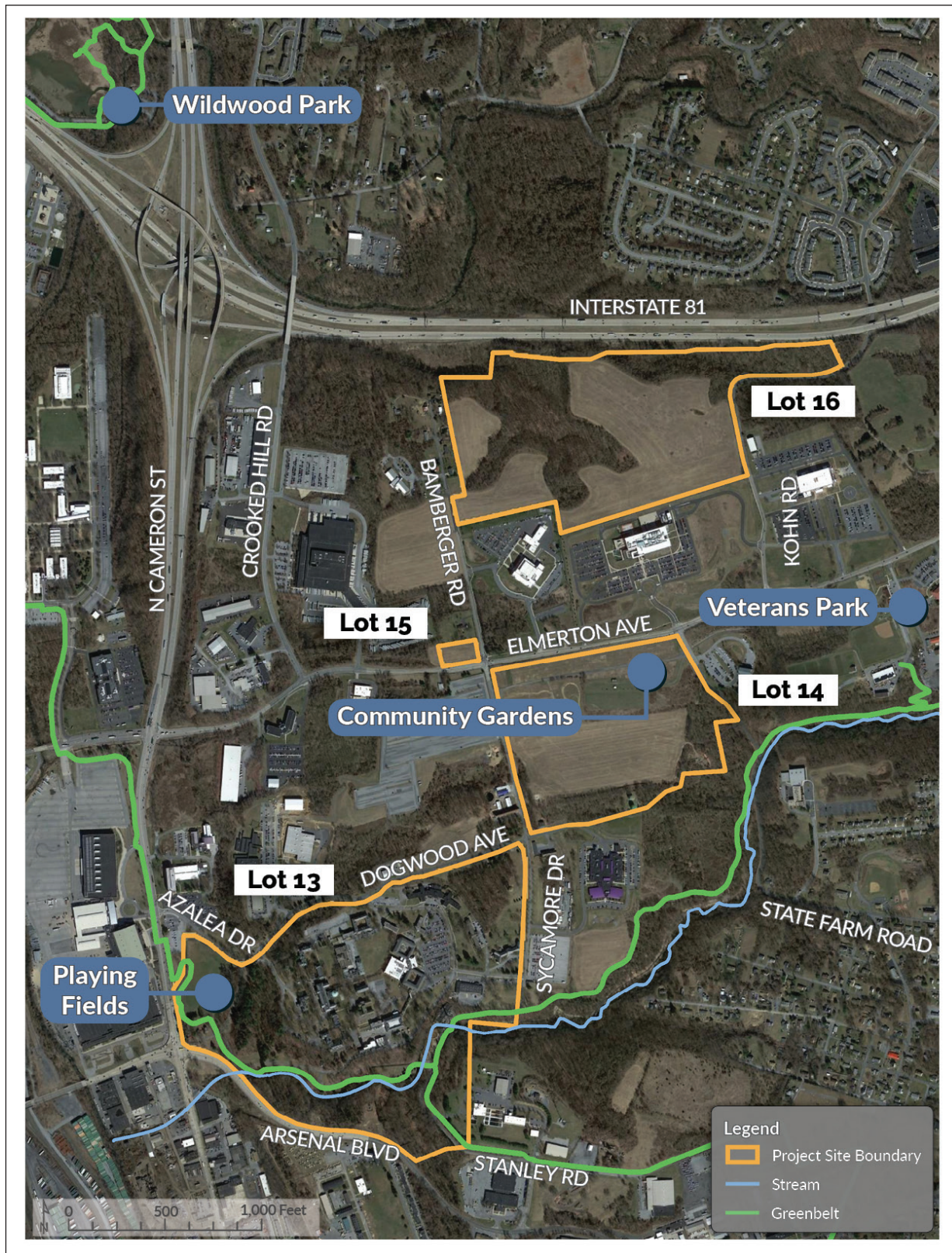
- Wildwood Park
- Veterans Park
- Playing fields at Lot 13
- Historic buildings and Patton Arboretum
- Community gardens on Lot 14

The DGS Annex Property is located in close proximity to two major parks: Wildwood Park to the north and Veteran's Park to the east. Both parks are well used and are great local amenities. Veteran's Park is home to several playing fields that are frequently used. Both Asylum Run and the Capital Area Greenbelt pass to the south of Veteran's Park, allowing users to follow the trail from the park all the way to Lot 13. Minor trail spurs or sidewalk infrastructure are highly desired to facilitate access directly into Lot 14. Wildwood Park is also accessible from the Capital Area Greenbelt, offers internal trails, and sits on the Paxton Creek alignment.

The four lots have several amenities within their boundaries. There are several playing fields located on Lot 13 along the Cameron Street (SR 002) roadway frontage. These grass fields are frequently used by local cricket teams. There is a strong desire to provide recreational space within the four lots, but due to the real estate value and marketability of the Cameron Street frontage, the playing fields will need to be relocated as part of master plan implementation.

There is substantial tree coverage on both Lots 13 and 16 as well as substantial topography. Preserving mature trees when possible will both protect the land and retain the value of fully grown trees to provide shade and aesthetics. On Lot 13, many of these trees are within the area designated as the Patton Arboretum, a part of the historic hospital site which also includes several historic buildings and tunnels.

On Lot 14, there is a large community garden located along Elmerton Avenue that is managed by Dauphin County Parks and Recreation Department. As described in the Visioning plan and shown in the Concept Plan, preservation of the community gardens is of high importance and will be accomplished by relocating the gardens to Lot 16.



**Location of Existing Recreational/Park Uses**

## Future Connections

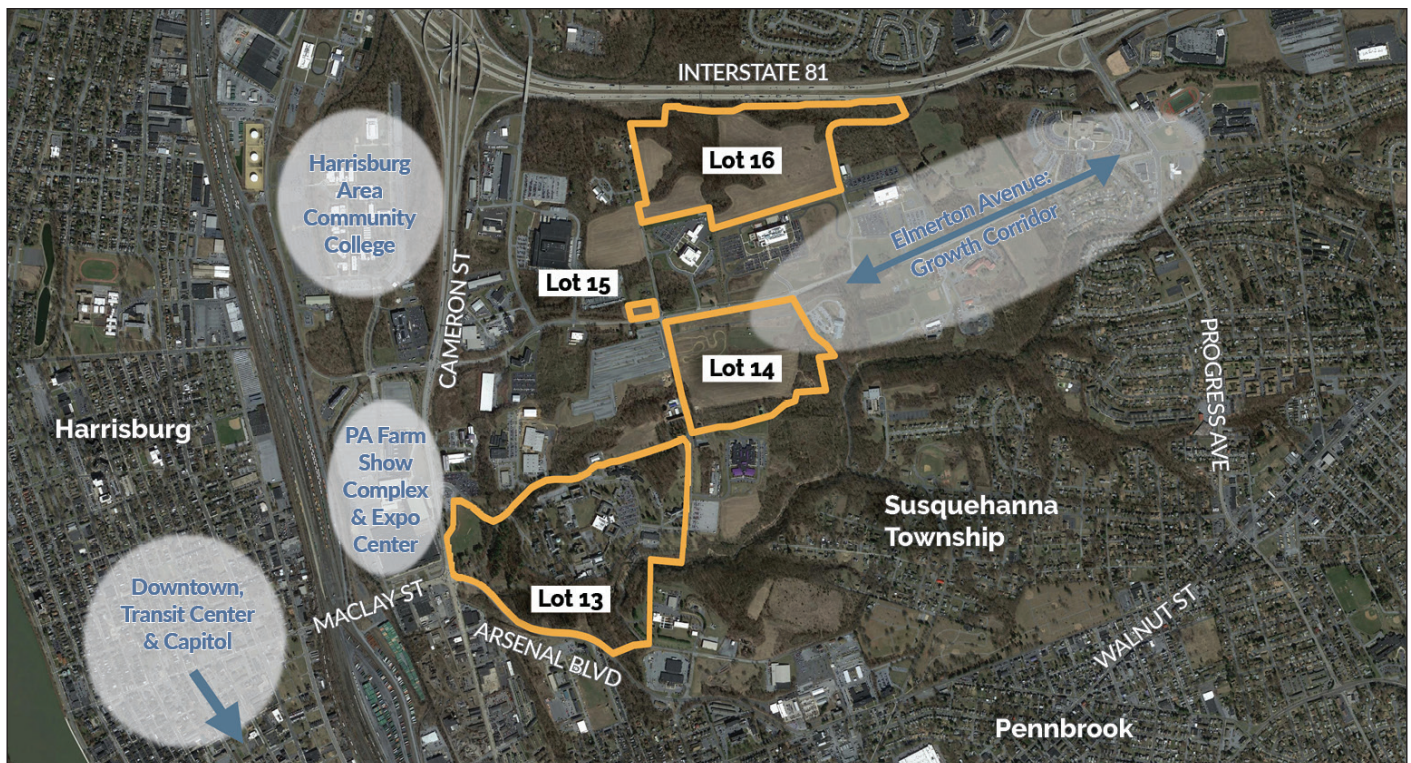
The DGS Annex Property offers an opportunity to improve and add connections to numerous destinations beyond the existing parks described above. Future desired connections to and from the lots include:

- Harrisburg Area Community College
- PA Farm Show Complex & Expo Center
- Downtown Transit Center
- Pennsylvania Capitol
- Londonderry School
- Elmerton Avenue Growth Corridor

The Harrisburg Area Community College and PA Farm Show Complex & Expo Center are located along Cameron Street (SR 0022) and are in walkable distance to several of the lots, if future sidewalk infrastructure is provided. These two destinations bring many people to the area on a regular basis and offer ready-made markets for new development. The Pennsylvania Department of Agriculture, Commonwealth Technology Center, PA DEP South Central Regional Office, PSECU Corporate Headquarters, and Pennsylvania Fish & Boat Commission are governmental offices located in close proximity. The Londonderry School is accessed from Bamberger Road and could further connect students and faculty to the parks, trails, housing, and dining options included in the proposed DGS Annex Property redevelopment. In Susquehanna Township, the Elmerton Avenue corridor is identified as a growth area.

Redevelopment activities can enhance connectivity to the Downtown Transit Center, Capitol buildings, and Downtown Harrisburg through the road network, Capital Area Greenbelt, and proposed future Paxton Creek linear park. The *DCRA Reuse Planning Study* highlights several key connections to area recreation, business, educational facilities, and entertainment, and these should be included in future redevelopment plans. Sidewalks are an essential piece of future infrastructure as they will connect Bamberger Road to the school, connect Kohn Road and State Farm Road Lot 16 to Lot 14, and provide access to the Greenbelt. Enhanced multimodal infrastructure on Sycamore Drive, including sidewalks, bike lanes, and multimodal paths, can connect all four lots and could be a future direct connection towards the south to Downtown Harrisburg. Below Azalea Drive, Sycamore Drive becomes Pine Drive which leads into 17th Street.





**Location and Proximity to Local Attractions and Destinations**

## Transit Review

Capital Area Transit (CAT) Bus Route #9 – Cameron Street/HACC travels along Cameron Street (SR 0022) and Elmeron Avenue (SR 3026), with two stops located adjacent to the study area. The bus route stops at the DGS Complex in Lot 13 and at the Farm Show Complex across Cameron Street from Lot 13.









# APPENDIX

# B

## COST BREAKDOWNS

### IN THIS SECTION

**PROPOSED UTILITY  
CONNECTION**

**TRANSPORTATION  
IMPROVEMENTS**



## PROPOSED UTILITY CONNECTION

**Table B1.** Utility Concept Estimate

Description		Total	
LOT 13		\$	5,420,779
LOT 14		\$	3,395,158
LOT 15		\$	383,500
LOT 16		\$	2,957,500
<b>Subtotal - Contract Cost</b>		<b>\$</b>	<b>12,156,937</b>
Escalation	% 6%	\$	729,416
Design	% 10%	\$	1,215,694
CM-CI	% 4%	\$	486,277
Design & Estimating Contingency	% 25%	\$	3,039,234
<b>Subtotal Project Cost</b>		<b>\$</b>	<b>14,588,324</b>

Table B2. Lot 13

Description	Units	Qty	Unit Cost	Total
8" Dia. DI Water Main, Incl Trenching	LF	5,389	\$ 90.00	\$ 485,010
6" Dia. DI Water Main, Incl Trenching	LF	5,495	\$ 80.00	\$ 439,600
8" Dia. PVC Sanitary Main, Incl Trenching	LF	12,139	\$ 50.00	\$ 606,950
Grinder Pump - Sanitary	EA	3	\$ 18,000.00	\$ 54,000
Underground Electric Ductbank, incl Trenching	LF	10,884	\$ 60.00	\$ 653,040
6" Gas Main	LF	13,484	\$ 70.00	\$ 943,880
FiberOptic/Comm Lines	LF	14,105	\$ 70.00	\$ 987,350
<b>Subtotal - Direct Cost</b>				<b>\$ 4,169,830</b>
Mobilization	%	4%		\$ 166,793.20
Maintenance & Protection of Traffic	%	1%		\$ 41,698.30
Construction Staking	%	1%		\$ 41,698.30
General Conditions	%	6%		\$ 250,189.80
Contractor Overhead & Profit	%	18%		\$ 750,569.40
<b>Total Contractor Cost</b>				<b>\$ 5,420,779</b>



Table B3. Lot 14

Description	Units	Qty	Unit Cost	Total
8" Dia. DI Water Main, Incl Trenching	LF	1,329	\$ 90.00	\$ 119,610
6" Dia. DI Water Main, Incl Trenching	LF	6,160.00	\$ 80.00	\$ 492,800
8" Dia. PVC Sanitary Main, Incl Trenching	LF	7,489	\$ 50.00	\$ 374,450
Grinder Pump - Sanitary	EA	2	\$ 18,000.00	\$ 36,000
Underground Electric Ductbank, incl Trenching	LF	7,489	\$ 60.00	\$ 449,340
6" Gas Main	LF	7,489	\$ 70.00	\$ 524,230
FiberOptic/Comm Lines	LF	8,789	\$ 70.00	\$ 615,230
<b>Subtotal - Direct Cost</b>				<b>\$ 2,611,660</b>
Mobilization	%	4%		\$ 104,466.40
Maintenance & Protection of Traffic	%	1%		\$ 26,116.60
Construction Staking	%	1%		\$ 26,116.60
General Conditions	%	6%		\$ 156,699.60
Contractor Overhead & Profit	%	18%		\$ 470,098.80
<b>Total Contractor Cost</b>				<b>\$ 3,395,158</b>

Table B4. Lot 15

Description	Units	Qty	Unit Cost	Total
6" Dia. DI Water Main, Incl Trenching	LF	200	\$ 80.00	\$ 16,000
6" Dia. PVC Sanitary Main, Incl Trenching	LF	1,700	\$ 50.00	\$ 85,000
Underground Electric Ductbank, incl Trenching	LF	200	\$ 60.00	\$ 12,000
6" Gas Main	LF	200	\$ 70.00	\$ 14,000
FiberOptic/Comm Lines	LF	2,400	\$ 70.00	\$ 168,000
<b>Subtotal - Direct Cost</b>				<b>\$ 295,000</b>
Mobilization	%	4%		\$ 11,800.00
Maintenance & Protection of Traffic	%	1%		\$ 2,950.00
Construction Staking	%	1%		\$ 2,950.00
General Conditions	%	6%		\$ 17,700
Contractor Overhead & Profit	%	18%		\$ 53,100
<b>Total Contractor Cost</b>				<b>\$ 383,500</b>

Table B5. Lot 16

Description	Units	Qty	Unit Cost	Total
8" Dia. DI Water Main, Incl Trenching	LF	10,500	\$ 90.00	\$ 945,000
6" Dia. DI Water Main, Incl Trenching	LF	1,000	\$ 80.00	\$ 80,000
8" Dia. PVC Sanitary Main, Incl Trenching	LF	3,800	\$ 50.00	\$ 190,000
Underground Electric Ductbank, incl Trenching	LF	5,300	\$ 60.00	\$ 318,000
6" Gas Main	LF	5,300	\$ 70.00	\$ 371,000
FiberOptic/Comm Lines	LF	5,300	\$ 70.00	\$ 371,000
<b>Subtotal - Direct Cost</b>				<b>\$ 2,275,000</b>
Mobilization	%	4%		\$ 91,000.00
Maintenance & Protection of Traffic	%	1%		\$ 22,750.00
Construction Staking	%	1%		\$ 22,750.00
General Conditions	%	6%		\$ 136,500.00
Contractor Overhead & Profit	%	18%		\$ 409,500.00
<b>Total Contractor Cost</b>				<b>\$ 2,957,500</b>



## TRANSPORTATION IMPROVEMENTS

**Table B6. Lot Trip Generation**

Lot	Lot Description	Notes	ITE Land Use Code	ITE Description	Independent Variable	
13	Low Density Residential	Single Family	210	Single-Family Detached Housing	39	Dwelling Units
		Townhouses	220	Multifamily Housing (Low-Rise)	79	Dwelling Units
	Apartments	-	221	Multifamily Housing (Mid-Rise)	332	Dwelling Units
	Mixed Use	Commercial	820	Shopping Center	51.681	1000 Sq. Ft. GFA
		Grocery	850	Supermarket	10	1000 Sq. Ft. GFA
		Office	710	General Office Building	103.36	1000 Sq. Ft. GFA
	Hotel	Hotel	310	Hotel	100	Rooms
		Sports Complex	495	Recreational Community Center	120	1000 Sq. Ft. GFA
		Commercial	820	Shopping Center	24.164	1000 Sq. Ft. GFA
	Historic Campus	Hotel & Conference	310	Hotel	100	Rooms
	Park	-	411	Public Park	47.43	Acres
14	Low Density Residential	Single Family	210	Single-Family Detached Housing	40	Dwelling Units
		Townhouses	220	Multifamily Housing (Low-Rise)	132	Dwelling Units
	Mixed Use	Commercial	820	Shopping Center	100.2	1000 Sq. Ft. GFA
		Office	710	General Office Building	300.59	1000 Sq. Ft. GFA
	Park	-	411	Public Park	19.84	Acres
	CAT	-	090	Park-and-Ride Lot with Bus or Light Rail	200	Parking Spaces
	CAT Transit Center	-	710	General Office Building	26.4	1000 Sq. Ft. GFA
15	Mixed Use	Commercial	820	Shopping Center	20.524	1000 Sq. Ft. GFA
16	Low Density Residential	Single Family	210	Single-Family Detached Housing	57	Dwelling Units
	Park	-	411	Public Park	39.05	Acres
	Community Garden	-	411	Public Park	7	Acres
	Industrial	-	110	General Light Industrial	333.69	1000 Sq. Ft. GFA

Land Use Trips									Lot Summary								
Weekday			AM Peak Hour			PM Peak Hour			Weekday			AM Peak Hour			PM Peak Hour		
Enter	Exit	Total	Enter	Exit	Total	Enter	Exit	Total	Enter	Exit	Total	Enter	Exit	Total	Enter	Exit	Total
219	219	438	9	24	33	27	15	42	7100	7094	14194	450	324	774	588	612	1200
279	278	557	9	30	39	31	17	48									
904	903	1807	32	88	120	90	57	147									
976	975	1951	31	18	49	95	102	197									
534	534	1068	24	15	39	48	45	93									
548	548	1096	107	17	124	19	99	118									
717	717	1434	41	26	67	49	40	89									
1730	1729	3459	140	72	212	131	147	278									
457	456	913	15	8	23	45	48	93									
717	717	1434	41	26	67	49	40	89									
19	18	37	1	0	1	4	2	6	4693	4691	9384	473	177	650	348	623	971
224	224	448	9	25	34	28	15	43									
479	479	958	15	48	63	48	28	76									
1892	1891	3783	59	36	95	184	198	382									
1543	1543	3086	267	43	310	52	272	324									
8	8	16	1	0	1	2	1	3									
401	400	801	77	18	95	28	82	110									
146	146	292	45	7	52	6	27	33	1157	1156	2313	220	62	282	70	207	277
388	387	775	13	7	20	38	41	79									
310	310	620	12	34	46	38	22	60									
16	15	31	1	0	1	3	2	5									
3	3	6	1	0	1	1	0	1									
828	828	1656	206	28	234	28	183	211									



Table B7. Lot 13 Trip Generation

Single-Family Detached Housing (210)										
Time Period		Calculations	39	Dwelling Units		Dir. Dist.	R <sup>2</sup>	ST. DEV	AVG RATE	Equation
			Trip Ends	Enter	Exit					
Weekday		Avg Rate	369	185	184	50%	0.95	2.1	9.44	$\ln(T) = 0.92\ln(X) + 2.71$
		Equation	438	219	219					
Weekday	Peak Hour of Adjacent Street Traffic, One Hour between 7 & 9 A.M.	Avg Rate	29	8	21	25%	0.89	0.27	0.74	$T = 0.71(X) + 4.80$
		Equation	33	9	24					
Weekday	Peak Hour of Adjacent Street Traffic, One Hour between 4 & 6 P.M.	Avg Rate	39	25	14	63%	0.92	0.31	0.99	$\ln(T) = 0.96\ln(X) + 0.20$
		Equation	42	27	15					

Multifamily Housing (Low-Rise) (220)										
Time Period		Calculations	79	Dwelling Units		Dir. Dist.	R <sup>2</sup>	ST. DEV	AVG RATE	Equation
			Trip Ends	Enter	Exit					
Weekday		Avg Rate	579	290	289	50%	0.96	1.31	7.32	$T = 7.56(X) - 40.86$
		Equation	557	279	278					
Weekday	Peak Hour of Adjacent Street Traffic, One Hour between 7 & 9 A.M.	Avg Rate	37	9	28	23%	0.9	0.12	0.46	$\ln(T) = 0.95\ln(X) - 0.51$
		Equation	39	9	30					
Weekday	Peak Hour of Adjacent Street Traffic, One Hour between 4 & 6 P.M.	Avg Rate	45	29	16	63%	0.86	0.16	0.56	$\ln(T) = 0.89\ln(X) - 0.02$
		Equation	48	31	17					

Multifamily Housing (Mid-Rise) (221)										
Time Period		Calculations	332	Dwelling Units		Dir. Dist.	R <sup>2</sup>	ST. DEV	AVG RATE	Equation
			Trip Ends	Enter	Exit					
Weekday		Avg Rate	1807	904	903	50%	0.77	2.03	5.44	$T = 5.45(X) - 1.75$
		Equation	1808	904	904					
Weekday	Peak Hour of Adjacent Street Traffic, One Hour between 7 & 9 A.M.	Avg Rate	120	32	88	26%	0.67	0.19	0.36	$\ln(T) = 0.98\ln(X) - 0.98$
		Equation	111	29	82					
Weekday	Peak Hour of Adjacent Street Traffic, One Hour between 4 & 6 P.M.	Avg Rate	147	90	57	61%	0.72	0.19	0.44	$\ln(T) = 0.96\ln(X) - 0.63$
		Equation	141	87	54					

Shopping Center (820)										
Time Period		Calculations	51.681	1000 Sq. Ft. GLA		Dir. Dist.	R <sup>2</sup>	ST. DEV	AVG RATE	Equation
			Trip Ends	Enter	Exit					
Weekday		Avg Rate	1951	976	975	50%	0.76	16.41	37.75	$\ln(T) = 0.68\ln(X) + 5.57$
		Equation	3838	1919	1919					
Weekday	Peak Hour of Adjacent Street Traffic, One Hour between 7 & 9 A.M.	Avg Rate	49	31	18	62%	0.5	0.87	0.94	$T = 0.50(X) + 151.78$
		Equation	178	111	67					
Weekday	Peak Hour of Adjacent Street Traffic, One Hour between 4 & 6 P.M.	Avg Rate	197	95	102	48%	0.82	2.04	3.81	$\ln(T) = 0.74\ln(X) + 2.89$
		Equation	334	161	173					

Supermarket (850)										
Time Period		Calculations	10	1000 Sq. Ft. GFA		Dir. Dist.	R <sup>2</sup>	ST. DEV	AVG RATE	Equation
			Trip Ends	Enter	Exit					
Weekday		Avg Rate	1068	534	534	50%	0.7	37.56	106.78	$T = 70.89(X) + 1212.64$
		Equation	1922	961	961					
Weekday	Peak Hour of Adjacent Street Traffic, One Hour between 7 & 9 A.M.	Avg Rate	39	24	15	60%	N/A	1.89	3.82	N/A
		Equation		N/A						
Weekday	Peak Hour of Adjacent Street Traffic, One Hour between 4 & 6 P.M.	Avg Rate	93	48	45	51%	0.57	3.69	9.24	$\ln(T) = 0.75\ln(X) + 3.21$
		Equation	140	72	68					

General Office Building (710)										
Time Period		Calculations	103.363	1000 Sq. Ft. GFA		Dir. Dist.	R <sup>2</sup>	ST. DEV	AVG RATE	Equation
			Trip Ends	Enter	Exit					
Weekday		Avg Rate	1007	504	503	50% Entering	0.83	5.15	9.74	Ln(T) = 0.97Ln(X)+2.50
		Equation	1096	548	548					
Weekday	Peak Hour of Adjacent Street Traffic, One Hour between 7 & 9 A.M.	Avg Rate	120	104	16	86% Entering	0.85	0.47	1.16	T = 0.94(X) + 26.49
		Equation	124	107	17					
Weekday	Peak Hour of Adjacent Street Traffic, One Hour between 4 & 6 P.M.	Avg Rate	119	20	99	16% Entering	0.88	0.42	1.15	Ln(T) = 0.95Ln(X)+0.36
		Equation	118	19	99					

Hotel (310)										
Time Period		Calculations	100	Rooms		Dir. Dist.	R <sup>2</sup>	ST. DEV	AVG RATE	Equation
			Trip Ends	Enter	Exit					
Weekday		Avg Rate	1434	717	717	50% Entering	N/A	6.22	14.34	N/A
		Equation		N/A						
Weekday	Peak Hour of Adjacent Street Traffic, One Hour between 7 & 9 A.M.	Avg Rate	67	41	26	60% Entering	0.65	0.29	0.67	T = 0.41(X) + 47.90
		Equation	89	54	35					
Weekday	Peak Hour of Adjacent Street Traffic, One Hour between 4 & 6 P.M.	Avg Rate	89	49	40	54% Entering	0.64	0.38	0.89	Ln(T) = 0.92Ln(X)+0.29
		Equation	93	51	42					

Recreational Community Center (495)										
Time Period		Calculations	120	1000 Sq. Ft. GFA		Dir. Dist.	R <sup>2</sup>	ST. DEV	AVG RATE	Equation
			Trip Ends	Enter	Exit					
Weekday		Avg Rate	3459	1730	1729	50% Entering	0.74	8.56	28.82	Ln(T) = 0.98Ln(X)+3.42
		Equation	3334	1667	1667					
Weekday	Peak Hour of Adjacent Street Traffic, One Hour between 7 & 9 A.M.	Avg Rate	212	140	72	66% Entering	0.59	0.74	1.76	Ln(T) = 0.54Ln(X)+2.73
		Equation	204	135	69					
Weekday	Peak Hour of Adjacent Street Traffic, One Hour between 4 & 6 P.M.	Avg Rate	278	131	147	47% Entering	0.64	1.14	2.31	Ln(T) = 0.76Ln(X)+2.00
		Equation	282	133	149					

Shopping Center (820)										
Time Period		Calculations	24.164	1000 Sq. Ft. GLA		Dir. Dist.	R <sup>2</sup>	ST. DEV	AVG RATE	Equation
			Trip Ends	Enter	Exit					
Weekday		Avg Rate	913	457	456	50% Entering	0.76	16.41	37.75	Ln(T) = 0.68Ln(X)+5.57
		Equation	2289	1145	1144					
Weekday	Peak Hour of Adjacent Street Traffic, One Hour between 7 & 9 A.M.	Avg Rate	23	15	8	62% Entering	0.5	0.87	0.94	T = 0.50(X) + 151.78
		Equation	164	102	62					
Weekday	Peak Hour of Adjacent Street Traffic, One Hour between 4 & 6 P.M.	Avg Rate	93	45	48	48% Entering	0.82	2.04	3.81	Ln(T) = 0.74Ln(X)+2.89
		Equation	190	92	98					

Hotel (310)										
Time Period		Calculations	100	Rooms		Dir. Dist.	R <sup>2</sup>	ST. DEV	AVG RATE	Equation
			Trip Ends	Enter	Exit					
Weekday		Avg Rate	1434	717	717	50% Entering	N/A	6.22	14.34	N/A
		Equation		N/A						
Weekday	Peak Hour of Adjacent Street Traffic, One Hour between 7 & 9 A.M.	Avg Rate	67	41	26	60% Entering	0.65	0.29	0.67	T = 0.41(X) + 47.90
		Equation	89	54	35					
Weekday	Peak Hour of Adjacent Street Traffic, One Hour between 4 & 6 P.M.	Avg Rate	89	49	40	54% Entering	0.64	0.38	0.89	Ln(T) = 0.92Ln(X)+0.29
		Equation	93	51	42					

Public Park (411)										
Time Period		Calculations	47.43	Acres		Dir. Dist.	R <sup>2</sup>	ST. DEV	AVG RATE	Equation
			Trip Ends	Enter	Exit					
Weekday		Avg Rate	37	19	18	50% Entering	0.82	1.36	0.78	T = 0.64 (X) + 88.46
		Equation	119	60	59					
Weekday	Peak Hour of Adjacent Street Traffic, One Hour between 7 & 9 A.M.	Avg Rate	1	1	0	59% Entering	N/A	0.23	0.02	N/A
		Equation		N/A						
Weekday	Peak Hour of Adjacent Street Traffic, One Hour between 4 & 6 P.M.	Avg Rate	6	4	2	55% Entering	0.53	0.24	0.11	T = 0.06(X) + 22.60
		Equation	26	15	11					



Table B8. Lot 14 Trip Generation

Single-Family Detached Housing (210)										
Time Period		Calculations	40	Dwelling Units		Dir. Dist.	R <sup>2</sup>	ST. DEV	AVG RATE	Equation
			Trip Ends	Enter	Exit					
Weekday		Avg Rate	378	189	189	50%	0.95	2.1	9.44	Ln(T) = 0.92Ln(X)+2.71
		Equation	448	224	224					
Weekday	Peak Hour of Adjacent Street Traffic, One Hour between 7 & 9 A.M.	Avg Rate	30	8	22	25%	0.89	0.27	0.74	T = 0.71(X) + 4.80
		Equation	34	9	25					
Weekday	Peak Hour of Adjacent Street Traffic, One Hour between 4 & 6 P.M.	Avg Rate	40	26	14	63%	0.92	0.31	0.99	Ln(T) = 0.96Ln(X)+0.20
		Equation	43	28	15					

Multifamily Housing (Low-Rise) (220)										
Time Period		Calculations	132	Dwelling Units		Dir. Dist.	R <sup>2</sup>	ST. DEV	AVG RATE	Equation
			Trip Ends	Enter	Exit					
Weekday		Avg Rate	967	484	483	50%	0.96	1.31	7.32	T = 7.56(X) - 40.86
		Equation	958	479	479					
Weekday	Peak Hour of Adjacent Street Traffic, One Hour between 7 & 9 A.M.	Avg Rate	61	15	46	23%	0.9	0.12	0.46	Ln(T) = 0.95Ln(X)-0.51
		Equation	63	15	48					
Weekday	Peak Hour of Adjacent Street Traffic, One Hour between 4 & 6 P.M.	Avg Rate	74	47	27	63%	0.86	0.16	0.56	Ln(T) = 0.89Ln(X)-0.02
		Equation	76	48	28					

Shopping Center (820)										
Time Period		Calculations	100.195	1000 Sq. Ft. GLA		Dir. Dist.	R <sup>2</sup>	ST. DEV	AVG RATE	Equation
			Trip Ends	Enter	Exit					
Weekday		Avg Rate	3783	1892	1891	50%	0.76	16.41	37.75	Ln(T) = 0.68Ln(X)+5.57
		Equation	6020	3010	3010					
Weekday	Peak Hour of Adjacent Street Traffic, One Hour between 7 & 9 A.M.	Avg Rate	95	59	36	62%	0.5	0.87	0.94	T = 0.50(X) + 151.78
		Equation	202	126	76					
Weekday	Peak Hour of Adjacent Street Traffic, One Hour between 4 & 6 P.M.	Avg Rate	382	184	198	48%	0.82	2.04	3.81	Ln(T) = 0.74Ln(X)+2.89
		Equation	545	262	283					

General Office Building (710)										
Time Period		Calculations	300.586	1000 Sq. Ft. GFA		Dir. Dist.	R <sup>2</sup>	ST. DEV	AVG RATE	Equation
			Trip Ends	Enter	Exit					
Weekday		Avg Rate	2928	1464	1464	50%	0.83	5.15	9.74	Ln(T) = 0.97Ln(X)+2.50
		Equation	3086	1543	1543					
Weekday	Peak Hour of Adjacent Street Traffic, One Hour between 7 & 9 A.M.	Avg Rate	349	301	48	86%	0.85	0.47	1.16	T = 0.94(X) + 26.49
		Equation	310	267	43					
Weekday	Peak Hour of Adjacent Street Traffic, One Hour between 4 & 6 P.M.	Avg Rate	346	56	290	16%	0.88	0.42	1.15	Ln(T) = 0.95Ln(X)+0.36
		Equation	324	52	272					

Public Park (411)										
Time Period		Calculations	19.84	Acres		Dir. Dist.	R <sup>2</sup>	ST. DEV	AVG RATE	Equation
			Trip Ends	Enter	Exit					
Weekday		Avg Rate	16	8	8	50%	0.82	1.36	0.78	T = 0.64 (X) + 88.46
		Equation	102	51	51					
Weekday	Peak Hour of Adjacent Street Traffic, One Hour between 7 & 9 A.M.	Avg Rate	1	1	0	59%	N/A	0.23	0.02	N/A
		Equation		N/A						
Weekday	Peak Hour of Adjacent Street Traffic, One Hour between 4 & 6 P.M.	Avg Rate	3	2	1	55%	0.53	0.24	0.11	T = 0.06(X) + 22.60
		Equation	24	14	10					

Park-and-Ride Lot with Bus or Light Rail (090)										
Time Period		Calculations	200	Parking Spaces		Dir. Dist.	R <sup>2</sup>	ST. DEV	AVG RATE	Equation
			Trip Ends	Enter	Exit					
Weekday		Avg Rate	776	388	388	50%	0.92	1.09	3.88	T = 3.78(X) + 44.13
		Equation	801	401	400					
Weekday	Peak Hour of Adjacent Street Traffic, One Hour between 7 & 9 A.M.	Avg Rate	88	72	16	81%	0.80	0.19	0.44	T = 0.40(X) + 14.34
		Equation	95	77	18					
Weekday	Peak Hour of Adjacent Street Traffic, One Hour between 4 & 6 P.M.	Avg Rate	110	28	82	25%	0.87	0.2	0.55	T = 0.54(X)+1.67
		Equation	110	28	82					

General Office Building (710)										
Time Period		Calculations	26.4	1000 Sq. Ft. GFA		Dir. Dist.	R <sup>2</sup>	ST. DEV	AVG RATE	Equation
			Trip Ends	Enter	Exit					
Weekday		Avg Rate	258	129	129	50%	0.83	5.15	9.74	Ln(T) = 0.97Ln(X)+2.50
		Equation	292	146	146					
Weekday	Peak Hour of Adjacent Street Traffic, One Hour between 7 & 9 A.M.	Avg Rate	31	27	4	86%	0.85	0.47	1.16	T = 0.94(X) + 26.49
		Equation	52	45	7					
Weekday	Peak Hour of Adjacent Street Traffic, One Hour between 4 & 6 P.M.	Avg Rate	31	5	26	16%	0.88	0.42	1.15	Ln(T) = 0.95Ln(X)+0.36
		Equation	33	6	27					

**Table B9. Lot 15 Trip Generation**

Shopping Center (820)										
Time Period		Calculations	20.524	1000 Sq. Ft. GLA		Dir. Dist.	R <sup>2</sup>	ST. DEV	AVG RATE	Equation
			Trip Ends	Enter	Exit					
Weekday		Avg Rate	775	388	387	50% Entering	0.76	16.41	37.75	Ln(T) = 0.68Ln(X)+5.57
		Equation	2049	1025	1024					
Weekday	Peak Hour of Adjacent Street Traffic, One Hour between 7 & 9 A.M.	Avg Rate	20	13	7	62% Entering	0.5	0.87	0.94	T = 0.50(X) + 151.78
		Equation	163	102	61					
Weekday	Peak Hour of Adjacent Street Traffic, One Hour between 4 & 6 P.M.	Avg Rate	79	38	41	48% Entering	0.82	2.04	3.81	Ln(T) = 0.74Ln(X)+2.89
		Equation	169	82	87					

**Table B10. Lot 16 Trip Generation**

Single-Family Detached Housing (210)										
Time Period		Calculations	57	Dwelling Units		Dir. Dist.	R <sup>2</sup>	ST. DEV	AVG RATE	Equation
			Trip Ends	Enter	Exit					
Weekday		Avg Rate	539	270	269	50% Entering	0.95	2.1	9.44	Ln(T) = 0.92Ln(X)+2.71
		Equation	620	310	310					
Weekday	Peak Hour of Adjacent Street Traffic, One Hour between 7 & 9 A.M.	Avg Rate	43	11	32	25% Entering	0.89	0.27	0.74	T = 0.71(X) + 4.80
		Equation	46	12	34					
Weekday	Peak Hour of Adjacent Street Traffic, One Hour between 4 & 6 P.M.	Avg Rate	57	36	21	63% Entering	0.92	0.31	0.99	Ln(T) = 0.96Ln(X)+0.20
		Equation	60	38	22					

Public Park (411)										
Time Period		Calculations	39.05	Acres		Dir. Dist.	R <sup>2</sup>	ST. DEV	AVG RATE	Equation
			Trip Ends	Enter	Exit					
Weekday		Avg Rate	31	16	15	50% Entering	0.82	1.36	0.78	T = 0.64 (X) + 88.46
		Equation	114	57	57					
Weekday	Peak Hour of Adjacent Street Traffic, One Hour between 7 & 9 A.M.	Avg Rate	1	1	0	59% Entering	N/A	0.23	0.02	N/A
		Equation		N/A						
Weekday	Peak Hour of Adjacent Street Traffic, One Hour between 4 & 6 P.M.	Avg Rate	5	3	2	55% Entering	0.53	0.24	0.11	T = 0.06(X) + 22.60
		Equation	25	14	11					

Public Park (411)										
Time Period		Calculations	7	Acres		Dir. Dist.	R <sup>2</sup>	ST. DEV	AVG RATE	Equation
			Trip Ends	Enter	Exit					
Weekday		Avg Rate	6	3	3	50% Entering	0.82	1.36	0.78	T = 0.64 (X) + 88.46
		Equation	93	47	46					
Weekday	Peak Hour of Adjacent Street Traffic, One Hour between 7 & 9 A.M.	Avg Rate	1	1	0	59% Entering	N/A	0.23	0.02	N/A
		Equation		N/A						
Weekday	Peak Hour of Adjacent Street Traffic, One Hour between 4 & 6 P.M.	Avg Rate	1	1	0	55% Entering	0.53	0.24	0.11	T = 0.06(X) + 22.60
		Equation	24	14	10					

General Light Industrial (110)										
Time Period		Calculations	333.687	1,000 Sq. Ft. GFA		Dir. Dist.	R <sup>2</sup>	ST. DEV	AVG RATE	Equation
			Trip Ends	Enter	Exit					
Weekday		Avg Rate	1656	828	828	50% Entering	0.54	4.2	4.96	T = 3.79(X) + 57.96
		Equation	1323	662	661					
Weekday	Peak Hour of Adjacent Street Traffic, One Hour between 7 & 9 A.M.	Avg Rate	234	206	28	88% Entering	0.52	0.65	0.7	Ln(T) = 0.74Ln(X)+0.39
		Equation	109	96	13					
Weekday	Peak Hour of Adjacent Street Traffic, One Hour between 4 & 6 P.M.	Avg Rate	211	28	183	13% Entering	0.52	0.68	0.63	Ln(T) = 0.69Ln(X)+0.43
		Equation	85	12	73					



**Table B11.** CAT Facility Infrastructure and Site Improvements with Associated Roads

Item Description
LOT 14 - CAT FACILITY INFRASTRUCTURE AND SITE IMPROVEMENTS
LOT 14 - ELMERTON AVENUE ROADWAY CONCEPT
LOT 14 - CAMERON STREET ROADWAY CONCEPT
LOT 14 - SYCAMORE DRIVE ROADWAY CONCEPT
LOT 14 - AZALEA DRIVE ROADWAY CONCEPT
LOT 14 - DOGWOOD AVENUE ROADWAY CONCEPT

				Subtotal
				\$16,500,000
				\$2,206,900
				\$316,800
				\$1,043,100
				\$810,800
				\$874,700
	<b>TOTAL PRELIMINARY COST ESTIMATE</b>			<b>\$21,752,300</b>



**Table B12.** Lot 14 CAT Facility Infrastructure and Site Improvements

Item Description
Full-Depth Roadway
Curb
Pavement Markings
Signage (Sign, Post and Install)
ADA Curb Ramps
Shared Use Path (5' Width)
Sidewalk (assumed 5' wide)
Concrete/Sidewalk area
Parking Lot Pavement

	Unit	Estimated Quantity	Estimated Unit Price	Subtotal
	SY	12942	\$149.00	\$1,928,358.00
	LF	12980	\$50.00	\$649,000.00
	LF	17260	\$2.50	\$43,150.00
	LS	1	\$10,000.00	\$10,000.00
	EACH	17	\$3,500.00	\$59,500.00
	LF	3030	\$65.00	\$196,950.00
	LF	11430	\$75.00	\$857,250.00
	SY	1320	\$125.00	\$165,000.00
	SY	30000	\$149.00	\$4,470,000.00
	<b>SUBTOTAL</b>			<b>\$8,898,408</b>
	E&S (2% of SUB)			\$177,968
	SWM (10% of SUB)			\$889,841
	UTILITY IMPACT (10% of SUB)			\$889,841
	LANDSCAPING (3% of SUB)			\$266,952
	CLEARING & GRUBBING (1% of SUB)			\$88,984
	SURVEY,EQUIP PKG, INSP FACILITIES (1% of SUB)			\$88,984
	LIGHTING (5% of SUB)			\$444,920
	MAINTENANCE OF TRAFFIC (2% of SUB)			\$177,968
	MOBILIZATION (5% of SUB)			\$444,920
	CONTINGENCY/ESCALATION (20% of SUB)			\$1,779,682
	<b>CONSTRUCTION SUBTOTAL</b>			<b>\$14,148,469</b>
	ENGINEERING/FINAL DESIGN (10%)			\$1,414,847
	PRELIMINARY ENGINEERING (5%)			\$707,423
	INSPECTION (1%)			\$141,485
	<b>TOTAL PRELIMINARY COST ESTIMATE</b>			<b>\$16,500,000</b>

**Table B13.** Lot 14 Elmerton Avenue Roadway Concept

Item Description
Mill and Overlay
Curb
Pavement Markings
Signage (Sign, Post and Install)
ADA Curb Ramps
Sidewalk (assumed 5' wide)
Traffic Signal Equipment Upgrades
Guide Rail



	Unit	Estimated Quantity	Estimated Unit Price	Subtotal
	SY	14000	\$8.00	\$112,000.00
	LF	6300	\$50.00	\$315,000.00
	LF	14400	\$2.50	\$36,000.00
	LS	1	\$10,000.00	\$10,000.00
	EACH	16	\$3,500.00	\$56,000.00
	LF	4000	\$75.00	\$300,000.00
	LS	2	\$150,000.00	\$300,000.00
	LF	900	\$75.00	\$67,500.00
	SUBTOTAL			\$1,196,500
	E&S (2% of SUB)			\$23,930
	SWM (10% of SUB)			\$119,650
	UTILITY IMPACT (10%)			\$119,650
	LANDSCAPING (3% of SUB)			\$35,895
	CLEARING & GRUBBING (1% of SUB)			\$11,965
	SURVEY,EQUIP PKG, INSP FACILITIES (1% of SUB)			\$11,965
	LIGHTING (5% SUB)			\$59,825
	MAINTENANCE OF TRAFFIC (2% of SUB)			\$23,930
	MOBILIZATION (5%)			\$59,825
	CONTINGENCY/ESCALATION (20%)			\$239,300
	<b>CONSTRUCTION SUBTOTAL</b>			<b>\$1,902,435</b>
	ENGINEERING/FINAL DESIGN (10%)			\$190,244
	PRELIMINARY ENGINEERING (5%)			\$95,122
	INSPECTION (1%)			\$19,024
	<b>TOTAL PRELIMINARY COST ESTIMATE</b>			<b>\$2,206,900</b>

**Table B14.** Lot 14 Cameron Street Roadway Concept

Item Description
Traffic Adaptive System
Traffic Signal Equipment Upgrades

	Unit	Estimated Quantity	Estimated Unit Price	Subtotal
	LS	1	\$65,000.00	\$65,000.00
	LS	1	\$150,000.00	\$150,000.00
			SUBTOTAL	\$215,000
			MAINTENANCE OF TRAFFIC (2% of SUB)	\$4,300
			MOBILIZATION (5%)	\$10,750
			CONTINGENCY/ESCALATION (20%)	\$43,000
			<b>CONSTRUCTION SUBTOTAL</b>	<b>\$273,050</b>
			ENGINEERING/FINAL DESIGN (10%)	\$27,305
			PRELIMINARY ENGINEERING (5%)	\$13,653
			INSPECTION (1%)	\$2,731
			<b>TOTAL PRELIMINARY COST ESTIMATE</b>	<b>\$316,800</b>



**Table B15.** Lot 14 Sycamore Drive Roadway Concept

Item Description
Mill and Overlay
Curb
Pavement Markings
Signage (Sign, Post and Install)
ADA Curb Ramps
Sidewalk (assumed 5' wide)
Guide Rail

	Unit	Estimated Quantity	Estimated Unit Price	Subtotal
	SY	3789	\$8.00	\$30,312.00
	LF	3100	\$50.00	\$155,000.00
	LF	6200	\$2.50	\$15,500.00
	LS	1	\$5,000.00	\$5,000.00
	EACH	14	\$3,500.00	\$49,000.00
	LF	3100	\$75.00	\$232,500.00
	LF	500	\$75.00	\$37,500.00
	SUBTOTAL			\$524,812
	E&S (2% of SUB)			\$10,496
	SWM (10% of SUB)			\$52,481
	UTILITY IMPACT (10%)			\$52,481
	LANDSCAPING (3% of SUB)			\$15,744
	CLEARING & GRUBBING (1% of SUB)			\$5,248
	SURVEY,EQUIP PKG, INSP FACILITIES (1% of SUB)			\$5,248
	LIGHTING (5% SUB)			\$26,241
	MAINTENANCE OF TRAFFIC (2% of SUB)			\$10,496
	MOBILIZATION (5%)			\$26,241
	CONTINGENCY/ESCALATION (20%)			\$104,962
	<b>CONSTRUCTION SUBTOTAL</b>			<b>\$834,451</b>
	Engineering / Final Design (10%)			\$83,445
	Preliminary Engineering (5%)			\$41,723
	Inspection (10%)			\$83,445
	<b>TOTAL PRELIMINARY COST ESTIMATE</b>			<b>\$1,043,100</b>

**Table B16.** Lot 14 Azalea Drive Roadway Concept

Item Description
Mill and Overlay
Pavement Markings
Signage (Sign, Post and Install)
ADA Curb Ramps
Traffic Signal Equipment Upgrades
Guide Rail



	Unit	Estimated Quantity	Estimated Unit Price	Subtotal
	SY	9300	\$8.00	\$74,400.00
	LF	15200	\$2.50	\$38,000.00
	LS	1	\$5,000.00	\$5,000.00
	EACH	8	\$3,500.00	\$28,000.00
	LS	1	\$225,000.00	\$225,000.00
	LF	500	\$75.00	\$37,500.00
	SUBTOTAL			\$407,900
	E&S (2% of SUB)			\$8,158
	SWM (10% of SUB)			\$40,790
	UTILITY IMPACT (10%)			\$40,790
	LANDSCAPING (3% of SUB)			\$12,237
	CLEARING & GRUBBING (1% of SUB)			\$4,079
	SURVEY,EQUIP PKG, INSP FACILITIES (1% of SUB)			\$4,079
	LIGHTING (5% SUB)			\$20,395
	MAINTENANCE OF TRAFFIC (2% of SUB)			\$8,158
	MOBILIZATION (5%)			\$20,395
	CONTINGENCY/ESCALATION (20%)			\$81,580
	<b>CONSTRUCTION SUBTOTAL</b>			<b>\$648,561</b>
	Engineering / Final Design (10%)			\$64,856
	Preliminary Engineering (5%)			\$32,428
	Inspection (10%)			\$64,856
	<b>TOTAL PRELIMINARY COST ESTIMATE</b>			<b>\$810,800</b>

**Table B17.** Lot 14 Dogwood Avenue Roadway Concept

Item Description
Full-Depth Roadway
Mill and Overlay
Curb
Pavement Markings
Signage (Sign, Post and Install)
Sidewalk (assumed 5' wide)

	Unit	Estimated Quantity	Estimated Unit Price	Subtotal
	SY	1200	\$149.00	\$178,800.00
	SY	1333	\$8.00	\$10,664.00
	LF	1900	\$50.00	\$95,000.00
	LF	3800	\$2.50	\$9,500.00
	LS	1	\$3,600.00	\$3,600.00
	LF	1900	\$75.00	\$142,500.00
	SUBTOTAL			\$440,064
	E&S (2% of SUB)			\$8,801
	SWM (10% of SUB)			\$44,006
	UTILITY IMPACT (10%)			\$44,006
	LANDSCAPING (3% of SUB)			\$13,202
	CLEARING & GRUBBING (1% of SUB)			\$4,401
	SURVEY,EQUIP PKG, INSP FACILITIES (1% of SUB)			\$4,401
	LIGHTING (5% SUB)			\$22,003
	MAINTENANCE OF TRAFFIC (2% of SUB)			\$8,801
	MOBILIZATION (5%)			\$22,003
	CONTINGENCY/ESCALATION (20%)			\$88,013
	<b>CONSTRUCTION SUBTOTAL</b>			<b>\$699,702</b>
	Engineering / Final Design (10%)			\$69,970
	Preliminary Engineering (5%)			\$34,985
	Inspection (10%)			\$69,970
	<b>TOTAL PRELIMINARY COST ESTIMATE</b>			<b>\$874,700</b>



**Table B18.** Total Transportation Improvements Recommendations

Item Description
LOT 13
LOT 14
LOT 15
LOT 16
KOHN ROAD ROADWAY CONCEPT
ELMERTON AVENUE ROADWAY CONCEPT
CAMERON STREET ROADWAY CONCEPT
BAMBERGER ROAD ROADWAY CONCEPT
SYCAMORE DRIVE ROADWAY CONCEPT
AZALEA DRIVE ROADWAY CONCEPT
DOGWOOD AVENUE ROADWAY CONCEPT
PINE ROAD ROADWAY CONCEPT
STANELY ROAD ROADWAY CONCEPT

	Subtotal
	\$37,100,000
	\$28,400,000
	\$1,900,000
	\$54,700,000
	\$3,300,000
	\$6,000,000
	\$400,000
	\$2,900,000
	\$2,900,000
	\$4,000,000
	\$1,200,000
	\$2,900,000
	\$1,700,000
<b>TOTAL PRELIMINARY COST ESTIMATE</b>	<b>\$147,400,000</b>

**Table B19.** Lot 13 Roadway Concept

Item Description
Full-Depth Roadway
Mill & Overlay
Curb
Pavement Markings
Signage (Sign, Post and Install)
ADA Curb Ramps
Shared Use Path (5' Width)
Sidewalk (assumed 5' wide)
Concrete/Sidewalk area
Parking Lot Pavement
New Traffic Signal Equipment
Pedestrian Bridge Structure (Trail)
Roadway Structure / Culvert
Guide Rail



	Unit	Estimated Quantity	Estimated Unit Price	Subtotal
	SY	26866	\$149	\$4,003,001
	SY	12116	\$8	\$96,924
	LF	26216	\$50	\$1,310,800
	LF	70641	\$3	\$176,602
	LS	1	\$15,000	\$15,000
	EACH	110	\$3,500	\$385,000
	LF	12007	\$65	\$780,455
	LF	26216	\$75	\$1,966,200
	SY	13944	\$125	\$1,742,986
	SY	53982	\$149	\$8,043,368
	LS	3	\$225,000	\$675,000
	EACH	1	\$350,000	\$350,000
	EACH	1	\$500,000	\$500,000
	LF	500	\$75	\$37,500
	SUBTOTAL			\$20,082,836
	E&S (2% of SUB)			\$401,657
	SWM (10% of SUB)			\$2,008,284
	UTILITY IMPACT (10%)			\$2,008,284
	LANDSCAPING (3% of SUB)			\$602,485
	CLEARING & GRUBBING (1% of SUB)			\$200,828
	SURVEY,EQUIP PKG, INSP FACILITIES (1% of SUB)			\$200,828
	LIGHTING (5% SUB)			\$1,004,142
	MAINTENANCE OF TRAFFIC (2% of SUB)			\$401,657
	MOBILIZATION (5%)			\$1,004,142
	CONTINGENCY/ESCALATION (20%)			\$4,016,567
	<b>CONSTRUCTION SUBTOTAL</b>			<b>\$31,931,710</b>
	ENGINEERING/FINAL DESIGN (10%)			\$3,193,171
	PRELIMINARY ENGINEERING (5%)			\$1,596,585
	INSPECTION (1%)			\$319,317
	<b>TOTAL PRELIMINARY COST ESTIMATE</b>			<b>\$37,100,000</b>

**Table B20.** Lot 14 Roadway Concept

Item Description
Full-Depth Roadway
Curb
Pavement Markings
Signage (Sign, Post and Install)
ADA Curb Ramps
Shared Use Path (5' Width)
Sidewalk (assumed 5' wide)
Concrete/Sidewalk area
Parking Lot Pavement

	Unit	Estimated Quantity	Estimated Unit Price	Subtotal
	SY	28,868	\$149	\$4,301,266
	LF	25,955	\$50	\$1,297,750
	LF	53,702	\$3	\$134,256
	LS	1	\$10,000	\$10,000
	EACH	68	\$3,500	\$238,000
	LF	4,129	\$65	\$268,385
	LF	9,303	\$75	\$697,725
	SY	7,544	\$125	\$942,958
	SY	43,179	\$149	\$6,433,721
	<b>SUBTOTAL</b>			<b>\$15,362,261</b>
	E&S (2% of SUB)			\$307,245
	SWM (10% of SUB)			\$1,536,226
	UTILITY IMPACT (10% of SUB)			\$1,536,226
	LANDSCAPING (3% of SUB)			\$460,868
	CLEARING & GRUBBING (1% of SUB)			\$153,623
	SURVEY,EQUIP PKG, INSP FACILITIES (1% of SUB)			\$153,623
	LIGHTING (5% of SUB)			\$768,113
	MAINTENANCE OF TRAFFIC (2% of SUB)			\$307,245
	MOBILIZATION (5% of SUB)			\$768,113
	CONTINGENCY/ESCALATION (20% of SUB)			\$3,072,452
	<b>CONSTRUCTION SUBTOTAL</b>			<b>\$24,425,995</b>
	ENGINEERING/FINAL DESIGN (10%)			\$2,442,599
	PRELIMINARY ENGINEERING (5%)			\$1,221,300
	INSPECTION (1%)			\$244,260
	<b>TOTAL PRELIMINARY COST ESTIMATE</b>			<b>\$28,400,000</b>



**Table B21.** Lot 15 Roadway Concept

Item Description
Curb
Pavement Markings
Signage (Sign, Post and Install)
ADA Curb Ramps
Concrete/Sidewalk area
Parking Lot Pavement

	Unit	Estimated Quantity	Estimated Unit Price	Subtotal
	LF	1150	\$50.00	\$57,500.00
	LF	3325	\$2.50	\$8,312.12
	LS	1	\$2,000.00	\$2,000.00
	EACH	6	\$3,500.00	\$21,000.00
	SY	3403	\$125.00	\$425,319.44
	SY	3431	\$149.00	\$511,285.22
	SUBTOTAL			\$1,025,417
	E&S (2% of SUB)			\$20,508
	SWM (10% of SUB)			\$102,542
	UTILITY IMPACT (10%)			\$102,542
	LANDSCAPING (3% of SUB)			\$30,763
	CLEARING & GRUBBING (1% of SUB)			\$10,254
	SURVEY,EQUIP PKG, INSP FACILITIES (1% of SUB)			\$10,254
	LIGHTING (5% SUB)			\$51,271
	MAINTENANCE OF TRAFFIC (2% of SUB)			\$20,508
	MOBILIZATION (5%)			\$51,271
	CONTINGENCY/ESCALATION (20%)			\$205,083
	<b>CONSTRUCTION SUBTOTAL</b>			<b>\$1,630,413</b>
	ENGINEERING/FINAL DESIGN (10%)			\$163,041
	PRELIMINARY ENGINEERING (5%)			\$81,521
	INSPECTION (1%)			\$16,304
	<b>TOTAL PRELIMINARY COST ESTIMATE</b>			<b>\$1,900,000</b>

**Table B22.** Lot 16 Roadway Concept

Item Description
Full-Depth Roadway
Curb
Pavement Markings
Signage (Sign, Post and Install)
ADA Curb Ramps
Shared Use Path (5' Width)
Sidewalk (assumed 5' wide)
Parking Lot Pavement
Roadway Structure / Culvert
Pedestrian Bridge Structure (Trail)



	Unit	Estimated Quantity	Estimated Unit Price	Subtotal
	SY	14322	\$149.00	\$2,133,944.89
	LF	17690	\$50.00	\$884,500.00
	LF	12084	\$2.50	\$30,210.00
	LS	1	\$5,000.00	\$5,000.00
	EACH	62	\$3,500.00	\$217,000.00
	LF	11670	\$65.00	\$758,550.00
	LF	71609	\$75.00	\$5,370,666.67
	SY	127658	\$149.00	\$19,021,108.22
	LS	1	\$500,000.00	\$500,000.00
	EACH	2	\$350,000.00	\$700,000.00
	SUBTOTAL			\$29,620,980
	E&S (2% of SUB)			\$592,420
	SWM (10% of SUB)			\$2,962,098
	UTILITY IMPACT (10%)			\$2,962,098
	LANDSCAPING (3% of SUB)			\$888,629
	CLEARING & GRUBBING (1% of SUB)			\$296,210
	SURVEY,EQUIP PKG, INSP FACILITIES (1% of SUB)			\$296,210
	LIGHTING (5% SUB)			\$1,481,049
	MAINTENANCE OF TRAFFIC (2% of SUB)			\$592,420
	MOBILIZATION (5%)			\$1,481,049
	CONTINGENCY/ESCALATION (20%)			\$5,924,196
	<b>CONSTRUCTION SUBTOTAL</b>			<b>\$47,097,358</b>
	ENGINEERING/FINAL DESIGN (10%)			\$4,709,736
	PRELIMINARY ENGINEERING (5%)			\$2,354,868
	INSPECTION (1%)			\$470,974
	<b>TOTAL PRELIMINARY COST ESTIMATE</b>			<b>\$54,700,000</b>

**Table B23.** Cameron Street Roadway Concept

Item Description
Traffic Adaptive System
Traffic Signal Equipment Upgrades

	Unit	Estimated Quantity	Estimated Unit Price	Subtotal
	LS	1	\$65,000.00	\$65,000.00
	LS	1	\$150,000.00	\$150,000.00
			SUBTOTAL	\$215,000
			E&S (2% of SUB)	
			SWM (10% of SUB)	
			UTILITY IMPACT (10%)	
			LANDSCAPING (3% of SUB)	
			CLEARING & GRUBBING (1% of SUB)	
			SURVEY,EQUIP PKG, INSP FACILITIES (1% of SUB)	
			LIGHTING (5% SUB)	
			MAINTENANCE OF TRAFFIC (2% of SUB)	
			MOBILIZATION (5%)	\$10,750
			CONTINGENCY/ESCALATION (20%)	\$43,000
			<b>CONSTRUCTION SUBTOTAL</b>	<b>\$268,750</b>
			ENGINEERING/FINAL DESIGN (10%)	\$26,875
			PRELIMINARY ENGINEERING (5%)	\$13,438
			INSPECTION (1%)	\$2,688
			<b>TOTAL PRELIMINARY COST ESTIMATE</b>	<b>\$400,000</b>



**Table B24.** Elmerton Avenue Roadway Concept

Item Description
Full-Depth Roadway Widening
Mill and Overlay
Curb
Pavement Markings
Signage (Sign, Post and Install)
ADA Curb Ramps
Sidewalk (assumed 5' wide)
New Traffic Signal Equipment
Traffic Signal Equipment Upgrades
Guide Rail

	Unit	Estimated Quantity	Estimated Unit Price	Subtotal
	SY	11550	\$149.00	\$1,720,950.00
	SY	11200	\$8.00	\$89,600.00
	LF	6300	\$50.00	\$315,000.00
	LF	28350	\$2.50	\$70,875.00
	LS	1	\$10,000.00	\$10,000.00
	EACH	32	\$3,500.00	\$112,000.00
	LF	6300	\$75.00	\$472,500.00
	LS	1	\$225,000.00	\$225,000.00
	LS	1	\$150,000.00	\$150,000.00
	LF	1100	\$75.00	\$82,500.00
	SUBTOTAL			\$3,248,425
	E&S (2% of SUB)			\$64,969
	SWM (10% of SUB)			\$324,843
	UTILITY IMPACT (10%)			\$324,843
	LANDSCAPING (3% of SUB)			\$97,453
	CLEARING & GRUBBING (1% of SUB)			\$32,484
	SURVEY,EQUIP PKG, INSP FACILITIES (1% of SUB)			\$32,484
	LIGHTING (5% SUB)			\$162,421
	MAINTENANCE OF TRAFFIC (2% of SUB)			\$64,969
	MOBILIZATION (5%)			\$162,421
	CONTINGENCY/ESCALATION (20%)			\$649,685
	<b>CONSTRUCTION SUBTOTAL</b>			<b>\$5,164,996</b>
	ENGINEERING/FINAL DESIGN (10%)			\$516,500
	PRELIMINARY ENGINEERING (5%)			\$258,250
	INSPECTION (1%)			\$51,650
	<b>TOTAL PRELIMINARY COST ESTIMATE</b>			<b>\$6,000,000</b>

Table B25. Bamberger Road Roadway Concept

Item Description
Full-Depth Roadway Widening
Mill and Overlay
Curb
Pavement Markings
Signage (Sign, Post and Install)
ADA Curb Ramps
Sidewalk (assumed 5' wide)
Guide Rail



	Unit	Estimated Quantity	Estimated Unit Price	Subtotal
	SY	3100	\$149.00	\$461,900.00
	SY	7922	\$8.00	\$63,377.78
	LF	6200	\$50.00	\$310,000.00
	LF	12400	\$2.50	\$31,000.00
	LS	1	\$5,000.00	\$5,000.00
	EACH	12	\$3,500.00	\$42,000.00
	LF	6200	\$75.00	\$465,000.00
	LF	1000	\$75.00	\$75,000.00
	SUBTOTAL			\$1,453,278
	E&S (2% of SUB)			\$29,066
	SWM (10% of SUB)			\$145,328
	UTILITY IMPACT (15%)			\$145,328
	LANDSCAPING (3% of SUB)			\$43,598
	CLEARING & GRUBBING (1% of SUB)			\$14,533
	SURVEY,EQUIP PKG, INSP FACILITIES (1% of SUB)			\$14,533
	LIGHTING (5% SUB)			\$72,664
	MAINTENANCE OF TRAFFIC (2% of SUB)			\$29,066
	MOBILIZATION (5%)			\$72,664
	CONTINGENCY/ESCALATION (20%)			\$290,656
	<b>CONSTRUCTION SUBTOTAL</b>			<b>\$2,310,712</b>
	Engineering / Final Design (10%)			\$231,071
	Preliminary Engineering (5%)			\$115,536
	Inspection (10%)			\$231,071
	<b>TOTAL PRELIMINARY COST ESTIMATE</b>			<b>\$2,900,000</b>

Table B26. Kohn Roadway Concept

Item Description
Full-Depth Roadway Widening
Mill & Overlay Roadway
Curb
Pavement Markings
Signage (Sign, Post and Install)
ADA Curb Ramps
Sidewalk (assumed 5' wide)

	Unit	Estimated Quantity	Estimated Unit Price	Subtotal
	SY	4889	\$149.00	\$728,444.44
	SY	8400	\$8.00	\$67,200.00
	LF	7200	\$50.00	\$360,000.00
	LF	14800	\$2.50	\$37,000.00
	LS	1	\$5,000.00	\$5,000.00
	EACH	12	\$3,500.00	\$42,000.00
	LF	7200	\$75.00	\$540,000.00
	SUBTOTAL			\$1,779,644
	E&S (2% of SUB)			\$35,593
	SWM (10% of SUB)			\$177,964
	UTILITY IMPACT (10%)			\$177,964
	LANDSCAPING (3% of SUB)			\$53,389
	CLEARING & GRUBBING (1% of SUB)			\$17,796
	SURVEY,EQUIP PKG, INSP FACILITIES (1% of SUB)			\$17,796
	LIGHTING (5% SUB)			\$88,982
	MAINTENANCE OF TRAFFIC (2% of SUB)			\$35,593
	MOBILIZATION (5%)			\$88,982
	CONTINGENCY/ESCALATION (20%)			\$355,929
	<b>CONSTRUCTION SUBTOTAL</b>			<b>\$2,829,635</b>
	ENGINEERING/FINAL DESIGN (10%)			\$282,963
	PRELIMINARY ENGINEERING (5%)			\$141,482
	INSPECTION (1%)			\$28,296
	<b>TOTAL PRELIMINARY COST ESTIMATE</b>			<b>\$3,300,000</b>



Table B27. Sycamore Drive Roadway Concept

Item Description
Full-Depth Roadway Widening
Mill and Overlay
Curb
Pavement Markings
Signage (Sign, Post and Install)
ADA Curb Ramps
Sidewalk (assumed 5' wide)
Guide Rail

	Unit	Estimated Quantity	Estimated Unit Price	Subtotal
	SY	3100	\$149.00	\$461,900.00
	SY	7922	\$8.00	\$63,377.78
	LF	6200	\$50.00	\$310,000.00
	LF	12400	\$2.50	\$31,000.00
	LS	1	\$5,000.00	\$5,000.00
	EACH	12	\$3,500.00	\$42,000.00
	LF	6200	\$75.00	\$465,000.00
	LF	1000	\$75.00	\$75,000.00
	SUBTOTAL			\$1,453,278
	E&S (2% of SUB)			\$29,066
	SWM (10% of SUB)			\$145,328
	UTILITY IMPACT (15%)			\$145,328
	LANDSCAPING (3% of SUB)			\$43,598
	CLEARING & GRUBBING (1% of SUB)			\$14,533
	SURVEY,EQUIP PKG, INSP FACILITIES (1% of SUB)			\$14,533
	LIGHTING (5% SUB)			\$72,664
	MAINTENANCE OF TRAFFIC (2% of SUB)			\$29,066
	MOBILIZATION (5%)			\$72,664
	CONTINGENCY/ESCALATION (20%)			\$290,656
	<b>CONSTRUCTION SUBTOTAL</b>			<b>\$2,310,712</b>
	Engineering / Final Design (10%)			\$231,071
	Preliminary Engineering (5%)			\$115,536
	Inspection (10%)			\$231,071
	<b>TOTAL PRELIMINARY COST ESTIMATE</b>			<b>\$2,900,000</b>

Table B28. Azalea Drive Roadway Concept

Item Description
Full-Depth Roadway Widening
Mill and Overlay
Pavement Markings
Signage (Sign, Post and Install)
ADA Curb Ramps
Sidewalk (assumed 5' wide)
Traffic Signal Equipment Upgrades
Pedestrian Bridge Structure (Trail)
Guide Rail

	Unit	Estimated Quantity	Estimated Unit Price	Subtotal
	SY	489	\$149.00	\$72,844.44
	SY	12032	\$8.00	\$96,257.78
	LF	16660	\$2.50	\$41,650.00
	LS	1	\$5,000.00	\$5,000.00
	EACH	20	\$3,500.00	\$70,000.00
	LF	8330	\$75.00	\$624,750.00
	LS	3	\$225,000.00	\$675,000.00
	EACH	1	\$350,000.00	\$350,000.00
	LF	1000	\$75.00	\$75,000.00
	SUBTOTAL			\$2,010,502
	E&S (2% of SUB)			\$40,210
	SWM (10% of SUB)			\$201,050
	UTILITY IMPACT (15%)			\$201,050
	LANDSCAPING (3% of SUB)			\$60,315
	CLEARING & GRUBBING (1% of SUB)			\$20,105
	SURVEY,EQUIP PKG, INSP FACILITIES (1% of SUB)			\$20,105
	LIGHTING (5% SUB)			\$100,525
	MAINTENANCE OF TRAFFIC (2% of SUB)			\$40,210
	MOBILIZATION (5%)			\$100,525
	CONTINGENCY/ESCALATION (20%)			\$402,100
	<b>CONSTRUCTION SUBTOTAL</b>			<b>\$3,196,699</b>
	Engineering / Final Design (10%)			\$319,670
	Preliminary Engineering (5%)			\$159,835
	Inspection (10%)			\$319,670
	<b>TOTAL PRELIMINARY COST ESTIMATE</b>			<b>\$4,000,000</b>



**Table B29.** Dogwood Avenue Roadway Concept

Item Description
Full-Depth Roadway Widening
Mill and Overlay
Curb
Pavement Markings
Signage (Sign, Post and Install)
ADA Curb Ramps
Sidewalk (assumed 5' wide)
Shared Use Path (5' Width)

	Unit	Estimated Quantity	Estimated Unit Price	Subtotal
	SY	2278	\$149.00	\$339,388.89
	SY	1278	\$8.00	\$10,222.22
	LF	2000	\$50.00	\$100,000.00
	LF	4000	\$2.50	\$10,000.00
	LS	1	\$5,000.00	\$5,000.00
	EACH	4	\$3,500.00	\$14,000.00
	LF	1000	\$75.00	\$75,000.00
	LF	150	\$65.00	\$9,750.00
	SUBTOTAL			\$563,361
	E&S (2% of SUB)			\$11,267
	SWM (10% of SUB)			\$56,336
	UTILITY IMPACT (15%)			\$56,336
	LANDSCAPING (3% of SUB)			\$16,901
	CLEARING & GRUBBING (1% of SUB)			\$5,634
	SURVEY,EQUIP PKG, INSP FACILITIES (1% of SUB)			\$5,634
	LIGHTING (5% SUB)			\$28,168
	MAINTENANCE OF TRAFFIC (2% of SUB)			\$11,267
	MOBILIZATION (5%)			\$28,168
	CONTINGENCY/ESCALATION (20%)			\$112,672
	<b>CONSTRUCTION SUBTOTAL</b>			<b>\$895,744</b>
	Engineering / Final Design (10%)			\$89,574
	Preliminary Engineering (5%)			\$44,787
	Inspection (10%)			\$89,574
	<b>TOTAL PRELIMINARY COST ESTIMATE</b>			<b>\$1,200,000</b>

Table B30. Pine Road Roadway Concept

Item Description
Full-Depth Roadway Widening
Mill and Overlay
Curb
Pavement Markings
Signage (Sign, Post and Install)
ADA Curb Ramps
Sidewalk (assumed 5' wide)
Pedestrian Bridge Structure (Trail)
Roadway Structure / Culvert
Guide Rail

	Unit	Estimated Quantity	Estimated Unit Price	Subtotal
	SY	867	\$149.00	\$129,133.33
	SY	2600	\$8.00	\$20,800.00
	LF	2600	\$50.00	\$130,000.00
	LF	5200	\$2.50	\$13,000.00
	LS	1	\$5,000.00	\$5,000.00
	EACH	16	\$3,500.00	\$56,000.00
	LF	2600	\$75.00	\$195,000.00
	EACH	1	\$350,000.00	\$350,000.00
	EACH	1	\$500,000.00	\$500,000.00
	LF	350	\$75.00	\$26,250.00
	SUBTOTAL			\$1,425,183
	E&S (2% of SUB)			\$28,504
	SWM (10% of SUB)			\$142,518
	UTILITY IMPACT (15%)			\$142,518
	LANDSCAPING (3% of SUB)			\$42,756
	CLEARING & GRUBBING (1% of SUB)			\$14,252
	SURVEY,EQUIP PKG, INSP FACILITIES (1% of SUB)			\$14,252
	LIGHTING (5% SUB)			\$71,259
	MAINTENANCE OF TRAFFIC (2% of SUB)			\$28,504
	MOBILIZATION (5%)			\$71,259
	CONTINGENCY/ESCALATION (20%)			\$285,037
	<b>CONSTRUCTION SUBTOTAL</b>			<b>\$2,266,042</b>
	Engineering / Final Design (10%)			\$226,604
	Preliminary Engineering (5%)			\$113,302
	Inspection (10%)			\$226,604
	<b>TOTAL PRELIMINARY COST ESTIMATE</b>			<b>\$2,900,000</b>



**Table B31.** Stanley Road Roadway Concept

Item Description
Full-Depth Roadway Widening
Mill and Overlay
Curb
Pavement Markings
Signage (Sign, Post and Install)
ADA Curb Ramps
Sidewalk (assumed 5' wide)
Shared Use Path (5' Width)
New Traffic Signal Equipment
Guide Rail

	Unit	Estimated Quantity	Estimated Unit Price	Subtotal
	SY	684	\$149.00	\$101,982.22
	SY	3422	\$8.00	\$27,377.78
	LF	3080	\$50.00	\$154,000.00
	LF	6160	\$2.00	\$12,320.00
	LS	1	\$5,000.00	\$5,000.00
	EACH	8	\$3,500.00	\$28,000.00
	LF	1540	\$75.00	\$115,500.00
	LF	1540	\$65.00	\$100,100.00
	LS	1	\$225,000.00	\$225,000.00
	LF	975	\$75.00	\$73,125.00
	SUBTOTAL			\$842,405
	E&S (2% of SUB)			\$16,848
	SWM (10% of SUB)			\$84,241
	UTILITY IMPACT (15%)			\$84,241
	LANDSCAPING (3% of SUB)			\$25,272
	CLEARING & GRUBBING (1% of SUB)			\$8,424
	SURVEY,EQUIP PKG, INSP FACILITIES (1% of SUB)			\$8,424
	LIGHTING (5% SUB)			\$42,120
	MAINTENANCE OF TRAFFIC (2% of SUB)			\$16,848
	MOBILIZATION (5%)			\$42,120
	CONTINGENCY/ESCALATION (20%)			\$168,481
	CONSTRUCTION SUBTOTAL			\$1,339,424
	Engineering / Final Design (10%)			\$133,942
	Preliminary Engineering (5%)			\$66,971
	Inspection (10%)			\$133,942
	<b>TOTAL PRELIMINARY COST ESTIMATE</b>			<b>\$1,700,000</b>





Dauphin County Redevelopment Authority