ST. GEORGE FIRE DEPARTMENT

Fire Station Master Planning

St. George Fire Department Analysis Source References

- Lewis Young Robertson & Burningham, INC (LYR&B) Impact Fee Study 2012. Currently under review/update.
- Insurance Service Office (ISO) Fire Suppression Rating Schedule.
- National Fire Protection Association Standards (NFPA)
- Specific City Considerations.

2012 Impact Fee Study - Fire Department Section

Fire Impact Fee Facilities Plan (IFFP)
Impact Fee Analysis (IFA)

SECTION 1: EXECUTIVE SUMMARY - FIRE IMPACT FEES

The purpose of the Fire Impact Fee Facilities Plan ("IFFP"), with supporting Impact Fee Analysis ("IFA"), is to fulfill the requirements established in Utah Code Title 11 Chapter 36a, the "Impact Fees Act", and help the City of St. George (the "City") plan necessary capital improvements for future growth. This document will address the future fire infrastructure needed to serve the City through the next six to ten years, as well as the appropriate impact fees the City may charge to new growth to maintain the level of service ("LOS").

- **Service Area**: The service area for fire impact fees includes all areas within the City. This document identifies capital projects that will help to maintain the same level of service enjoyed by existing residents into the future.

- **Demand Analysis**: The demand unit used for this analysis is calls for fire service. Although growth has slowed recently, it is anticipated that the growth projected over the next six to ten years, and through buildout, will impact the City's existing services through the increase in calls for service. Section 3 of this report outlines the growth in calls for service.

- **Level of Service**: Target response time for the Fire Department is four to six minutes. However, the existing response time is slightly higher at approximately 6.27 minutes. Additional detail regarding level of service is found in Section 3.

- **Excess Capacity**: Fire facilities are not governed by traditional excess capacity analyses such as water and sewer systems. Instead, fire relies more on response time coverage and the geographic location of fire stations. Currently the average response time is approximately 6.27 minutes, thus the SGFD does not have any excess capacity to serve growth that continues to spread toward the outer-limits of the City's boundaries. It is anticipated that additional stations will be required in the next five to ten years to allow the SGFD to meet the current LOS for response times.

- **Future Capital Facilities**: The City is planning to construct two new stations of approximately 12,000 sq. ft. each as well as a training facility in the next five to ten years. Additional stations may also be required to meet demand through buildout. However, these additional stations will not be constructed within the IFFP planning horizon and thus are not included in this analysis.

PROPOSED FIRE IMPACT FEE

The IFFP must properly complete the legislative requirements found in the Impact FEE Act if it is to serve as a working document in the calculation of appropriate impact fees. The calculation of impact fees relies upon the information contained in this analysis. Impact fees are then calculated based on many variables centered on proportionality share and levels of service.

GROWTH-DRIVEN (PERPETUATION OF EXISTING LEVEL OF SERVICE)

The methodology utilized in this analysis is based on the increase, or **growth**, in demand. The growth driven method utilizes the existing level of service and perpetuated that level of service into the future. Impact fees are then calculated to provide sufficient funds for the entity to expand or provide additional facilities, as growth occurs within the community. Under this methodology, impact fees are calculated to ensure new development provides sufficient investment to maintain the current level of service (LOS) standards in the community.

FIRE IMPACT FEE CALCULATION

Fire impact fees were calculated assuming that 100% of the cost of new future stations and apparatus will be attributed to new demand. The cost per call was determined by taking the total cost of all **new** fire stations and apparatus and dividing it over the total estimate number of calls the station and apparatus will serve. A cost for professional services is then applied, which would be the cost to provide an update to the IFFP and IFA.

TABLE 3.3: RATIO OF CALLS PER DEVELOPED UNIT

	DEVELOPED UNITS	HISTORIC AVG. CALLS	CALLS PER DEVELOPED UNIT
Residential Single-Family (per dwelling unit)	24,892	2,082	0.084
Residential Multi-Family (per dwelling unit)	7,331	912	0.124
Mobile Homes(per dwelling unit)	1,310	162	0.124
Professional Office (per 1,000 square feet)	572	94	0.164
Commercial (per 1,000 square feet)	10,639	1,041	0.098
Manufacturing (per 1,000 square feet)	7,844	62	0.008
Total	**52,588**	**4,353**	

In all, an average of 4,353 calls for service were attributed to residential and non-residential development (not including calls placed from public land-uses - i.e. government buildings, parks, etc. - and calls that cannot be traced to identifiable land-uses).

The call ratio analysis establishes the existing level of service for residential and non-residential land-uses. A review of existing business in the City shows a mix of business types including building materials, home furnishings, food stores, general merchandise, automotive dealers/gasoline service stations, eating and drinking establishments, communications, motion pictures, wholesale trade, miscellaneous retail, amusement and recreation, electric, gas, and sanitary services, hotels and other lodging. This suggests the call data is based on a variety of business that reflects a cross-section of the types of business that will likely continue to develop in the City.

The City's future growth will impact the fire department's ability to provide adequate fire protection throughout the City. Future development will 1) increase the calls for service, 2) affect acceptable response times as a result of geographic expansion of the City's developed areas, and 3) contribute to increased roadway congestion resulting in increased response times.

In order to determine the demand placed upon existing public facilities by new development, this analysis projects the additional call volume that undeveloped land-uses will generate. An in-depth analysis has been prepared to determine the number of developed units or acres of land in each zoning category, and the number of calls per unit or acre of land has been assigned to each land-use category. As shown in Table 3.4, the future fire calls are projected based upon the number of historic calls within each land-use category.

LEVEL OF SERVICE STANDARDS

TARGET LEVEL OF SERVICE (RESPONSE TIME AND ROAD MILES)

The target response for service for the fire department is ***four to six minutes or to be within 1.5 road miles from a station.*** The time portion of the response is recommended through the state and NFPA standards and the mileage portion of the response is standard that ISO uses for insurance grading purposes. The department has master planned general station locations using the 1.5 mile guideline for future expansion of station sites.

EXISTING LEVEL OF SERVICE (RESPONSE TIME AND ROAD MILES)

While the City's target response time is four to six minutes, actual response time may be slightly higher due to the nature of fire incidents, as shown in the table below. Weighted average response time is approximately 6.27 minutes.

TABLE 3.5: EXISTING LEVEL OF SERVICE (RESONSE TIME)

NATURE	RESPONSE TIME
Fire-Alarm	0:06:29
Fire-Brush	0:06:53
Fire-Other	0:06:54
Fire-Structure	0:05:56
Fire-Trash	0:04:43
Fire-Vehicle	0:07:17

Source: City of St. George Dispatch, 2011

Approximately 74 percent of fire calls are within 1.5 road miles of at least one fire station.[5]

Challenges that face the department to achieve the response goals are the rapid growth rate that occurs in areas that are beyond the desired distances and how quickly the impact fee fund allows for the construction of the needed stations.

As traffic congestion increases and new developed areas required fire protection services, the fire department will need to construct new facilities to ensure the existing response times and service levels remain the same. While the needs assessment below is intended to maintain proportionality, or that facilities similar to the facilities provided for the existing development are built for future development, the location and timing of the new facilities should be based on response times.

5-City of St. George, GIS

FIRE FACILITIES NEEDS ASSESSMENT

To determine the impacts new development will place in the existing system this analysis also considers the current building square feet per call. Impact fees cannot be used to finance an increase in the level of service to current or future users of the infrastructure. Based in the historic call data shown above there is approximately 4,782 calls annually. This equates to 10.20 sq. ft. of existing facilities per call

TABLE 3.6: FIRE FACILITIES NEEDS ASSESSMENT

	FIRE FACILITIES
Total current Sq. Ft.	48,754
Average total calls	4,353
Sq. Ft./Call	11.20
Future calls to Buildout	4,052
Additional Square Feet Needed (IF Eligible)	45,382

Based on the historic level of service, a total of 45, 382 new square feet will be necessary to serve new development and maintain the same proportionality of square footage at buildout. This is based in 11.20 sq. ft. per call as identified in the needs assessment.

SECTION 6: FIRE IMPACT FEE CALCULATION

The written impact fee analysis relies upon the information contained in this analysis. The following briefly discusses the methodology for calculating fire impact fees.

PROPOSED FIRE IMPACT FEES

The fire/EMS impact fees proposed in this analysis will be assessed within all areas of the City. The impact fee assumes that 100% of the cost of new stations and apparatus will be attributed to new demand.

The cost per call for facilities, engines, and ladders is found in Table 5.1 and is the basis

for the maximum impact fees per land use category shown in Table 5.2

The following details how the cost per call was determined for stations, engines, and ladders.

Stations and Facilities: New demand assumes 11.20 sq. ft. per call as shown in Table 3.6. Based on the square footage of the two new stations, new demand would be approximately 2,036 calls. This varies from the 4,052 future calls shown in Table 3.6 which shows demand at **buildout**. While additional square feet will be required at buildout, some stations will not be constructed within the IFFP planning horizon, thus only the stations and apparatus anticipated for the next five to ten years are included.

Engines: The City currently owns one engine which serves an estimated 1,197 non-residential calls. Thus, assuming the same level of service, two additional engines will serve approximately 2,394 calls.

10-Impact fees cannot be used to increase the level of service provided to the community. Since the City does not currently have a training center, impact fees may not be used to fund the training center: .

TABLE 5.1: ESTIMATE OF IMPACT FEE COSTS PER CALL

	ESTIMATED COST	NEW DEMAND	IF ELIGIBLE	COST TO IMPACT FEES
Future Stations and Facilities				
Southeast Station (Little Valley/Fort Pierce)	$2,132,009	1,018	100%	$2,132,009
Training Center10	$1,020,100		0%	$0
West Station (Tonaquint/Dixie Drive)	$2,174,863	1,018	100%	$2,174,863
Impact Fee Cost				$4,306,872
Calls Served by New Facilities				2,036
Cost per Call (Facilities)				**$2,116**
Future Engines				
Engine/Pumper	$703,869		100%	$703,869
Engine/Pumper	$718,017		100%	$718,017
Impact Fee Cost				$1,421,886
Calls Served by New Engines				2,394
Cost per Call (Engines)				**$594**
Future Ladders				
Aerial ladder	$1,248,725		100%	1,248,725
Impact Fee Cost				1,248,725
Calls Served by New Ladder				1,197
Cost per Call (Ladder)				**$1,043**
Professional Expense				
Professional Expense				$8,000
Total Calls through 2018				5,196
Cost per Call (Professional Expense)				**$2**

Insurance Service Office (ISO)

Fire Suppression Rating Schedule, Survey / Grading determines Public Protection Classification (PPC) used to calculate insurance premiums

A review of the **Emergency Communications** accounts for 10% of the total classification. This Section is weighted **10 points**, as follows:

- Emergency Reporting — 3 points
- Telecommunications — 4 points
- Dispatch Circuits — 3 points

A review of the **Fire Department** accounts for 50% of the total classification. ISO focuses on a fire departments first alarm response and initial attack to minimize potential loss. The fire department section is weighted **50 points**, as follows:

- Engine Companies — 6 points
- Reserve Pumpers — 0.5 points
- Pump Capacity — 3 points
- Ladder/Service Companies — 4 points
- Reserve Ladder/Service Trucks — 0.5 points
- Deployment Analysis — 10 points
- Company Personnel — 15 points
- Training — 9 points
- Operational Considerations — 2 points
- Community Risk Reduction — 5.5 points (in addition to the 50 points above)

A review of the **Water Supply** system accounts for 40% of the total classification. ISO reviews the water supply a community uses to determine the adequacy for fire suppression purposes. The water supply system is weighted at **40 points**, as follows:

- Credit for Supply System — 30 points
- Hytdrant Size, Type & Installation — 3 points
- Inspection & Flow testing of Hydrants — 7 points

Fire department	
Pumpers - ISO compares the number of in-service pumpers and the equipment carried with the number of needed pumpers and the equipment identified in the FSRS (or equivalency list). The number of needed pumpers depends on the Basic Fire Flow, the size of the area served, and the method of operation.	**10%**
Reserve pumpers - ISO evaluates the adequacy of the pumpers and their components with one or more in larger communities) pumper out of service.	**1%**
Pump capacity - ISO compares the pump capacity of the in-service and reserve pumpers (and pumps on other apparatus) with the Basic Fire Flow. ISO considers a maximum Basic Fire Flow of 3,500 gpm.	**5%**
Ladder/service - Communities use ladders, tools, and equipment normally carried on ladder trucks for ladder operations, as well as for forcible entry, utility shut-off, ventilation, salvage, overhaul, and lighting. The number and type of apparatus depend on the height of the buildings, needed fire flow, and the size of the area served.	**5%**
Reserve ladder and/or service – ISO compares the adequacy of ladder and service apparatus when one (or more in larger communities) apparatus is out of service.	**1%**
Distribution of companies — ISO credits the percentage of the community within specified response distances of pumpers (1-*1*/2 miles) and ladder/service apparatus *(*2-*1*/2 miles).	**4%**
Company personnel – ISO credits the personnel available for first alarms of fire. For personnel not normally in the fire station (for example, volunteers), ISO reduces the value of the responding members to reflect the delay due to decision, communication, or assembly. ISO then applies an upper limit for the credit for manning, as it is impractical for a very large number of personnel to operate a piece of apparatus.	**15%**
Training - Trained personnel are vital to a competent fire-suppression force. ISO evaluates training facilities and their productivity; training at fire stations; training of fire officers, drivers, and recruits; and building familiarization and prefire planning inspections.	**9%**
	Fire department total: 50%

FSRS Feature (2017)		Earned Credit	Credit Available
Emergency Communications			
	414 Credit for Emergency Reporting	2.55	3.00
	422 Credit for Telecommunications	4.00	4.00
	432 Credit for Dispatch Circuits	1.33	3.00
	440. Credit for Emergency Communications	**7.88**	**10.00**
Fire Department			
	513 Credit for Engine Companie	6.00	6.00
	523 Credit for Reserve Pumpers	0.50	0.50
	532 Credit for Pump Capacity	3.00	3.00
	549 Credit for Ladder Service	2.60	4.00
	553 Credit for Reserve Ladders and Service Trucks	0.00	0.50
	561 Credit for Deployment Analysis	5.71	10.00
	571 Credit for Company Personnel	3.61	15.00
	581 Credit for Training	6.70	9.00
	730 Credit for Operational Considerations	2.00	2.00
	590 Credit for Fire Department	**30.12**	**50.00**
Water Supply			
	616 Credit for Supply Systems	27.79	30.00
	621 Credit for Hydrants	2.96	3.00
	631 Credit for Inspection and Flow Testing	2.40	7.00
	640 Credit for Water Supply	**33.15**	**40.00**
Divergence		**-4.53**	
	1050 Community Risk Reduction	**3.68**	**5.50**
	Total Credit	**70.30**	**105.50**

FSRS Feature (2012)		Earned Credit	Credit Available
Receiving and Handling Alarms			
	414 Credit for Telephone Service	1.90	2.00
	422 Credit for Operators	3.00	3.00
	432 Credit for Dispatch Circuits	1.65	5.00
	440 Credit for Receiving and Handling Fire Alarms	**6.55**	**10.00**
Fire Department			
	513 Credit for Engine Companie	7.95	10.00
	523 Credit for Reserve Pumpers	0.69	1.00
	532 Credit for Pump Capacity	5.00	5.00
	549 Credit for Ladder Service	3.10	5.00
	553 Credit for Reserve Ladders and Service Trucks	0.47	1.00
	561 Credit for Distribution	2.48	4.00
	571 Credit for Company Personnel	3.09	15.00
	581 Credit for Training	2.56	9.00
	590 Credit for Fire Department	**25.34**	**50.00**
Water Supply			
	616 Credit for Supply Systems	32.46	35.00
	621 Credit for Hydrants	1.98	2.00
	631 Credit for Inspection and Condition	1.94	3.00
	640 Credit for Water Supply	**36.38**	**40.00**
Divergence		**-8.05**	
	Total Credit	**60.22**	**100.00**

Item 553- Credit for Reserve Ladder and Service Trucks (0.50 points)

The next item reviewed is item 553 "Credit for Reserve Ladder and Service Trucks (CRLS)." This item considers the adequacy of ladder and service apparatus when one (or more in larger communities) of these apparatus are out of service. The number of needed reserve ladder and service trucks is 1 for each 8 needed ladder and service companies that were determined to be needed in Item 540, or any fraction thereof.

Item 553 "Credit for Reserve Ladder and Service Trucks (CRLS)" = 0.00 points

Item 561- Deployment Analysis (10 points)

Next, Item 561 "Deployment Analysis (DA)" is reviewed. This item examines the number and adequacy of existing engine and ladder-service companies to cover built-upon area of the city.

To determine the Credit for Distribution, first the Existing Engine Company (EC) points and the Existing Engine Companies (EE) determine in Item 513 are considered along with Ladder Company Equipment (LCE) points, Service Company Equipment (SCE) points, Engine-Ladder Company Equipment (ELCE) points, and Engine-Service Company Equipment (ESCE) points determine in item 549.

Secondly, as and alternative to determining the number of needed engine and ladder/service companies through the road-mile analysis, a fire protection area may use the results of a systematic performance evaluation. This type of evaluation analyzes computer-aided dispatch (CAD) history to demonstrate that, with its current deployment of companies, the fire department meets the time constraints for initial arriving engine and initial full alarm assignment in accordance with the general criteria of in NFPA 1710, Standar for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments.

A determination is made of the percentage of built upon area within 1 ½ miles of a first-due engine company and within 2 ½ miles of a first-due ladder-service company.

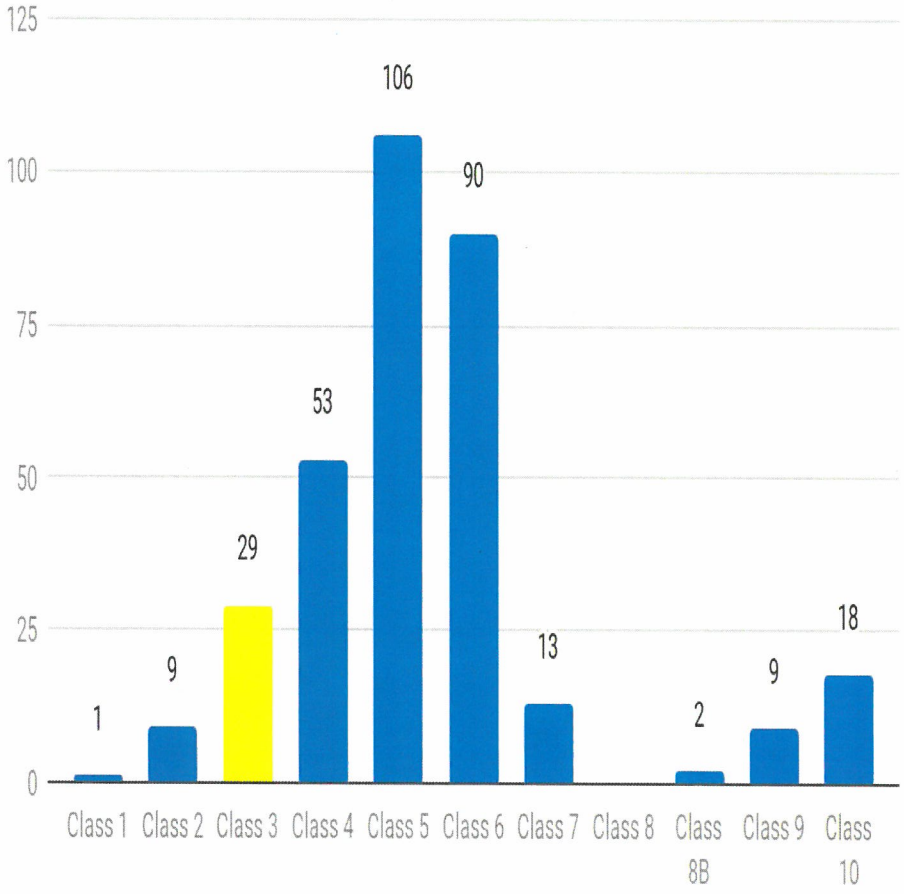
Item 561 "Credit Deployment Analysis (DA)= 5.71 points.

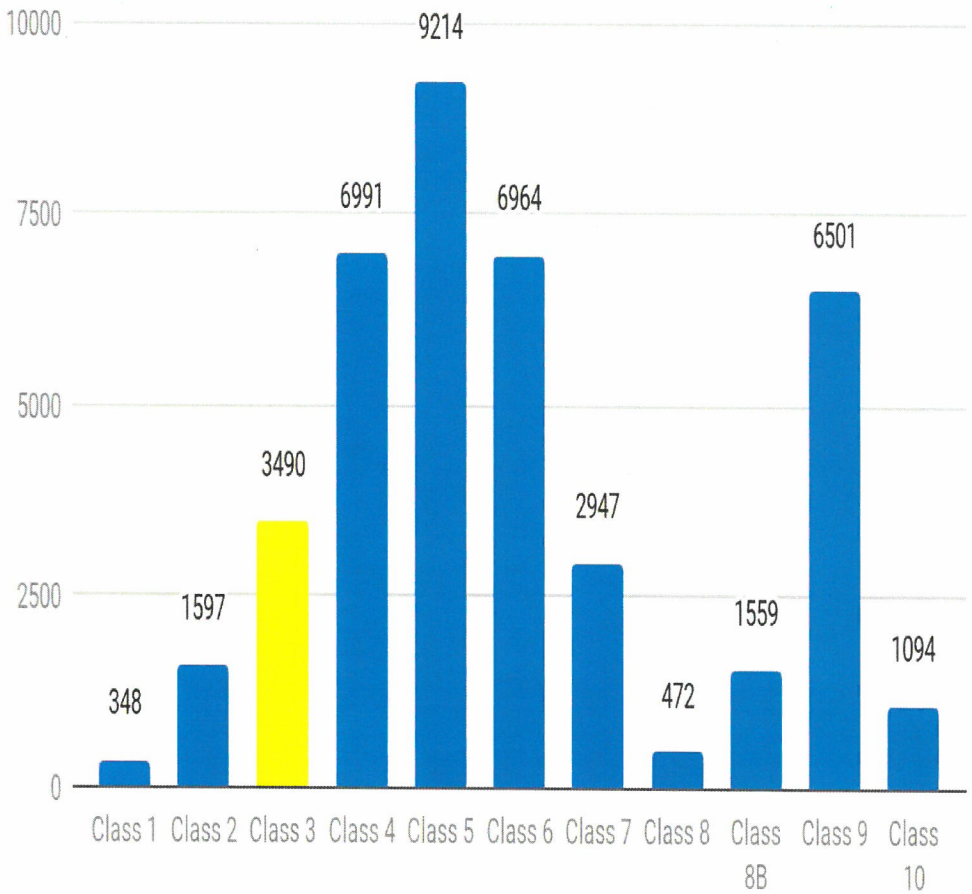
PPC Review

ISO concluded its review of the fire suppression features being provided for Saint George. The resulting community classification is CLASS 03/3X

If the classification is a single class, the classification applies to properties with a Needed Fire Flow of 3,500 gpm or less in the community. If the classification is a split class (e.g.,6/XX):

- The first class (e.g., "6" in a 6/XX) applies to properties within 5 road miles of a recognized fire station and within 1,000 feet of a hydrant or alternative water supply.
- The second class (XX or XY) applies to properties beyond 1,000 feet of a fire hydrant but within 5 road miles of a recognized fire station.
- Alternative Water Supply: The first class (e.g.,"6" in a 6/10) applies to properties within 5 road miles of a recognized fire station with no hydrants distant requirement.
- Class 10 applies to properties over 5 road miles of a recognized fire station.
- Class 10W applies to properties within 7 to 7 road miles of a recognized fire station with a recognized water supply within 1,000 feet.
- Specific properties with a Needed Fire FLow in excess of 3,500 gpm are evaluated separately and assigned an individual classification


PPC for Utah
125
100
75
50
25
0
1
9
29
53
106
90
13
2
9
18
Class 1
Class 2
Class 3
Class 4
Class 5
Class 6
Class 7
Class 8
Class 8B
Class 9
Class 10


PPC for Fire Departments country wide
10000
7500
5000
2500
0
348
1597
3490
6991
9214
6964
2947
472
1559
6501
1094
Class 1
Class 2
Class 3
Class 4
Class 5
Class 6
Class 7
Class 8
Class 8B
Class 9
Class 10

National Fire Protection Association (NFPA) Standards

NFPA 1710 Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations.

4.1.2.1 The fire department shall establish the following objectives:

(1) Alarm handling time to be completed in accordance with 4.1.2.3.
(2) 80 seconds turnout time for fire and special operations response and 60 seconds turnout time for EMS response
(3)*240 seconds or less travel time for the arrival of the first arriving engine company at a fire suppression incident
(4) For other than high-rise, 480 seconds or less travel time for the deployment of an initial full alarm assignment at a fire suppression incident
(5) For high-rise, 610 seconds or less travel time for the deployment of an initial full alarm assignment at a fire suppression incident
(6) 240 seconds or less travel time for the arrival of a unit with first responder with automatic external defibrillator (AED) or higher level capability at an emergency medical incident
(7) 480 seconds or less travel time for the arrival of an advanced life support (ALS) unit at an emergency medical incident, where this service is provided by the fire department provided a first responder with AED or basic life support (BLS) unit arrived in 240 seconds or less travel time

Operating costs (staffing, building and apparatus)

Staffing (Average Costs for salary and benefits):

3 person engine crew- Captain, FF level III, FF level II

$257,733 x 3 = $773,199

4 person engine crew- Captain, FF level III, FF level II, FF level I

$346,267 x 3 = $1,038,801

As we increase our department staffing we will also need to increase command and support staff.

Utilities for fire station 8 last year: $7,579.27

Non-utilities cost for station 8 was around $1,500.00

Apparatus w/ equipment: $700,000.00 - 1.3million

Routine maintenance and fuel costs: $24,500.00 yearly

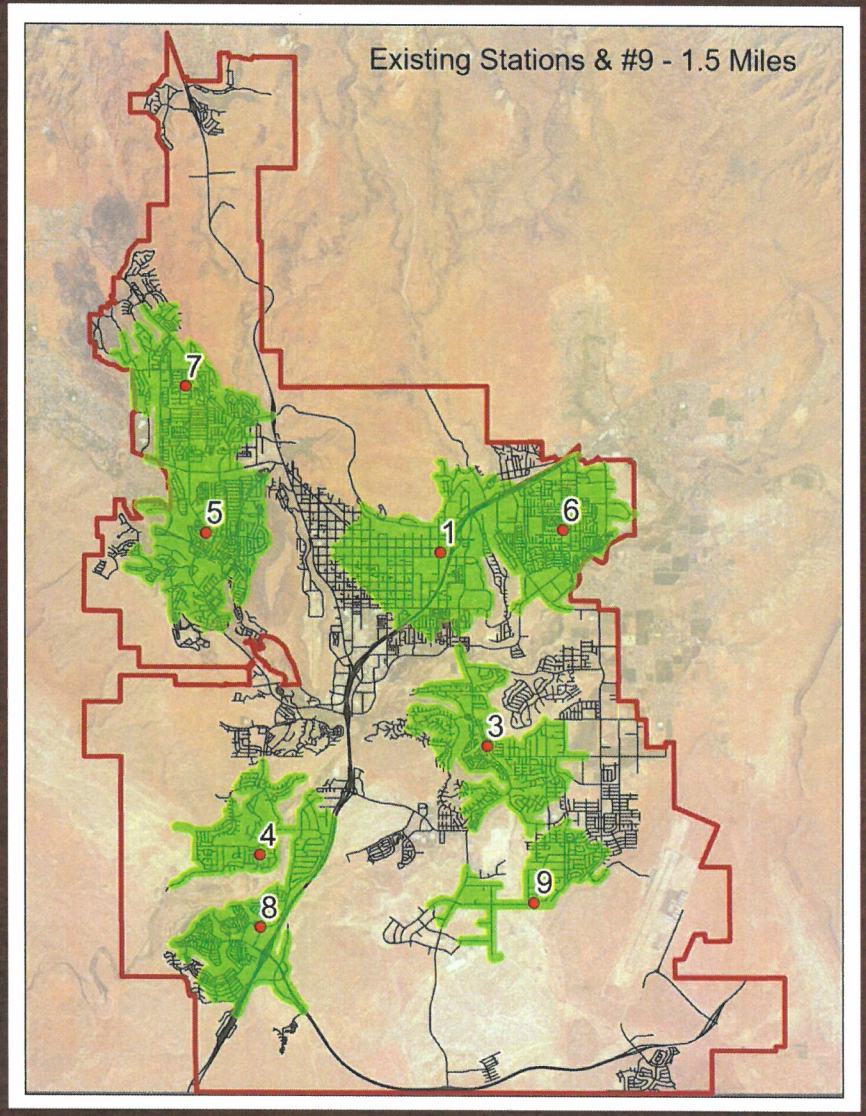
Specific City Considerations

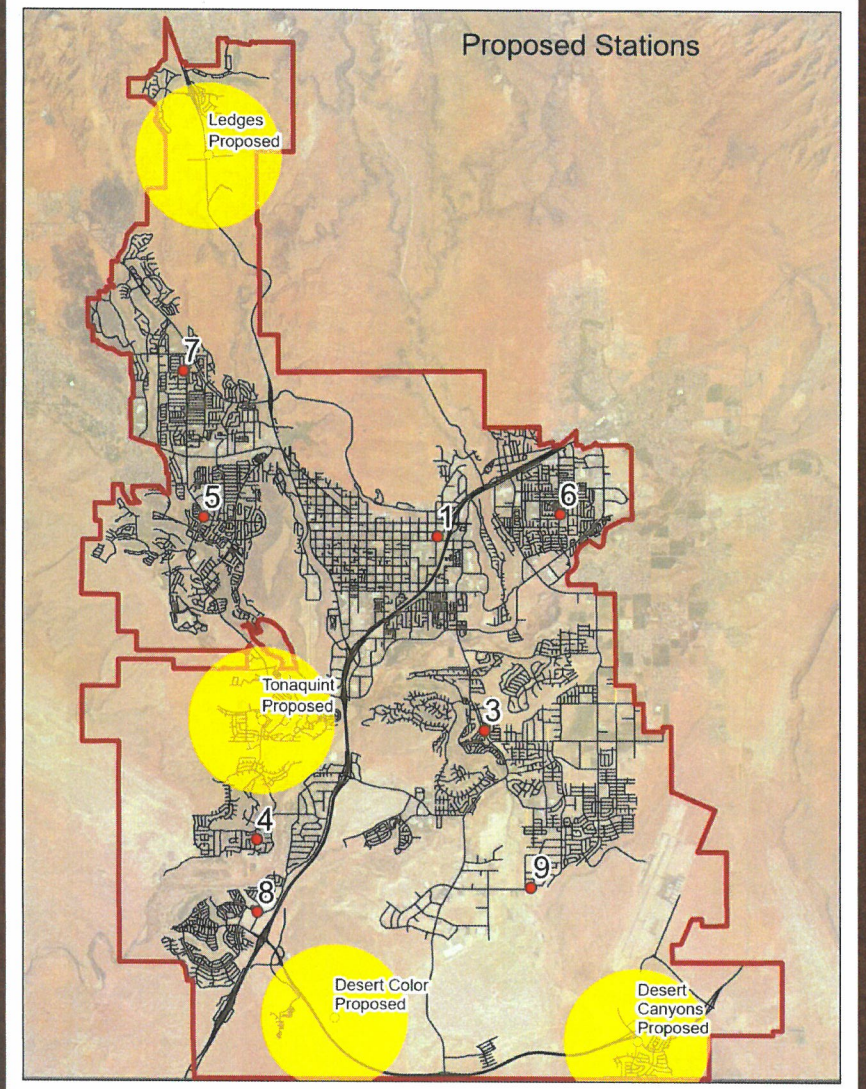
- Obstructions such as the I-15 freeway, rivers, washes, and mesas.
- Road miles used to measure distances and response times.
- Future growth in specific areas within the city, geographic expansion. Projected growth areas may change over time due to economic climate. i.e. Ledges projected station replaced by Sunriver.
- Increased calls for service.
- Increased traffic and roadway congestion resulting in increased response times.

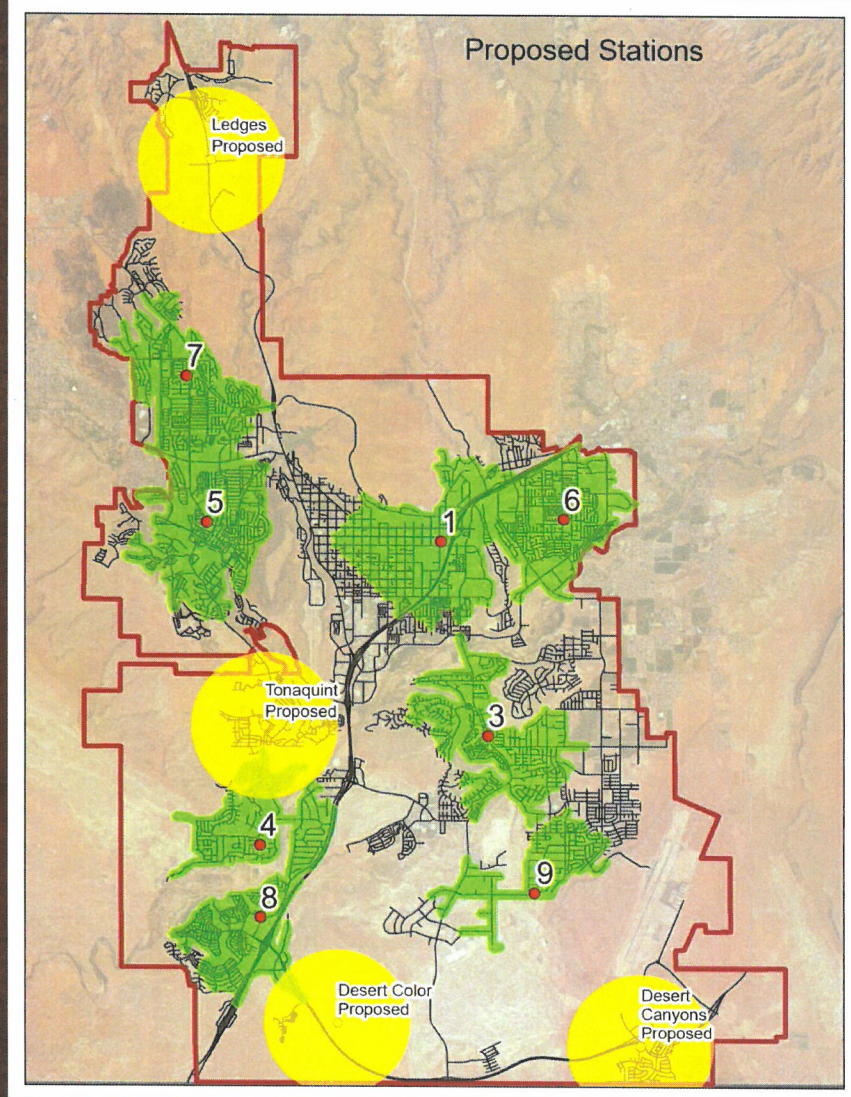
Existing and Proposed Fire Station Maps

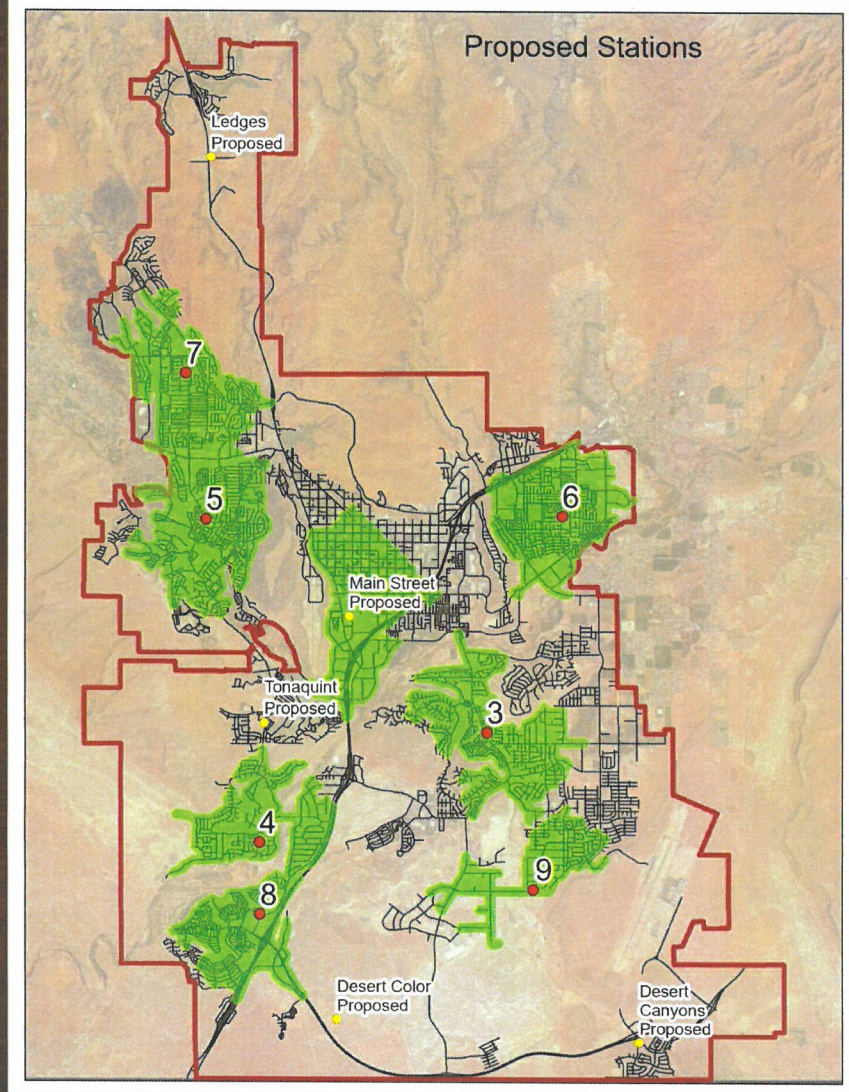
- Existing
- Proposed fire station sites
- Existing w/proposed fire station sites

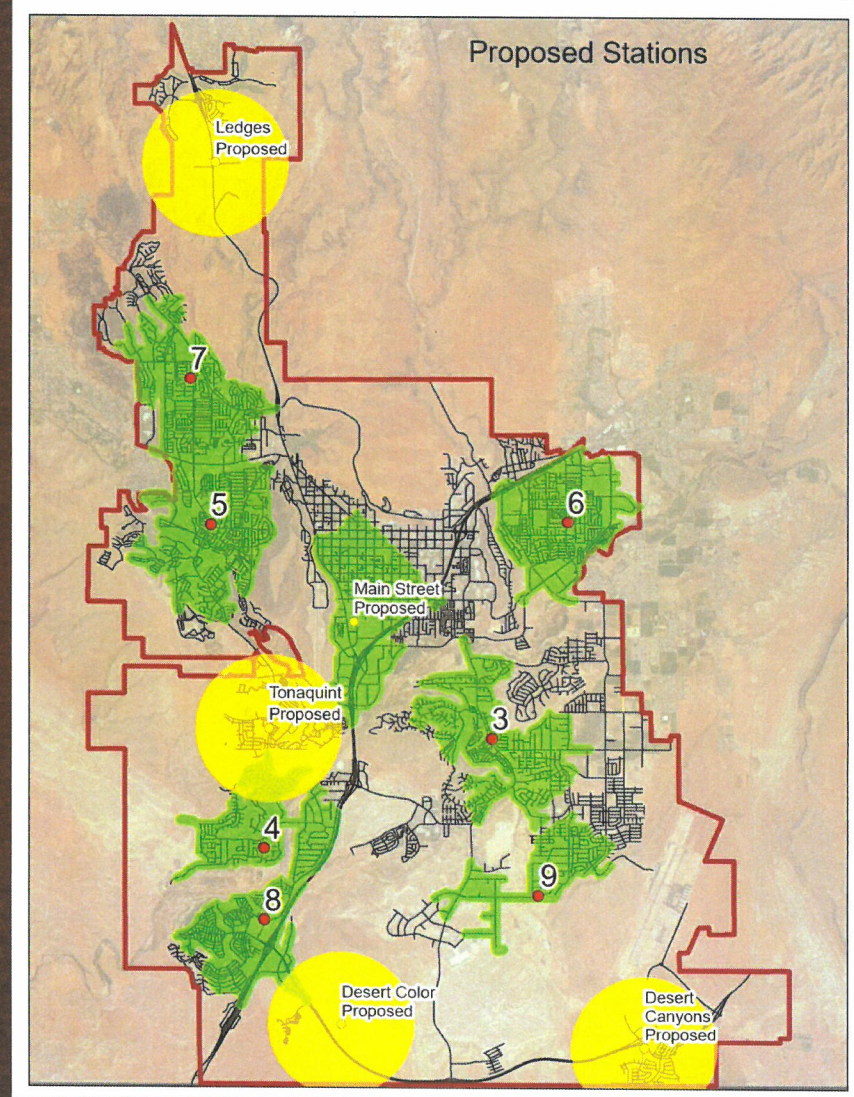
- Proposed Main Street fire station
- Proposed Main Street Fire Station w/ future fire station sites


Existing Stations & #9 - 1.5 Miles
7
5
1
6
3
4
8
9


Proposed Stations
Ledges
Proposed
Tonaquint
Proposed
Desert Color
Proposed
Desert
Canyons
Proposed
1
3
4
5
6
7
8
9


Proposed Stations
Ledges
Proposed
Tonaquint
Proposed
Desert Color
Proposed
Desert
Canyons
Proposed
1
3
4
5
6
7
8
9


Proposed Stations
Ledges
Proposed
7
5
6
Main Street
Proposed
Tonaquint
Proposed
3
4
9
8
Desert Color
Proposed
Desert
Canyons
Proposed


Proposed Stations
Ledges
Proposed
7
5
6
Main Street
Proposed
Tonaquint
Proposed
3
4
9
8
Desert Color
Proposed
Desert
Canyons
Proposed

Existing fire stations

Station 1, 51 South 1000 East (1986)

Station 3, 2315 South River Road (1990)

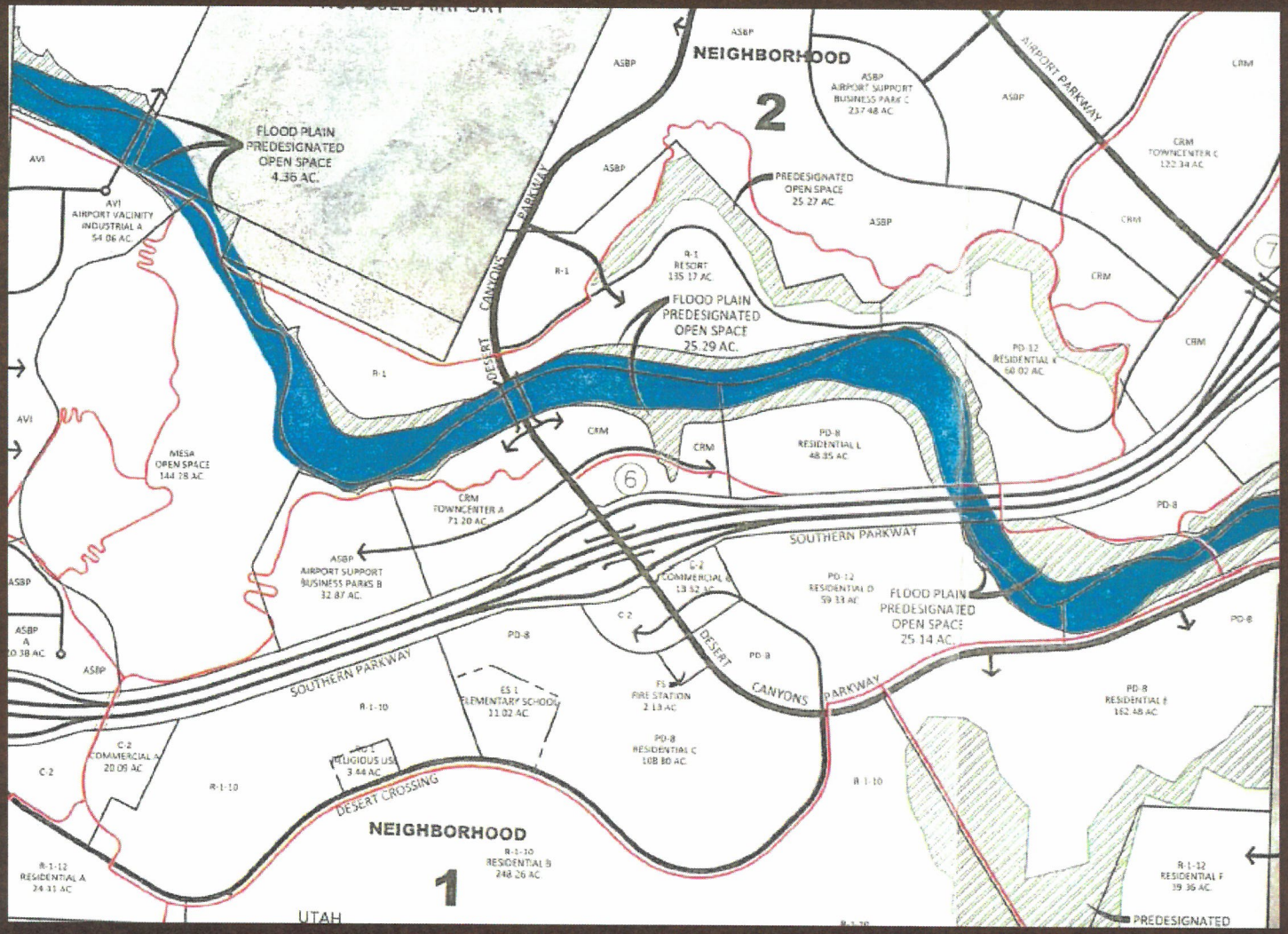
Station 4, 3521 South Manzanita Road (1970's) (Bloomington FD)

Station 5, 150 North Dixie Drive (1990)

Station 6, 184 North 2450 East (1998)

Station 7, 1912 West 1800 North (2002)

Station 8, 1096 West Bluegrass Way (2011)


NEIGHBORHOOD
2
FLOOD PLAIN
PREDESIGNATED
OPEN SPACE
4.36 AC.
PREDESIGNATED
OPEN SPACE
25.27 AC.
FLOOD PLAIN
PREDESIGNATED
OPEN SPACE
25.29 AC.
FLOOD PLAIN
PREDESIGNATED
OPEN SPACE
25.14 AC.
MESA
OPEN SPACE
144.28 AC.
SOUTHERN PARKWAY
DESERT CANYONS PARKWAY
AIRPORT PARKWAY
NEIGHBORHOOD
1
DESERT CROSSING
UTAH
PREDESIGNATED

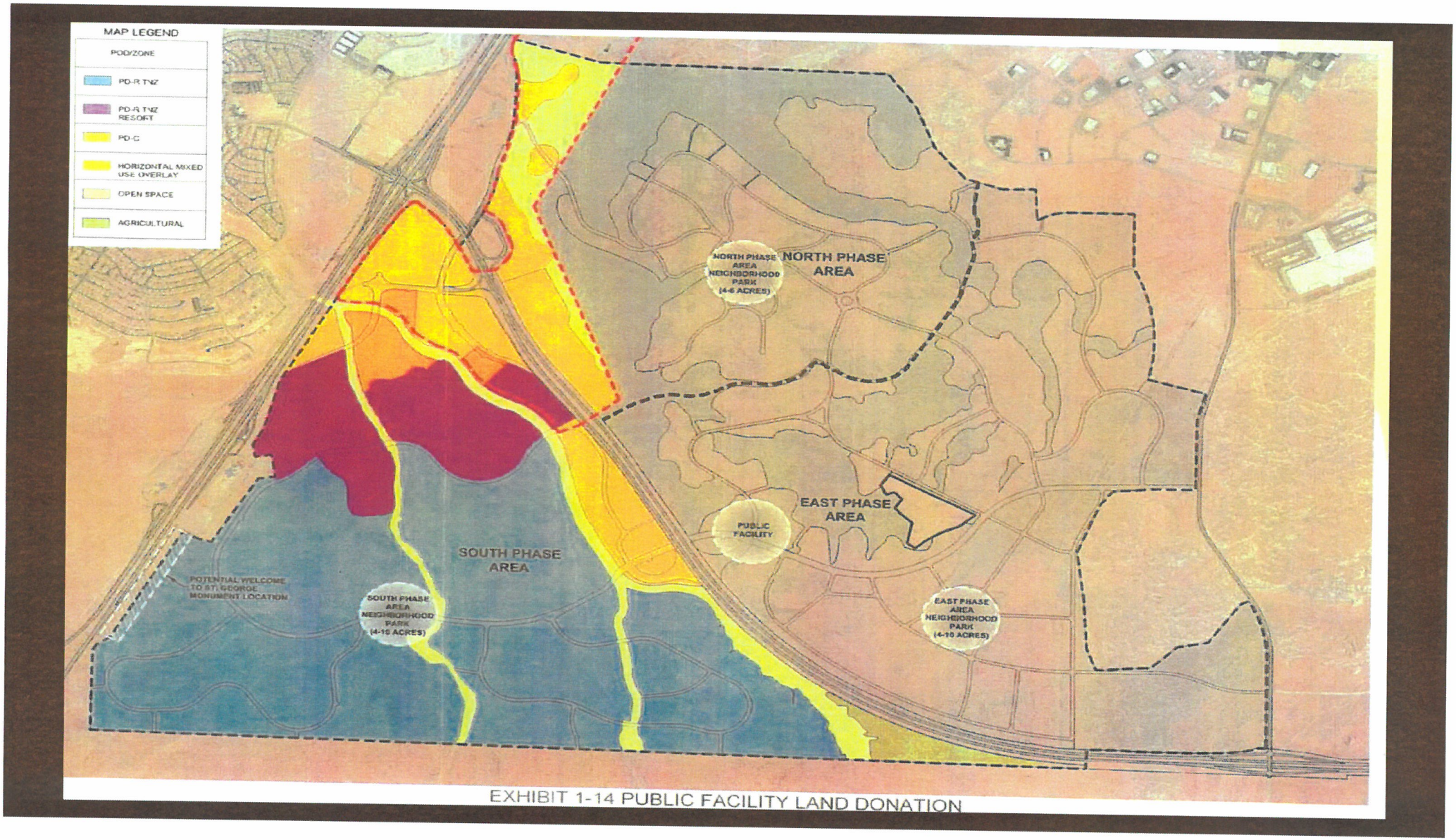


EXHIBIT 1-14 PUBLIC FACILITY LAND DONATION