Water & Wastewater

Existing Conditions

Water
This redevelopment area is served with potable water by Edwards Aquifer wells via the Park Water Treatment Plant and the Southside Water Treatment Plant. The water pressure and fire flows are provided by the 906 foot pressure plane with water stored in the Central Ave (500,000 gallons) and James Street (500,000 gallons) elevated storage tanks.

The area is currently fed from the southwest via 16” and 12” lines crossing IH 35, from the northwest via a 12” line down Williams Drive, from the northwest via a 12” line from the Central Avenue storage tank, from the southeast via a 12” line crossing IH-35, and from the northeast via a 12” line crossing IH-35 near Apple Creek Drive. The average ground elevation in the area is 750 feet, resulting in an average water pressure of 65 gallons per square inch.

Wastewater
The area is served with wastewater service by the San Gabriel Wastewater Treatment Plant via the Park Lift Station and two 12” collection mains crossing IH-35, one at Clay Street and the other at the North San Gabriel River. The North San Gabriel River collection main is currently running less than 25 percent of capacity and serves the area along Williams Drive to Central Ave. This line also serves the redevelopment area to Clay Street. The North San Gabriel 12” collection main is providing service to 150 connections or less. Assuming minimum slopes, a 12” collection main should carry approximately 1,000 residential connections.

The second 12” collection main at Clay Street serves the property along Northwest Blvd. This same main runs along the southeastern border of the area before turning to the southeast to cross IH 35. Although this main serves a much larger area to the northeast, it is also running at 25 percent capacity. Since the ground elevation slopes to the east for the area north of Clay Street, the 12” line running along IH-35 will provide service to properties along the IH-35 access road that may be developed north of Clay Street. This flow is lower than it has been in the past due to removal of lift stations and other system modifications to redirect flow to Pecan Branch wastewater treatment plant northeast of Georgetown. This main currently serves approximately 350 connections. Assuming minimum slopes, a 12” collection main should carry approximately 1,000 residential connections.

Issues and Analysis
The existing water and wastewater infrastructure serving the redevelopment area is capable of additional development density. Due to the numerous water lines feeding the area and the proximity of the Central elevated storage tank, water capacity and fire flow requirements are not expected to be the limiting factors.

The wastewater infrastructure should be capable of supporting an increase of 1,500 Living Unit Equivalents (LUEs). The available capacity is also dependent upon the proportion of Commercial to Residential property envisioned. Commercial wastewater flow is subject to a higher peaking factor, resulting in a lower LUE availability. Depending of the density of the commercial component, the 1,500 LUE’s could be exceeded. If additional wastewater flows were desired, then the installation of new collection mains would be required. These additional mains would be costly due to the IH-35 bore that would be required.
Exhibit S Water Line Overview
Drainage, Stormwater & Water Quality

Existing Conditions

The overall area of the Williams Gateway Redevelopment Plan is 69.3 acres and the total existing impervious cover is 25.0 acres. This creates an existing impervious coverage of 36 percent. The portion of the Williams Gateway Redevelopment area that is south of Williams Drive flows primarily south to the North San Gabriel River. The total area of this portion of the study is 25.1 acres and the existing impervious cover is 9.4 acres creating an existing coverage of 37.5 percent. This drainage area is labeled as Drainage Basin A on Exhibit U.

The remaining drainage area of the Williams Gateway Redevelopment area is between Northwest Boulevard and Williams Drive, which flows east to the west frontage road of IH-35. This drainage area is labeled as Drainage Basin B on Exhibit U. The drainage from this area then flows under IH-35 in an existing 48" culvert that is located approximately 100 feet north of Clay Street. The culvert dumps onto an undeveloped property north of the Republic Square commercial development. The existing drainage then continues east under Austin Ave. and into San Gabriel Park where it flows between Birkelbach Stadium and the Chamber of Commerce Building, and finally into the San Gabriel River.

Drainage Basin B is split at the 48" culvert crossing IH-35. The drainage flows to the culvert from a drainage area southwest of the culvert and an area northwest of the culvert. The 12.4 acre area southwest of the culvert is currently at the developed condition of 75 percent impervious cover. This drainage area is labeled as Drainage Basin B-1 on Exhibit U. The 31.75 acres northwest of the culvert is largely undeveloped at an existing impervious cover of 20.4 percent and this drainage area is labeled as Drainage Basin B-2.

With redevelopment of the Williams Gateway Redevelopment area, maintenance of a 75 percent impervious cover maximum to Basin B-1 is assumed. Also, an increase to 65 percent impervious cover is assumed for Basin B-2. According to the local Texas Department of Transportation (TXDoT) office, the 48" culvert crossing IH-35 is functioning adequately but is at capacity. Therefore, detention and water quality ponds will be required for additional impervious cover in Basin B-2, and no additional detention or water quality will be required for Basin B-1.

Drainage Basin A drains south to the North San Gabriel River. As mentioned above Basin A is 25.1 acres with 9.4 acres of existing impervious cover creating a coverage of 37.5 percent. Drainage improvements will be added for this area to develop the total impervious cover to be 65 percent. With direct conveyance to the North San Gabriel River, stormwater detention will not be required for this drainage basin. However, given the proximity of this basin to the river, water quality is very important.

The drainage improvements will be upgraded to provide detention and water quality for a total impervious cover of 65 percent for those areas that are currently below 65 percent. Where detention is required, the storm water will be controlled to the existing runoff rates for the 2-year, 10-year, 25-year and 100-year storms as required in the City Drainage Manual or conveyance to the San Gabriel River will be provided for any increase in stormwater flow. Water quality will be provided to meet Section 11.02.020A of the Unified Development Code for Low-Impact Site Design. This will require that wet ponds or retention/irrigation water quality ponds be provided for the increased impervious cover. The impervious cover may be developed to be more intense in some areas and less in other areas. In this case the drainage improvements will be modified to control the storm water and water quality to match the impervious cover conditions.
Developed Conditions

As stated above, the 31.75 acre Drainage Basin B-2 is currently developed with 6.47 acres of impervious cover creating 20.4 percent impervious cover. We analyzed two different scenarios to provide control of the drainage and to provide for water quality for the increased impervious cover.

The first scenario would be to provide a detention/water quality pond on the west side of the IH-35. This pond would be located west of the entrance to the existing 48” culvert and at the rear of the existing or proposed buildings on the west frontage road. This pond would provide detention for the 2-year, 10-year, 25-year and 100-year storm events. In conjunction with and adjacent to the detention pond, a retention/irrigation water quality pond would be constructed. This provides for 100 percent removal of the suspended solids and therefore meets Section 11.02.020A of the Unified Development Code for Low-Impact Site Design. According to preliminary drainage calculations, the combination detention/water quality pond would be 6.74 acre-feet with 5.34 acre-feet of detention and 1.4 acre-feet of water quality. Using an ADS underground detention system, the detention pond would require a 285 ft. by 285 ft. area and the irrigation pond would require a 150 ft. by 112 ft. area. The approximate cost of the combined pond is $940,000. Parking could be installed over this type pond, therefore the use of the property for parking would be maintained. With an open detention pond and a closed irrigation water quality pond the cost would be $550,000. Parking could be installed over the closed water quality pond and the open detention pond would require an area of 178 feet by 178 feet. The cost of the irrigation piping system and maintenance of the ponds would be born by the developments within the Williams Gateway Redevelopment area. Also, the developments would be responsible for the extension of the storm sewer system within the development and to the ponds.

The second scenario that was analyzed was to provide conveyance to the river for the additional runoff created by 65 percent impervious cover on Drainage Basin B-2. As described above, a 1.4 acre foot retention/irrigation water quality pond would be constructed on the west side of IH-35 to meet the UDC requirements. In addition to this pond, drainage improvements would be made to the existing drainage swale that conveys runoff from IH-35 east under Austin Ave. (between the Birkelbach Stadium and the Chamber of Commerce building) to the San Gabriel River. Also, as stated above the existing 48” culvert crossing IH35 is at capacity. Therefore, without the installation of a detention pond, an additional culvert would need to be bored under IH-35 for the proposed 65 percent impervious cover. This culvert would cost $190,000. In addition to the IH-35 culvert, the necessary improvements would include a culvert bored under Austin Ave., several new culverts under existing streets in the San Gabriel Park and excavation of existing channels to convey the increased storm water flow created by no detention.

The total cost to provide conveyance to the river, including culverts, drainage easement, and channel excavation would be $535,000. With the irrigation water quality pond, the total cost would be $875,000. As with option 1, parking can be installed over the irrigation water quality pond.

One scenario was analyzed for Drainage Basin A which is south of Williams Drive and basically drains south to the North San Gabriel River. The total area of this portion of the study is 25.1 acres and the existing impervious cover is 9.4 acres creating an existing coverage of 37.5 percent. Drainage improvements for this area were analyzed to develop the total impervious cover to be 65 percent. With direct conveyance to the North San Gabriel River, stormwater detention will not be required for this drainage basin. However, given the proximity of this basin to the river, water quality is very important. A
wet water quality pond is therefore proposed for this area which would meet Section 11.02.020A of the Unified Development Code for Low-Impact Site Design. The pond could be located in several areas and one possible location is shown on Exhibit U. Calculations show that this pond would have a volume of 0.50 acre feet and would cost $250,000. Unlike the offsite drainage easement that was required for conveyance to the river for drainage from Basin B-2, we assume that an onsite easement for this pond will be provided by the Williams Gateway Redevelopment area developers. As with Drainage Basin B, the cost for maintenance and make-up water for this pond will be born by the developments within the Williams Gateway Redevelopment area. Also, the developments will be responsible for the storm sewer system to convey drainage to the pond.

Exhibit T Wastewater Service Overview