

III SEWERS

Existing Sewer System

The North Albuquerque Acres area is primarily dependent upon the use of septic systems with associated leach fields as there are only limited locations of installed community sewer lines in the area. The Primrose Point development uses a lift station method to collect the waste near Lowell Street and pump it uphill to the Tennyson Street area where it then enters a gravity system. Some of the development on the fringes of the area are served by the Albuquerque-Bernalillo Water Utility Authority (ABWUA) sewer system. One example of this is the Temple of the Church of Jesus Christ of Latter-day Saints. This fringe service, however, is the exception rather than the rule in the area.

Verification and Future Wastewater System

One of the requirements of this study is to verify the system information and costs presented in the Schiavo Report. The Schiavo Report, however, did not provide a system layout or other pertinent information related to the development of the wastewater collection system for the entire North Albuquerque Acres area; only Phase 1 detailed information was provided for verification. Therefore, as part of its work, the study team assessed the Phase 1 work done in the Schiavo Report and worked with ABWUA personnel to develop an area-wide general service plan in order to determine area-wide system feasibility and costs. It should be noted that the general service plan developed is to provide information for feasibility and cost only and is not intended as a master plan or as preliminary design of a wastewater system for the area.

The Phase 1 sewer layout provided in the Schiavo Report, and assessed as part of the study requirements, takes all flows east of Eubank Boulevard and south of Palomas Avenue (the approximate Phase 1 area of the Schiavo Report) to Eubank Boulevard to then to the south. However, after discussions with ABWUA representatives, the flow directions were adjusted according to two different scenarios:

1. One was to direct most of the wastewater flow from the area to the northwest
2. The other was to direct most of the wastewater flow east of Holbrook Street to the interceptor that currently crosses Paseo del Norte at Holbrook Street with the remainder to tie-in to the top of the existing ABWUA system or flow to the northwest.

Scenario number 2 is the scenario that is discussed in this study as it is the scenario that is preferred by the ABWUA. Currently, the Holbrook interceptor does not continue much further north than Paseo del Norte. However, a portion of it is currently under design to extend further to the north.

The flow and design requirements from the ABWUA were used in the development and analysis of the wastewater system. The dwelling unit occupancy used for the flow generation was three

persons per dwelling unit. This is based on information from the City of Albuquerque Development Process Manual. The 2000 census shows approximately 2.88 persons per dwelling unit. The Manning's equation was then used to determine the required line size for the required flows. The flows were calculated assuming full development of the area. The minimum line size is eight inches.

The primary difficulties in providing sewer service to the area are:

- System connection points
- Arroyo crossings
- Steep grades on east-west roads and low flows
- Relatively flat grades on north-south roads

System Connection Points-The system connection points were assumed to be part of the ABWUA system. The difficulty in this regard occurred in two areas. The first of these areas was the fact that several of the downstream connection points are currently under design, under construction, or have recently been added to the ABWUA system. For this difficulty assumptions were made as to the connection points to use. These connection points may need to be adjusted with downstream analysis of the existing sewers to verify the capacities of the recently developed systems.

The second of the system connection point difficulties were related to the area in the far northwest corner of the study area around Elena Drive and Louisiana Boulevard. The sewer in this area may need to cross the Sandia Pueblo, or Pueblo owned land, in order to connect to the remainder of the ABWUA system. Additional verification of the reality of this difficulty would need to take place during the actual design of the system.

Arroyo Crossings-The primary difficulties involved in the arroyo crossings is with regard to protection of the underground lines and the minimum depth requirements. The sewer lines that cross the arroyos would need a minimum depth of cover in addition to probable concrete encasement. Furthermore, because of the rise and fall nature of the ground in the vicinity of the arroyos, some portions of the sewer lines would need to be approximately 20 feet deep just outside of the arroyo in order to be the minimum depths within the arroyo. Depths greater than 20 feet are often considered to be too deep for routine sewer man holes because of equipment limitations.

Steep Grades on East-west Roads and Low Flows-The steep grades on the east-west roads, sometimes four percent or more, can result in the reduction of flow depths in the sewer lines especially in the upstream reaches of the system. This can result in increased effort to move the sewer flows with load down through the system. This difficulty can be combated in two different ways. One way is to reduce the slope of the sewer lines in comparison to the ground surface elevations using drop manhole connections. It is anticipated that these drop connections, if used, would be needed more in the upstream reaches of the system where flows

would be smallest. The specific locations of this type of solution would need to be made during the design process.

The second way to improve any difficulties with the steep grades and low flows is to include additional flows upstream through the system to move larger volumes through the system. An example of this inclusion would be to include the flows from the Primrose Point development thereby increasing those flows directly west of Primrose Point. Including the Primrose Point flows would also remove the need for the existing lift station.

Relatively Flat Grades on North-south Roads-The relatively flat grades is not a difficulty but must be remembered during the final design process. Any sewer lines places in the north-south roadways would need to be carefully designed in order to meet the minimum grade requirements and pass under the arroyo crossings at the required bury depths.

The completed area-wide system used for cost generation is shown in Exhibit III-1 in the appendix.

Resident Requirements to Connect to the Sewer System

The requirements for connection to a public sewer system vary according to the Bernalillo County Wastewater Ordinance 2000-7. Section 42-498 of the ordinance states that:

If a public sewer system is available, any new structure requiring wastewater disposal shall be connected to the sewer system prior to the structure being occupied. If a public sewer system is available to a proposed subdivision, every lot in that subdivision shall, at the property line of each lot, be provided access to sewer.

A. If a public sewer system is available to a lot that has a structure that will be or is generating wastewater, or has a structure that has generated wastewater, that structure shall be connected to the sewer system within one year (365 calendar days) of the availability of sewer.

1. Exceptions

- a. A failing wastewater system shall be abandoned and the structure shall be connected to sewer within 30 days of the wastewater's system's failure
- b. Within 30 days of the ownership of the property changing, the structure shall be connected to sewer.
- c. Wastewater systems that were installed prior to the sewer system becoming available and meet the requirements of Section 42-508, Performance Standards, without a variance, are not required to connect to the sewer system.

Section 42-508 of the County's ordinance is shown in the appendix for reference. Property owners that would be required to connect to a public sewer system according to the ordinance would be required to pay the sewer connection fee (currently \$1,234.00) and would be required to route their sewer service lines on their property to the property line at the connection point at their own expense. Additionally, due to required hookup, the septic systems currently in use would need to be abandoned or removed.

Estimated costs for routing would vary depending on efforts required for a particular lot and would need to be estimated on a lot by lot basis. However, some of the general cost ranges for elements of the routing are:

4" diameter PVC pipe complete in place	\$14 to \$20 per linear foot
Service line cleanouts (non-pressure)	\$300-\$700 each
Grinder pump assembly	\$4,000-\$6,500 each

The service line cleanouts would generally be needed in connection with service line angle points. The grinder pump assemblies may be needed for some homes where the service line cannot connect to the system at proper grade. Please note that these costs provided are for general guidance only and actual costs would vary depending on timing of construction, quality of materials used, contractor used, quantity of pipe installed, and the level of complication of the work.

One of the more costly scenarios for routing the house sewer lines to the property line would be for those property owners whose current sewer connection is to the rear of the house and away from the street. This scenario would require routing the sewer around the house and out to the street. This effort must be done carefully in order to maintain an adequate slope for the lines in addition to cleanouts that would be needed at any of the significant changes in direction that would be needed to route around the house. If a grinder pump assembly were needed, this scenario's cost would increase further.

There is the potential that septic systems will need to meet the performance standards of Section 42-508 of the County Wastewater Ordinance by the year 2015. Therefore, if no public sewer system is constructed, existing septic systems that do not meet the performance standards of the Ordinance may need to be upgraded from the existing system to a class of system that does meet those performance standards by the year 2015 (from a Class 1 to a Class 2 system, for example). The performance standards are based on the Estimated Wastewater Flows and lot sizes. The tables and charts relating to estimated wastewater flows and lot size are shown in the appendix for Section 42-508.

It is currently estimated that the cost of a Class 2 system is between \$8,000 and \$12,000. Again, please note that these costs provided are for general guidance only and actual costs would vary depending on timing of construction, quality of materials used, contractor used, and quantity of material installed.

Sewer System Costs

The overall cost to provide the entire system as shown in Exhibit III-1 is \$35.758 million. Exhibit III-2 shows the breakdown of those costs.

Sewer System Phasing

Although specific phasing locations are not discussed in this document, phasing of the sewer construction is certainly possible and would be recommended. The primary phasing of the entire effort would be that the sewer lines would need to be installed prior to or concurrently with any water system that would be provided.

Other sewer system phasing would be based on starting at the connection point to the ABWUA system and working upstream. For example, one basis of phasing would be the Holbrook interceptor line. All of the sewer lines south of Paseo del Norte that would connect into this interceptor, either directly or indirectly, could be built beginning at Holbrook Street and travel upstream to the east. For example, a connection could be made to the existing ABWUA system at Pino Avenue and Holbrook Street. The sewer line could then be built to travel east on Pino Avenue to Eubank Boulevard or even all the way to Tennyson, connecting to the homes as it progresses. The other lines in this area could be constructed likewise.

North of Paseo del Norte, once the Holbrook interceptor extends further to the north, all of the lines east of Holbrook Street could be connected to the interceptor and then extend to the east as far as funding would allow. For example, once the Holbrook interceptor extends to Eagle Rock Avenue, a connection to the interceptor at Eagle Rock Avenue could be made. The line on Eagle Rock Avenue could then extend to the east to Eubank Boulevard or even all the way to Tennyson Street.

The areas that are west of the Holbrook interceptor could be phased in a similar manner. These lines would need to similarly start with the connection points to the existing ABWUA system and then travel to the east. One exception to this would be the area that contributes flows to the far northwest corner of the study area. This phasing would probably include more extensive work to connect into the City system. Once the connection was completed, however, the phasing of this area could continue similarly to the other phased areas.

Sewer System Permitting

The only known permitting that would need to occur would be the development of a joint powers agreement between the City of Albuquerque and Bernalillo County to provide treatment services and to tie-in to the ABWUA system. It is our understanding that the existing treatment plant currently has capacity for the flows that would be generated by the study area.

According to the current system layout, only a few easements would be required along property lines in some key locations primarily in the vicinity of the flood control dams. Additionally, an easement would need to be negotiated with the Sandia Pueblo to install an interceptor to the

west from the far northwest part of the development. All other lines assumed to be built within the street right-of-way.

Sewer System Funding

There is currently no identified funding for the installation of a sewer system for the study area.