

FINAL
ENVIRONMENTAL IMPACT STATEMENT
FOR
CONSTRUCTION OF WASTEWATER FACILITIES

AUSTIN, TEXAS

WPC-Tex-824

IMPACT STATEMENT NUMBER 7104

Prepared By

OFFICE OF GRANTS COORDINATION, REGION VI
ENVIRONMENTAL PROTECTION AGENCY
DALLAS, TEXAS



APPROVED BY:
Arthur W. Busch
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Regional Administration

May 26, 1972

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SUMMARY

() DRAFT (X) FINAL

ENVIRONMENTAL IMPACT STATEMENT
CONSTRUCTION OF WASTEWATER FACILITIES
ENVIRONMENTAL PROTECTION AGENCY
OFFICE OF GRANTS COORDINATION

1. Name of Action. Construction of wastewater interception and treatment facilities for the City of Austin, Texas (WPC-Tex-824). Pending action is the approval of plans and specifications for the tunnel interceptor.

Administrative Action (X) Legislative Action ()

2. Brief Description of Action. A grant offer has been made to the City of Austin contingent upon preparation of an acceptable Environmental Impact Statement. The grant offer was made on September 28, 1971, and accepted on October 18, 1971. The grant amount, \$16,004,450, is based on total construction costs of \$29,099,000, all of which is eligible for federal participation.

Eligible work consists of the construction of a deep tunnel interceptor and the enlargement of an existing wastewater treatment plant. The tunnel will intercept wastewater flows from existing and proposed interceptor flows and convey them to the proposed wastewater treatment plant.

For the continuation of the project, the approval of the plans and specifications for the tunnel interceptor by the Environmental Protection Agency is required. The plans and

specifications for construction of the crosstown tunnel interceptor have been approved by the Texas Water Quality Board and have been submitted to the Regional EPA office.

3. Summary of Environmental Impact and Adverse Environmental Effects. Lake Austin and Town Lake are sources of municipal water supply (City of Austin). The project will relieve overloaded trunk sewers tributary to the Govalle Wastewater Treatment Plant and will reduce peak flows to the plant to permit additional sewer service to the undeveloped Govalle Treatment Plant service area - all at a minimum expense to the City. Since present wastewater overflows cause a detriment to the environment, especially to the tributary creeks, Lake Austin, Town Lake, and the Colorado River, the proposed project will abate such existing conditions.

The proposed Walnut Creek enlargement has design features which assure complete treatment of all flows, even at times of peak wet weather flows, thereby alleviating the periodic overflows of untreated wastewater to the Colorado River System. All treated wastewater flows presently discharge below Town Lake.

Minor adverse effects on the environment due to the construction and operation of a larger treatment plant at the Walnut Creek site will be offset by the benefits to be derived from more complete and modern treatment facilities. The existing

treatment facilities consist of aerated wastewater lagoons and stabilization ponds, with no discharge to surface water. The expanded treatment facilities will be constructed at the existing plant site; however, treatment requirements will require the conversion of this site to a more permanent type of treatment plant, and the land essentially becomes irrecoverable for other land uses. This is a basic and unavoidable effect because a modern wastewater treatment plant must be built somewhere if the public is to be properly served and current local, State, and Federal demands and regulations are to be complied with.

The adverse effects during construction will be minimal due to the construction scheme of the interceptor as a tunnel. The construction of the new facilities on the existing plant site will minimize adverse effects from the construction operations.

The tunnel construction will permit the use of blasting. The magnitude of blasting will be limited to prevent adverse surface effects. The tunnel construction will be through subsurface faults. These faults are dormant and potential problems are improbable. The provisions for the plant construction have considered attenuation of noise levels and odor control schemes to minimize the detriments of wastewater treatment plant operation. Modifications to Walnut Creek to improve the hydraulic regime will require clearing of small trees and brush ground cover which will be designed to result in a park-like area.

4. Alternatives Considered. Numerous alternatives for the project have been considered and are summarized below:

Location of Plant

1. Expansion of the existing Govalle Plant to accommodate design flows.
2. Interception of flows at upstream points on trunk sewers and diversion to Walnut Creek site. (Method Selected)
3. Locating the proposed treatment facilities at a more remote site near Hornsby Bend.

Location of Interceptor

1. Three preliminary tunnel routes were investigated and one of these routes was refined for design. (Method Selected)
2. Relief of overloaded outfall sewers by using parallel relief sewers to the Govalle Plant was investigated in conjunction with the alternative to further develop the Govalle site.

Treatment Process

1. Biological treatment with effluent filtration. (Method Selected)
2. Physical chemical treatment.

Sludge Disposal

1. Dewatering and land fill.
2. Lagooning with pilot irrigation studies. (Biological only) (Method Selected)
3. Waste lime recalcination and disposal of waste ash. (Physical/Chemical only)

5. List of all Federal, State and Local Agencies from which
Comments have been received.

CITY OF AUSTIN

Curtis E. Johnson, Director
Water & Wastewater Department
City of Austin
Mathews, Leeds, Hill, Jewett,
Bryant, and Currington
Black & Veatch Consulting Engineers
S. A. Garza, C. E.
Capitol Area Planning Council
Freese, Nichols & Endress

FEDERAL AGENCIES

Forest Service
Bureau of Outdoor Recreation
Army Corps of Engineers
Soil Conservation Service
Geological Survey

STATE AGENCIES

Office of the Governor
Texas Air Control Board
State Department of Health
Texas Parks & Wildlife Department
Texas Water Quality Board
Texas Highway Department
Texas Water Rights Commission
Forest Service
State Soil & Water Conservation
Board
Texas Water Development Board

INDIVIDUALS & PRIVATE ORGANIZATIONS

Sierra Club, Austin, Texas Group
R. M. Dixon Water Consultant
Citizens in opposition to the
proposed Walnut Creek Sewer
Plant (Petition of 160 persons)
Mrs. F. K. Eidelbach

6. The Draft Environmental Impact Statement was made available to the Council on Environmental Quality on February 4, 1972. The Final Environmental Impact Statement was made available to the Council on Environmental Quality on May 26, 1972.

I. DESCRIPTION OF THE PROPOSED ACTION

A. Environmental Setting

This project, located in Austin, Texas, involves the Colorado River (of Texas) System having a drainage area of 41,800 sq. miles, of which 39,900 sq. miles are in Texas. The headwaters are northwest of Lubbock, Texas, and flow in a southeasterly direction, discharging into the Gulf of Mexico in the vicinity of Matagorda. Hence, this river system, originating in the arid area of west Texas, has extreme natural water quality variations generally characteristic of the local area - i.e., high mineral characteristics in the upper reaches to very acceptable and good quality characteristics in the lower reaches.

The Colorado River is probably one of the leading examples of almost ultimate full development of a river basin flow by the construction of dams from mouth to headwaters. Figure 1A shows the Colorado River Basin in its relation to the State of Texas and also the location of existing and proposed dams. It will be noted that there are six upstream dams and reservoirs in the immediate area. These facilities were constructed and are maintained and operated by the Lower Colorado River Authority (LCRA).

As a consequence, the water supply sources for present and future growth of Austin are practically unlimited. Also, the control of excessive flood waters detrimentally affecting the Austin environment is most remote. Finally, the attraction of these reservoirs - referred to generally as the Highland Lakes System -- for recreational uses is tremendous. Austin, being the major

municipality in this lake system, realizes all of these and other fringe area benefits and is, therefore, most water conscious and eager to maintain, protect, and improve upon these attributes.

This project reflects the attitude and dedication of the City to assure the maintenance of high quality water in the Colorado River system while, at the same time, providing the necessary wastewater utility facilities to provide for the obvious future growth and to have these facilities available and in operation prior to the creation of critical and unsatisfactory water quality conditions.

As will be described more fully later, the City of Austin presently is served by three wastewater treatment plants. The Govalle Plant is the major one, providing secondary treatment including chlorination of the final effluent prior to discharge to the Colorado River. This plant presently treats about 85 percent of the total 28 mgd wastewater flow. Another plant is located at the Williamson Creek site and treats about 1.5 mgd with final discharge to large stabilization ponds (245.7 acres) after mechanical aeration. There is no discharge to surface waters from this plant.

The third plant is the Walnut Creek Plant, similar in nature to the Williamson Creek Plant, and presently treating about 1.8 mgd. Existing facilities occupy about 100 acres of the 300 acres at the site. The facilities include bar screen and comminutor, parshall flume, two 150' x 150' aeration tanks with mechanical aerators plus the air discharge from blowers providing forced draft ventilation for the Walnut Creek Outfall line to the

plant. The aeration tanks are followed by two 40 acre stablization ponds. The plant has never been loaded to design capacity; consequently, there has been no discharge to the receiving stream. This is the plant which will be enlarged as proposed in this project. (Location of the three plants is shown on Fig. 1.)

This project is part of the Highland Lakes System Comprehensive Wastewater Study prepared for the Lower Colorado River Authority and the City of Austin, and financed by the Texas Water Quality Board, as prepared by Freese, Nichols and Endress, consulting engineers. The Highland Lakes System includes an area which covers portions of nine counties and is specifically concerned with that portion of the Colorado River Watershed which extends generally from the head waters of Lake Buchanan downstream through San Saba, Lampasas, Burnet, Llano, Blanco, Hays, Travis, and Bastrop Counties.

There are 35 existing domestic sewerage systems covered by 22 Texas Water Quality Board Domestic Wastewater Discharge Permits within the study area. There are 15 existing industrial wastewater systems covered by 11 Industrial Wastewater Discharge Permits and there is one proposed fossil fueled power plant for which a cooling water discharge permit has been granted. In addition to the domestic and industrial wastewater systems, there are approximately 82,000 persons in the study area who are served by septic tanks.

The water in the Highland Lakes area, including Lake Austin, is currently of good quality allowing the lakes to be used

extensively for recreation and water sports. Town Lake receives significant amounts of surface run-off pollution and pollution from overflowing sanitary sewer manholes during wet weather. There are indications that it also receives some pollution from septic tank wastewater disposal systems. The numbers of fecal coliform bacteria in Town Lake Water are encroaching on the recommended limit for contact water sports. The Texas Water Quality Board is currently engaged in a program to control the proliferation of septic tanks in the immediate vicinity of lakes in the Highland Lakes System.

The project proposed by the City of Austin is included as part of the recommended improvements in the Highland Lakes Study. These improvements have been deemed necessary to prevent sewer overflows into Town Lake and the Colorado River during periods of peak wet weather flow.

1. Population Trends and Projections

Past and current records of population data for the City of Austin were analyzed to indicate future projection trends. The Master Plan of the City of Austin was utilized to allow future population projections to be related to planned land-use and development trends. Population projections were made for the years 1985, 2000, and 2020.

2. Land-use Trends and Projections

The Master Plan of the City of Austin was published in 1961 and updated by a major revision in 1965. Subsequent yearly revisions have kept the Master Plan coherent during a period of rapid urban growth.

Planned unit development permits and special property development permits require an evaluation, including public hearings, to assure that proposed development conforms to the Master Plan.

The City of Austin is physically growing in all directions. Most rapid development is occurring in the

- a. Southwest along U. S. Highway 290 in the vicinity of the Oak Hill Community,
- b. South along IH-35, east and south of the industrial district, and
- c. Northwest area, Dry Creek and Bull Creek drainage basins.

As in most cities with rapid residential, commercial, and industrial development, physical development within and proximate to the City limits of Austin is greatly dependent on the City's ability to provide utilities.

To estimate future sewerage needs, the present development of the City of Austin and of areas within reasonable sewer service limits were studied to determine the type and intensity of land-use. Future land-use patterns developed by the City Planning Department, to be effected by the Master Plan, were incorporated into the projections of sanitary sewer needs. Population projections and future land-use patterns for each major drainage area were tabulated. Tabulations were further subdivided for each subdrainage area.

Land-uses tabulated for use in estimating wastewater flows included shopping centers, shopping districts, commercial uses, manufacturing, central business district, public and semi-public, and recreation and open areas.

The proposed tunnel will intercept wastewater flows from areas north of the tunnel alignment; the existing system will be modified and expanded to accommodate flows to the south of the tunnel.

The projected annual growth for the Bull Creek Basin for the study period is much greater than for other areas.

Land-use studies for the Bull Creek Basin reveal that future development up to ten living units per acre, with a scattering of commercial development.

Sewerage needs in this area are expected to increase rapidly due to accelerated physical growth. Completion of the new West Loop will become an impetus for development in the scenic areas already a prime location for residential land-use. Projected population for the year 2020 is 60,000 persons within the 20,745 acres, all of which is either unsewered or served by septic tanks.

The Dry Creek Basin is similarly developing into an attractive residential area. A population of 15,000 persons has been projected for the year 2020.

The crosstown Tunnel has been designed to serve the Dry Creek Basin and the Bull Creek Basin; however, the collection system, interceptors, and lift stations must be constructed in these areas to convey wastewaters to the tunnel. These facilities

are now in the planning stage and are expected to be constructed concurrently with the tunnel project but are not a portion of the eligible work included in the grant offer by the Environmental Protection Agency.

3. Character of City of Austin. Austin is the state capital of Texas and the county seat of Travis County. Its metropolitan area exceeds 1,000 square miles. The altitude is 550 feet, the yearly annual rainfall is 32.6 inches and the mean maximum July temperature is 95 degrees, and the mean minimum January temperature is 41 degrees. The economy is diversified, but is primarily based upon State and Federal governmental activities, institutions of higher education and military installations. Lime, sand, gravel and stone are the principal minerals produced. There is little heavy industry in Austin.

Some 350 manufacturers in the Austin area, are engaged in activities and products such as research and development, office machines, printing, stone and granite, brick, furniture, transportation equipment, chemicals, fabricated metal, baked goods, food and dairy products, electronic components, building materials and boats. The total payroll for manufacturing firms is about 42 million dollars annually.

There are 90 State and 50 Federal agencies with aggregate annual salaries totaling over \$100 million. Insurance home offices number 35 with over 1,000 employees.

The current enrollment at The University of Texas is approximately 40,000 and three other institutions of higher education report combined enrollments of nearly 2,000.

Bergstrom Air Force Base has over 6,000 personnel. The combined military-civilian payroll exceeds \$30 million. The City of Austin is also a major shopping and distribution center for a 20-county trade area serving a population of about 660,000 people. Retail sales are estimated in excess of \$400 million annually.

The Chamber of Commerce in Austin estimates that the tourist industry brings more than \$40 million annually into the Austin economy. Cash receipts from agriculture in 1958 amounted to approximately \$12 million with livestock and livestock produce contributing \$7 million to the total. Beef cattle, milk, mohair, grain sorghums, cotton, hay, hogs, wheat, oats and wood are among the variety of farm products in Travis County.

4. Terrain. The City of Austin is near the center of a great geographical domain, located in the valley of the Colorado River and at the edge of the wooded hills of central Texas that mark the break from the Midland prairies to the high plateaus and rugged mountains of the west.

In the hill country to the west of Austin, the Colorado River has been developed into a series of lakes by dams constructed by the Lower Colorado River Authority. This series of lakes ends with the long narrow Town Lake located within the City. Northwest of Austin, the Valley of the Colorado is narrow with steep banks. Within the City, the valley gradually widens and the flat plains or bottom lands appear as the river passes through Austin.

A series of creeks draining from the prairies to the river have etched much of Austin's unusual topography. The Austin area includes more than 20 creeks, with many tributaries. Shoal, Waller, Boggy and Walnut Creeks form the north side of the Colorado and Bouldin, Barton and Dellana Creeks in south Austin, and are examples of the larger creeks. In the extreme south portion of the study area are the large drainage areas of Williamson and Onion Creeks.

The Soil Conservation Service of the U. S. Department of Agriculture has made a survey of the types of alluvial deposits in Travis County. The soil types in the Travis Lake area indicate a severe limitation for septic tank drain fields. The comprehensive wastewater study recommended that septic tanks not be permitted within 2,000 feet of the outer boundary of a restricted zone, the restricted zone being the area immediately adjacent to the Highland Lakes. An order regulating septic tank installations in this area has been issued by the Texas Water Quality Board, and is being implemented by LCRA and the City of Austin.

5. Geology. The substrata investigations made for the tunnel construction indicate the presence of Austin Chalk, Eagle Ford Formation, Buda Limestone, Georgetown Formation, Edwards Formation and Glenrose Formation. These formations are considered good for tunnel construction.

A number of bedrock faults are expected to be encountered during the tunnel construction. The faults which are breaks in the bedrock along which there has been movement, generally have

a northeast to southeast strike or trend. The faulting is in the Balcones fault zone, which extends through the City. The extent of faulting in the area has been mapped in the field by the Bureau of Economic Geology of the University of Texas at Austin.

Ground water is not expected to be a construction problem along the tunnel alignment. Ground water may be encountered in the Edwards Formation primarily in the vicinity of the Mount Bonnell fault. Ground water may also be encountered along the fracture surfaces in the Austin chalk limestone. However, the quantity of ground water in the Austin Chalk is not expected to be large. The sources of ground water are in fractures in solution openings in the rock and possibly at some of the faults. There is evidence that some of the ground water is under artesian pressure high enough to raise the water above the source strata level in wells and test holes, but not sufficiently high to cause the test holes to flow. Such occurrences are erratic and widely divergent conditions are encountered within short distances.

The artesian wells that are located in the area of the tunnel line come from an aquifer well below tunnel grade. Water levels in test holes show the tunnel is below the level of the hydrostatic head from the ground water. Sufficient failure of the tunnel to permit leakage is considered very unlikely; however, if this remote possibility occurred, infiltration rather than exfiltration would take place since the outside water level will be greater than the gravity pressure inside the tunnel.

The minor water supplies derived from ground water in the area (all of the City of Austin's supply is from surface water) would be protected by this differential pressure from outside to inside of the tunnel.

The quality of ground water varies from poor quality having a high sulfur content to good quality. Also, the consolidation grouting will seal off the area around the tunnel.

6. Water Resources and Water Quality. The Colorado River basin has a total drainage area of 41,800 square miles of which 39,900 square miles are in Texas and the remainder is in New Mexico. The average runoff in the basin ranges from a maximum of about 350 acre-feet per square mile near the mouth of the Colorado River to less than 50 acre-feet per square mile in the contributing area of the basin west of Coke County. There have been many large floods throughout the Colorado River Basin from the headwaters to the Gulf of Mexico, with major floods occurring on the average of every four and a half years. Extensive overflows are restricted mostly on the coastal plains downstream from Austin.

Runoff from the drainage area above J. B. Thomas Reservoir is generally low in dissolved solids, and water impounded in the reservoir since its completion in 1952, has generally contained not more than 250 mg/l of dissolved solids, about 25 mg/l of chloride and about 60 mg/l sulfate. Below J. B. Thomas Reservoir, however, the Colorado River becomes highly mineralized as a result of inflows of oil field brine and naturally saline ground water. The saline inflows in the upper basin have historically

degraded the quality of the flows for considerable distance downstream, even though most of the major tributaries such as Concho River, Pecan Bayou and the San Saba River contribute good quality water which has diluted the saline flows from the upper basin. The Colorado River near San Saba has contained dissolved solids concentrations ranging from about 200 mg/l to more than 1,000 mg/l, equaling or exceeding 500 mg/l about 50 percent of the time.

Runoff throughout most of the remainder of the Colorado River Basin is of good chemical quality and suitable for most municipal, industrial and agricultural purposes, although generally hard. As a result of impoundment and releases of water from the series of reservoirs in the middle Colorado River Basin (the Highland Lakes) the chemical quality below Austin is comparatively uniform. Dissolved solids concentrations in the river at Wharton in the lower basin generally range between 100 and 400 mg/l, and have a median value of approximately 300 mg/l.

Organic loading throughout the Colorado River Basin is generally low and presents no serious dissolved oxygen deficits for extended periods of time. However, as a result of municipal and/or industrial return flows in Beals Creek below Big Spring, the Concho River below San Angelo and in the Colorado River below Austin, dissolved oxygen depressions have occurred seasonally.

The Texas Water Development Board in Report No. 120, tabulated the quality of the Colorado River at Farm Road 973 below Austin, Texas, which is repeated below. The station is located one mile downstream from the Govalle sludge disposal site shown on Figure 1.

COLORADO RIVER QUALITY

Date	Discharge (cfs)	Nitrate NO ₃ mg/l	Phosphate PO ₄ mg/l	pH	Temperature (°Celcius)	Dissolved Oxygen mg/l	BOD mg/l
10-10-68	110	1.0	4.8	7.3	26	6.3	4.4
12- 4-68	96	10	4.6	7.4	12	7.3	7.2
2- 4-69	58	19	6.5	7.2	13	5.4	9.0
4- 9-69	940	6.5	1.2	7.6	24	6.5	4.7
6-11-69	2000	0.2	0.8	7.5	24	7.8	2.2
8- 5-69	1920	3.8	1.5	7.5	30	7.6	2.4

B. Description of Project

The project proposed by the City of Austin consists of the construction of a deep tunnel interceptor and an enlarged wastewater treatment plant. The location of these proposed facilities has been illustrated on Figure 1. The Crosstown Tunnel will intercept all wastewater flows to the north of the tunnel alignment. Therefore, wastewater flows presently conveyed by trunk sewers south of the proposed tunnel alignment will discharge to the tunnel rather than to existing overloaded sewers, thus relieving those overloaded sewers by allowing flows now being conveyed to the existing Govalle Plant to be transported by the tunnel to the proposed Wlanut Creek Treatment Plant. Upon completion of the tunnel, flows to the Govalle Plant will be substantially reduced and the existing plant will be adequate to handle additional flows that will be generated by future development. The design condition for the Crosstown Interceptor Tunnel is planned for the year 2020. The peak design flow for the year 2020 is 131 million gallons per day (mgd) measured at the downstream terminus near the Walnut

Creek Wastewater Treatment Plant. The diameter of the interceptor waterway ranges from 84 to 96 inches.

The proposed Walnut Creek Plant primary facilities are planned to have a hydraulic capacity consistent with that of the Crosstown Interceptor Tunnel (131 mgd). The average or nominal design flow rate of the primary facilities for the year 2000 is 27 mgd. The secondary facilities for the treatment plant will be designed for the year 1984 and will have a rated capacity of 18 mgd. The Walnut Creek site will serve the Crosstown Interceptor Tunnel as well as the Walnut Creek drainage area and the areas contiguous to the plant site.

After considering the merits of two alternative processes for secondary treatment, the City elected to use biological treatment followed by effluent filtration to produce an effluent substantially free of suspended solids and biochemical oxygen demanding material. The treatment facilities for the biological process are shown on Figure 3.

The impact of the total project as proposed by the City of Austin has been superposed on the water quality management plant for the area.

The Highlands Lakes System Comprehensive Wastewater Study has been approved by the TWQB and the EPA as a cost effective interim water quality management plan consistent with applicable guidelines. The authorized planning authority, the Capitol Planning Council, has certified that the project conforms to regional plans being developed for the planning area.

1. Tunnel. The proposed tunnel is planned to relieve the existing overloaded trunk sewers tributary to the Govalle Wastewater Treatment Plant and relieve the overloaded conditions at the Govalle Wastewater Treatment Plant. Figure 4 shows a schematic diagram of the proposed and existing sewers tributary to the Walnut Creek and Govalle Treatment Plants.

The design flows for the year 2020 were developed from land-use studies and expected wastewater flows from the various land-use areas, including that portion of the wastewater flow due to storm water and infiltration. The present development of the City and of the areas within reasonable sewer service limits were studied to determine the type and intensity of land-use. In addition, the future land-use patterns, developed by the City of Austin Planning Department, were incorporated into the projections of the sanitary sewer needs. The land-uses adopted for developing wastewater flows were residential areas, shopping centers, shopping districts, commercial and semi-industrial uses, manufacturing, central business district, and public and open area land-use.

In order to estimate the dry weather wastewater flows, data were obtained from the City of Austin on single family customers with water and sewer connections, and industrial and commercial customers with water and sewer connections. In order to determine the portion of water usage which is discharged from users' homes as waste, the cold weather months of December, January, and February were evaluated in order to minimize the effect of lawn sprinkling.

Water use information was also obtained for several of the large water users in the area, along with estimates of the acres of land occupied by the user. The data analyzed indicated that there was little or no correlation between the water usage in the summer and the winter months; therefore, the annual water use was averaged.

Average dry weather wastewater flows were derived for the residential areas and corresponding population by utilizing the daily average per capita water use values developed. In order to determine peak domestic flows, the average values of domestic flow were multiplied by peaking factors, as determined from the American Society of Civil Engineers Manual of Engineering Practice No. 37.

Dry weather wastewater flows from industrial and manufacturing areas were in part obtained from a Water and Sewage Works magazine article (July 1967) presenting data obtained in Kansas City, Missouri. The Kansas City data were based on measured water consumption of industrial parks.

Wastewater criteria from shopping centers were developed from unpublished data collected by Horner & Shifrin in the metropolitan St. Louis, Missouri area, and upon the previously mentioned studies in Kansas City, which were based on actual measurements of flows from shopping centers.

Dry weather wastewater flows from the central business district were calculated on the basis of 200 persons per acre and an average flow of 30 gallons per capita daily, with the peak flow being twice that of the average.

The average water usage of the University of Texas was computed on an acreage basis with a peak flow of two times the average water usage.

The storm water and infiltration allowances were determined from actual measurements and from design assumptions. A study made in 1958 by Black & Veatch Consulting Engineers proposed a sewer design basis which varied with the population density and the total number of acres tributary to the point of design. For 12 persons per acre the design flow varies from 4,500 gallons per acre per day for a 500 acre sewer area to 2,980 gallons per acre per day for a service area of 5,000 acres. Although the flows presented in the basis of design proposed by the Black & Veatch report are less than the flows generated from developed areas in the City, it was proposed as obtainable criteria. Studies made by Freese, Nichols & Endress on the Shoal Creek drainage area indicated that a design basis of about 6,000 gallons per acre per day is more representative of current flows. Contract specifications for the tunnel state that the rate of infiltration into the tunnel shall not exceed 100 gallons per inch of diameter per mile per 24 hours. This infiltration allowance will allow only a total of .098 mgd as infiltration at the downstream end of the tunnel or only 0.074 percent of the design hydraulic capacity at that point. This specified allowance is much more rigid than the design criteria of the Texas State Department of Health which allows a maximum of 1,000 gallons in lieu of 100 gallons.

An extensive program to eliminate sources of infiltration is practiced by the City as part of their routine collection system maintenance program. Also new building codes and sewer construction methods promise reduced amounts of infiltration and more strict regulations on illegal connections. The design proposed by Horner & Shifrin Consulting Engineers in the report considering the alternative methods of collection was based on approximately 6,000 gallons per acre per day for developed areas and were based on from 2,700 to 3,700 gallons per acre per day for new and future service areas.

The flow anticipated from the projected land-uses for the year 2020 was used for design purposes. The City is optimistic that improvements on the existing sewage collection system will reduce the amounts of infiltration and storm water entering the collection system so that the interceptor tunnel will have an extended life beyond the design period. Modern pipe materials, more rigid inspection of house connections, and elimination of major sources of infiltration will result in a much lesser percentage of infiltration as total flows increase.

2. Treatment Facilities. The primary facilities include screening equipment, grit removal equipment, primary clarification and flow equalization. The flow from the Crosstown Tunnel to the wetwell of the pumping station is by gravity.

The flow will be carried under the railroad and Walnut Creek by means of a triple siphon approximately 500 feet long. An air line, carried in the concrete encasement of the siphon, will be provided from the siphon inlet to blowers located on the plant site. The air line will provide ventilation for the

Crosstown Interceptor to minimize the effect of hydrogen sulfide-sulfuric acid deterioration of the interceptor. The air within the tunnel will, in effect, be changed over six times a day or every four hours. The air will be discharged to subsequent process units to supplement aeration capacity.

The siphon lines will be designed for use in stages, depending on the amount of flow entering the siphon inlet. Use of the individual lines will be controlled by fixed weirs in the siphon inlet structure.

Flow will be measured with Parshall flumes. The outlet structure of the siphons is to be built integrally with the Parshall measuring flumes.

Two 60 inch lines will convey the wastewater from the Parshall flumes to the headworks building. Only one line will be in use for flows less than 65 mgd. The 60 inch line will operate in a surcharged condition because of the weir control in subsequent treatment units. To minimize deposition in the 60 inch line, fluid jets will be installed at the invert of the pipe to induce mixing action. Access for maintenance to these jets will be possible by diverting the flow to the idle 60 inch line and draining the line previously in use. Provisions will be made for prechlorination for control of odors.

Two mechanically cleaned bar screens will be provided in the headworks structure.

Aerated grit chambers will be used at the Walnut Creek Plant for the removal of grit. Aerated grit chambers operate on the principle of providing a level of turbulence that will maintain

organic solids in suspension and permit solids of a higher specific gravity to settle to the bottom.

Two aerated grit chambers will be provided. Both units will be in operation at all times, with a provision that one unit may be isolated for maintenance. The grit removed in the basin will be conveyed to central hoppers by the use of a screw conveyor. Bucket elevators will lift the grit from the hopper to a grit washer located in the screen room. The washed grit will be deposited in a steel drum for subsequent disposal by landfill.

The flow from the aerated grit chambers will be equally split over weirs and will flow to two center feed primary sedimentation units. The primary sedimentation units will be designed for a high overflow rate to remove the floating and heavy organic solids in the wastewater flow.

During periods of peak flow conditions, it is intended that mixing in the subsequent equalization basins be discontinued to permit sedimentation of solids which will be eventually flushed from the bottom of the basins and returned to the head of the plant.

The sludge from the primary clarifiers will be introduced to the activated sludge process.

The two cell, mixed and aerated, lined flow equalization basin will be designed to equalize normal variations in flow when significant quantities of infiltration are not present. When significant infiltration occurs, the emergency storage lagoon will be used.

Provisions for handling extreme flows during periods of infiltration will be made by converting the existing second cell lagoon to an emergency storage lagoon. The emergency storage lagoon will be used when flows exceed 1.33 times the nominal design rate of the secondary facilities and the flow equalization basins are full.

The emergency storage lagoon will provide the capability to give full treatment to all flows tributary to the treatment plant under all anticipated conditions. The emergency lagoon will act as an overflow storage system in the event of total power failure at the treatment plant site. This will permit continued inflow to the plant at a rate of 27 mgd for one day. Solids contained in the wastewater will settle in the primary sedimentation basins, and further solids removal will occur in the flow equalization basin. A weir common to the flow equalization basin and to the emergency storage lagoon will permit overflow when the equalization basins are filled. The second function of the emergency storage lagoon will be to divert flows by pumping when the inflow rate exceeds 1.33 times the nominal plant design flow rate, the equalizations basins are full, and power is available on the plant site. The storage capability of the second provision exceeds that of the first emergency storage provision. Storage of up to 75 million gallons is available.

When the condition requiring diversion has been discontinued, the stored liquid in the emergency storage lagoons will be returned to the system for treatment.

The settled sewage pumping station will be constructed in conjunction with a raw sewage pumping station. The raw sewage pumping station will accept sanitary flows generated from the plant site and from areas tributary to the site, but not tributary to the Crosstown Interceptor Tunnel or the Little Walnut Creek Trunk Sewer. The amount of flow from this area is minimal and an ultimate flow from this area if fully developed, is estimated to be 0.2 mgd.' Discharge from the raw sewage pumping station will be to the siphon outlet structure. Washdown from the equalization basins will be discharged to the raw sewage pumping station.

The settled sewage pumping station will receive flows from the flow equalization basin and the return flows from the emergency storage lagoons. The settled sewage pumping station wetwell level will remain relatively constant over the full range of the level in the equalization basins. The discharge rate from the settled sewage pumping station will be controlled by variable speed pumps.

When diversion to the emergency storage lagoon is indicated, the throttling valve between the equalization basin and the wetwell can be deactivated to allow the wetwell level to rise. The diversion pumps to the emergency storage lagoon would then be activated.

Table 1 summarizes the design parameters and facility sizing for the pretreatment facilities.

The flow from the settled wastewater pumping station will be split equally to two aeration basins. The aeration basins will be designed to permit operation under either the complete

mixing or contact stabilization flow scheme. Following the aeration basins, a flocculation zone will be provided. The flocculation zone improves sedimentation in the final basins during periods of upset. Flocculant aids can be added and better sedimentation is obtained by optimizing the flocculation energy level.

The flow from the flocculation basins will be carried to the final sedimentation basins for solids separation. A scum removal device will be provided. A portion of the flow from the final sedimentation basins will be conveyed to the filters.

Filtration of the effluent will be provided to assure a high quality composite effluent and an effluent whose quality variation will be within the requirements of the Texas Water Quality Board. The filters will be gravity flow concrete basins and will operate from influent level control, and rate control. A hydraulic capability of six gallons per minute per square foot will be provided; however, a nominal application rate of three gallons per minute per square foot will be used for the design flow rate. The flow will be chlorinated and discharged to Walnut Creek.

The backwash supply will be from pumps located in the chlorine contact basins.

The anticipated average quality produced by the filters will be less than 5 mg/l suspended solids and 5 mg/l of carbonaceous BOD.

The only solid material requiring disposal is waste activated sludge.

An aerobic digester will receive the waste activated sludge from the activated sludge process. To increase the solids destruction capability of the aerobic digester, it will be designed as a two-cell unit. To minimize the size of the aerobic digester, a decanting operation will be provided to allow solids concentration. The operation would consist of periodically turning off the blowers to permit sedimentation of the solids and decanting of the supernatant. The decanting operation would involve the lowering of a weir, and permitting the decant liquid to overflow. Solids would be discharged from the aerobic digester by pumping. Aerobic digestion of all sludge prior to discharge to the lagoons will be required to prevent odor problems.

Table 2 summarizes the design criteria for the liquid process facilities proposed under this alternative. Table 3 summarizes the design criteria for the alternative sludge disposal schemes for the biological treatment process.

The disposal of waste activated sludge will be to the existing lagoons at a site remote from the Walnut Creek Site (Hornsby Bend). This method has the advantage of consolidating the Walnut Creek and Govalle sludge disposal process at one location, enabling economy of scale and the enhancement for the development of a long-term sludge disposal plan. Studies of alternative disposal methods are planned by the City and evaluation of new methods of sludge disposal are contemplated. The residues from water and wastewater processing have been the largest problem in the field and emphasis of developing improved methods are planned by the City.

The continued use of lagoons for ultimate disposal is not considered to present a long-range sludge disposal plan. The aerobically digested sludge would be maintained in a definite layer separate from the soil and a continual buildup of waste sludge would result; whereas, if mixed with the soil, the sludge will gradually blend in to form reclaimable land. The mixing of the sludge with the soil forms the basis of recommending that the initial studies for improving sludge disposal be of wet sludge land disposal.

The scope of the recommended study would involve establishing a 20-acre pilot plot at the Hornsby Bend site for the land disposal of aerobically digested waste activated sludge. It is anticipated that the plot would be divided into five equal sections and each section would be loaded once a week and allowed to dry. Periodically the plots would be plowed for the mixing of sludge and soil. The recommended period of study is two years.

It is further recommended that investigations of the quantity of the present accumulation of sludge at the Hornsby Bend site be made. Once determined, methods of stabilizing and disposal of this sludge should be analyzed to provide an opportunity to empty each lagoon and reclaim the land. It is suggested that the methods of stabilization and disposal which should be included for consideration are:

Dredging, massive chlorination (2,000 mg/l dosage) and land disposal.

Dredging, aerobic stabilization and land disposal.

If the studies of land disposal of wet sludge prove satisfactory, it is recommended that the land presently used by the

lagoons be reclaimed and converted for use by land disposal. Surveillance wells around the site shall be included to monitor the ground water quality.

It is estimated that approximately 240 acres would be required for the disposal of the aerobically digested sludges from the Govalle and Walnut Creek Plants by the year 2000. The application of sludge to the land is anticipated to build up the land at a rate of less than one-half inch per year at the year 2000 loading condition.

3. Site Preparation. The initial construction of the proposed facilities will be within the limits of the first, or northernmost oxidation pond. This will place the plant in the forefront of the site and require the second lagoon to remain in service for treatment during the period of construction of the new plant facilities. During construction, the flows will, therefore, be treated in the existing aerated lagoon, the second oxidation pond and chlorination will be provided for the effluent.

After completion of the expanded facilities, the existing downstream siphon structure will be piped to the new siphon outlet structure and the existing facilities downstream from the siphon outlet structure will be abandoned, and the site restored.

Investigations have been made to determine high water levels on Walnut Creek in the vicinity of the plant. A USGS gaging station is located immediately downstream from the Farm Road 969 bridge, and discharge records are available from May of 1966 to the present. The peak flow record was 6,000 cfs and produced a

flood level at elevation 449.7. USGS personnel estimate that a 25-year storm would produce 15,000 cfs at the gaging station. An estimate of the Walnut Creek drainage basin indicates a 100-year flow of 25,000 cfs.

The USGS rating curve for the gaging station at the Walnut Creek Plant site is shown on Figure 5, and is the basis for determining the "n" value for Walnut Creek in that area. The "n" value varies from 0.05 to 0.09. Assuming the "n" value at 0.09, the rating curve for this section was extended to a flow rate of 25,000 cfs, and having the channel in its present natural state, a flood elevation would be 460.0. This represents a water level of six feet above the present lagoon levee.

To reduce the flood stage level, improvements to the channel on the property owned by the City will be achieved by selective clearing and grubbing of brush and small trees with branches of larger trees trimmed below elevation 456. By maintaining a grass ground cover in the flood plain, and with the selective clearing and grubbing, an "n" value of less than 0.04 will be obtained. Assuming normal depth, the natural USGS section was recalculated based on the revised "n" value, resulting in a 25,000 cfs flow producing a flood elevation of 454.5.

To confirm that the maximum level in the Colorado and the railroad bridge on Walnut Creek would not affect the calculated rating curve, backwater curves were calculated from the Colorado River to the plant site. The natural channel conditions downstream from the railroad bridge were assumed to have an "n" value of 0.10

and a slope of 0.0022 foot per foot. Channel sections similar to those found on the City property were assumed in this reach. The oxbows in the area adjacent to the existing lagoon system were assumed to be straightened. The backwater curve for the 25,000 cfs flow was calculated and normal depth was attained prior to the control section. The effect of the railroad bridge on the stream was investigated, and found to have a small effect on the backwater curve, but not sufficient to change the rating curve.

The velocities which occur during the 100-year flood flow are in the erodible range and channel damage will result whenever extreme peak flows occur.

The levels on the Walnut Creek below the City property are affected by the level in the Colorado River. The 100-year flood level in the Colorado River is estimated by the City Department of Public Works to result in an elevation of 442.5. This has been confirmed by the U. S. Corps of Engineers, and has been the basis of the calculations for the backwater curve. All lower water surface elevations on the Colorado River will result in the same flood elevation at the plant site when the 100-year flood flow occurs in Walnut Creek. The Colorado River is highly developed and controlled, and extreme flood levels have been obviated.

The reach of Walnut Creek between the proposed treatment facilities and the Colorado River is subject to backwater effects from the Colorado River. Walnut Creek below the site is a

meandering stream with bottom of shale, sand, and rock. Stream banks are erodible soils.

The City of Austin plans to improve that portion of the channel located on City property and is contemplating to construct a channel to connect Walnut Creek to the Colorado River immediately downstream from the Colorado River. This plan would divert water from private property and would raise legal questions but would protect contiguous property presently subject to erosion. The peak discharge from the Walnut Creek Plant, 36 mgd or 56 cfs, would not contribute to erosion in the area where bank sloughing is now a problem. The bank sloughing is occurring in that reach of Walnut Creek less than 1,000 yards from the Colorado River and where the tributary channel is undefined within the primary flood plain of the Colorado River. Bank undercutting is extensive on high banks of erodible material.

If the cut-off to divert flows from this area is not constructed, the only other alternative to protect the banks would involve expensive bank stabilization and channel improvements.

Maximum discharges from the Walnut Creek Treatment Plant will not produce erodible velocities in Walnut Creek. The additional 56 cfs contributed by the treatment plant will be insignificant during flood conditions (15,000 cfs for a 25-year storm).

The plant site will be protected to elevation 457.0 to provide a 2.5 foot freeboard for the 100-year flood flow.

It is estimated that 150,000 cu. yd. of excavation will be available from the associated plant construction of the peak

storage lagoon with an additional 50,000 cu. yd. of earth available from the tunnel spoilage and excavation form structures. It is intended that this excavation be used to provide fills around the plant structures and roads so that the finished grade in the general plant area will be 457.0 and will slope to meet existing grade. The plant entrance road will also be protected to elevation 457.0 until it connects with Farm Road 969. Farm Road 969 is at elevation 457.0 at the bridge over Walnut Creek and slopes to elevation 451.0 near the plant entrance road. It is anticipated that the 25-year flood will reach Farm Road 969.

4. Architectural Considerations. Building materials will be of the permanent low maintenance type such as brick, architectural concrete, aluminum windows, and no exposed metal flashing.

All structures will be low and relatively small, with a minimum setback of 500 feet from the highway to the administration building. All other structures will be grouped behind the administration building and appropriately landscaped to present a pleasing view from the road. A boulevard type entrance will be provided to visually terminate at the entrance to the administration building. Service, maintenance and plant operation will have vehicular access by an all weather service road west of the plant. The service road will parallel the reconstructed creek area. The area contiguous to the creek, with proper maintenance and care, could be used as a park area. Initial design and subsequent care and maintenance will make this plant a pleasing addition to the Austin community.

5. Electrical and Instrumentation. The estimated power demand projections for the proposed plant are shown below:

<u>Year</u>	<u>Connected Load (kVA)</u>	<u>Anticipated Peak Demand (kVA)</u>
1975	5,000	2,400
1984	5,000	3,100
1985	6,000	3,200
2000	6,000	3,200

The plant will be served from two separate power generation stations with transmission lines coming from separate directions with plant distribution through an outdoor lineup of switchgear. Dual feeds will be provided to the activated sludge blower building, pumping station and plant, the screening and grit removal structure and essential auxiliaries.

Conventional instrumentation will be provided for control of the plant functions.

II. ENVIRONMENTAL IMPACT OF PROPOSED ACTION

The proposed project will have a significant beneficial effect on the water quality of Lake Austin, Town Lake, and the Colorado River and the surrounding metropolitan area by providing the capability to intercept and properly treat all wastewater flows. The beneficial effect on the environment by increasing the effectiveness and reliability of treatment, providing additional available hydraulic capacity at the existing Govalle site, and providing sewer service to areas not now served, or served by improperly operating septic tanks, cannot be minimized.

The present average discharge of approximately 25 mgd from the Govalle Treatment Plant site presents a point load to the Colorado River. With the construction of the Walnut Creek Plant site, a diversification of the load on the Colorado River will result although the Walnut Creek discharge will enter the Colorado River within the influence of the Govalle discharge, such diversification will lessen localized effects on the Colorado River.

The beneficial effect upon Lake Austin, Town Lake, and the Colorado River is the primary purpose of the project. Lake Austin and Town Lake beneficial uses include water oriented recreation and potable water supply. The Crosstown Interceptor project will eliminate the wastewater overflows which are a threat to these beneficial uses.

Downstream from Town Lake, the Colorado River beneficial uses include fishing, recreation, agricultural irrigation and stock watering, and wildlife propagation. At present there are no

domestic water uses downstream from Austin; however, the Texas Water Plan recommends development of the lower Colorado to provide domestic water supplies and associated uses. The urgency for the increased treatment capability and reliability proposed by this project will help perpetuate these beneficial uses.

The Walnut Creek site is presently used for the treatment of wastewater generated from the Walnut Creek drainage basin. The present flow rate to the treatment facility is approximately 1.4 mgd, and the plant capacity is nominally rated at 2.5 mgd. The treatment process consists of aerated lagoons and oxidation ponds. At present, there is no overflow from the oxidation ponds to Walnut Creek. The liquid evaporates and percolates to the ground water. The City maintains ground water monitoring wells to determine the effects of this recharge on the ground water, and there is no indication of pollution of the ground water. However, there have been complaints to the Texas Water Quality Board and to the City of pollution of wells in areas contiguous to the site, but these claims have not been substantiated.

The construction of the new facilities will result in the discharge of wastewater to Walnut Creek and will eliminate the holding ponds.

The establishment of a large treatment facility with a design average discharge of 27 mgd will substantially impact the reach of Walnut Creek between the plant and confluence with the Colorado River. A major point load source will be created that did not exist before. The dissolved oxygen sag of 0.5 mg/l

expected in that reach should produce no serious adverse effects on the stream, neither should the increased loads of BOD₅ and suspended solids that will enter the stream. The anticipated effluent of less than 10 mg/l BOD₅ and 10 mg/l SS is adequate to prevent degradation of the receiving stream and should not decrease water quality of the Colorado River.

Upon completion of the tunnel and Walnut Creek facility, the total flows at the Govalle Plant will be decreased with a commensurate decrease in that point load to the Colorado River until development once again brings the discharge to equal present flows. If in the future, the point loadings contribute to reduced water quality in the Colorado River, the plants must be upgraded to produce a higher quality effluent.

The existing Govalle Plant receives the waste from Jefferson Chemical Company which because of the nature of their operation, produces industrial waste having characteristics highly variable in nature. After project completion, the industry will be tributary to the Walnut Creek site. The recently enacted Industrial Waste Ordinance by the City, construction of the flow equalization basin, and provisions for additional control treatment by the industry, will reduce the possibility of plant upsets. and will provide a more reliable system to treat the industrial wastes. This directly results in a beneficial environmental effect in treatment plant efficiency and improved receiving stream quality.

In the exploratory drilling program, limited amounts of water were encountered in several holes, all primarily in the limestones.

The plans and specifications for the Crosstown Wastewater Interceptor include provisions for consolidation grouting in the event sizeable flows are encountered. This grout will be pumped under pressure from inside the tunnel and will extend around the tunnel to cut off the inflow. This seal will also prevent infiltration after tunnel completion. In addition, contact grout will be placed between the outside of the permanent lining and the excavated surface of the tunnel.

A study of Bulletin 5708 Records of Wells in Travis County, Texas, prepared by the Texas Board of Water Engineers in cooperation with Mr. Ted Arnow, Geologist, United States Geological Survey, indicates that the tunnel should not encounter any major aquifers, other than those which may be encountered in crossing the Balcones Fault zone.

Well H-11, located on the Austin State School property is the only major producing well the tunnel comes near. This well is very shallow and is in the gravel stratum above bedrock. The tunnel is in the limestone and passes 100 feet ± below the bottom of this well. A test hole drilled in this area during the exploratory drilling program of this project did not encounter significant water flows.

Besides the detrimental environmental impacts caused by a project of this nature due to the inconvenience and temporary intense activity associated with construction, there will also be an additional organic load on Walnut Creek, which presently does not exist, the remote possibility of tunnel failure due to

subsurface faults, the displacement of certain forms of wildlife on the Walnut Creek caused by the improvements to permit a more suitable waterway for runoff, and noise and some odors generally associated with the sewage treatment plant operation.

The construction of 10 shafts in conjunction with the tunnel contract, the construction of the siphon under Walnut Creek and the treatment facilities at the Walnut Creek site will cause some restrictions of traffic which will be a temporary inconvenience to motorists and pedestrian traffic. The necessary movement of construction machinery to the shaft accesses will also create some temporary inconvenience.

The material excavated from the tunnel will be moved to two primary sites, located essentially at the terminal and starting points of the tunnel. The soil removed at the terminal portal near the Walnut Creek site will be used for fill on the Walnut Creek site. The soil removed at the upstream terminal of the tunnel is anticipated to be used as fill for an eroded area to reclaim the land. The change in topography caused by the displacement of the soil from the tunnel to the two disposal sites is not anticipated to result in a detrimental environmental impact. The period during which the soil is moved will result in a temporary detrimental impact caused by the noise and inconvenience to motorists from the heavy earth moving equipment.

The tunnel has been designed to permit construction by conventional methods including blasting or by tunneling machines. If blasting under conventional construction methods is selected

by the successful contractor, the contractor will be required to limit the blast size to result in minimum specified measured surface particle velocities and will be required to muffle the sounds at access shafts. If tunneling machines are used, the above effects of blasting will not be encountered.

The exploratory drilling indicated fractured rocks, cavities, and possibly gouge zones. The design is premised on special support systems when these conditions are encountered.

III. ADVERSE IMPACTS WHICH CANNOT BE AVOIDED

The detrimental effects caused by the project construction are minimal and are substantially less than those associated with alternative plans. The entire concept of the tunnel interceptor is designed to reduce the adverse effects normally associated with construction of large interceptors.

The detrimental effects caused by a design discharge of 27 mgd to Walnut Creek which previously received no wastewater discharge has been estimated by the engineer to result in a dissolved oxygen sag of about 0.5 mg/l within the reach between the discharge and the confluence with the Colorado River. This is a minimal effect and generally not considered significant. Also the flow velocities in the creek are high, even at low flows, due to the slope of the channel; and therefore, siltation or sedimentation is not considered to be a problem from the plant discharge. The remaining dissolved organics in the wastewater discharge and the nutrients contained in the discharge will stimulate new growths in Walnut Creek; however, the velocities associated with the discharge in the Walnut Creek stream will assist in minimizing the detrimental effects from these stimulated growths.

The channel modifications to Walnut Creek channel result in a detriment to the existing habitat, but will be offset by the aesthetic enhancement of the creek on the site property. The underbrush and small trees which will be removed to provide less friction in the channel and permit a lower water elevation during the design peak flood flow, and the removal of the lesser

trees and underbrush will result in the displacement of the small wildlife which live in the underbrush; however, thinning out of the trees and the replacement of the underbrush with a grass ground cover and the trimming of the remaining trees will result in a pleasing park-like area, suitable and attractive to many forms of wildlife.

Figure 6 shows a wind rose which has been developed from data collected by the National Oceanic and Atmospheric Administration. A prevailing wind direction is from the south.

The construction of the Walnut Creek site will result in a temporary concentration of heavy activity in an area which presently is peaceful and rural. During the period of construction, the same degree of treatment of the flows tributary to the Walnut Creek site will be provided and no change in the environmental impact is anticipated.

Construction of a permanent wastewater treatment plant at the existing Walnut Creek site will adversely affect existing and future development in the proximate area. Society's willingness to accept a wastewater treatment plant as a "good neighbor" is prejudiced by the past history of such facilities; judgment is not based on the fact that modern design and operation concepts can produce a treatment facility that will cause only minor physical adverse effects on the environment that are usually acceptable to inhabitants of the area. Modern technology and effective planning cannot overcome the psychological adversity and sometimes resultant emotional turmoil. These intangible adversities are indeterminate.

Generally, adverse effects regarding site location will be of concern only to those persons living in the immediate area of the plant site who might be subjected to odors from the plant or to the intangible affects as mentioned above.

There are two platted subdivisions, Craigwood and Cavalier Park, within the immediate area of the Walnut Creek site. Two other platted subdivisions, University Hills and Springdale Hills, are approximately one mile away but separated by industrial development and a main thoroughfare. One other subdivision, University Hills, is approximately two miles away. Figure 8 is a map showing the locations of existing platted subdivision development.

There are about twelve homes located on Nixon Lane less than 1,000 feet from the treatment plant site. A history of residential development in the area is given in the Appendix as a summary of the public hearing of April 4, 1972.

The history reveals that plans for the Walnut Creek Treatment Plant were initiated prior to plans for subdivision development. Applications by the developers to the City of Austin Planning Commission were initiated in 1966 and continued to 1969, when the City Council accepted the request as a variance to the Master Plan. Actual construction of houses in the subdivision closest to the treatment plant site, Craigwood, was begun in February 1969 -- more than three years after the Walnut Creek Treatment Plant began operation in December 1965. The Craigwood Subdivision is now surrounded by land designated for commercial/industrial use.

Presently, there is little development to the north of the Walnut Creek Plant; however, land subdividers have indicated their intention of developing light industry or business land uses in the area north of the plant.

The odors associated with sewage will be minimized by the use of prechlorination and postchlorination of the wastewater. The project has been designed to minimize the septicity of the incoming sewage by designing a water flushing system for the tunnel which will eliminate long-term deposits caused by low velocities. The source of flushing water will be the filter backwash wastewater from the City's water treatment plant. Also, provisions have been made for an air change system in the tunnel to minimize the effects of hydrogen sulfide-sulfuric acid corrosion of the interceptor. The air exchange system is designed to retard the production of hydrogen sulfide gas to the extent that odors and potential noxious fumes will be eliminated. The air changes also provides the associated benefits of some oxygen transfer by passing large quantities of air over the wastewater in transit. The air from the tunnel will be used again to maintain oxygen and mixing in the equalization basins.

Air injection will be used in distribution wells, scum collecting pits, and in other similar facilities in order to maintain aerobic conditions of semistagnant water. The maintenance of aerobic conditions will minimize the potential of odor problems. The screen room will be closed and the ventilation of the enclosure will be designed so that if odor problems are encountered the ventilated air can be treated with ozone or other means if odors become a problem in the future.

The primary source of noise associated with the wastewater treatment plant will be the settled wastewater pumps and aeration blowers. Building housing this equipment for isolation of the noise from the plant environment will be provided.

Landscaping of the plant site upon completion of the construction will be included in the general contract. A landscape architect will be instructed to assure a planned, attractive environment as described in earlier sections of this statement.

The chlorination of plant effluent at the new facilities will increase concentrations of combined chlorine in Walnut Creek below the plant, and to a much lesser degree - in the Colorado River below the plant outfall.

Chloramines are toxic to fish; toxicity varies among fish species. However, the extent of toxicity is greatly reduced by dilution and mortality is highly dependent on exposure time. These factors combine to prevent fish kills and deleterious effects below treatment plant outfalls. Fish species that are affected by the concentrations of chloramines will migrate to a more desirable habitat. This condition is a minor and reversible adverse effect when weighed against the value of chlorination to reduce water-borne disease.

The potential impact associated with the construction of the tunnel through a major fault is an unavoidable detrimental possibility irrespective of the project alternatives selected. In this area the faults are stable and it is improbable that a fault slip will occur within the life of the project. If the fault were to slip, severe damage to any interceptor would occur

and provisions for alternative disposal would be required. The Crosstown Interceptor Tunnel plan would permit temporary diversion of the wastewater by using temporary piping and portable pumping equipment above the point of failure to the sewage collecting system tributary to the Govalle Plant while the repairs were being performed. This would not necessarily be the case for alternative plans considered.

Plans and specifications for the project will include provisions to reduce temporary air pollution due to particulate emission from blasting operations during construction of the tunnel. The extent of blasting to be required is not known. However, specifications will provide for safety precautions to limit the sequence and duration of blasting. Muffling to reduce noise pollution will be required. In all probability, the tunnel excavation will be accomplished by tunneling machines or drilling instead of blasting.

Explosives used underground will be of a permissible grade of the non-gelatinous ammonia type and will not produce the oxides of nitrogen which are harmful to humans.

IV. ALTERNATIVES TO THE PROPOSED ACTION

A. Tunnel

Two basic plans were considered for the collection of wastewater flows from the area north of Lake Austin, Town Lake and the Colorado River. The first plan considered the use of parallel relief sewers and enlarged pumping station capacities to conform to the general existing drainage pattern. The second plan considered the use of the deep tunnel Crosstown Interceptor Sewer and minor supplementary relief of existing interceptors, where necessary.

Under the first alternative, 18 separate relief sewer and force main projects would be required to bring the principal interceptor sewers of the Austin area system up to the capacity required for the projected flows of the year 2020. In addition, six major pumping stations would have to be rebuilt or substantially expanded.

The total construction costs of the sewers and pumping stations required under this plan was estimated to be \$13,066,600 based on 1969 prices.

The interceptor tunnel plan would require five supplementary relief sewer lines and construction of two pumping station enlargements to bring the entire system capacity to the requirements established for the year 2020. The total capital costs for this plan is estimated to be \$14,757,000.

The project comparison studies included computed equivalent annual costs for each project based upon the construction of the

individual elements at the time they would be required. The annual costs for each plan were computed on a cost flow basis and are shown graphically on Figure 7.

The overall economic advantage associated with the tunnel plan was used as the basis for selecting that alternative. Other benefits not having an economic impact on the evaluation included the substantially lower impact from the construction of the tunnel as compared to the construction of shallow sewers.

The additional benefits of providing a diversified wastewater treatment system is also an advantage for the tunnel plan.

B. Treatment Plant

The Walnut Creek Treatment Plant process selection considered basically two alternatives. The first alternative considered biological treatment followed by filtration. The second alternative considered physical/chemical treatment using chemical precipitation followed by filtration and carbon adsorption. The alternative project costs are summarized in Table 4.

The pretreatment costs are shown to be identical for each alternative. The secondary treatment costs include the facilities required for the disposal of sludge.

A 10 per cent allowance for engineering, legal, and administration costs has been added to the total construction costs to develop a total capital cost for the project. This capital cost has been amortized at a rate of 6 per cent over a 25-year period to develop an annual cost. The operating costs derived for each section has been added to the annual capital cost to arrive at a

total annual cost for each alternative, which is a comparable number to determine the most economical project.

The biological treatment system is the most economical process to meet the 20/20 quality criteria. For the anticipated future criteria of 5/5/1, the most economical process would be to add facilities to feed alum to the biological process. All alternatives considering physical/chemical treatment indicate higher costs than do the processes involving biological treatment.

The estimated quality which would be obtained from each alternative process is shown in Table 5. The basic biological scheme is anticipated to provide an effluent having a median value of 12 mg/l of both BOD and suspended solids. Very little phosphorus removal is anticipated, and the effluent would be less than 1 mg/l. The alternative process with lime differs only in the ability of this system to remove nonbiodegradable COD in the precipitation of the raw wastewater.

The physical/chemical scheme with low lime (10.0 pH) would have an effluent BOD of 10 mg/l and an effluent suspended solids of 5 mg/l. The associated COD would be approximately 25 mg/l and the phosphorus in the effluent would be less than 1 mg/l.

The high lime (12.2 pH) physical/chemical scheme is claimed by EnviroTech to have additional COD removal capabilities. This is shown to be 15 mg/l of COD and 6 mg/l of BOD. Although the BOD values for the physical/chemical schemes are shown to be in excess of the required 5 mg/l future quality standard, there will be a certain amount of biological activity within the carbon adsorber, and a lower BOD will result.

This is not a predictable result, and only full scale operation could prove the physical/chemical system's capability of obtaining this level.

The essential difference between the capabilities of the physical/chemical process is the ability of each to remove certain types of organics. The physical/chemical process is subject to apparent inefficiencies due to a certain amount of nonadsorbable organics in the wastewater. The biological process is subject to apparent inefficiencies due to nonbiodegradable organics in the wastewater. Actually, each process is highly efficient for their application. It appears that for the wastewater tested, 25 mg/l of COD and 10 to 15 mg/l of BOD is non-adsorbable. From the City records, it appears that there will be a 40 mg/l residual of COD which is nonbiodegradable.

The physical/chemical process provides a higher degree of COD removal, but an effluent BOD concentration cannot be predicted. The biological system has the inherent advantage of removing BOD, and will present a method of predictably meeting the future design criteria.

The most often claimed advantage for physical/chemical treatment is the system's resistance to upset from the application of biologically toxic organics, and its ability to remove these organics. This advantage is in part negated by the equalization system preceding the plant. The frequency of occurrence at Austin where toxic organics are released to the system is also low. On the other hand, biological systems have been shown to be capable of removing hexavalent chromium and cyanides, which would pass through physical/chemical systems.

If the chemical sludges from the P-C system are not recalcinated, they present an onerous disposal problem. The City presently disposes of approximately 50 tons per day of waste chemical sludges on the Walnut Creek site, and the additional 30 tons per day from the wastewater treatment plant will result in an annual estimated fill requirement of 10 acre-feet per year. Although the lagooning of this sludge provides an economical short-term disposal method, eventually land will not be available for further disposal. The land so used will not be readily reclaimable because of the continued semifluidity characteristic of the sludge. Therefore, continuation of this disposal procedure does not appear to present a long-term solution to the disposal of chemical sludges. The addition of wastewater chemical sludges would accelerate the need to move to a long-term disposal process.

On the other hand, the processes considering recalcination present a long-term solution to the disposal of both water and wastewater chemical sludges. An ash quantity of 10 to 20 tons per day would require disposal; however, this would be a solid product amenable to a sanitary landfill operation. The disadvantage is the higher cost.

An incinerator presents further problems with regard to air pollution. Again the solution to restrict the emissions to within acceptable limits results in higher costs and there is a probable need for additional equipment to control emissions to meet future standards.

The biological processes considered have varying degrees of solids processing problems. The biological systems which do

not include chemical addition for phosphorus removal are inexpensively incorporated into the Hornsby Bend disposal site. The biological sludges could readily return to the soil and will increase the soil's productivity. On an ecological basis the disposal of biological sludges to the land is more compatible with the environment than is the disposal of chemical sludges.

If phosphorus removal is required in the future, massive chemical dosages are added to supplement the biological treatment process and the problems stated for the physical/chemical systems are applicable.

The biological system offers no relief for the disposal of the water treatment plant sludges and should be recognized as not representing a purely equivalent system.

This report does not include a detailed analysis of the consideration for disposing of the water treatment plant sludge; however, as a point of reference, Culp and Culp in their book on advanced waste treatment indicate a unit operating cost of \$21.35 per ton for recalcinating lime sludge, plus \$9.00 to \$10.00 per ton capital costs. This would be about \$31.00 per ton for lime sludge handling. For 50 tons per day, the daily cost would be \$1,550 or \$86.00 per mg. If added to the biological process, this unit cost would be approximately \$290.00 or essentially equal to the costs associated with physical/chemical processes including recalcination.

This fact can be interpreted that physical/chemical does not appear to cost more than biological if the problems of the water treatment sludge were handled similarly. It can also be interpreted that there is no apparent advantage to using the physical/chemical process as a means of incorporating a system for disposal of the water treatment plant sludge.

The Z-M process proposed for Austin presents a new concept. The process claims include hydrolysis of large unadsorbable organic molecules to an adsorbable size by the addition of massive lime dosages. Tests run by Z-M personnel indicated a distinct difference in the effluent quality between a high lime dosage (required for hydrolysis) and a low lime dosage, 100 mg/l ($\text{Ca}(\text{OH})_2$).

Similar tests run by Battelle-Northwest and the City were unable to justify these claims. The basis for these claims on the Austin Wastewater included the use of a lower than optimum lime dosage for solids coagulation on the low pH condition. This allowed solids to escape the filters and carbon adsorbers and indicated a higher phosphorus and COD concentration in the effluent. This was unfortunate. The high lime system did produce an excellent effluent; however, the benefit from, or existence of, hydrolysis was not established.

The Battelle-Northwest tests showed a slight, but insignificant, increase in COD removal by using the high pH process.

No conclusions can be reached concerning the benefits of the Z-M process; however, sufficient reservations exist concerning the degree of benefit to disregard this alternative at this time, especially in light of the costs associated with the process as compared to the other processes.

Concerning the ability of each process to meet future possible quality criteria, the following is presented to indicate the additional processes required:

<u>Parameter</u>	<u>Additional Process Required</u>
1. BOD Removal	Biological - Designed to meet anticipated future quality P/C - Unknown, requiring pilot or full scale work
2. SS Removal	Biological - Designed to meet anticipated future quality P/C - No change
3. Nitrification	Biological - change operation P/C - Add biological system or remove nitrogen
4. Nitrogen Removal	Biological - nitrify-denitrify, or ammonia stripping or ion exchange P/C - ammonia stripping or ion exchange
5. Phosphorus Removal	Biological - chemical addition P/C - no change
6. COD Removal	Biological - add 15 minute carbon adsorbers P/C - No change

If phosphorus removal is required, additions can be made to the biological process which will result in a unit cost equal to or less than the physical/chemical schemes.

If additional COD removal is required, carbon adsorption will be required; however, the facilities for adsorption would be considerably less than those proposed for the P/C process.

The selection of a site for the Walnut Creek Treatment Plant was prejudiced by prior planning and land acquisition by the City of Austin. That is, land was purchased during the period of 1962-1964 for the specific purpose of developing a treatment facility to serve the Big Walnut Creek and Little Walnut Creek drainage

areas. The actual purchase of the land was authorized by the Capitol Improvement Program during the 1961-1962 fiscal year. Also, expansion of facilities at that site will allow continued use of some existing influent piping, siphon, the plant operators residence, and one stabilization pond which will be used as an emergency holding pond to prevent bypassing during periods of unusually high flows.

An alternate site, approximately 3 miles to the east in the vicinity of Hornsby Bend was also evaluated. Location at that site would increase total project costs by an estimated \$8,900,000. This increase includes \$8,500,000 for extension of the Crosstown Tunnel, and \$400,000 for land acquisition.

Construction and operation of facilities at the alternate Hornsby Bend Site would minimize adverse environmental impact in some respects.

First, the site is further from extensively developed areas. This is important because prevailing winds are from the east and southeast. Also, the area to the east and south of the Hornsby Bend site is mostly undeveloped and the treatment facilities would not impact existing development in that area. Land in the Hornsby Bend area has been designated as commercial/industrial in the Master Plan.

There is extensive suburban residential development to the north and northeast of that site which might present tantamount conflicts with existing land use such as those inherent to the Walnut Creek site.

Construction at the Hornsby Bend site will not eliminate adverse environmental effects; therefore, a "tradeoff" between environmental factors and economics would still be necessary if that site were selected.

A Hornsby Bend site would allow a larger area to be serviced by gravity and would further reduce pumping costs. These benefits would be offset by additional costs of the interceptor to that site.

No cost-benefit ratio for either site is available. The problems encountered in transposing intangible environmental benefits and negative benefits to dollar values are complex and usually indeterminate; no methodology has been established that is realistic and acceptable to the majority of disciplines.

The check and balance system provided by planning and review by governmental entities and a public hearing process had indicated that the proposed project, including site selection, has given due consideration to economics and environmental issues. A minor decrease in adverse environmental effects that would result from selection of an alternate site would not outweigh the additional costs that must be borne by the citizenry.

The alternative of using the Govalle plant as a central treatment facility; that is, the one treatment plant concept, was also evaluated. The Govalle Treatment Plant site is nearly fully developed and expansion on that site would require the purchase of adjacent land. The disadvantage of increasing the capability of the Govalle site would be its restricted ability to serve areas

in the Walnut Creek drainage basin. The Walnut Creek site has the ability to serve those areas tributary to the Crosstown Interceptor Tunnel and the Walnut Creek drainage basin which at present is sparsely developed. The major areas of growth are anticipated to be in the area tributary to the Crosstown Interceptor Tunnel with a rapidly developing growth in the Walnut Creek drainage basin. Consideration was not given to sites in the Walnut Creek basin site out of flood plain because of the inability to have gravity flow to the plant and the reduced reliability associated with the requirement of pumping to the plant facilities. The existing site at Walnut Creek provides the gravity flow ability.

V. THE RELATIONSHIP BETWEEN LOCAL SHORT-TERM USES OF MAN'S ENVIRONMENT AND THE MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

The design life of the tunnel is estimated to be in excess of 100 years. The structures associated with the treatment plant are likewise anticipated to have a safe life in excess of 100 years and the equipment associated with the treatment plant facilities is estimated to have an average life of 15 years. After the design life of the proposed facilities is exploited, the facilities may be replaced with up-to-date treatment facilities or the land may be reclaimed by removal of the structures.

The treatment plant has been planned to be consistent with anticipated future water quality requirements. The plant has been planned on a modular construction basis providing capacity for periods of from 10 to 15 years after construction. This permits flexibility in future planning so that the plant can be serviceable to a variety of tributary area considerations, thereby allowing flexibility in future planning for wastewater treatment.

The project is justifiable at the present time on the basis that further overflows from the sewage collection system to Lake Austin, Town Lake and the Colorado River will inhibit the beneficial uses established for those receiving waters and the immediate elimination of the problem is necessary at this time to prevent further quality deterioration of these waters. If no project were to be undertaken to solve the above stated problem, the situation causing fish kills, excessive oxygen depletion, increased treatment requirements at the water treatment plant

taking supply from Town Lake, inhibition of recreational water use of the Colorado River and Town Lake, odiferous and unsightly conditions resulting from sludge and scum float, and excessive aquatic plant growth stimulation will result.

VI. IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES WHICH WOULD BE INVOLVED IN THE PROPOSED ACTION SHOULD IT BE IMPLEMENTED

For the biological treatment process, the primary irretrievable commitment of resources is the demand for power to pump the wastewater and supply oxygen for the bacterial stabilization of the organics in the wastewater. The power demand will cause the need for more use of natural gas required to generate this power.

The only chemical use for the biological process to be on a continuous basis is chlorine. Chlorine is manufactured by the electrolysis of an aqueous solution of sodium chloride. Sodium chloride, because of its abundance and because the sodium and the chloride are returned to the environment, is not lost. The demand for power for the electrolysis of the solution is an irretrievable and committed resource.

The materials used in the construction of the plant are essentially irretrievable.

The use of power and the construction materials are commitments of resources that are justified by the preservation of the water resources.

VII. PROBLEMS AND OBJECTIONS RAISED BY OTHER FEDERAL, STATE, AND LOCAL AGENCIES AND BY PRIVATE CORPORATIONS AND INDIVIDUALS

The review process of the project has included three public hearings before the City Council and two hearings before the Texas Water Quality Board. All of the above public hearings were publicly announced prior to the hearing date.

The order of hearings are summarized below:

June 25, 1970, City Council Meeting:

Comment: Mr. Isom Hale, a Consulting Engineer from Austin, presented the alternative of constructing relief sewers parallel to the existing sewers in lieu of the Crosstown Tunnel. He questioned the cost estimates prepared by Horner & Shifren.

Response: Mr. Lyn Andrews, City Manager, stated that at the end of 15 years, both 50 year plans (as presented by Horner & Shifren) would be at an even point (financially). From then on, there is a savings on the tunnel plan, which would mean 35 years of profit.

Comment: Mr. Isom Hale commented that although the tunnel system and relief sewer system were equally acceptable sewer system plans, it (tunnel plan) does cost more in the beginning, almost \$2,000,000.

"We have a recommended design criteria on which the costs of the sewer system are based. It involved...4 to 6 times the normally accepted design for allowing infiltration to get into our sanitary sewer. I object to allowing that much

water get into the sewer, because if it can get in, it can get out and cause pollution. If we fix them (the sewers) to keep them from leaking and polluting out, then they are not going to (leak) in".

Response: In discussions between the councilmen and the City Manager and the Director of Water and Wastewater during the open council meeting, it was stated that although the initial costs of the project over the life time of the tunnel was less. Mr. Schmidt stated that it was important and highly desirable to stop infiltration from entering the sewers, but also expensive and the process is inherently a long-term project.

After working on the problem for more than three years, some improvements have been made, but as yet there has not been such a drastic improvement as to revise the hydraulic design basis for existing areas.

July 30, 1970, City Council Meeting

Comment: Mr. R. M. Dixon stated that in the 1966 master plan report by Black & Veatch Consulting Engineers and Bryant-Currington Engineers, the proposed sewer design basis was 2,980 gallons total flow per acre per day; however, the Shoal Creek design basis formulated by Freese, Nichols and Endress was 6,000 gallons per acre per day. He continued his statement by saying the design basis should be 3,000 gallons per acre per day until measurements in the sewer system indicate otherwise. He proposed that the project be delayed until the surveys and studies have been made.

Response: The councilmen continued to ask Mr. Dixon questions regarding his objections to the present plan; however, no direct response to his objection was made.

June 10, 1971, City Council Meeting:

Comment: Mr. R. M. Dixon, a Consulting Engineer from Austin, Texas, believed the concept presented in the Horner & Shifren report needed a thorough examination by a disinterested engineer. The project would take care of only one fourth of the north side (of Austin) and would not serve the south side.

Response: Mr. Vic Schmidg, Director of Water and Wastewater for the City of Austin, said the design was to handle the drainage area of Bull Creek, Dry Creek, Johnson Creek, Shoal Creek and Waller Creek. On the south side, there is an (existing) outfall that would be adequate for hopefully 50 years.

The Council approved the Crosstown Interceptor Tunnel preliminary design report and authorized proceeding with the final design work - (7 to 0 vote).

July 21, 1971, Texas Water Quality Board Hearing:

See attached synopsis.

August 5, 1971, Texas Water Quality Board Hearing:

See attached synopsis.

April 11, 1972, City of Austin Zoning Committee Meeting:

See attached synopsis.

Residents and property owners in the general area of the Walnut Creek Treatment Plant have objected to the project contending that the treatment plant will produce foul odors, destroy

the residential quality of the proximate community, depreciate the value of homes and property.

The fact is, these people have valid reasons for not wanting wastewater treatment facilities to be located in their neighborhood. A treatment plant that is not designed properly and operated efficiently will have a real and significant impact on their environment and their lives. Unfortunately, sewage treatment plants have a past history of being offensive and obnoxious to their environs. This is a chagrin that the Texas Water Quality Board and the Environmental Protection Agency are dedicated to correct.

The basic problem arises from the fact that wastewater treatment plants must be constructed to abate water pollution and prevent health hazards, yet seldom can a location for plants be found that will be acceptable to all. Most objections and controversy relate directly back to plant location.

The Environmental Protection Agency has adopted the policy of allowing local government entities to determine the most feasible site since those entities are most able to ascertain the facts and respond to the needs of the citizenry by utilizing an effective public hearing process.

The Environmental Protection Agency must ensure, if federal funds are involved, that the proposed construction and operation of wastewater treatment facilities will avoid to the fullest extent practicable undesirable consequences to the environment. The Agency requires that all governmental entities give due consideration to both environmental impact and economic prudence.

Seldom is a proposed site both the least expensive alternate and the one that will result in the least adverse environmental impact, and frequently the most ecologically acceptable site is not available or is not within the financial capability of the City without sacrificing other vital project elements. A compromise between environmental objectives and economic feasibility is often necessary and acceptable provided human health is not endangered and provided serious environmental impact will not result from the compromise.

The objections from residents and landowners, in the form of letters, petitions, and comments at hearings, prompted additional on-site investigations by a representative of EPA, Region VI, and participation in a hearing regarding the site selection. The information gathered from the on-site investigation and at the hearing were incorporated into this statement.

As a result of these objections, the Environmental Protection Agency will require that contract plans and specifications include provisions for odor control techniques and devices to further reduce the possibility of odors emanating from the plant site.

VIII. CONCLUSIONS OF THE ENVIRONMENTAL PROTECTION AGENCY

1. The engineering information as presented in preliminary studies, and preliminary design reports are very comprehensive and complete.

2. The project concepts included in the proposed project give appropriate and careful consideration to the environmental aspects to ensure that environmental quality is enhanced. Sufficient alternatives were evaluated to minimize adverse impact. The selected alternative will avoid undesirable consequences for the environment.

3. Public participation has been encouraged by three public hearings before the City Council of Austin, Texas, and two hearings before the Texas Water Quality Board. Active solicitation of comments from Federal, State, and local agencies, private organizations, and individuals during the environment impact statement process will allow further "two-way" communication. Therefore, no additional hearings are anticipated.

4. Since the proposed Walnut Creek Treatment Plant is to be constructed in an area where platted subdivisions have been approved by the City of Austin, the EPA will require that plans include design concepts, equipment, and processes to ensure that odors do not become a problem at the site.

5. The Environmental Protection Agency will recommend that the City of Austin fully explore the feasibility of constructing a separate outfall to the Colorado River for discharge of treatment plant effluent from the proposed Walnut Creek Treatment Plant.

6. The Environmental Protection Agency will require that the City of Austin give full consideration to the environmental impact

of future sanitary sewer interceptors that will be proliferated by the construction of this project.

7. The project as proposed by the City of Austin appears to be consistent with local, state, and national environmental goals.

APPENDIX NO. 1

Comments received from Federal, State, and local agencies and by private organizations and individuals in the review process.

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

P. O. Box 648
Temple, Texas 76501

February 23, 1972

Mr. Arthur W. Busch
Regional Administrator
Environmental Protection Agency
Region VI
1600 Patterson, Suite 1100
Dallas, Texas 75201

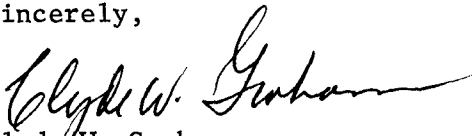
Dear Mr. Busch:

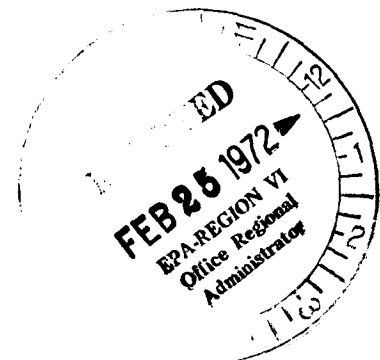
The draft environmental impact statement for construction of waste-water facilities, Austin, Texas, was referred to the Soil Conservation Service for review and comment.

This statement adequately reflects the effect of the proposed project on upstream water resources and the change in streamflow characteristics of Walnut Creek.

We appreciate the opportunity to review and comment on this proposed project.

Sincerely,


Clyde W. Graham
State Conservationist





United States Department of the Interior

BUREAU OF OUTDOOR RECREATION

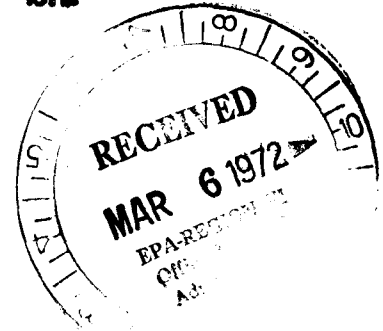
MID-CONTINENT REGION
BUILDING 41, DENVER FEDERAL CENTER
DENVER, COLORADO 80225

IN REPLY REFER TO:

D6427 Wastewater
Facility, Austin

MAR 2 1972

Mr. Arthur W. Busch
Regional Administrator
Environmental Protection
Agency, Region VI
1600 Patterson, Suite 1100
Dallas, Texas 75201



Dear Mr. Busch:

We have reviewed the draft environmental impact statement for the proposed wastewater treatment facilities to be located near Austin, Texas as requested in your letter of February 5, 1972. Our comments are general in nature since a site inspection of the area was not possible.

Although we feel the environmental effects of the proposed project have been adequately covered, the statement could be strengthened by listing a broader range of alternative actions. As noted in our February 23, 1972 comments on the proposed treatment facilities near Pittsburg, Texas, we feel that a reuse situation should be considered whenever municipalities modify existing treatment plants or build new ones. Waste treatment technology is advancing along with social attitudes toward acceptance of the reuse of treated water to the point where tradition can be overcome in favor of innovative practices. A promising factor as far as recreation is concerned is location, since sewage is produced where the people are and that is also where the greatest recreation needs exist. Therefore, we would like to see the statement address itself to possible reuse alternatives.

One possible alternative which comes to mind (although we are uncertain as to whether it would be appropriate in this case) is the Project CURE concept. This concept -- which stands for Clean Urban River Environment -- was developed jointly by this office and the Kansas City Water Quality Office and presented in a report dated November 1970 as a prospectus for development. Basically, this concept involves the advanced treatment of waste water near the points of use and collection, and then allowing the highly treated effluent to enter either natural or artificially created channels and flow freely along the surface through various reaches of the city where it can be utilized for recreational and

Mr. Arthur W. Busch

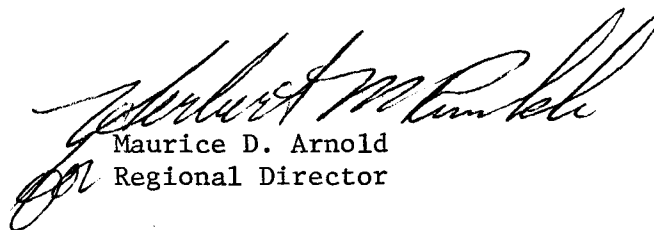
Page 2

environmental enhancement purposes. So what we are talking about is decentralizing treatment facilities, utilizing advance treatment methods, and returning stream courses in urban areas to the surface instead of piping them underground. We have found in our investigations that only approximately 40 percent of the original stream miles remain on the surface in our larger urban areas. Many of the natural drainageways and streams have been "engineered" underground through complex systems of sewers, pipes and tunnels, some related to the sanitary systems, some quite independent of it. Under CURE, it would be possible to return the rivers back to a usable condition. The concept is an imaginative way of integrating waste water treatment and reuse into the future development or redevelopment of urban areas. The obvious values of these newly formed rivers and lakes are for water-oriented outdoor recreation and the enhancement of the urban environment. Herein lies the importance of the CURE concept -- considering the documented recreation needs in most urban areas and the general deterioration of the quality of environment in today's cities.

The only other comment we have to make is in regard to the sentence on page 34 of the environmental statement which reads as follows: "The overall economic advantage associated with the tunnel plan was used as the basis for selecting that alternative." We do not feel that monetary costs and benefits should be the sole criterion used in evaluating alternatives.

We thank you for affording us the opportunity to review this statement.

Sincerely yours,



Maurice D. Arnold
Regional Director

cc: Director, BOR
Attn: Division of Resource
Area Studies



United States Department of the Interior

BUREAU OF OUTDOOR RECREATION

MID-CONTINENT REGION

BUILDING 41, DENVER FEDERAL CENTER

DENVER, COLORADO 80225

IN REPLY REFER TO:

APR 28 1972

Mr. Dan L. Sherwood, P. E.
Acting Chief
Environmental Evaluation Section
Environmental Protection Agency
Region VI
1600 Patterson, Suite 1100
Dallas, Texas 75201

Dear Mr. Sherwood:

This refers to your April 4, 1972 letter regarding your environmental impact statement number 7104 relating to construction of wastewater treatment facilities in Austin, Texas.

Based upon a review of the material provided, it does not appear the interceptor tunnel will have a direct effect upon the 49-acre Lakewood Park project (L&WCF 48-00162) at this time. Although it may not be within the purview of this statement, we would like to take this opportunity to note that possible future developments above the presently proposed tunnel entrance could have a substantial impact upon the park. Such developments could include additions to this system or attempts to increase the Bull Creek Channel capacity as the area develops and run-off increases. In short, any alteration of the natural character of the creek in the park area would have a very damaging impact.

We were unable to determine the nature of the tunnel right-of-way in the statement narrative. However, as the result of the conversation between Ed Harris and yourself, we understand that no surface rights will be acquired for the route that could be utilized for bike trails or other recreation pursuits.

Regarding the Walnut Creek plant enlargement, in several places the statement refers to selective clearing and grubbing along the creek; however, page 25 refers to the "reconstructed creek area." Selective clearing and grubbing does not connote reconstruction. Clarification is needed on this matter.

MAY 1 1972

Mr. Dan L. Sherwood, P. E.
Page 2

We also note on page 25 the suggestion that the area contiguous to the creek could be used as a park. Has this idea been coordinated with city park authorities? The city park department is not on the list of local agencies asked to comment on the draft Environmental Impact Statement. As you know, flood plain areas can offer one of the most attractive and refreshing recreation opportunities in the middle of the urban scene. It would be a plus to the project if such an opportunity could be incorporated into this project or be used as a starter for a larger greenbelt along the creek.

I enclose a Xerox copy of a 3/2/72 memo to your Regional Administrator on this project. We appreciate your thoughtfulness in contacting us on the project to determine its possible impact on Lakewood Park.

Sincerely yours,

Lyle E. Hollenbeck

for
Maurice D. Arnold
Regional Director

Enclosure



United States Department of the Interior

GEOLOGICAL SURVEY

WATER RESOURCES DIVISION

FEDERAL BUILDING
300 EAST 8TH STREET
AUSTIN, TEXAS 78701

February 8, 1972

Memorandum

To: Mr. Arthur W. Busch, Regional Administrator
Environmental Protection Agency, Dallas, Texas

From: I. D. Yost, District Chief, Austin, Texas

Subject: PROGRAMS AND PLANS--Review of environmental impact
statement - Construction of
Wastewater Facilities, Pittsburg,
Texas, WPC-TEX-722

The Texas District, Water Resources Division of the Geological Survey, has no comment to make on the subject statement.

A handwritten signature in cursive script, appearing to read "I. D. Yost".

I. D. Yost

cc: Regional Hydrologist, WRD, RMR, Lakewood, Colorado
G. H. Davis, Research Hydrologist, WRD, Washington, D.C./w statement.

AGW:lk



DEPARTMENT OF THE ARMY
FORT WORTH DISTRICT, CORPS OF ENGINEERS
P. O. BOX 17300
FORT WORTH, TEXAS 76102

SWFED-PR

29 February 1972

Mr. Dan Sherwood
Air and Water Programs Division
Environmental Protection Agency, Region VI
1600 Patterson, Suite 1100
Dallas, Texas 75201

Dear Mr. Sherwood:

As requested by your letter, the draft environmental statement for the proposed wastewater facilities, Austin, Texas, has been reviewed by the Fort Worth District, U. S. Army Corps of Engineers.

We concur with the basic text of the draft environmental statement. However, the following comments are offered to assist you in the revision of this environmental statement.

- a. Page 2, paragraph 2, line 3. It is unclear what is meant by "complete treatment."
- b. Page 2, paragraph 2, line 5. What is "total flow"?
- c. Page 2, paragraph 4, line 4. It should be stated that Freese, Nichols and Endress are consulting engineers.
- d. Page 3, paragraph 2, line 3. The statement "currently of good quality" should be explained in depth.
- e. Page 3, paragraph 2, line 4. "Significant amounts of surface runoff, pollution, etc." should be explained or quantified.
- f. General, Land disposal of sludges. Precaution should be employed so that runoff from land disposal sites will not enter water courses. Also, the alternative of "no action" should be stated.

SWFED-PR
Mr. Dan Sherwood

29 February 1972

Thank you for the opportunity to review and comment on this statement.
It is hoped these comments will be helpful in preparing the final
environmental statement.

Sincerely yours,

A handwritten signature in dark ink, appearing to read "D. L. Orendorff". The signature is written in a cursive style with a large, stylized "D" and "O".

D. L. ORENDORFF
Chief, Engineering Division

UNITED STATES DEPARTMENT OF AGRICULTURE

SOIL CONSERVATION SERVICE

P. O. Box 648
Temple, Texas 76501

January 4, 1972

Mr. Arthur Busch
Regional Administrator
Environmental Protection Agency
Region VI
1402 Elm Street, Third Floor
Dallas, Texas 75202

Dear Mr. Busch:

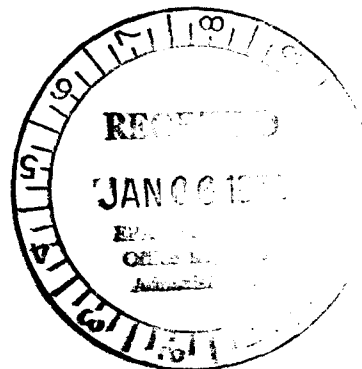
This is in reference to your Notice of Intent to prepare an Environmental Impact Statement on the construction of new cross-town tunnel interceptor and expansion of existing Walnut Creek wastewater treatment plant, City of Austin, Travis County, Texas.

The land involved in both projects is not agricultural land; therefore, agricultural production will not be affected. The land use is urban. Erosion control will be of no consequence on either project. There will be a minimum amount of sediment of these projects because of limited areas involved. Neither of the projects will affect the agricultural drainage patterns in the area.

We appreciate the opportunity to review and comment on this Notice of Intent.

Sincerely,

Clyde W. Graham
Clyde W. Graham
State Conservationist



UNITED STATES DEPARTMENT OF AGRICULTURE
FOREST SERVICE
Region 3
517 Gold Avenue, S. W.
Albuquerque, New Mexico 87101

1940

March 3, 1972



Mr. Arthur W. Busch
Regional Administrator
Environmental Protection Agency
1600 Patterson, Suite 1100
Dallas, Texas 75201

Dear Mr. Busch:

We have reviewed the Draft Environmental Impact Statement for Construction of Wastewater Facilities, Austin, Texas, WPC-TEX-824, Impact Statement No. 7104.

We have nothing to add to this statement, and therefore no comments to make. We thank you for permitting our review.

Sincerely,

WM. D. HURST
Regional Forester



EXECUTIVE DEPARTMENT

DIVISION OF PLANNING COORDINATION

PRESTON SMITH
GOVERNOR

BOX 12428, CAPITOL STATION
AUSTIN, TEXAS 78711
PHONE 512 475-2427

ED GRISHAM
DIRECTOR

March 3, 1972

Mr. Ancil A. Jones
Air and Water Programs Division
Environmental Protection Agency
1600 Patterson, Suite 1100
Dallas, Texas 75201

Dear Mr. Jones:

The Office of the Governor, Division of Planning Coordination (State Planning and Development Clearinghouse), and affected Texas State agencies have reviewed the draft environmental impact statement for construction of wastewater facilities, Austin, Texas.

The following comments were received and summarized:

1. The Texas Air Control Board addresses the requirement of permits for particulate emissions of the furnaces used for calcining of lime and regeneration of activated carbon. The Board further treats the subjects of air pollution resulting from oxides of nitrogen during blasting phase of construction and the need for incinerating hydrogen sulfide from the air change system if the quantity requires.
2. The Texas Parks and Wildlife Department recommends the use of the physical-chemical treatment alternative to provide the maximum treatment of wastes now.
3. The Texas Water Rights Commission recommends modification of several parts of the statement in order to clarify ambiguities, strengthen justifications, and resolve issues.
4. The Texas State Soil and Water Conservation Board recommends that the improvement of the natural characteristics of the 20-acre pilot plot for wet sludge be made a part of the evaluation of the study if implemented. The Board further recommends that adequate protective measures be taken to protect the banks of Walnut Creek should the treatment plant be contributing to the banks' erosion.

7 MAR 1972

Mr. Ancil A. Jones
March 3, 1972
Page Two

The comments of these State agencies are enclosed. Other State agencies responding concurred with the present content of the draft statement; their comments are also enclosed.

Thank you for the opportunity to review this draft environmental impact statement.

Sincerely,



Ed Grisham
Director

EG:gtt

Encl. (8)

cc: Mr. Hugh C. Yantis, Jr., TWQB

Mr. Louis McDaniels, TWRC

Mr. Charles R. Barden, TACB

Mr. James U. Cross, TP&WD

Mr. Harvey Davis, TSS & WCB

Mr. Harry Burleigh, TWDB

Dr. James E. Peavy, TSDH

Mr. J. C. Dingwall, THD

Hon. Roy Butler
Mayor, City of Austin

Mr. Lynn H. Andrews
City Mgr., City of Austin

Mr. Richard G. Bean
Exec. Dir., CAPCO



TEXAS AIR CONTROL BOARD

1100 WEST 49th STREET
AUSTIN, TEXAS - 78756

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WILLIE L. ULICH, Ph.D., P.E.

March 1, 1972

Mr. Ed Grisham, Director
Division of Planning Coordination
Office of the Governor
Capitol Station
Austin, Texas 78711

Dear Ed:

Following are our comments on the Draft Environmental Impact Statement Construction of Wastewater Facilities, Austin, Texas:

1. Temporary air pollution will result from oxides of nitrogen during blasting operations in the construction phase of the project (page c of impact statement).
2. The calcining of lime is a potential source of particulate emissions, and the furnace used for this purpose will require a permit from the Texas Air Control Board (page 20 of statement).
3. The incinerator used for regeneration of activated carbon is also a potential source of particulate emissions and will require a permit from the Texas Air Control Board (page 21 of statement).
4. The description of the air change system in the tunnel is not detailed enough to determine pollutant concentrations, type of air change system or its effectiveness (page 32 of statement). Hydrogen sulfide is very noxious and, if found in large enough quantities, should be incinerated.

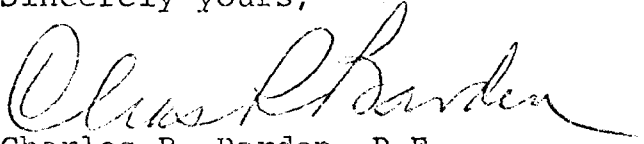
Mr. Ed Grisham

Page 2

March 1, 1972

Thank you for the opportunity to review this project. If I may be of further service, please let me know.

Sincerely yours,

A handwritten signature in cursive script, reading "Charles R. Barden". The signature is fluid and extends to the right.

Charles R. Barden, P.E.

Executive Secretary

Texas Air Control Board

cc: Mr. Eugene Fulton, Regional Supervisor, Waco
Mr. Roderick Moe, Air Pollution Control Program, Austin-
Travis County Health Department

PARKS AND WILDLIFE DEPARTMENT

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JACK R. STONE

JOHN H. PLAGAN



JAMES U. CROSS

EXECUTIVE DIRECTOR

JOHN H. PLAGAN BUILDING
AUSTIN, TEXAS 78701

Mr. Ed Coker
Division of Planning Coordination
Executive Department
Capitol Station
Austin, Texas 78711

February 22, 1972

Mr. Ed Coker
Division of Planning Coordination
Executive Department
Capitol Station
Austin, Texas 78711


Dear Mr. Coker:

We have reviewed the draft environmental impact statement for the construction of wastewater facilities at Austin, Texas, and are in general agreement with the assessment of the project.

In reference to the plans presented for the construction of the Walnut Creek Treatment Plant, we would prefer the physical-chemical treatment alternative. As we understand it, the physical-chemical treatment scheme would result in greater BOD, COD and phosphorus removals, while the biological treatment scheme would require additional facilities, not to be included at this time, to provide equivalent treatment. We feel that maximum treatment of wastes should be provided now and not postponed until effluent standards are upgraded.

We appreciate having had the opportunity to review this draft environmental impact statement.

Sincerely,


JAMES U. CROSS
Executive Director

RECEIVED

FEB 23 1972

7 MAR 1972 Div. of Plan. Coord.

TEXAS WATER RIGHTS COMMISSION

SAM HOUSTON STATE OFFICE BUILDING

COMMISSIONERS

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475-2451

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475-2453

DORSEY B. HARDEMAN
475-4325

LOUIS L. MCDANIELS

EXECUTIVE DIRECTOR
475-2452

AUDREY STRANDTMAN

SECRETARY
475-4514

February 29, 1972

Ed Grisham, Director
Governor's Division of Planning Coordination
Sam Houston State Office Building
Austin, Texas 78711

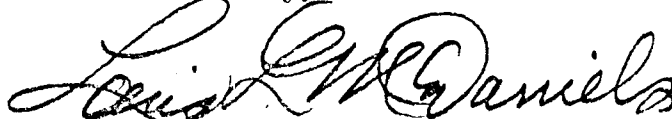
Re: Draft Environmental Impact Statement
for the Construction of Wastewater
Facilities, Austin, Texas, by the
Environmental Protection Agency

Dear Ed:

In response to your request of Judge Dent by memorandum of February 9, 1972, we have reviewed the referenced statement and submit herewith for your use our staff memorandum of review of the referenced draft environmental impact statement on the vital and complex \$29 million construction project -- the City of Austin Crosstown Interceptor Tunnel and the Walnut Creek Wastewater Treatment Plant. We believe that the draft statement warrants substantial modification in order to clarify ambiguities, to strengthen justifications, and to resolve issues.

We recommend that the attached memorandum of review be furnished to the Environmental Protection Agency, as they requested, by March 3, 1972, for their consideration in preparing the finalized impact statement which will be sent to the Council on Environmental Quality, urging early review by the Council. Also, we direct your attention to the underscored last sentence of the second paragraph on page 10 which raises the question of use of state water for flushing the proposed tunnel as being a beneficial use authorized by state law and subject to being permitted. We may have some problems with this point as proposed.

Sincerely,



Louis L. McDaniels

Attachment
As stated

For the Executive Director
Texas Water Rights Commission

February 22, 1972

MEMORANDUM OF REVIEW
OF
ENVIRONMENTAL PROTECTION AGENCY -- DRAFT ENVIRONMENTAL
IMPACT STATEMENT FOR THE CONSTRUCTION OF
WASTEWATER FACILITIES, AUSTIN, TEXAS

Prepared by: Dr. Alfred J. D'Arezzo, Environmental Sciences Analyst

1. INTRODUCTION

1.1 Basis of Review -- By Memorandum of February 9, 1972, the Director, Governor's Division of Planning Coordination, transmitted to, and requested the comments of the Texas Water Rights Commission on the document entitled: Draft Environmental Impact Statement for Construction of Wastewater Facilities, Austin, Texas, WPC-TEX-824, Impact Statement Number 7104. This document was prepared by the Air and Water Programs Division, Region VI, Environmental Protection Agency, Dallas, Texas, in accordance with Section 102(2)(C) of the National Environmental Policy Act of 1969.

1.2 General Description and Scope of Project -- The project involves the construction of a crosstown deep tunnel interceptor and expansion of the existing Walnut Creek wastewater treatment plant for the City of Austin, Travis County, Texas. The estimated total construction cost is \$29,099,000. A federal grant offer of \$16,004,450 was made to the City of Austin on September 28, 1971, and accepted on October 18, 1971. The EPA (Environmental Protection Agency) Notice of Intent of November 18, 1971, further indicated that the State of Texas has offered financial assistance in the amount of \$7,274,750. Construction was expected to start in March 1972 and be completed by June 1974. The basic application for the federal grant, pursuant to Federal Water Pollution Control Act, Public Law 84-660, as amended, was filed on April 22, 1971.

1.3 General Description of Crosstown Tunnel Interceptor --

- a. Length: 58,630 feet¹
- b. Depth below ground surface (varies): 25 to 425 feet¹
- c. Capacity, based on year 2020, measured at its downstream terminus near the Walnut Creek Wastewater Treatment Plant: 130¹ million gallons per day (MGD) (Draft states 131 MGD -- see page 9)
- d. Diameter (varies): 60 to 96 inches¹ (Draft: 78-96 inches)
- e. Types Considered: Elliptical, Shaped Invert (Cunette), and Circular¹

1.4 General Description of the Walnut Creek Wastewater Treatment Plant --

- a. Hydraulic capacity of primary treatment facility will be based on year 2020 needs, i.e., 131 MGD.
- b. Average or nominal design flow rate of primary treatment facility will be based on year 2000 needs, i.e., 27 MGD. (See page 9, Draft)
- c. Rated capacity of secondary treatment facility designed for year 1984 needs, i.e., 18 MGD. (See page 9, Draft)
- d. Alternative types of secondary treatment processes being considered by the City include biological and physical/chemical process designs.

1.5 Basic Reports and Literature Reviewed --

- a. "Long-Range Program of Sewerage Improvements -- Austin, Texas", Black and Veatch, Consulting Engineers, and Bryant-Curington, Inc., 1966.

¹ City of Austin, Texas, Crosstown Wastewater Interceptor, Preliminary Design Report -- Mathews Leedshill Bryant-Curington, May 1971, page I-3.

- b. "Pre-Design Study for Shoal Creek Sanitary Sewer System - City of Austin, Texas", prepared by Freese, Nichols and Endress, Consulting Engineers, October 1968.
- c. "Study of Wastewater Collection System, Phase I -- City of Austin, Texas", by Horner and Shifrin, Inc., October 1969.
- d. "Study of Wastewater Collection System, Phase II -- City of Austin, Texas", by Horner and Shifrin, Inc., June 1970.
- e. "Preliminary Design Report -- City of Austin, Texas -- Crosstown Wastewater Interceptor", by Matthews Leedshill Bryant-Curington, Engineering Consultants to the City of Austin, Texas, May 17, 1971.
- f. "Report on Wastewater Treatment Walnut Creek Site for Austin, Texas", by Black and Veatch, Consulting Engineers, and S. A. Garza Engineers, Inc., December 10, 1971.
- g. "The Highland Lakes System -- Comprehensive Wastewater Study, 1970-1990, - Phase III, Conceptual Design for Area-Wide Facilities, by Freese, Nichols and Endress, Consulting Engineers, January 1971.
- h. "The Highland Lakes System -- Comprehensive Wastewater Study, 1970-1990, Phase IV - Implementation of the Recommended Plans", by Freese, Nichols and Endress, Consulting Engineers, February 1971.
- i. "Design and Construction of Sanitary and Storm Sewers, Manual No. 37", by American Society of Civil Engineers, 1970.
- j. "Cost Effectiveness and Clean Water, Vol. II", by Water Quality Office, Environmental Protection Agency, March 1971.

2. COMMENTS AND SUGGESTIONS

Item No.	Draft Page No.	Comments and Suggestions
2.1	Summary, page a, subpar. 2	<p>The statement: "The tunnel will intercept overloaded trunk sewer wastewater flows.. .." warrants more precise wording or clarification.</p> <p><u>Basis:</u> Page 73, report 1.5g, supra, states: "...all three individual collection systems have adequate capacity to handle present dry weather flows but that the 'central' system does not have adequate capacity to handle present wet weather flows."</p> <p>Pages 73 and 74, report 1.5g, supra, state further that: "The existing Govalle plant has adequate capacity to handle present dry weather flows, but does not have adequate capacity to handle present wet weather flows. The city is now completing construction of an addition to this (Govalle) plant which will permit treatment of all wet weather flows that can be transported to it by the existing outfall lines."</p> <p>Finally, mention is made that the interceptor tunnel is expected to alleviate flows in the existing interceptors and lines downstream from the tunnel, through the year 1990 only. ✓</p>
2.2	Summary, page a, subpar. 3	<p>Identify what are the projects for which "plans and specifications have been approved by the Texas Water Quality Board and have been submitted to the regional EPA office."</p> <p><u>Basis:</u> The narrative of the draft statement under review indicates no mention of completed plans and specifications for the Crosstown tunnel or Walnut Creek plant.</p>
2.3	Summary, page b, subpar. 2	<p>More detailed clarification should be presented as to how and when the tunnel interceptor and the still undecided type treat-</p>

Item No.	Draft Page No.	Comments and Suggestions
		<p>ment to be adopted for the new Walnut Creek treatment plant "will relieve the overloaded trunk sewers tributary to the Govalle Wastewater Treatment Plant...." Explanation also would be helpful as to precisely how and where the "present wastewater overflows cause a detrimentto the tributary creeks, Lake Austin, and the Colorado River...." Perhaps, some mention could be made of hydraulic deficiencies and infiltration in the older, existing sewerage system; and the measures being taken to remedy these defects.</p> <p><u>Basis:</u> See pages 73-74, of report cited in 1.5g, supra. Also, see pages 45-46 of draft for discussion of infiltration and related matters brought out during hearings.</p>
2.4	Summary, page b, subpar. 3	<p>The statement that the adverse effects "due to the establishment of a more permanent type of treatment at the Walnut Creek site are considered minimal" warrants either further explanation or modification.</p> <p><u>Basis:</u> The type of treatment to be adopted, the effluent standards to be established and volume of discharge appear to be still in an indeterminate status. See pages 76-81 of report cited in 1.5g, supra. Also, see pages 68-81, report 1.5f, supra. Also, see pages 35-41, of the environmental draft statment. Analysis of the data in foregoing references indicates that the net impacts on the environment could be significant, depending on the final decisions to be made concerning the type of treatment, the modes of operation, plant failure safeguards and effluent or stream standards. Also, consideration should be given to the overall regional plan of improvements of</p>

<u>Item No.</u>	<u>Draft Page No.</u>	<u>Comments and Suggestions</u>
		which this project is part, (see page 82 of report cited in 1.5g, supra), in assessing whether the specific environmental effects of this component project can be isolated, and identified.
2.5	Summary, pages c & d, subpar. 4	Clarification should be made that the alternatives are still being considered. The present wording inferring completed action should be modified.
2.6	Pages 2-3	Suggest that the explanation showing that "the project is part of the Highland Lakes System Comprehensive Wastewater Study...." be more precisely worded.

Basis: See page 1 of the Hearing Commission Report appended to subject draft. The above report indicates that the Highland Lakes study was recommended by the Texas Water Quality Board "as the interim water quality management plan for the Highland Lakes planning area." In this regard, the undersigned believes that some recognition should be given to the fact that several local groupings of a number of small treatment plants into collective sewerage systems cannot be accurately regarded as true regional systems.²

Whipple³ indicates that:

"There are of course advantages of scale to be obtained by consolidated operations, which however, are rapidly countered by increasing costs of piping wastewaters as the area is extended."

²Whipple, William, Jr., "Water Pollution Control Institutions", Engineering Issues, Proc. of Amer. Soc. of Civ. Engrs., Vol. 98, No. PP 1, January 1972, page 20.

³Whipple, Ibid, page 20.

Item No.	Draft No.	Page No.	Comments and Suggestions
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Therefore, qualified wording should be used to place the Austin Crosstown tunnel interceptor and the Walnut Creek Wastewater Treatment Plant in the proper perspective. The project (i.e., tunnel and plant may eventually be part of a Highland Lakes System, but this appears to be still a conjectural matter at this time. Whipple⁴ indicates a major problem in wastewater treatment regionalization:

"There are usually institutional difficulties in organizing collective systems, which require state action to overcome."

A discussion of the special institutional and organizational arrangements involved in the Highland Lakes System is contained in the report cited in paragraph 1.5h, supra. Salient aspects thereof should be included in the discussion of the Highland Lakes System made in the project description of this draft environmental statement.

2.7 Page 12,

Statement is made that "an extensive program to eliminate sources of infiltration" is underway and it is inferred that substantial improvements will result therefrom. However, on pages 45-46, discussions at a public hearing indicate that the correction of infiltration is "expensive and the process is inherently a long-term project. After working on the problem for more than three years, some improvement has been made, but as yet there has not been such a drastic improvement as to revise the hydraulic basis for existing areas."

⁴Whipple, Ibid, page 20.

Item Draft Page
No. No.

Comments and Suggestions

The matters of amount of infiltration, and the basis of computing the amount of infiltration appear to permeate disquietingly all phases of this project.

Therefore, in order to remove all misunderstandings, it is strongly suggested that a very clear and complete explanation be made of the techniques, methods, data or measurements used in determining the design data of the collection systems involved in the project. This clarification of basic design capacities would be in beneficial pursuance of the bold cost effectiveness analyses urged by the Environmental Protection Agency, in the document cited in paragraph 1.5j, supra:

- p. 117: "Thus, economies of scale and safety margins are not, in and of themselves, sufficient economic justifications for overbuilding treatment plant capacity. Only if a community is expected to operate its treatment facility near full capacity within the near future, say five to seven years, will the potential cost savings be realized. In general, a strategy of building capacity to meet current and near-term needs will yield lower costs of construction and operation than the strategy of overbuilding".

.In view of the foregoing, it is evident that special care must be taken in determining the design treatment load. In this regard, the following additional cautions are given in the report, paragraph 1.5j, supra:

- p. 75: "Assuming the substitutability of uninvested capital in one place for another, and a generally fixed level of funding, overbuilding at one set of

Item	Draft	Page	
No.	No.		Comments and Suggestions

points at the same time that untreated waste discharges and overloaded waste treatment plants occur at other points contributes to the persistence of pollutional conditions...."

- p. 77: "...assistance that is used to capitalize idle capacity when it might be allotted for productive purposes can under resource scarcity only be considered to contribute to the persistence of pollution, since, unlike local funds, it is potentially available for a number of other projects."

Further,

- p. 77: "It is probably safe to assume that the major costs of misallocating funds to purposes that have a low marginal utility -- specifically, adding to the stock of idle waste treatment capital and sewerage portions of communities that do not require sewerage -- are borne by the environment. Continued pollution of water is the prime price that economy pays for directing investments into projects that offer a low return relative to other, more directly profitable purposes."

In view of the foregoing cautions, it is recommended that any major doubts over basic design criteria be quickly, thoroughly and clearly explained. This would greatly strengthen the engineering environmental and economic bases of this project.

Item No.	Draft Page No.	Comments and Suggestions
2.8	Page 13, subpar. 2	<p>The question arises as to what measures will be taken to minimize the effects of hydrogen sulfide-sulphuric acid deterioration also in the relieved collector systems downstream of the proposed new interceptor.</p> <p>Also, has adequate consideration been given to the frictional losses or energy drops of the air flow due to the siphons and the access shafts along the new, proposed interceptor line? In addition, will effluent resulting from periodic flushing of the interceptor be treated? <u>But, more fundamental is the question of whether or not the use of Lake Austin water for this purpose is an authorized use of State waters justifying issuance of a usage permit.</u></p>
2.9	Pages 16 to 21, inclusive	<p>The comparative discussion of the biological and the chemical/physical treatment processes, should end with some firm recommendations as to which process, or modification thereof, should be selected, and the justification for that selection, considering: effluent standards adopted, estimated construction costs, and estimated annual maintenance and operation costs.</p> <p>In the discussion of treatment processes further consideration should be given to effects of effluent chlorination on the receiving body of water.</p>
2.10	Page 26,	<p>Statement is made that the Govalle Plant discharge "presents a point load to the Colorado River", and that while the future Walnut Creek plant discharge will "enter the Colorado River within the influence of the Govalle discharge, such diversification will lessen the localized effects on the Colorado River". These remarks warrant further elaboration to reflect the replies to th-</p>

<u>Item</u> <u>No.</u>	<u>Draft</u> <u>No.</u>	<u>Page</u> <u>No.</u>	<u>Comments and Suggestions</u>
			<p>following questions:</p> <p>(a) Will the present modifications to the Govalle Plant (not part of this project) increase the present discharge of 25 MGD, and will it afford any mitigation in adverse point load effects?</p> <p>(b) What is the anticipated discharge of the future Walnut Creek plant, and can this future discharge really be regarded other than another major point load source which did not exist before? (It is understood from the discussion on page 27 that there is no discharge from the present Walnut Creek plant; the future plant will discharge.)</p> <p>In summary, it appears that the anticipated beneficial water uses of Lake Austin, Town Lake and the Colorado River are contingent upon the establishment of stringent stream and effluent standards, and the design of waste treatment facilities to insure those high standards. Otherwise, the Govalle and Walnut Creek Plant discharges will have a very significant effect on the receiving body of water.</p>
2.11		Page 32, subpar. 2	Statement is made that odor control will be obtained by chlorination processes.
		Page 33, subpar. 4	Statement is made that if a physical/chemical secondary treatment process is used, the discharge of air pollutants from regeneration furnaces will be controlled by scrubbing of gases "to provide a quality consistent with the National Air Quality Standards established by EPA."

Item No.	Draft Page No.	Comments and Suggestions
		Analysis of prevailing winds (see figure 6, Draft) indicates that very stringent odor and pollution control processes will be essential since all major wastewater treatment facilities for Austin will be consolidated into a localized area from which by-product odors and/or pollutants could be driven by the prevailing winds from south to north, across the major portions of the city.
2.12	Pages 35-42 inclusive	<p>Cost data pertaining to the various treatment plant alternatives should be furnished, as they were for the tunnel project (see page 34).</p> <p>Some clarification should be made of the major reasons why no final decision has been reached concerning the type of treatment process, sludge disposal process and related matters. What are the delaying or complicating factors?</p> <p>Special cautions should be taken to insure the construction and operation of treatment facilities to near-full capacity. See discussion in Item 2.7, supra. It appears from the subsequent discussion on page 42, regarding the construction of the treatment plant on a "modular" basis that the economies of balanced growth and flexibility have been recognized.</p>

3. RECOMMENDATIONS

Recommend that the comments and suggestions in paragraph 2, supra be furnished to and considered by the Environmental Protection Agency, the City of Austin, and their engineer consultants, in preparation of the finalized environmental impact statement for the vital and complex project under review.


Alfred J. D'Arezzo

GORDON FULCHER
CHAIRMAN

LESTER CLARK
VICE-CHAIRMAN

J. DOUG TOOLE

HARRY P. BURLEIGH

TEXAS WATER QUALITY BOARD



314 WEST 11TH STREET 78701
P.O. BOX 13246 CAPITOL STATION 78711
AUSTIN, TEXAS

JAMES U. CROSS

J. E. PEAVY, MD

BYRON TUNNELL

HUGH C. YANTIS, JR.
EXECUTIVE DIRECTOR

PH. 475-2651
A.C. 512

February 23, 1972

RE: Environmental Impact Statement
Austin, Texas
WPC-Tex-824

Mr. Ed Grisham, Director
Division of Planning Coordination
Office of the Governor
P. O. Box 12428, Capitol Station
Austin, Texas 78711

Dear Mr. Grisham:

In response to your memorandum of February 9, 1972, regarding the draft environmental impact statement for the City of Austin, this letter will indicate to you our interest in this matter in that the City has submitted an application to us under the Public Law 660 Program for construction grant assistance. Also upon completion of the project, we will have regulatory jurisdiction over the lines as well as the treatment plant to which the wastewater will be conveyed.

We have reviewed this project thoroughly and feel it has great merit. The Draft Environmental Impact Statement has been very adequately presented with respect to the benefits the project will provide the Austin metropolitan area and the lower Highland Lakes System.

The project, in conformance with the Highland Lakes System Comprehensive Wastewater Study as approved by the Texas Water Quality Board and the Environmental Protection Agency, has been publicly aired on several occasions at the local and State levels. Its acceptance by the public is reflected in the vote of confidence margin of 7-1 for bonds to support the project.

The State of Texas, by Texas Water Quality Board Order No. 71-1216-5, has approved State Financial Assistance in the amount of \$7,274,750.00 for the project. The City of Austin has submitted an Environmental Assessment in accordance with condition Number 13 of their Part A (Grant offer).

RECEIVED

FEB 24 1972

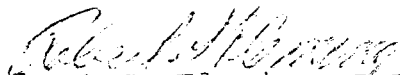
7 MAR 1972

Div of Planning

Mr. Ed Grisham
Page 2
February 23, 1972

We hope these remarks will be sufficient for your review process.
Please call us if we may be of further assistance.

Sincerely yours,


Robert G. Fleming, P.E., Director
Central Operations

NWC:jh

TEXAS WATER DEVELOPMENT BOARD

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MARVIN SHURBET, VICE CHAIRMAN
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NEW BOSTON

MILTON T. FOTTS
LIVINGSTON

CARL ILLIG
HOUSTON



P.O. BOX 13087
CAPITOL STATION
AUSTIN, TEXAS 78711

FEB 28 1972

HARRY P. BURLFIGH
EXECUTIVE DIRECTOR

AREA CODE 512
475-2201

301 WEST 2ND STREET

IN REPLY REFER TO:

TWDBP

Mr. Ed Grisham, Director
Division of Planning Coordination
Office of the Governor
P. O. Box 12428, Capitol Station
Austin, Texas 78711

Dear Mr. Grisham:

Please refer to your memorandum of February 9, 1972 forwarding for our review and comment the draft environmental statement for the Construction of Wastewater Facilities, Austin, Texas (WPC-Tex-824), prepared by the Environmental Protection Agency.

On September 17, 1971, the Texas Water Quality Board, of which I am a member under statute, considered the application of the City of Austin for enlargement of its existing Walnut Creek waste treatment plant and the interception of flows at upstream points on trunk sewers for diversion to the Walnut Creek plant. After thorough evaluation of various alternatives by the staff of the Texas Water Quality Board, the Board approved the City's program as set forth in the draft statement and the accompanying Hearing Commission Report of the Board.

The action of the Texas Water Quality Board therefore represents the views of this agency on the matter. We also concur in the conclusions of the Environmental Protection Agency as set forth on page 48 of the draft environmental statement.

Thank you for providing us the opportunity of commenting on this statement.

RECEIVED

FEB 28 1972

Div. of Plan. Coord.

Sincerely,

A handwritten signature in cursive script that reads "Harry P. Burleigh".

Harry P. Burleigh

MAR 1972

State Department of Health
AUSTIN TEXAS

INTER-OFFICE

G. R. Herzik, Jr., P.E.
Deputy Commissioner for
Environmental Health

Fratris L. Duff, M.D.
Deputy Commissioner for
Program Planning

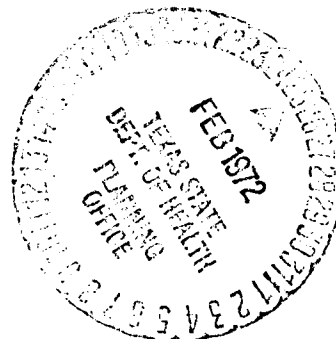
FROM _____ TO _____

SUBJECT Wastewater Facilities, Austin, Texas - WPC - Tex - 824
Draft Environmental Impact Statement

We have completed a review of the Draft Environmental Impact Statement prepared by the Environmental Protection Agency and submitted to this Department for evaluation by the Governor's Office. The project involves the construction of a cross town sewage tunnel which will extend from the intersection of Walnut Creek and FM 969 to the mouth of Bull Creek. At the terminus of the sewer the Walnut Creek Wastewater Treatment Plant will be constructed. Improvement in the existing facilities at the Govalle Wastewater Treatment Plant will be concurrent.

The net public health impact of the project is beneficial and will alleviate many of the problems associated with overflowing manholes and possible contamination of Town Lake.

DMC/rf



7 MAR 1972

SIGNED

[Signature]
February 20, 1972

TEXAS FOREST SERVICE



File 5.329-E

College Station, Texas 77843
February 15, 1972

Mr. Arthur W. Busch
Regional Administrator
Environmental Protection Agency
Region VI
1600 Patterson, Suite 1100
Dallas, Texas 75201

Dear Mr. Busch:

The Texas Forest Service has no constructive comments to offer in response to the draft of your environmental statement for the proposed wastewater treatment facilities to be located near Austin, Texas.

Document received February 5, 1972.

Very truly yours,

Paul R. Kramer, Director

Mason C. Cloud
mm
By: Mason C. Cloud

MC/mm



TEXAS STATE SOIL AND WATER CONSERVATION BOARD

1018 First National Building
Temple, Texas 76501
AREA CODE 817, 773-2250

February 25, 1972

Division of Planning Coordination
Office of the Governor
Capitol Station Box P
Austin, Texas 78711

Attention: Mr. Ed Coker

We have reviewed the Draft Environmental Impact Statement for the Construction of Wastewater Facilities, Austin, Texas, and have these comments:

- 1.) We note with favorable interest the city's intention to investigate land disposal of wet sludge (pg. 19). If the study involving a 20-acre pilot plot is implemented, we recommend that improvement of the natural characteristics of the treated land area be made a part of the criteria for evaluating the results of the study.
- 2.) Morrison Enterprises, in a letter attached to the draft statement, states that "considerable erosion" is occurring on the north bank of Walnut Creek downstream from the treatment plant. There appears to be little discussion of this particular problem other than general remarks on pages 23 and 31 that apparently conflict with the Morrison letter. Although we have no information other than that presented in the draft statement, we believe that the permitted average discharge volume of 25,000,000 gallons per day could possibly cause accelerated streambank erosion resulting in downstream polluting siltation. If an investigation indicates that the Walnut Creek plant is contributing to the problem, we recommend that adequate protective measures be made integral part of this project.

RECEIVED

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Div. of Plan. Coord.

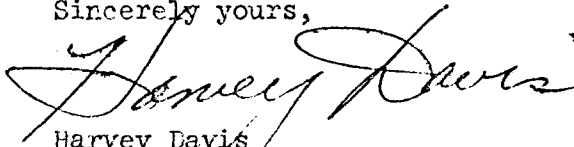
page 2

Mr. Ed Coker

February 25, 1972

Other than these comments, we agree with the conclusions of the Environmental Protection Agency and consider the draft statement to be a comprehensive and detailed presentation of the environmental impact of the project.

Sincerely yours,



Harvey Davis
Executive Director

HD:mc



COMMISSION

DEWITT C. GREER, CHAIRMAN
HERBERT C. PETRY, JR.
CHARLES E. SIMONS

TEXAS HIGHWAY DEPARTMENT

AUSTIN, TEXAS 78701

STATE HIGHWAY ENGINEER
J. C. DINGWALL

February 18, 1972

IN REPLY REFER TO
FILE NO. D-5

SUBJECT: Draft Environmental Impact Statement for the
Construction of Wastewater Facilities, Austin,
Texas, by the Environmental Protection Agency

Mr. Ed Grisham, Director
Division of Planning Coordination
Office of the Governor
Room 211, Sam Houston State
Office Building
Austin, Texas 78701

Dear Ed:

We have reviewed the draft environmental impact statement which accompanied your memorandum of February 9, 1972 and find nothing in it which would be detrimental to the interests of the Texas Highway Department. As stated in the letter of December 27, 1971 from Mr. J. M. Owens, District Engineer, Texas Highway Department, to Mr. Bill V. McFarland, Acting Regional Administrator of the Environmental Protection Agency, the City of Austin worked in close harmony with the Department in the development of detailed plans for the proposed cross-town tunnel interceptor.

The opportunity of reviewing the draft environmental impact statement is greatly appreciated.

Sincerely yours

J. C. Dingwall
State Highway Engineer

By: *Marcus L. Yancey, Jr.*
Marcus L. Yancey, Jr.
Administrative Engineer



COMMISSION

DEWITT C. GREER, CHAIRMAN
HERBERT C. PETRY, JR.
CHARLES E. SIMONS

TEXAS HIGHWAY DEPARTMENT

Austin, Texas
December 27, 1971



Subject: Proposed Cross-town Tunnel Interceptor and
Expansion of Existing Walnut Creek Wastewater
Treatment Plant, City of Austin, Travis County

IN REPLY REFER TO
FILE NO.

Mr. Bill V. McFarland
Acting Regional Administrator
Environmental Protection Agency
Region VI
1402 Elm Street, Third Floor
Dallas, Texas 75202

Dear Mr. McFarland:

Reference is made to your "Notice of Intent" dated November 18, 1971, regarding the above subject and inviting comments for your use in the preparation of the Draft Environmental Impact Statement. This Notice was forwarded to this office for our comments.

The City of Austin has discussed the proposed cross-town tunnel interceptor with this office during their detail planning and have made certain revisions at our suggestions.

The interceptor tunnel will be on the right of way of Farm Road 969 from near the Walnut Creek outlet to Springdale Road. The creek outlet was moved off of the right of way at our request and shaft S-1 at Fort Branch was moved further from the pavement to allow possible widening of the roadway of Farm Road 969 without disturbing the shaft entrance. We have also discussed with the City the handling of traffic during the construction and use of this shaft. From the east end of the tunnel to where the tunnel leaves the right of way of Farm Road 969 there will be a variation in cover from 20' to about 100'.

From Springdale Road the tunnel goes cross-country crossing U.S. Highway 183 about 68' underground near the intersection of U.S. 183 and Farm Road 969. The interceptor tunnel will be about 78' underground at its crossing with Loop 111 (Airport Boulevard); about 143' below I.H. 35 near East 28th Street; about 120' under Loop 1 (Mo Pac) at about 29½ Street and about 98' under Ranch Road 2222 at the Mt. Bonnell Road.

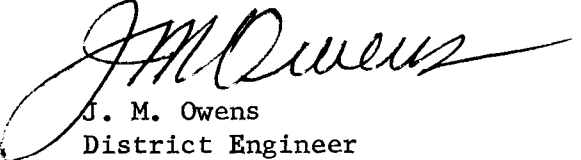
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Mr. Bill V. McFarland
December 27, 1971
Page 2

As we have told the City of Austin, we do not see any problems which would arise from the construction of this interceptor tunnel as far as the Highway Department is concerned.

If further information is desired, please advise.

Sincerely yours



J. M. Owens
District Engineer
District Fourteen

JMO:rb

cc File D-5

Mr. Ed Grisham

District Maintenance Engineer Jack Wilder

CAPCO

105 WEST RIVERSIDE DRIVE • SUITE 246 • AUSTIN, TEXAS 78704 • PH. 474-2376

March 6, 1972

Mr. Lynn H. Andrews
City Manager
City of Austin
P. O. Box 1088
Austin, Texas 78767

Dear Mr. Andrews:

As per your recent request for the Capital Area Planning Council (CAPCO) to review and comment on the E.P.A. "Environmental Impact" statement regarding the City of Austin's proposed Crosstown Interceptor and Treatment Facilities, we have done so and have found the statement well-prepared and apparently cognizant of the appropriate environmental considerations.

You will notice from the attached "Project Summary" Sheet that our Governmental Applications Review Committee (GARC) concurred with our findings and recommended a favorable review and comment on the project and the impact statement. The remaining steps are to present the staff and GARC comments to the CAPCO Executive Committee at their Tuesday, March 14th meeting for their consideration, followed by final summation of all comments and recommendations and submittal of same to the City of Austin and the Environmental Protection Agency in Dallas.

Yours truly,


Richard G. Bean
Executive Director

RGB/jm

cc: Curtis E. Johnson, P. E., City of Austin
Air & Water Programs Division, Region IV, EPA, Dallas

PROJECT SUMMARY

Date: 2/15/72

Project Title 12-72-017E Environmental Impact Statement, City
of Austin - Crostoun Interceptor & Treatment Facilities

Description of Project

Construction of wastewater interception and treatment facilities for the City of Austin, Texas. Eligible work consists of the construction of a deep tunnel interceptor and the enlargement of an existing wastewater treatment plant. The tunnel will intercept overloaded sewer wastewater flows and convey them to the proposed wastewater treatment plant.

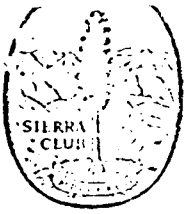
The total estimated cost of this project is \$ \$29,099,000, all of which is eligible for federal participation.

Staff Comments

The staff reviewed this proposed project and found that it would adequately serve the needs of the area. However, they stressed that care should be taken in the construction process to alleviate the possibility of shifting and consequent damage in the area. Otherwise, the staff recommended favorable review and comment.

GARC Comments

GARC reviewed the proposed application and found it to adequately serve the needs of the area and therefore recommended favorable review and comment.



Sierra Club

AUSTIN TEXAS GROUP OF THE LONE STAR CHAPTER

...TO EXPLORE, ENJOY, AND PROTECT THE NATION'S SCENIC RESOURCES...

7608 Rustling Road
Austin, Texas 78731
345-1351, 926-2800

January 11, 1972

Dr. Arthur W. Busch
Regional Administrator
Environmental Protection Agency
1600 Patterson, Suite 1100
Dallas, Texas 75201

Dear Dr. Busch:

Subject: Shortened Coordination Cycle, Austin Crosstown
Wastewater and Treatment Facility

By this letter, we are confirming the details of a proposal discussed in telecons with Mr. McFarland, Mr. Danny Sherwood, and Mr. James De La Plaine, and in writing to the City Manager and City Council of Austin. Specifically, we propose that a pilot project be initiated in Austin to effect concurrent public critique when an environmental impact statement is required for an environmental improvement project funded in part by the Environmental Protection Agency. We propose that the review periods of 90 and 30 days for the draft and final impact statements could thereby be reduced, resulting in a cost reduction to the Government. To achieve that end, the Sierra Club has proposed to the City of Austin, and the City of Austin has accepted, an offer whereby the Sierra Club will coordinate a concurrent public critique of the plans and impact statement associated with the crosstown sewer interceptor tunnel and treatment plant.

The Sierra Club previously performed a coordination activity during the preparation of Austin's Industrial Waste Ordinance. This Ordinance was endorsed by all environmental groups in Austin and by industry in Austin and was passed unanimously by the City Council. Organizations and individuals who in the past supported us in this activity or who have volunteered to do so or will likely do so include, in addition to the Sierra Club, the Travis Audubon Society, Friends of the Earth, Friends of the Environment, Ecology Action, St. Edward's Environics Center, the Institute for Advanced Environmental Studies, the Texas Environmental Coalition, and other persons connected

Dr. Arthur W. Busch
Page 2
January 11, 1972

with the faculties and the universities in this city or connected with architectural and engineering firms. This critique process, which would be open to the public, would in essence amount to a "blue ribbon" panel.

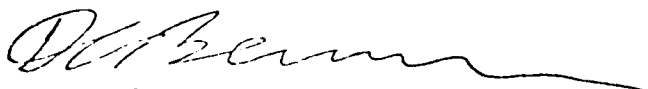
We suggest that this operation in Austin be considered a pilot project rather than an exception and that as a result of this effort, sponsored jointly by the Dallas Regional Office of EPA, the City of Austin, and the Sierra Club, a draft procedure for subsequent projects could be distributed. We, of course, have had limited experience in the interpretation of the regulations governing impact statements, but do get the impression that the Council on Environmental Quality has the prerogative of authorizing a reduction in the 90 and 30 day review periods. (Federal Register, Volume 36, No. 79, Paragraph 10(d), second sentence:

Similarly, where there are overriding considerations of expense to the Government or impaired program effectiveness, the responsible agency should consult the Council concerning appropriate modifications of the minimum periods.")

Since all public groups in Austin who might reasonably be expected to send in critiques will be represented, we are not bypassing or subverting the public review process--merely making it more timely and efficient.

It is our intent, as concurred with by the City of Austin, to proceed with the review of the City's plans and impart statement input by next week at the latest. The members of the Sierra Club and the other groups involved are willing to perform this function as environmentally-concerned and civic-minded citizens. Both we and the City are most anxious to have a reply from your office as to any relief which the Environmental Protection Agency and the Office of Environmental Quality can grant on the time needed for the coordination process.

Yours very truly,



Donald C. Berman
Chairman, Austin Regional Group

DCB/bc

cc: Mr. William McFarland
Assistant Regional Administrator
for Management
Environmental Protection Agency

Mayor Roy Butler
Austin City Council
City Mgr. Lynn Andrews
Mr. Curtis Johnson, Water
and Wastewater Dept.



Sierra Club

AUSTIN TEXAS GROUP OF THE LONE STAR CHAPTER

...TO EXPLORE, ENJOY, AND PROTECT THE NATION'S SCENIC RESOURCES...

7608 Rustling Road
Austin, Texas 78731
345-1351, 926-2800

February 8, 1972

Mr. Arthur W. Busch
Regional Administrator
Environmental Protection Agency
1600 Patterson, Suite 1100
Dallas, Texas 75201

Dear Mr. Busch:

It has just occurred to us that perhaps you have not as yet received a copy of the reply from the Council on Environmental Quality regarding the Austin Crosstown Wastewater and Treatment Facility. A copy is attached for your information.

We would appreciate early receipt of the impact statement as soon as it is available to the public for review.

Yours very truly,

Donald C. Berman
Chairman
Austin Regional Group

DCB/bc

Enclosure

EXECUTIVE OFFICE OF THE PRESIDENT
COUNCIL ON ENVIRONMENTAL QUALITY
722 JACKSON PLACE, N. W.
WASHINGTON, D. C. 20006

JAN 20 1972

Dear Mr. Berman:

The Council has reviewed your letter of January 18 concerning the possibility of shortening review periods under Section 102(2)(c) of the National Environmental Policy Act and the Council's Guidelines as they relate to the Austin Crosstown Wastewater and Treatment Facility. It is not possible for us to agree to your proposal for the following reasons:

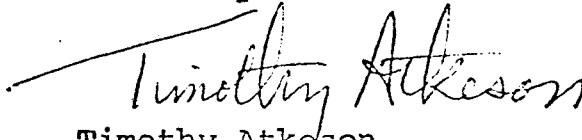
1. Section 10(d) of the Guidelines leaves to the Federal agency proposing to take the action the duty of consulting with the Council in regard to modification of review period. We have received no official correspondence on this matter from the Environmental Protection Agency.
2. Any request for such modification of review periods must closely delineate the emergency circumstances, expense to the Government, or impaired program effectiveness which make necessary the consultation. The prospect of delay alone is not a sufficient consideration in this regard because experience has shown that an environmental statement process properly integrated into the on-going project review procedures will cause no inappropriate delay. Your letter assumes that the 90-day review period under NEPA is a waiting period after all decisions to proceed have been made. The Council cannot agree with this interpretation of the Act. Section 102(2)(c) states (in part) that the statement "shall accompany the proposal through the existing agency review process."
3. The Council is very reluctant to consider shortening the review period for actions which involve the construction of a major interceptor sewer because of the unique set of beneficial and detrimental impacts which such a

project usually entails. Close examination and full public review of these impacts and the relative benefits and costs is extremely important in the case of an action with such characteristics. For example, the instant project appears to have an effect on the pattern and pace of urban development in surrounding areas; we believe that issue requires fullest airing and discussion, with the maximum expertise both within and without government brought to bear.

4. Finally, it is unclear to us what is meant by rising this review as a "pilot" for others. If it is the belief of your organization that in some classes of cases less than the 30 and 90-day review periods should be required for NEPA review, we would be interested in receiving your comments and suggestions. The Guidelines for 102(2)(c) are currently undergoing revision to bring them up to date with the current status of the Act under law. It would be helpful to us if you would let us know in the near future what general ideas for revision you might have. Meanwhile, we are assuming that the 30 and 90-day periods are appropriate as a general rule.

Thank you for writing the Council. I hope this letter is responsive to your inquiries.

Sincerely,


Timothy Atkeson
General Counsel

Mr. Donald C. Berman
Chairman, Austin Regional Group
Sierra Club
7608 Rustling Road
Austin, Texas 78731

cc: Mr. Sheldon Myers, EPA
Mr. Michael McCloskey, Sierra Club
Mr. W. Lloyd Tupling, Sierra Club

R. M. DIXON
WATER CONSULTANT
AUSTIN, TEXAS

REGISTERED ENGINEER
CIVIL - SANITARY - CHEMICAL

March 24, 1972

P. O. Box 5216

512/345-0287

Mr. Arthur W. Busch
Regional Administrator
Environmental Protection Agency, Region VI
1600 Patterson, Suite 1100
Dallas, Texas 75201

Dear Sir:

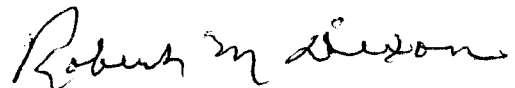
Attached to this letter of transmittal are the comments that I have prepared for your agency's consideration in connection with the consolidation of other comments and statements that are in response to your invitation in your undated communication which accompanied the DRAFT ENVIRONMENTAL STATEMENT for CONSTRUCTION OF WASTEWATER FACILITIES for AUSTIN, TEXAS, designated as WPC-TEX-824. DRAFT IMPACT STATEMENT IS NUMBERED 7104, and the cover page states that it was prepared by AIR AND WATER PROGRAMS DIVISION of Region VI, and it bears your signature as Regional Administrator, and in order to keep the record straight, I asked for an extension of the time mentioned in your Statement transmittal letter and it was duly granted and because of unforeseen circumstances which were explained by telephone to the ENVIRONMENTAL EVALUATION SECTION I was granted some additional time in addition to what was in Mr. Lee's reply to my letter request. And I want to express to you my deep appreciation and sincerest thanks for their understanding and considerations. And The Texas League of Conservation Voters join me in this expression for this analysis of the statement (IMPACT) is made jointly with their endorsement because: I am their advisor in water and wastewater matters, and hold membership in the organization.

I have enjoyed a close working relationship with the people in the Water Programs division and have found them to be dedicated and concerned and that goes quite a long way with

Mr. Arthur W. Busch, March 24, 1972, Page 2

the people who contact them in this water pollution program of attempted abatement. Its magnitude and complexities loom large to even those of us who have been in the game all of our adult lives, and I feel sure that the situation is even more baffling for the young engineer who has to perform his assignments as a part of the Environmental Protection Agency.

Yours very truly,

A handwritten signature in cursive script, reading "Robert M. Dixon".

Robert M. Dixon

RMD/d

Enclosure: Impact Statement Analysis
Statement No. 7104

MEMORANDUM OF REVIEW
OF
DRAFT ENVIRONMENTAL IMPACT STATEMENT
BY ENVIRONMENTAL PROTECTION AGENCY
For
THE CONSTRUCTION OF WASTEWATER FACILITIES BY
CITY OF AUSTIN, TEXAS
(Statement Number 7104.)

TO AND FOR: ENVIRONMENTAL PROTECTION AGENCY
Att'n: Environmental Evaluation Section

FROM: R. M. Dixon, Consulting Engineer and Advisor to
The Texas League of Conservation Voters

1. INTRODUCTION

a. Tunnel Sewer

The project or projects designated as WPC-TEX-824 by E.P. A. involves the construction (proposed) of about 58,630 feet of sewer tunnel which has been locally designated as the Crosstown Tunnel Interceptor (sewer) and it varies in size (diameter) from 60 inches to 96 inches according to certain sources of information but in a recent report by Matthews, Leeds, Hill, Bryant and Curington it is to be 78 inches at the upper end and 96 inches at the terminal point. That firm or combine prepared the preliminary design and was given a contract for the final design. I have not seen their latest proposals. The inside configuration or waterway is not circular for the entire length, but varies from circular to elliptical and to shaped cunette in selected areas, the main reason as given is to attempt to assure cleansing velocities of flow and those precautions and variations are given extra attention by stating that augmentation water will be needed to increase the flows for certain periods and lengths of time, the water to be taken into the entrance or upper end of the tunnel, generally referred to as the Bull Creek area and the lower end of the tunnel terminates at what is designated as the Walnut Creek plant site, and the tunnel derives its name from the fact that its course between the two points traverses a large section of what is generally referred to as North Austin, even though it is planned to intercept the sanitary sewers that flow from north to south and except for interceptors and

pumping stations along what is referred to as Town and Austin Lakes, the discharges would enter the lakes, which in reality are segments of the Colorado River channel but have been dammed to help control the river flow and to conserve flood waters. (Austin has three water treating plants; two are in the western portion of the city and take water from Lake Austin and the third is close to the business district and it takes its supply (raw) from Town Lake which is referred to in this IMPACT Statement 7104 as receiving sewage from broken and leaky sewers and overflowing manholes, and states that that alone is adequate justification for construction of the Crosstown Interceptor and while this condition has been widely sold and almost as widely accepted, it is not supported by any present conditions where measurements have been made and reports properly supported. And since this condition takes on so much prominence in the STATEMENT it will be dealt with in detail later in this analysis, and the treatment plant will come.

2. Engineering Reports and Other Documents Examined and Reviewed.

- (1) Cost effectiveness and Clean Water, Volume 1 and 2, by Water Quality Office Environmental Protection Agency, March, 1971.
- (2) Environmental Protection Agency (40 CFR Part 6) Environmental Impact Statements, Procedures for preparation. Fed. Reg. Vol. 37, 1-20-72.
- (3) Design and Construction of Sanitary and Storm Sewers, Manual No. 37, Jointly by the American Society of Civil Engineers and Water Pollution Control Federation, 1970.
- (4) Report on Wastewater Treatment, Walnut Creek Site, for Austin, Texas by Black and Veatch and S. A. Garza, 1971.
- (5) Capital Improvements Program, City of Austin, Texas 1971-76.
- (6) Four (4) volume report titled The Highland Lakes System, Comprehensive Wastewater Study, 1970-1990 by Freese, Nichols and Endress, 1971.
- (7) Preliminary Design Report for City of Austin: Crosstown Wastewater Interceptor by Matthews, Hill, Leeds-Bryant and Currington, May 1971.

- (8) Study of Wastewater Collection System, Phases 1 and 2 (2 volumes) By Horner and Shifrin 1969 and 1970 respectively.
- (9) Pre-Design Study for Shoal Creek Sanitary Sewer System-City of Austin, Texas by Freese, Nichols and Endress

3. WALNUT CREEK PLANT SITE (Re introduction) AND THE ENVIRONMENT

I have read and reread the January 20, 1972 guidelines (as published in the Fed. Register, vol. 37, no. 13) same having been furnished to me by the Air and Water Programs Division and it appears that the Impact Statement under consideration in this case does not comply with the provisions of those requirements. Under Subpart B-Procedures (6.21 (8) seems to call for information that is not included) and assuredly Subpart C, Content of Environmental Impact Statements there is full instructions in Sec. 6.45 which clearly indicate or require that the impact statements "shall not be justification documents for proposed Agency funding or actions. Rather they shall be objective evaluations of actions and their alternatives in light of all environmental considerations. Environmental Impact Statements shall be prepared using a systematic interdisciplinary approach. Statement shall include all relevant analytical disciplines and shall provide meaningful and factual data. The presentation should be simple and concise, yet include all facts necessary to permit independent evaluation and appraisal of the benefits and adverse environmental effects of alternate actions. Statements shall not be drafted in a style which requires extensive scientific or technical expertise to evaluate the environmental impact of an agency action.."

And the remaining portions of Sec. 6.45 seem to try and assure the public that there will be full information furnished, and exchanged and that according to par (e) there should be a full showing of who benefits and who pays. In this case (the crosstown tunnel and plant) the price keeps climbing. It was first presented by Horner and Shifrin as only from Shoal Creek to Walnut Creek with the tunnel to cost around 14 million Dollars and the plant (treatment) in the neighborhood of four or five Million.

But when the Matthews-Hill-Leeds-Bryant and Curington Preliminary design was released it carried an extension to Bull Creek (which was the unstated but suspected statement by the

general public) and the price had RISEN TO \$25,290,000 and the Black and Veatch report on the treatment plant to serve it has now risen to \$11,700,000. Austin water rates were raised in 1970 by 46% (by council action) and the report is now out that another raise is in the making and that a separate sewer charge which has been estimated at \$4.00 per month is to be added. Water and sewer service charges are all lumped together in the water rate as of the present. So that is a fair indication of who will pick up the tab for the tunnel and plant if built, and the tunnel will serve only a part of the north part of Austin as planned but its terminus will be in the hills north of the Colorado River and above Austin, and the water and sewer line costs in that area are fierce because the "ground" is solid rock and it is much too hard to cut with a ditching machine. It is almost granite in hardness. But the developers (land) are pushing it with great zeal and to make it worse for the small home owner, the City of Austin rebates to the developer 90% of his cost (not a fixed amount per foot) and in addition the developer gets 3% annual interest on his unrebated portion of his cost. But here is the payoff: Some of the view lots, and particularly those on the rim or edge of the top of the hill get around 15 to 25,000 dollars per lot without a house. Water, sewer and paving is all except for the gas company's private lines and same for the telephone company.

The Impact Statement leaves one with the feeling that the people that wrote the Report on the Wastewater Treatment, Walnut Creek Site also wrote the Impact Statement; namely Black and Veatch and I base this on the great amount of detail about plant equipment and plant operation and almost ignores the Environmental factors in their entirety. For Instance, no mention is made of the residential development which has taken place in the past two or three years and is still expanding in what might be called a stones throw from the proposed plant site for the new activated sludge plant, and this has been repeatedly called to the attention of many people. The homes are being built by Walter Carrington and NashPhillips-Copus, both two of the more prominent home builders in Austin. Nash Phillips-Copus has named their subdivision Graigwood and Carrington has named his Cavalier Park. The homes are modern brick and range up \$25,000 and both are in the direct path of any odors that will be developed at the plant, either those that are brought to the plant by the tunnel or those that are generally

associated with the operations of wastewater treatment plants or as we one time called them sewage treatment plants and those that are acquainted with plant odors know that they have a distinctive and easily identifiable characteristics, and that in semi-tropical climates such as Austin has, that these odors tend to be most troublesome in the twilight to near midnight hours when the breezes are light (5 to 10) miles per hour and that they have a tendency to remain near the ground when atmospheric conditions are not suitable for dissipating them by rising to higher levels. It may be contended that odors are nuisances and are not health hazards but Keefer, in his book "Sewage Treatment Works", page 489 deals with the deleterious effects of odors and states that in some individuals there are health-associated effects from noxious and the First Annual Report of the Council On Environmental Quality refers to lowering the quality of air as adding unpleasant smells in certain instances and if adverse conditions are to be created by man-made activities and if the spirit of the clean air act is properly carried out, it is reasonable to expect that some measure will be enacted to rectify it, even if it requires tighter land use and specialized zoning.

The City of Austin has had suggestions regarding the elimination of the practice of fragmenting its wastewater treatment and to take a longer and more realistic look at planning for land use, main sewer locations, moving the nuisance creators down stream to a point that the prevailing south-southeast winds in the summer will not capture the plant odors and under the conditions for holding the odors near the ground and feeding them into the air currents that almost without exception on warm muggy nights will seek out and follow the valleys of the water courses and they can be transported for appreciable distances. The Impact Statement does not make mention of the fact that the Planning Department of the City of Austin is now beginning on a real land use study, its first. I am told by the planning Department that it will be at least another year before the data will all be collected for a professional start on a plan and that the plan is badly needed to gain some knowledge of which way should Austin try to shape its growth for the future. The so-called land use planning that has been done and is so widely publicized was done by the Department of Agriculture and they are the first to admit that it does not furnish the information that is needed and that their land planning programs are not geared to helping to solve the more complex urban problems. But the press and electronic journalists fail to clarify that situation for the general public.

Some of us have maintained that if a tunnel is needed, and we are not convinced that it is as will be explained when the subject of Infiltration of Storm waters into Sewers is presented, that it should be located along the Colorado River so that both North and South sides of the river can gravity to the "main line". The location of the Crosstown Tunnel Sewer will serve only Bull Creek, Dry Creek, upper Shoal Creek, Upper Waller Creek, a small area in Upper Boggy Creek, Upper Tannehill Branch and upper Fort View Branch. But that still leaves the lower portions of those Creeks, their continued operation and maintenance, and does nothing for the South part of Austin, but to charge them for a project that is readily recognized as a special interest undertaking, and when it was put before the voters for approval of bonds, the ballot read "For Additions and improvements to the Sanitary Sewer System" and some of the most misleading promotion was carried out that has ever been seen. There will be exhibits and pictures enclosed to bear this out, including an article by the local press that was fictional from the word go. (A Xerox of the article is being submitted with this report and we then tried to discuss it with the Council about a week before the election, we were told to put it in writing and submit it to the City Manager. We did just that and we never even received an acknowledgment from the City Manager or any member of the Council, all of whom got duplicate copies and the statement in the Impact Statement about the Council held five public hearings on the project and the Water Quality Board held two, all of which were widely publicized and all that I have to say about the Council's public hearings is that there is not an ounce of truth in it. I did make several attempts to get a public discussion, with the City presenting the merits and benefits of the proposals and I would answer for the opponents. They would readily put me on the Council's weekly agenda but never once was I able to get them to present their case so that the public would get the benefit of what the projects mean. When I first made my request in 1970 the City Manager advised the Council to refuse it, which they did, based upon his reason that that constituted nothing but a waste of time and once they began the practice of allowing such requests that they would be doing nothing but holding public hearings on projects in the Capital Improvements Programs. And we then went to the planning commission for a similar request and failed there because the then technical director to the Commission said that if they got themselves involved in a public hearing on that Tunnel project that it could well

turn out to be one of the "most agonizing" experience that they had ever witnessed. He then refused a request that he examine the projects and bring back an opinion for them at the next regular meeting. This he also refused, pleading inability. Some of the previously received Engineering reports, with recommendations for improving the Austin Sanitary Sewer System, had been briefly reviewed and it was interesting to note that the Black and Veatch Report, of 1966 had been put on the shelf so to speak, and that because of two overflowing manholes on Shoal Creek at the location where it joined Hancock Branch and a little flurry of citizen complaints that were received at about the same time that other actions involving the sewer system began to stir; namely, some interest in the Crosstown Tunnel which had been mentioned by Black and Veatch as a possibility or maybe so. And that seemed to have been revived because of some large real estate transfers in the Bull Creek area and plans made to construct a traffic artery or loop around town which would almost parallel Bull Creek. And strange as it might seem, an employee of Black and Veatch's partner (local) in making the 1966 Long Range Report for the Sanitary Sewer System was named as in the "Local contact engineer" to represent the City in that joint venture. And it is reported that he gave birth to the idea of the tunnel and perhaps there is some support for that because that is the first report that advances the idea of investigating the tunnel, its feasibility, costs, etc. and recommended such an action for consideration. That came as something of a surprise because the Long Range Report had just been received in June of 1966 and it was quite comprehensive and apparently satisfactory. But in less than two years the Shoal Creek Report was contracted for and it was a surprising departure from the 1966 Black and Veatch-Bryant and Curington in that it pressed for an early investigation of the tunnel's feasibility, a contract that was executed with Horner and Shifrin in about two (2) months after the acceptance of the Shoal Creek Report, and when Horner and Shifrin filed their report in October of 1969 (phase one) they flatly stated that the City had instructed them to delete Shoal Creek from their study area, the contract for which had already been signed to include it, and to adopt the data and information developed in the Shoal Creek report by Freese, Nichols and Endress and the important thing involved was that the Shoal Creek Report almost exactly doubled the design criteria that the 1966 Long Range Report had stated that it had been found adequate and was reusing it for the 1966 list of improvements. (The design Criteria being the peak flows in sewers, including storm water infiltration. For

example, the City's design curve for sewer design was 3,000 gallons per acre per day for a population density of 12 and drainage area of 5,000 acres and the 1968 report raised that to 6,000 gallons for the same deal. So...when Horner and Shifrin were instructed to use the Shoal Creek figures as a guide, it became quite likely that a cost comparison between the tunnel and sewer enlargements along the banks of the lakes. And it all went back to an assumption of infiltration quantity of storm water which was totally foreign to the cause of the overflow: The manholes had been constructed for over 30 years and were designed to overflow because one 24-inch sewer could not handle the flow from 4 sewers: 24, 21, 18 and a 15, all being on exceedingly steep grades and two had been installed in a lake above the manholes, and their condition was not known because the precipitous (about 12 or 15 feet) grade just above the manholes was too steep to allow the pulling of the T-V camera for examinations.

There is enclosed a copy of the engineering contracts for your consideration. And it might be well to add that the City has no high water marks in its creeks and therefore no basis for correlation between the elevations of their manhole covers and flood levels in the creeks, and only this year has the city made arrangements with the U.S. Geological Survey to begin gathering runoff data. The City's Engineers readily agree that some changes are overdue.

Conclusions and Recommendations on 7104
Impact Draft by E. P. A.

1. It is my understanding that the Engineers that are employed by the City of Austin did actually draft or write the Draft Impact Statement for the Crosstown Tunnel Sewer and Wastewater facilities (treatment). If this be factual, it is suggested that this is a near conflict-of-interest situation and that different parties be employed to prepare a more balanced, unbiased and truly effect-on-the-Environment substitute document.
2. That the policy advanced in Volumes 1a and 2 of Cost Of Clean Water, prepared by the Environmental Protection Agency, Washington, D. C. be fully implemented to make for better coordination of future plans for Wastewater facilities and that the case against "building for 50 to 100 years into the Future with the funds that we have available today" be adopted as a solid based criteria for policy making and guidelines development. If the City of Austin is given approval for financial assistance in building the tunnel, which they openly state is good for 100 years, the pattern of development of the City is strongly influenced and may actually be fixed in perpetuity. In a reply to Governor Preston Smith in connection with the Highland Lakes 4-volume study by Freese, Nichols and Endress, the Dallas Regional Office called his attention to the desirability for an area-wide planning concept and suggested an early decision on the triple-pronged problem of Walnut Creek Sewage, Govalle Plant and the Sludge lagoons at Hornsby Bend. This not only should have an early decision but should also be the recipient of some positive action.

And it was noted in the Impact Statement that the Superintendent of the Austin Water and Wastewater Department remarked at the public hearing on the Highland Lakes System Report that he agreed that infiltration into sewers (by storm water) is a serious problem in Austin but that arresting it and obtaining a reduction of the in-flow volume as set by Freese, Nichols and Endress was a long and costly process but he agreed with this individual's question about examining the situation in depth. But if the late information that I have been able to elicit from the City Sewerage (or Wastewater) personnel is correct

or even near correct, the people of Austin have been misled and misinformed and if it was done by design and with a fixed purpose in mind by those in the policy-making positions, then it seems to pale the recent stock fraud operations into something akin to children at play, and if the Federal Government is to financially assist such an undertaking with money that must be supplied by the taxpayers, then there appears to be an opportunity, if not an invitation, to conduct some field investigations.

SUMMARY RECAP

1. There is one outstanding question that the City Manager's staff has refused to discuss or to supply answers about; namely, what prompted the deletion of Shoal Creek Basin from the area that was delineated for study by Horner and Shifrin, operating under the contract that was executed in December, 1968, with no reduction in contract price (\$78,000) but a reduction in work to be done by about 30% and in lieu thereof Horner and Shifrin states on pages 1 and 2 of their Report (first) and marked as phase I, Study of Wastewater Collection System, Austin, Texas. A letter was written to the then Mayor Travis LaRue and the question was asked as to who authorized the deletion and under what Authority as pertains to the State Law and the City Charter. He sent the memo letter to the Deputy City Manager who replied to him but furnished no relevant information to explain. A letter was then dispatched to Mayor La Rue wherein this was explained and after some delay dealing with the subject correspondence, he finally replied "That he had done his best as a layman to furnish the information but if he had failed to get the information that he felt he had gone as far as he could."

As stated herinbefore, the City has tried to maintain a strict cloak of silence and secrecy (City Manager and his staff specifically) about matters of this nature, and this is a procedure of long standing according to a former member of the Council. I was told that when the agenda is presented by the City Manager that quite often it becomes necessary to vote "blindly" for or against a proposition when it is brought up by the Manager. I was told that this is no uncommon occurrence and that I should not feel too rejected about it if the Council members were not properly informed on projects and policies prior to time to vote. But if this switch had not been made in the Horner and Shifrin contract and instructions issued by the City (see reproduced pages from the Horner Shifrin Phase I October, 1969 report. The sheets are marked Exhibit No. 1, Horner and Shifrin. If the report is analyzed only briefly and in the light of the "ordered change", it becomes evident that Horner and Shifrin was forced into a position to where they had to change their design criteria from that used in the design and construction of the present system (sanitary sewers) as shown by the reproduced curves taken from Manual No. 37, The American Society of Civil Engineers and the Water Pollution Control Federation, the curves being plainly identified as the design curves used by the City of

Austin, Texas. (The manual edition is marked 1970.) The pages are marked as Exhibit No. 2, Sanitary Sewer Design Curves for Austin. By being required to "nearly double" the housing for the sewage or wastewater flows as compared to what the Black and Veatch-Bryant Curington found to be adequate in 1966, and including peaking flows and infiltration vs the arbitrary addition of 3,000 gallons per acre per day for infiltration and then compound that by "peaking" the average flow per person per day by 3.0 and with an average population density of 12 per acre, there is produced 6,000 gallons of liquid peaking (Average of 85 gals. per capital per day X three (3) for approximately 3,000 gallons per acre per day (for 12 people for sanitary flow) and then increase that by 3,000 gallons per acre per day from storm water infiltration (See Exhibit No. III, Freese, Nichols and Endress, Shoal Creek Pre-Design Study.)

When Horner and Shifrin was faced with this situation involved in a more-than lucrative contract for making the study, the picture should begin to take form. The Horner and Shifrin study contract calls for a comparison (of sorts) between constructing the Crosstown Tunnel and examining the conditions of the pumping stations (sewage) and North Austin Interceptors parallel to the North banks of Town Lake and Lake Austin and to convey the sewage with prevention against spills into the lakes, for much had been said and written about the broken sewers that leaked and the surcharged lines and overflowing manholes. The net result of the ordered change in design criteria made it imperative for Horner and Shifrin to add as much capacity to the present system as the "new" or doubled criteria called for and when all SEWERS BELOW THE PROPOSED TUNNEL ROUTE WERE PARALLELED AND ALL SEWAGE PUMPING STATIONS HAD TO BE GIVEN EQUIVALENT ADDED CAPACITY, PLUS EXTENDING THE NORTH BANK INTERCEPTORS AND PROJECTING FLOWS TO THE YEAR 2020, there was no choice in terms of costs for the Plan A as Horner and Shifrin designated the strengthening and expanding the present system vs Plan B (Tunnel). I told the Director of the Council On Environmental Quality that an "in depth" investigation should be conducted by some competent authority that is clothed with the power to subpoena witnesses, compel attendance, subpoena records and documents and swear testimony at a hearing that is designed and dedicated to uncover this what give full appearance of an "unhealthy" situation.

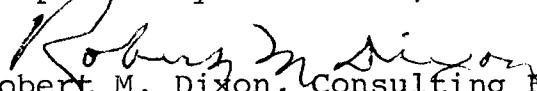
And in closing mention should be made that the City of Austin is advertising for construction bids at the present time and as I understand E.F.A.'s rules and regulations

this is not to be done. No final decision has been announced on the Walnut Creek Wastewater treatment facility and that leaves the advertising to cover the tunnel only.

And one more item: It appears that the construction of the PRESENT Walnut Creek treatment plant, which is constructed in the flood plain of Walnut Creek may be an illegal structure in as much as no record can be produced to show that the City complied with the requirements of Texas statutes by clearing the project before construction was accomplished. And while speaking of complying with the laws of the State of Texas, there is a possible problem that may develop when attempts are made to take Lake Austin water for augmenting the flows in the tunnel to prevent deposition of solids and their putrefaction and deterioration, which is usually accompanied by unpleasant odors, and while the Impact Statement recognizes the likely development of odors in the sewers and tunnel, it speaks of employing chlorination, both pre and post, to solve that difficulty. But those who have operated plants and have been plagued with odor problems are well aware that their control is difficult and often exceeds the operator's capabilities.

If the City had proceeded with the plans that it developed for handling the wastewater from the Bull Creek and Dry Creek areas, these yet to be developed areas could have been served by way of following along the North Banks of the Lakes, and thereby taken a big step toward a comprehensive plan for collection and treatment. The designing was done and about a half million dollars was spent on that route before the accent was put on the tunnel project. The developments in the Bull Creek area are quite a gamble at this time. It may go but the early years will require a lot of investments in public works improvements and if the City "Underwrites" the water and sewer with the addition of the rebate or refund contracts to the developer, the time may be quite extended before enough customers for water and sewer can provide adequate funds for the amortization of the investment. The City's power and light department is quite lucrative as a revenue producer and it is in that direction that the controlling interests seem to be moving: Keep the taxes low and get the money from the utility user, but the taxes are not noticeably lower than in other cities of comparable size and location.

Respectfully Submitted,


Robert M. Dixon, Consulting Engineer and
Water and Wastewater advisor to the Texas
League of Conservation Voters.

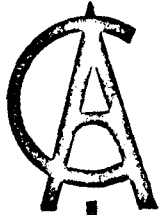
P.S. The Cost of Clean Water, Vol. II seems to have escaped the applicants herein.

R. M. DIXON
WATER CONSULTANT
AUSTIN, TEXAS

REGISTERED ENGINEER
CIVIL • SANITARY • CHEMICAL

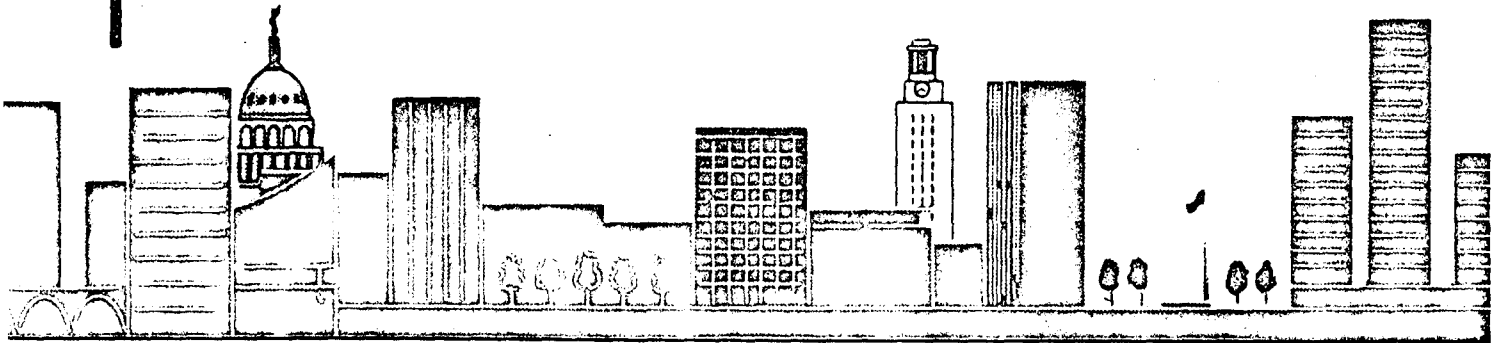
P. O. Box 5216
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CITY OF AUSTIN, TEXAS



STUDY OF WASTEWATER COLLECTION SYSTEM

PHASE - 1



HORNER & SHIFRIN, INC.

**Consulting Engineers
St. Louis, Missouri**

OCTOBER, 1969

STUDY OF WASTEWATER COLLECTION SYSTEM

AUSTIN, TEXAS

1. INTRODUCTION

PURPOSE

The purpose of this study is to determine whether the construction of a crosstown tunnel is physically and economically feasible and to compare such construction with other facilities providing equivalent service to the present and future population of the study area. The report considers population and land use projections to year 2020, which was considered to be the year of ultimate development in the study area. Current land use plans and population predictions developed by the Austin Planning Commission were utilized in the preparation of the report.

SCOPE

The study area for the report generally includes the area north and east of Town Lake and Lake Austin and includes the drainage basins of Bull Creek, Dry Creek, Taylor Slough, Johnson Creek, Shoal Creek, Waller Creek, Boggy Creek, Tannehill Branch, Fort Branch, and the area contiguous to the North Austin Interceptor sewer.

The report includes specifically:

1. A study of land use and its effect in developing waste flows.
2. Estimates of population in the study area, generally in accordance with the City Planning Commission data when available for the time period considered.
3. Development of waste flows from the various land use areas of the study area, including that portion of the waste flow due to storm water infiltration.
4. Determination of existing sewer capacities and the relief sewers required with and without the use of a deep crosstown tunnel.
5. Cost estimates of waste collection systems with and without the tunnel and a comparison of the plans on an equivalent annual cost basis.
6. Cash flow requirements of recommended collection system plan.

7. A special study of the Dry Creek and Bull Creek basins, with recommendations as to long-range plans for providing these basins with an outfall sewer for their wastewater collection systems.

2. STUDIES OF LAND USE

The present development of the City and of the areas within reasonable sewer service limits were studied to determine the type and intensity of land use. In addition, the future land use patterns, developed by the City of Austin Planning Department, were incorporated into the projections of sanitary sewer needs. The various land uses intended to be effected by the Austin Master (Development) Plan for each watershed studied are shown in Tables 1 through 7. These tables are further subdivided into the land uses anticipated for each of the subdrainage areas within the major watersheds of Taylor Slough, Johnson Creek, Waller Creek, Boggy Creek, Tannehill Branch, Fort Branch and North Austin Interceptor. The corresponding subdrainage areas are shown on each of the watershed maps (Figures 1 through 5) along with the areas of projected land use.

Since the watersheds of Dry Creek and Bull Creek lie wholly above the considered tunnel alignment and no relief sewer requirements within the basins themselves were considered, the establishment of subdrainage areas was not necessary in these basins. Bull and Dry Creeks are also expected to be predominantly residential areas and the amount of land use other than residential was considered to be insignificant.

Land use data for Shoal Creek were not shown since this information is available in the recent Shoal Creek Report prepared for the City of Austin by others. To avoid duplication, the City directed that the information and data in the Shoal Creek Report be adopted for use by the Consultant.

Figures 1 through 5 show the land uses as adopted for use in developing waste flows. For simplicity, all residential areas i.e., suburban, low density, medium density and high density, are illustrated alike; shopping centers, shopping districts, commercial and semi-industrial uses are illustrated alike; manufacturing, central business district, public and semi-public, and recreation and open areas are all illustrated individually.

3. STUDIES OF POPULATION

Past and current records of population data were analyzed in order to arrive at a population estimate for the study area. Population projections were made for the years 1985, 2000 and 2020 (ultimate).

**Exhibit No. 2, A.S.C.E. & W. P. C. F.
Manual No. 37, 1970**

**(Note attached page 20 for Austin
Sanitary Sewer Design Curves.)**

**DESIGN AND CONSTRUCTION OF
SANITARY AND STORM SEWERS**

PREPARED BY

A JOINT COMMITTEE OF

AMERICAN SOCIETY OF CIVIL ENGINEERS

AND WATER POLLUTION CONTROL FEDERATION

**Published by the AMERICAN SOCIETY OF CIVIL ENGINEERS
WATER POLLUTION CONTROL FEDERATION**

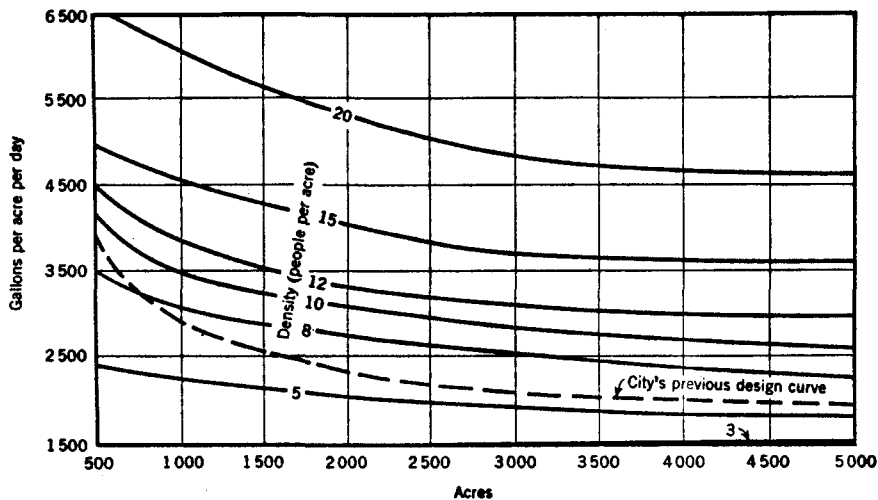


FIGURE 2.—Design flows used in Austin, Tex. ($\text{Gpd/acre} \times 0.00935 = \text{cu m/day/ha}$; $\text{acre} \times 0.405 = \text{ha}$.)

5. Flow Estimates Based on Population and Flow Trends

Figure 1 shows a typical plot of past census populations of a small city and estimates of the population made from the number of electric meters and water meters for each year subsequent to the last regular census year. The records of the average daily and per capita water consumption which may be used in lieu of measured sewage flows also are shown for the previous 15-yr period.

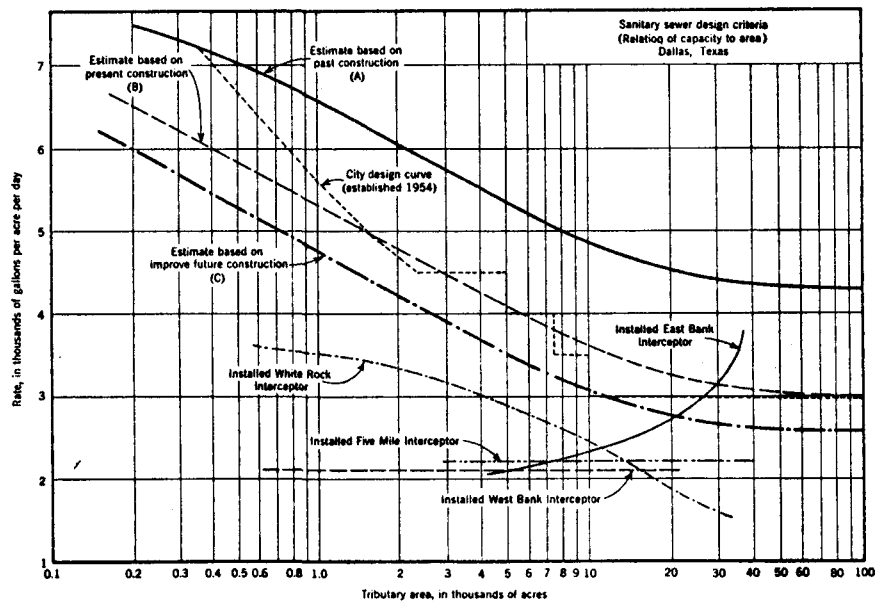


FIGURE 3.—Design flows used in Dallas, Tex. ($\text{Gpd/acre} \times 0.00935 = \text{cu m/day/ha}$; $\text{acre} \times 0.405 = \text{ha}$.)

TABLE 1.—Some Typical Design Flows

City	Year and Source of Data	Average Rate of Water Consumption (gpd/cap)	Population Served (1,000's)	Average Sewage Flow (gpd/cap)	Sewer Design Basis (gpd/cap)	Remarks
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Exhibit No. 3, Freese , Nichols and Endress

**PRE-DESIGN STUDY
FOR**

SHOAL CREEK

SANITARY SEWER SYSTEM

CITY OF AUSTIN, TEXAS

**FREESE NICHOLS AND ENDRESS
CONSULTING ENGINEERS**

OCTOBER

1968

c. As shown on Figure 6, construct a gravity line from the confluence of Main Shoal Creek with Hancock Branch to a point near West 9th, and continue the gravity line from the point near West 9th Street to West 7th Street and Rio Grande, thence to West 1st Street and San Antonio, which would carry the combined flow from Main Shoal Creek and Lower East Shoal Creek. It should be pointed out that while this method received brief consideration and an estimate of the cost was determined this proposal was abandoned for the following reasons:

- (1) The only existing line in West 1st Street at an elevation low enough to receive the flow from this proposed line is a 30-inch main which does not have sufficient capacity to carry the design flows.
- (2) A new deep line at approximately the same elevation as the existing 30-inch line would have to be constructed. Such a new line would be at an elevation too low to discharge by gravity into Canterbury lift station.
- (3) A new pump station, probably in the vicinity of the existing old River Street Pump Station, would have to be constructed.
- (4) Deep and expensive cuts would be required to install the gravity line to West 1st Street and along the route of the new outfall line.

B. DESIGN DATA

Hydraulic design of sewers has been based upon Manning's formula using a value of $n = 0.013$. The preliminary designs for the sizes of

proposed mains were based on available profiles of the existing lines and on gradients established from USGS contour maps.

Previous reports indicate that average contribution to the sewer system is 85 gallons per capita per day and that the peak dry weather flow in the system may vary from 2.5 to 3.8 times the average dry weather flow. For this report, 85 gallons per capita per day has been used with a peak factor of 3.0.

Infiltration is a factor which has considerable effect on a sewer system. The usual sources of infiltration would include service connection joints, cracked or broken pipe, open pipe joints, leaks in manholes and storm drains connected to a sanitary system. Flow measurements made from July 31st through August 6, 1968, indicate that during that period, the 30-inch Main Shoal Creek interceptor had a peak dry weather flow of 8.2 MGD at West 6th and Wood Street. The theoretical capacity of this line has been calculated to be 14.6 MGD at this location. During the same period, measurements indicate that the peak dry weather flow in the 18-inch interceptor just prior to entering the Shoal Creek Pump Station was 3.8 MGD. The theoretical capacity of the 18-inch line at this location has been calculated to be 6.2 MGD. Both of these lines have been known to flow full and at their capacity during wet weather.* The difference between full capacity and peak dry weather flow in the two lines,

*Note: Section of both of these lines have been surcharged during periods of extremely wet weather. It can be assumed, therefore, that the actual flows in such sections, particularly where the lines have flat grades, has exceeded the theoretical free flow capacities. Therefore, the assumption has been made that the lines have carried at least their theoretical design capacities at the locations given here.

at the above locations, totals 8.8 MGD. This is assumed to be from infiltration and is equal to approximately 1,100 gallons per acre per day based on distributing the 8.8 MGD over the approximately 8148* acres which contribute to the drainage basin.

An unmeasured quantity of sewage has overflowed into Shoal Creek through surcharged manholes, principally at the confluence of Hancock Branch with the Main Creek. Table 2 contains a list of recorded days when these manholes have surcharged and overflowed into the creek. These overflows have ranged from a few inches to a waterspout in excess of two feet over the top of the manhole. While this overflow cannot be measured with any degree of accuracy, it is estimated that the overflow is at least equal to the infiltration which enters the sewer. It is believed that an allowance of 3,000 gallons per acre per day would be reasonable to use in the design of the Shoal Creek interceptors.

Table 3 gives design flow data, including areas, average contribution density and calculated flows. Table 4 gives existing line sizes, capacity of existing lines based on minimum recorded grades and required pipe sizes.

There are two areas which are contributing to the sewage flow in the Shoal Creek basin which deserve special comments as follows:

1. The sewage from an area of approximately 85 acres in the Northwest Hills addition, which lies along West Rim Drive and is in the Bull Creek basin, is diverted into the Shoal Creek system by means of a small pump station located at the westerly end of West Rim Drive.

*Note: The Main Shoal Creek drainage area contains approximately 6,657 acres and the Hancock Branch of Main Shoal Creek contains approximately 1,491 acres, for a total area of approximately 8148 acres.

Table 4
PIPE SIZE REQUIREMENTS
MAIN SHOAL CREEK INTERCEPTOR

Total(1) Flow (MGD)	Existing(2) Lines (Sizes)	Min. Grade- Existing Lines	Capacity-(3) Exist. Lines (MGD)	Deficiency-(4) Exist. Lines (MGD)	Pipe Size(5) For Deficiency	Pipe Size(6) For Total Flow
Hancock Br. to West 45th	24" 8"	.375 .50	9.0 <u>.5</u> 9.5	32.4	42"	42"
West 45th to West 35th	24" 8"	.375 .50	9.0 <u>.5</u> 9.5	36.6	42"	48"
West 35th to West 29th	24" 10"	.30 .30	8.0 <u>.7</u> 8.7	38.0	48"	48"
West 29th to West 19th	30" 15"	.34 .30	15.1 <u>2.3</u> 17.4	31.7	42"	48"
West 19th to West 6th	30" 18"	.30 .39	14.5 <u>4.2</u> 18.7	32.5	42"	48"
West 6th to West 1st	30" 18"	.20 .39	11.8 <u>4.2</u> 16.0	35.2	48"	54"

Notes: (1) Total flow from Figure 9.

- (2) Short Sections of 12" and 20" pipe in 8"-18" interceptor do not control flow and are not shown.
 (3) Carrying capacities calculated on basis of minimum grades and lines flowing full but not surcharged.
 (4) Total flow less capacity of the existing facility.
 (5) This line would operate in conjunction with existing facility.
 (6) Size of pipe to carry total flow in a new facility.

Table 3

DESIGN FLOW DATA

MAIN SHOAL CREEK INTERCEPTOR

	Area (Ac.)	Average Density (Persons/Ac.)	Average Dry Weather Flow (MGD)	Peak Dry Weather Flow (MGD)	Infiltration @ 3,000 GPDA (MGD)	Total Flow (MGD)
Main Shoal Creek	5078	12.3	5.3	15.9	15.3	31.2
Hancock Branch	1491	14.3	1.8	5.4	4.5	9.9
Sub-Total	6569		7.1	21.3	19.8	41.1
Hancock Br. to West 45th	142	10.5	0.13	0.4	0.4	0.8
Sub-Total	6711		7.23	21.7	20.2	41.9
West 45th to West 35th	675	12.2	0.7	2.2	2.0	4.2
Sub-Total	7386		7.93	23.9	22.2	46.1
West 35th to West 29th	87	12.2	0.1	0.3	0.3	0.6
Sub-Total	7473		8.03	24.2	22.5	46.7
West 29th to West 19th	387	11.0	0.4	1.2	1.2	2.4
Sub-Total	7860		8.43	25.4	23.7	49.1
West 19th to West 1st	288	14.8	0.4	1.2	1.0	2.1
Sub-Total	8148		8.83	26.6	24.7	51.2

TABLE 2

RECORD OF OVERFLOW*

MAIN SHOAL CREEK AT HANCOCK BRANCH

<u>Year</u>	<u>Date</u>
1965	January 23 through 25
	February 9 through 13
	February 17 through 21
	May 21 through 23
	October 13
	November 8
	November 11
	December 3 through 5
1966	January 10
	April 25 through 26
	August 12 through 15
1967	September 6
	October 16 through 17
	November 10 through 12
	December 15 through 19
1968	January 9 through 13
	March 11 through 13
	May 11
	May 13 and 14
	May 17 through 19
	May 28

*Note: From City Wastewater Department Records

**SANITARY SEWER SYSTEM
City of Austin, Texas**

**Copies of Engineering Contracts that the City of Austin
entered into with Consulting Engineering firms since
1966**

**(Note: Copies of the contracts covering work that
is under way on the Crosstown Tunnel and the
Wastewater Treatment Plant are not
included.)**

*{ Horn and Lipman
Freese Nichols and Lindsey
Black and White Bryant Livingston*

THE STATE OF TEXAS

X

KNOW ALL MEN BY THESE PRESENTS:

COUNTY OF TRAVIS

X

That upon the mutual agreements, conditions and terms hereinafter contained, the City of Austin, hereinafter called "City," hereby engages the professional services of Horner & Shiffrin, Inc., Consulting Engineers, St. Louis, Missouri, hereinafter called the "Engineer," for the preparation of engineering studies relating to the feasibility of constructing a cross-town interceptor sewer tunnel to relieve the trunk sewers on the north bank of Lake Austin and Town Lake, as well as to reduce the load on the City of Austin's Waste Water Plant No. 1 (Coville Plant), and said parties do hereby mutually covenant as follows:

A. SCOPE OF SERVICES TO BE PROVIDED BY THE ENGINEER

PHASE I

The Phase I studies would compare the construction of a cross-town tunnel with other comparable facilities to serve present and future population of the study area in order to determine whether or not the construction of said tunnel is physically and economically feasible.

PHASE II

The Phase II studies would be undertaken only after authorization by the City Council of the City of Austin. If the Phase I studies indicated that the tunnel construction were feasible, the Phase II studies would investigate the tunnel in greater detail, including the determination of the geological profile along the various proposed routes by test borings and the preparation of cost estimates for financing purposes.

PHASE I

STUDIES OF LAND USE

The present development of the City and of the areas within reasonable sewer service limits will be studied to determine the type and intensity of land development. Such studies will allow reasonable accurate projections of sanitary sewer needs. Residential, commercial, and industrial land use will be given consideration. The effects of potential urban renewal will be reviewed. Probable limits and intensity of development for logical divisions of the study area will be projected to the year 2000 and to saturation conditions. City and civic leaders, including representatives of the City Planning Department and the Housing Authority, will be contacted as to probable future developments, and any available reports and ordinances pertinent to the problems will be studied.

STUDIES OF POPULATION

Past and current records and previous studies of population will be reviewed in order to provide a basis for estimates of future population within the study limits. Each major segment of the study area will be analyzed individually in accordance with the data developed in the land use study. Data from the Water Department and electric and telephone companies will be scrutinized to determine growth patterns. Census data for the City and the surrounding area will be analyzed. The effects of the transient population upon sewers will be determined.

WATER USAGE

Water use data from the Water Department for winter periods of the year will be obtained and analyzed to determine the patterns of water usage. Such an analysis is of primary importance since there is a direct relationship between water consumption and the amount of sewage contributed to the sewer system. Domestic, commercial, industrial, and institutional accounts will be scrutinized. Trends in water usage will be developed in order to serve as a basis for estimating future water usage. The effects of the transient population also will be studied. The service limits of the water system will be scrutinized as to their effects upon sewer extensions and modifications.

GROUND WATER INFILTRATION

A substantial component of the sewage handled in most older public sewer systems is ground water that infiltrates into the system. Estimates of the amount of such infiltration will be made, based upon actual recorded flow measurements in certain of the City's sewers previously made by others. If the estimated or observed amounts of infiltration appear to be excessive, the Engineer will recommend corrective measures, if feasible solutions become apparent in the course of the study.

DETERMINATION OF RECOMMENDED SEWER SERVICE LIMITS

The limits of the study area will be defined in conjunction with the Director of the Water and Sewer Department. Watershed limits will be determined to approximate the study area. The study area will generally encompass the area north of Town Lake and Lake Austin, extending from the Bull Creek drainage area on the west to and including the Fort Branch drainage area on the east.

RECOMMENDED SEWER PROGRAM

In order to determine the feasibility of constructing a cross-town tunnel interceptor sewer, two basic plans will be studied and estimates of the cost of construction as well as annual costs will be prepared. These plans are as follows:

1. A plan involving a tunnel traversing across the City aligned generally from the mouth of Bull Creek at Lake Austin to the site of the existing Walnut Creek Waste Water Treatment Plant.
2. A plan which would provide additional sewer capacity parallel to Lake Austin and Town Lake to convey the wastes to the treatment plant sites.

Both of these plans will be examined on the basis of providing capacity for the maximum flows projected for the design period. In the case of the tunnel plan, various alternate alignments will be considered in order to achieve the most efficient use of the existing sewers and pumping stations downstream of the points of interception. Estimates will be based on rock information available from the City and the Bureau of Economic Geology at the University of Texas. It is not anticipated that it will be necessary to make any test borings in this phase of the work. Critical reaches of each existing trunk sewer system will be examined to determine its capacity as well as the maximum flow anticipated at the end of the design period. Based upon this data, it will be determined where the trunk sewers should be intercepted in order that the flow may be conveyed to the tunnel and whether or not any relief sewers will need to be constructed.

The alignment and the hydraulics of the tunnel system will be investigated. The tunnel and other required facilities will be sized in sufficient detail to enable estimates of cost to be made.

In the second plan, studies will be made to determine the necessary sewers, including relief sewers, and pumping stations including expansion of existing works, in order to complete sewerage facilities which will provide the same degree of service as accomplished by the tunnel interceptor plan.

In investigating these plans, the Engineer will review previous studies which have been made for the City. Those portions of previous plans of improvement which are adequate to provide service for the design period will be incorporated. The capacity of the existing pumping stations will be assumed to be as stated in the reports resulting from previous studies.

Capital cost estimates will be presented in detail. Since it is anticipated that the components of whichever plan is found feasible will be constructed over a reasonable period of time, the costs will be escalated in accordance with a suggested construction schedule to determine the total capital cost to the City. Such escalation has been found to be necessary within recent years due to the steady increase in construction costs.

Estimates of the cost of operation and maintenance also will be prepared. These estimates will include labor, utilities and other items normally required for works of the type anticipated. Labor costs will be developed on the basis of the City's experience with its existing facilities. The cost will be developed on a yearly basis and escalated to a point that might be experienced in the median year of the design period. The plans will be compared on the basis of the equivalent annual cost, which comparison will take into account the life of the various portions of each plan. Based upon this study, a recommendation will be made as to the improvements to be constructed.

The Engineer will furnish the City fifty (50) copies of a comprehensive report embracing the results of all studies, including construction and annual costs of all of the alternate plans investigated. Recommendations as to the improvements to be constructed shall be contained in the report.

PHASE II

The Phase II preliminary design studies will not be undertaken by the Consultant until authorized by the City Council following the approval of Phase I. These studies will make a final determination of the route of the proposed tunnel. In order to do this, borings will be taken along the proposed routes. Such borings are not included in the services to be provided by the Engineer, however the specifications for and the determination of the location of such tests are to be included in these services. Based on the borings and the hydraulic studies made in Phase I, the final route, size, elevations and gradients of the proposed tunnel will be determined. Consideration will be given to the daily variations in flow which occur, as well as to the variation in the flow quantities which will take place over the design period in determining the tunnel size and the section to be utilized. Preliminary designs of tunnel sections for the various conditions to be encountered, that is rock sections, earth sections, and mixed-face sections, will be made. Preliminary designs also will be made for typical drop shafts, construction shafts, and other appurtenances. Preliminary designs will be carried out to the detail necessary to enable the Engineer to prepare an estimate in sufficient detail to enable the City to determine the final financing requirements for the project. Considerations also will be given to staged construction of the tunnel in order that the system will be compatible with the development of the area.

The Engineer will furnish the City fifty (50) copies of a report of the findings, estimates of construction cost, etc., developed in this phase of the studies.

B. INFORMATION TO BE FURNISHED BY THE CITY

1. The City will furnish the Engineer copies of all previous reports and planning studies; maps and plans and profiles of existing sewerage facilities,

plans of existing pumping stations, and performance curves for the installed pumps; flow measurement data that may be useful in the course of these studies.

2. The City will furnish aerial photographs of the study area.

3. Sub-surface data required by the Engineer which are available from the Bureau of Economic Geology of the University of Texas will be furnished by the City at no cost to the Engineer.

4. Test borings to determine the location and classification of sub-surface materials will be furnished by the City at no cost to the Engineer.

C. FEE TO BE PAID ENGINEER

1. For the Phase I services, as outlined in Section A, the City agrees to pay the Engineer a fee of Seventy-Eight Thousand Dollars (\$78,000), payable in five (5) bi-monthly installments, of Eleven Thousand Five Hundred Dollars (\$11,500) each, upon documentation by the Engineer of satisfactory progress, and a final installment of Twenty Thousand Five Hundred Dollars (\$20,500) upon completion of the studies and acceptance by the City of the report.

2. For the Phase II services, as outlined in Section B, the City agrees to pay the Engineer a lump sum fee of Twenty-Seven Thousand Dollars (\$27,000) upon completion of the studies and acceptance by the City of the report.

D. TIME OF COMPLETION

The work for Phase I will be commenced within two weeks after the authorization of this Contract and the completed Phase I report shall be submitted to the City within three hundred sixty-five (365) calendar days of said authorization.

The Phase II studies will be commenced upon receipt of authorization by the City Council. The completed Phase II report shall be delivered to the City no later than one hundred twenty (120) calendar days after receipt of authorization to proceed.

E. TERMINATION CLAUSE

The Owner shall be entitled to terminate this contract by paying the Engineer for work performed to the date of delivery to the Engineer of written notice of such termination. The Owner shall reimburse the Engineer for his direct salary cost multiplied by a factor of 2.5 for time engaged on the work plus non-salary expense at invoice cost multiplied by a factor of 1.15.

IN TESTIMONY WHEREOF, the parties hereto have executed these presents as of the 17 day of December, 1968.

RM CITY OF AUSTIN, TEXAS

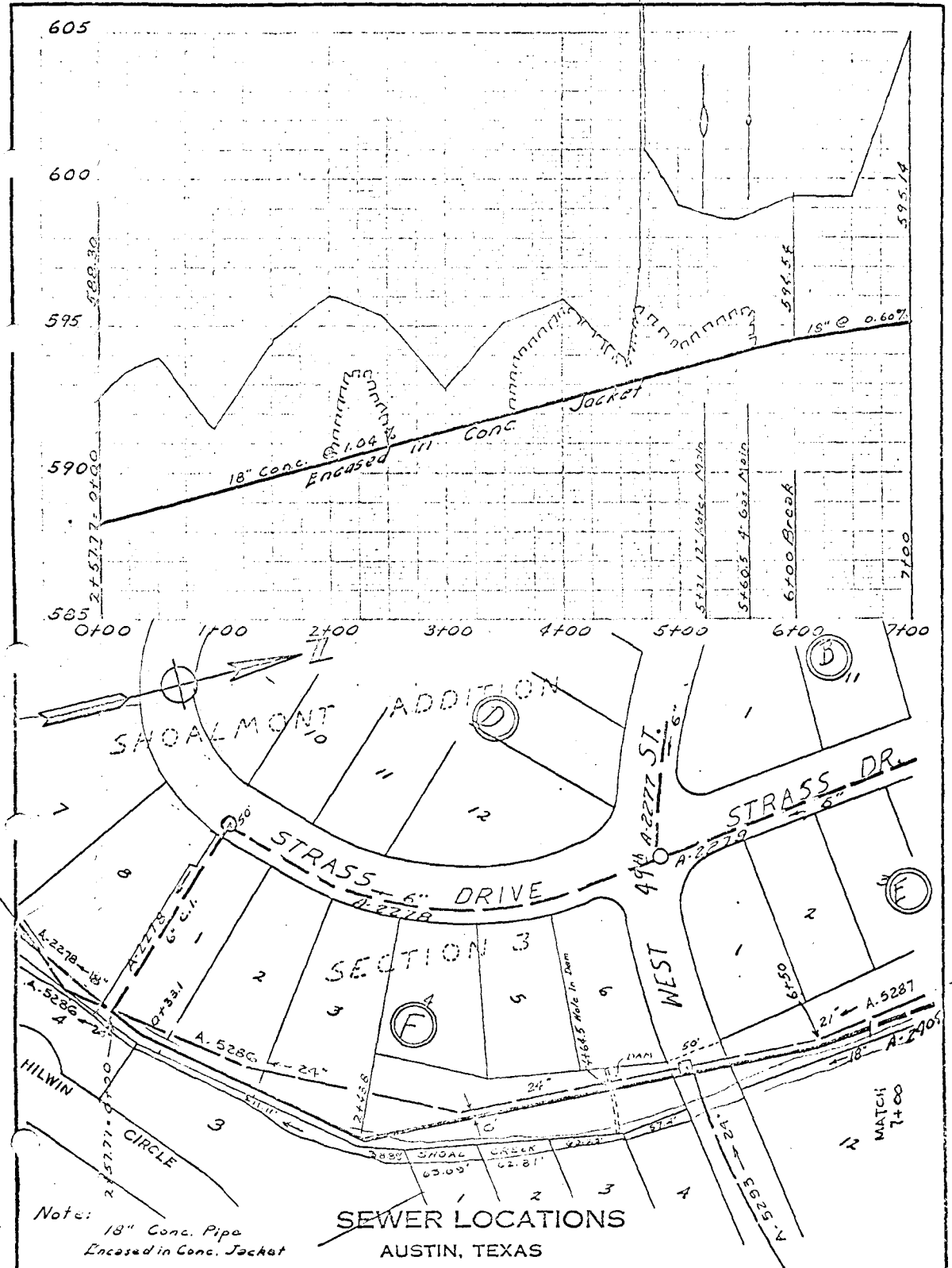
By Robert M. Tinstman
Robert M. Tinstman
City Manager

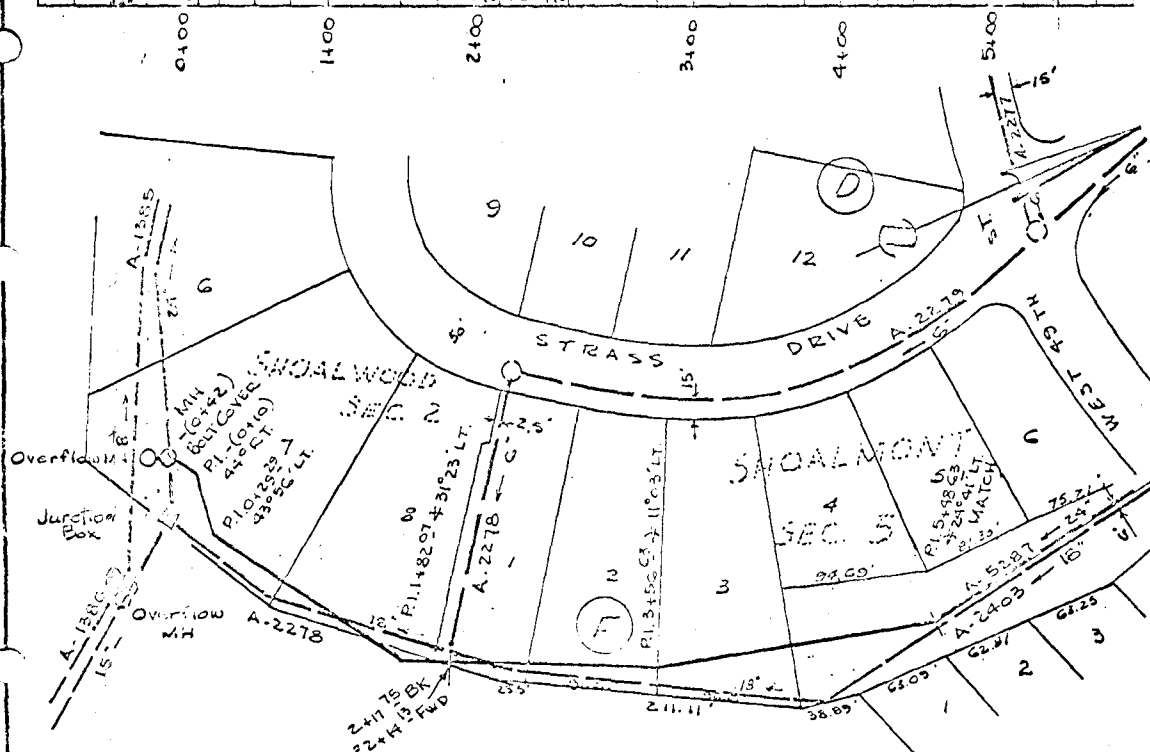
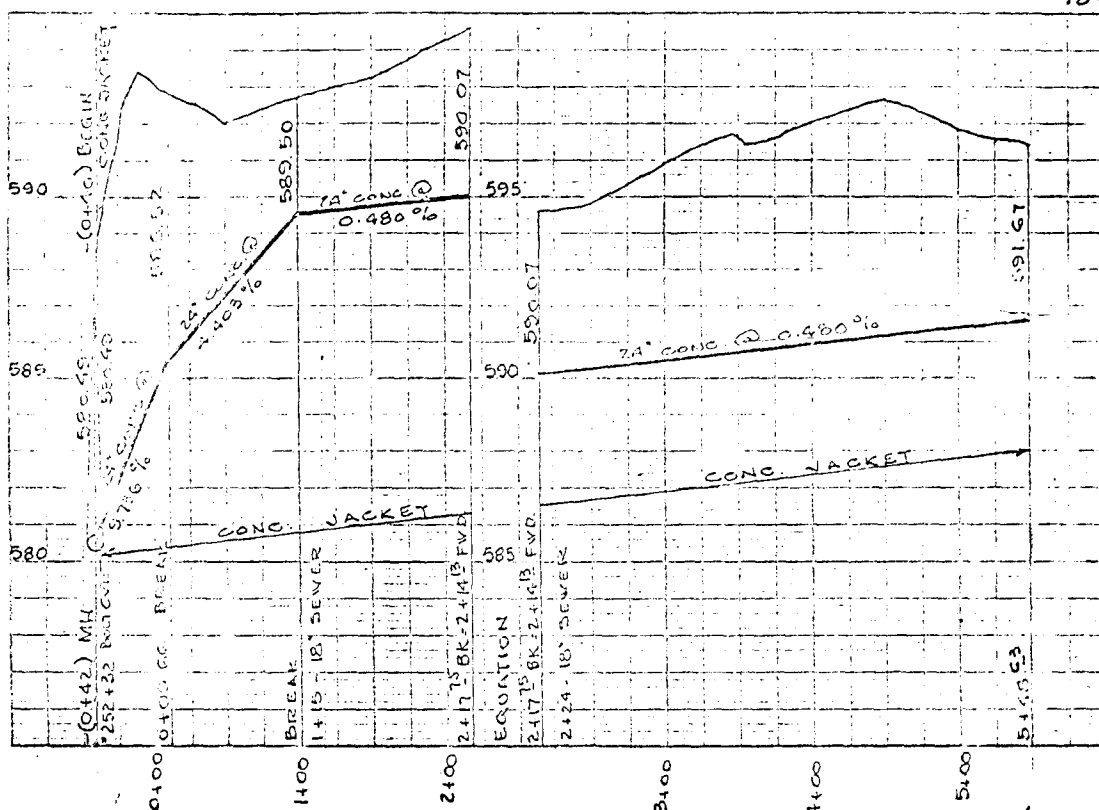
HORNER & SHIFRIN, INC.
Consulting Engineers

By E. E. Bloss
E. E. Bloss
President

ATTEST:

Elaine M. ...
City Clerk

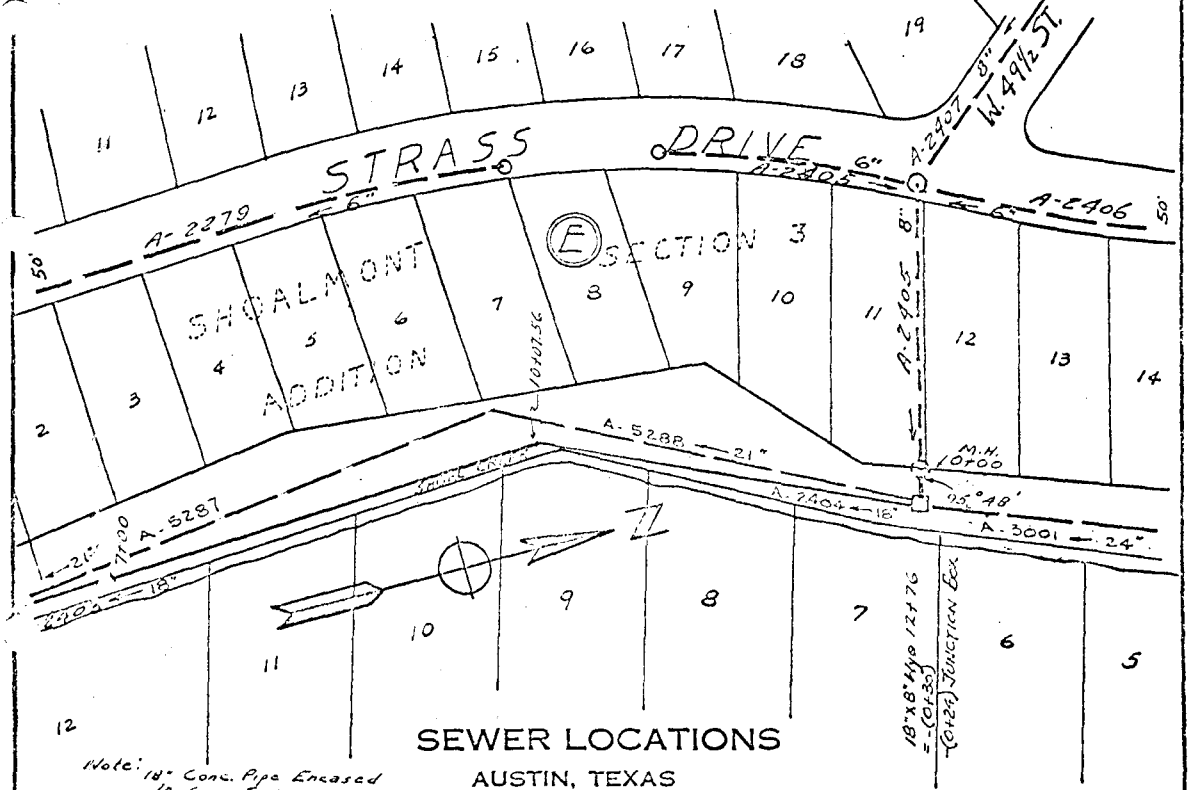
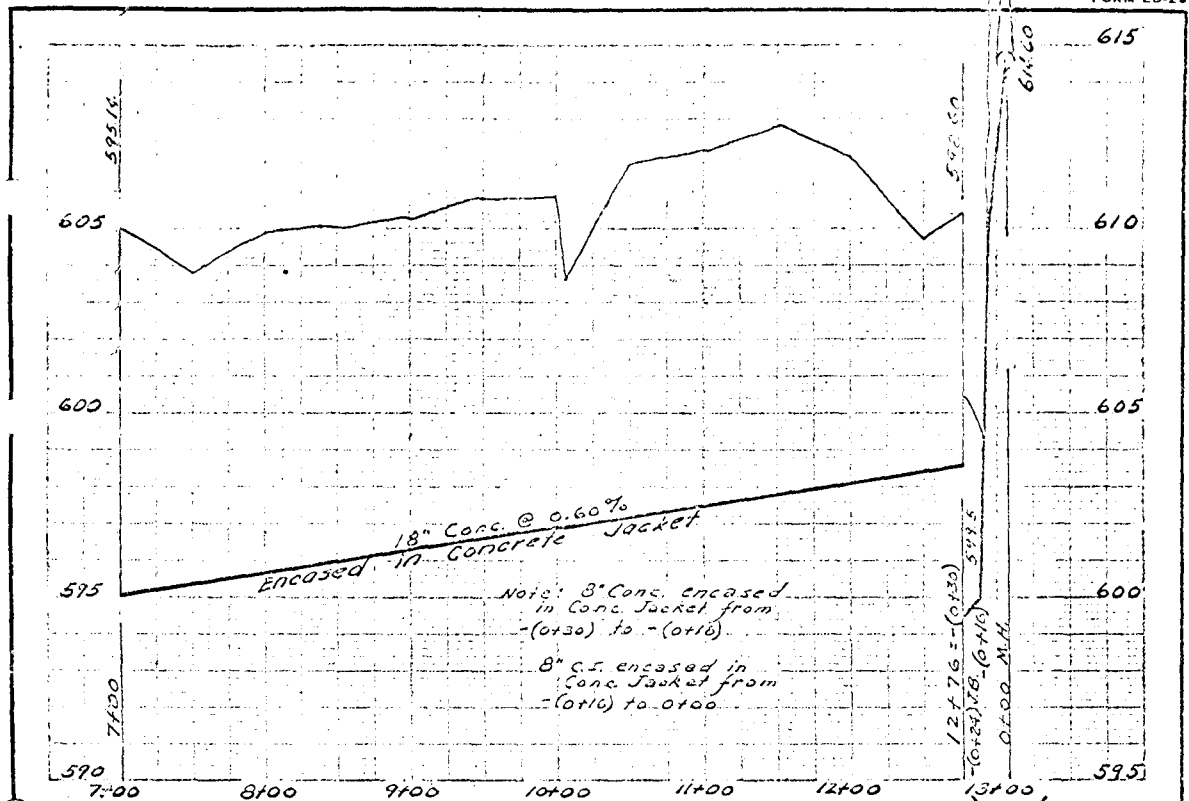




SEWER LOCATIONS

AUSTIN, TEXAS

BUILT BY KARL WAGNER DATE MAR 1961 SANI. SEWER: JOB NO. 0200645-5321
FIELD BOOK 2513 p.45 DATE 2-24-60 LOCATION SHOAL CREEK
DRAWN BY S. RIDLEY DATE 3-7-61 FROM GREAT OAKS PKWY. E-SEMENT
REVISED BY _____ DATE _____ TO 120' S. OF W. 49TH ST
CHECKED BY _____ DATE _____ BOOK NO. A SHEET NO. 5286



SEWER LOCATIONS AUSTIN, TEXAS

BUILT BY JOE BLAND DATE 9-9-50 SANI. SEWER: JOB NO. W.O. 1241
 FIELD BOOK 1641 P. 47 DATE 8-13-50 LOCATION SHOAL CREEK
 DRAWN BY D.A. SELKE DATE 10-20-50 FROM HINCOCK BRANCHEASEMENT
 REVISED BY _____ DATE _____ TO WEST 49 1/2 ST. EASEMENT
 CHECKED BY A.W. MOBLEY DATE 12-26-50 BOOK NO. A SHEET NO. 2404

THE STATE OF TEXAS I
 I
COUNTY OF TRAVIS I

THIS AGREEMENT made and entered into this the 13th day of May, 1965, by and between the City of Austin, a municipal corporation organized and existing under the laws of the State of Texas and situated in Travis County, Texas, hereinafter called the OWNER, acting herein by and through W. T. Williams, Jr., its City Manager, hereunto duly authorized, and Bryant-Curington Inc., of Austin, a corporation, and Black & Veatch of Kansas City, Missouri, hereinafter called the ENGINEER:

SECTION I

LONG-RANGE DEVELOPMENT PROGRAM FOR WATER SYSTEM

A. Scope of Project and Work to be Done by the Engineer

1. The gross area to be included in the studies of the water system requirements will include the Bull Creek Drainage Area to the west, the Big Walnut Creek area and Decker Creek Area to the north and east, and the south ridge of Onion Creek Drainage Area to the south. In general, the area covered is essentially as shown on attached 15-minute Quadrangle (Topographic) map marked Exhibit "A".

2. Population predictions, population distribution and related water use studies, and area utilization trends will be made for a total ultimate population of the above mentioned gross area.

3. The studies will include the usual and necessary statistics such as:

Population trends
Demand for Water
Equalizing Storage
Fire Demand
Reserve Storage
Firm Capacity

4. The studies will include recommended locations, capacities, and preliminary estimates of cost of future water treatment facilities, with studies of relative economic feasibility of alternate sites (if any) regarding size and length of trunk mains, pumping heads, operating cost of pumping and personnel, etc.

5. The studies will include hydraulic studies of the distribution system as needed for recommendation for future long-range water distribution system

improvements, to consist of size and locations of trunk mains, storage reservoirs and booster pump stations, with preliminary estimates of costs.

6. The studies will include a priority construction program for the recommended improvements.

7. The ENGINEER will furnish the OWNER 50 copies of a comprehensive report embracing the results of all the studies, analyses, designs, etc.,; and the recommendations, long-range improvement programs and estimates as set forth above, together with the tracings of the maps prepared for the Report.

B. Information to be Furnished by OWNER

1. The OWNER will furnish a copy of the area under study to scale of 1" = 800', showing location of existing mains 12" and larger, location of water treatment plants, intakes, pump plants, booster pump stations, size and location of reservoirs and elevated tanks.

2. The OWNER will furnish the ENGINEER a copy of all reports, statistics, pump characteristics curves, population charts and studies, population distribution and densities, and all other existing data and information including City Plan studies and information, that may be desired and helpful in making the required studies and recommendations.

SECTION II

LONG-RANGE DEVELOPMENT PROGRAM FOR SEWERAGE SYSTEM

A. Scope of Project and Work to be Done by Engineer

1. The gross area to be included in the studies of the sewerage system requirements will include the Bull Creek Drainage Area to the west, the Big Walnut Creek Area and Decker Creek Area to the north and east, and the south ridge of Onion Creek Drainage Area to the south. In general, the area covered is essentially as shown on attached 15-minute Quadrangle (Topographic) map marked Exhibit "A".

2. The studies will include several sewage flow measurements to be made for 7 consecutive days at strategic locations to be determined at a later date as the study progresses.

3. The studies will include population trends, intensities and predictions for each drainage area under consideration.

4. The studies will include recommended locations, capacities, and preliminary estimates of cost of future sewage treatment facilities with studies

of relative economic feasibility of alternate sites (if any) regarding size and length of outfall mains, pumping heads, operating cost of pumping, personnel, etc.

5. The studies will include preliminary design of entire sewer main and submain for each area to be studied.

and will include preliminary design of sewer main and submain for sewerage system improvements, with preliminary estimation of costs.

6. The studies will include a priority construction program for the recommended improvements.

7. The ENGINEER will furnish the OWNER 50 copies of a comprehensive report embracing the results of all the studies, designs, etc., and the recommendations, long-range improvement programs and estimates, as set forth above, together with tracings of the maps prepared for the Report.

B. Information to be Furnished by OWNER

1. The OWNER will furnish a contour map of the area under study to scale of 1" = 800', showing location of existing collector mains, and also of laterals in the vicinity of the areas to be studied and at such other places as may be desired in determining suitable locations for sewage measurements. Such maps will include invert elevations of several points to be determined by the ENGINEER during the preparation of the Report.

2. The OWNER will furnish the ENGINEER with a copy of all reports, statistics, pump station data, population charts and studies, densities and distribution, and other existing data, including City Plan studies and data, that may be desired and helpful in making the required studies and recommendations. The OWNER shall, at its own expense, make rock borings at locations mutually agreed upon in order to determine reasonable cost estimates of the sewer mains.

SECTION III

FEE TO BE PAID ENGINEERS

1. The OWNER agrees to pay the ENGINEER for the performance of the services prescribed in Section I and II the sum of \$35,000.00 at the time of completion and delivery of both of the reports.

2. It is understood and agreed that the work to be done will be accomplished through a combination of the experience, personnel and resources of the ENGINEERS, but that one of the principals shall be designated as

"coordinator" to act as liaison with the City. The principals will notify the City in writing, at or before the work is commenced, of the name of principal designated as coordinator. All financial transactions between the City and Engineers shall be handled through the coordinator; it being understood and agreed that the City is to obtain the collective engineering services contemplated by this Contract and that the division of moneys paid hereunder between the Engineers shall not be an obligation of the City.

3. The "Principals" are to be H. W. Curington, E. E. Bolls, Frank G. Bryant and Paul D. Haney. The "Project Engineers" are to be E. G. Ferguson and J. A. Franzetti.

SECTION IV

WORK SEQUENCE AND ESTIMATED COMPLETION TIME

The actual sequence of preparation of the reports will be made in accordance with the desires of the City in conference prior to the start of the work.

It is estimated that the report on a long-range development program for the City's water system should be available for the City's use in six (6) months from date of instructions to proceed on this phase of the project, and that 50 printed copies of the report should be delivered in seven (7) months from said date.

It is estimated that the report on a long-range development program for the City's sewerage system should be available for City's use in eight (8) months from date of instructions to proceed on this phase of the project, and that the 50 printed copies of the report should be delivered in nine (9) months from said date.

IN TESTIMONY WHEREOF the parties hereto have executed these presents as of the 13th day of May, 1965.

ATTEST:

Edna Hester
City Clerk

W.T.
CITY OF AUSTIN, TEXAS

By W. T. Williams, Jr.
City Manager

BRYANT-CURINGTON INC. and
BLACK & VEATCH
By H. W. Curington
Executive Vice-President

By E. E. Bolls, Jr.
Partner and Principal Engineer

STATE OF TEXAS I

COUNTY OF TRAVIS I

THIS AGREEMENT made and entered into this the 11th day of June, 1968 by and between the City of Austin, a municipal corporation organized and existing under the laws of the State of Texas and situated in Travis County, Texas, hereinafter called the Owner, acting herein by and through its City Manager, hereunto duly authorized, and FREESE, NICHOLS AND ENDRESS, Consulting Engineers, of Austin, Texas and Fort Worth, Texas, a partnership, hereinafter called the Engineer.

W I T N E S S E T H:

For and in consideration of the mutual covenants and agreements herein contained, the parties hereto agree as follows:

SECTION I.

The Owner hereby employs the Engineer and the Engineer hereby agrees to perform all necessary professional services hereinafter set forth in connection with the following utility project of the City of Austin, Travis County, Texas, such project being in two parts, located and described as follows:

1. Shoal Creek Sanitary Sewer Line and Pertinent Facilities, beginning at the existing Shoal Creek Sanitary Sewage Pumping Station located at West First Street and extending upstream along Shoal Creek to the confluence of Shoal Creek and Hancock Branch, same being in the general vicinity of 49th Street and Crestmont Drive. This project shall include a review of past studies of the size of line required and a review of the adequacy of the existing Shoal Creek Pumping Station.
2. Lower East Section of the Shoal Creek Sanitary Sewer Collection System and Pertinent Facilities, beginning in the vicinity of West 5th Street at West Avenue and extending in a northerly direction to the general vicinity of 23rd Street at Nueces Street. An engineering report shall be prepared which shall include a review of past studies and make recommendations as to size, location and estimated cost of the proposed facility.

SECTION 1.

(a) The Engineer agrees that all services shall be rendered by engineering personnel qualified for the particular work or phase of engineering, and all such services so rendered shall be under the direction of a professional engineer licensed in the State of Texas to practice the particular phase of engineering. Each professional engineer assigned to direct any particular phase of the engineering service shall affix his seal to work performed under his direction.

(b) The Engineer agrees to submit the required plans to the Texas State Health Department for approval and shall, if necessary, make such changes as may be required to secure their approval.

(c) The Engineer agrees to commence the services to be performed under this contract within days after the date of this contract and to complete the services within approximately months.

(d) The Engineer shall make the necessary field surveys and investigations required for the preparation of working drawings. He also shall supervise the necessary borings, test pits and ground explorations and tests, but the cost of such work shall be paid for directly by the Owner and not by the Engineer. In the event it is necessary to make exploratory excavation to locate or determine the depth of any critical utility, same shall be paid for by the Owner.

(e) The Engineer agrees to attend all necessary conferences, and after approval by the Owner of the preliminary plans, the Engineer shall prepare working drawings and specifications of the utility work project hereinabove described; deliver to the Owner paper tracings drawn in pencil of all the working drawings prepared by the Engineer; prepare all necessary forms for proposals, contracts and performance bonds; and furnish the Owner with five (5) complete sets of plans and twenty-five (25) sets of specifications, proposals and contract documents.

(f) The Engineer agrees: when the plans and specifications are submitted for bids to interest experienced contractors specializing in the work to submit proposals thereon, and, when bids are finally received, to attend the letting, assist in the tabulation of bids and make an analysis thereof, and file a written report on the merits of various bids and qualifications of the bidders, including therein recommendations relative to the acceptance of the best bids.

(g) The Engineer agrees to review and make written recommendation concerning any proposed change order which might be considered during the construction phase of this project. The Owner shall make a written request for this service; setting forth the details of the proposed change order.

SECTION III.

The Owner also agrees to make available to the Engineer all existing records, plans, maps, reports, and all other data now possessed by the Owner, where such data are necessary, advisable or helpful to the Engineer in the prosecution of the work under this contract.

The Engineer shall be provided with "permits of access" to properties that are involved by this project.

SECTION IV.

The Owner agrees to pay the Engineer for the performance of the services prescribed in Section II above the sum of five and one-half (5.5%) per cent of the contract price for the construction of the proposed work as follows:

(a) Ninety (90%) per cent of the five and one-half (5.5%) per cent of the agreed estimated construction cost of the work upon completion and delivery to the Owner of the tracings, five (5) sets of plans and twenty-five (25) sets of specifications and contract documents, less all previous payments.

(b) Five and one-half (5.5%) per cent of the contract price for the proposed work upon the award of contract, less all previous payments.

(c) In the event the Owner chooses to defer construction of a portion of the project, final payment under paragraph (b) shall be based on an agreed upon estimate of the construction cost of the entire project.

SECTION V.

(a) Should the Owner require revision of plans or specifications after same have been approved by the Owner; or

(b) During construction, should the Owner request consultation and advice from the Engineer regarding the work, regarding clarification and interpretation of the plans and specifications, or for other matters such as studies upon which to base recommendations relative to the need of change orders; or

(c) Should the Owner desire the Engineer to check shop and working drawings and revise the contract drawings where necessary to conform with the requirements of the contract - then the Owner will reimburse the Engineer for his direct salary cost multiplied by a factor of 2.5 for time engaged on the work as noted hereinabove in this Section V plus non-salary expenses at invoice cost multiplied by a factor of 1.15. Such payments will be in addition to the payments set out in Section IV.

(d) Should the Owner desire or require the Engineer to revise the contract drawings, with the assistance of the Resident Inspector, to show the work as actually constructed, then the Owner will reimburse the Engineer for his direct salary cost multiplied by a factor of 2.5 for time engaged on making the revisions plus non-salary expenses at invoice cost multiplied by a factor of 1.15. Such payments will be in addition to payments set out in Section IV.

(e) Should the Owner desire engineering during the "construction phase" (not including resident inspection) as described in the Manual of Professional Practice for General Engineering Services as published by the Texas Society of Professional Engineers 1967, same shall be furnished by the Engineer at a fee of ninety-five one hundredths (0.95%) of one per cent of the actual construction costs.

(f) Should the Owner desire the Engineer to furnish a Field Representative for full time resident inspection during construction, same shall be furnished by the Engineer at actual salary cost multiplied by a factor of 2.0

SECTION VI.

(a) In the event the Owner determines to abandon the project or delay it for an indefinite period, the Owner shall be entitled to terminate this contract by paying the Engineer for work performed to the date of delivery to the Engineer of written notice of such termination. The Owner shall reimburse the Engineer for his direct salary cost multiplied by a factor of 2.5 for time engaged on the work plus non-salary expense at invoice cost multiplied by a factor of 1.15.

(b) Should the engineering firm, herein called the Engineer, be disrupted before the completion of this contract through the death, incapacity or loss of principal engineering personnel, or for any reason so as to seriously impair the quality of the engineering services or seriously delay completion of the engineering services to be performed under this contract, then the Owner shall be entitled to terminate this contract by paying the Engineer for services rendered to such termination date, and the decision of the City Council of the City of Austin, Texas as to whether the quality of the engineering services are impaired or whether the engineering services will be delayed shall be conclusive and binding upon the parties to this contract.

SECTION VII.

The parties hereto bind themselves, executors, administrators, and assigns in respect to all covenants of this agreement. It is expressly understood that neither the Owner nor the Engineer shall assign, sublet,

or transfer his interest or obligation in this agreement without the written consent of the other party.

Witness our hands at Austin, Travis County, Texas, this the 11th day of June, 1968.

CITY OF AUSTIN, TEXAS

BY: *Robert M. Tinstman*

Robert M. Tinstman

ATTEST:

E. K. Treacy
City Clerk

FREESE, NICHOLS AND ENDRESS

Marion H. Freese



was a Shore Creek at Hancock
Branch before summer of 1971

(See Trease, Nichols and Endrey
Shore Creek Report for description -
Picture was made by Austin
American in Jan, 1968

(This is the Xerox of an article and the
photo is unclear. That is the reason
for obtaining a copy of it from the
Austin American which used it on
March 18, 1970

The Austin American

Read by the Decision-Makers of Texas

59-No. 216

52 Pages

Austin, Texas, Wednesday, March 18, 1970



Staff Photo

SEWER MAIN ERUPTS, POURING RAW SEWAGE INTO SHOAL CREEK
\$27 million will help prevent breaks from pressure as this one did in 1968.

Austin Has Sewer Ills That Takes Cash To Fix

By ALAN BAILEY
Staff Writer

(Editor's Note: This is the fourth of a 12 part series on the March 28 bond election to authorize \$95.5 million in bonds for Austin. This article is on the \$27 million revenue bonds for sewer operations.)

Granted, it's hard for the average citizen to get worked

up over sewer collection and voters to approve \$27 million in revenue bonds to finance treatment.

It's real hard, until the sewers start backing up, usually during heavy rains, and diluted raw sewage is dumped onto the city streets and into Town Lake and of all 10 propositions on the ballot.

—then citizens get worked up.

Residents living along the Shoal Creek collection basin — roughly bordered by Guadalupe, N. Lamar on the east and Mo Pac railroad on the west — are familiar with the sewer problem.

Shoal Creek system is the worst of any sewer collection systems, Vic Schmidt, head of water and sewer department, said. "When heavy rains hit, toilets will not flush easily, raw sewage pours into the creek from pipes that break — we have headaches," he said.

To help solve Austin's sewer problems, the city is asking

The real gem of the proposed capital improvements, Schmidt said, is the \$14 million for a cross-town super sewer tunnel, or often called a sewer interceptor.

According to an engineering study, this would solve sewer problems north of Town Lake for the next fifty years.

A similar sewer outfall, although somewhat smaller in scope, was built several years ago in South Austin.

Schmidt said although the interceptor cost about \$1 million more than would beefing up the

(See BONDS, Page 6)

BONDS

(From Page 1)

existing eight systems, it would save the city millions of dollars in yearly operating costs.

The present system requires a high operating cost on lift stations and cleaning out the pipes, Schmidt said.

Other advantages of the interceptor are:

— Reduce the possibility of spillage into Town Lake and the creeks.

— Not have to dig up the pipes in the creek beds and replace them.

— Less beautification problems on Town Lake.

— Almost no interference to traffic and local property owners during the construction (the tunnel would be constructed with a mole-type boring machine.)

— Reduce the amount of right-of-way costs.

— Less worries about mechanical failures of lift stations.

The proposed route roughly follows E. 19th, Manor Rd., W. 22nd, and W. 35th and would cut across eight sewer drainage basins in North Austin.

If the proposed interceptor is built, the city will have to greatly expand the Walnut Creek treatment plant and the city has earmarked \$9,234,000 for its expansion and improvements to the Williamson Creek plant in South Austin.

The remaining allotment of about \$15.5 million will go into other sewer collections.

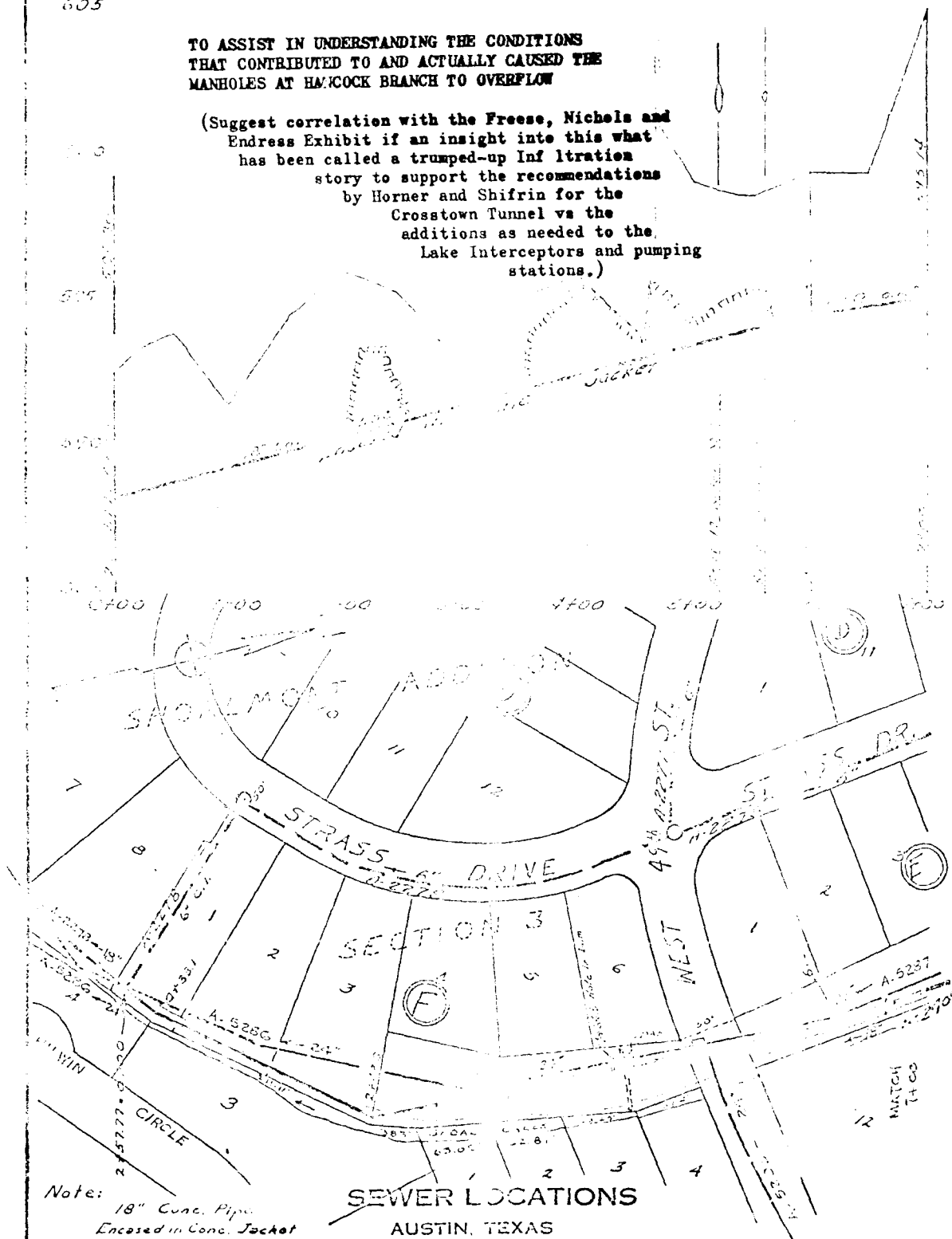
The three big collection expenditure are beefing up Shoal Creek system, Big Walnut Creek system and Williamson Creek system.

(This article contains material that is not factual, is totally misleading and is no credit to anyone connected with it.)

605

TO ASSIST IN UNDERSTANDING THE CONDITIONS
THAT CONTRIBUTED TO AND ACTUALLY CAUSED THE
MANHOLES AT HANCOCK BRANCH TO OVERFLOW

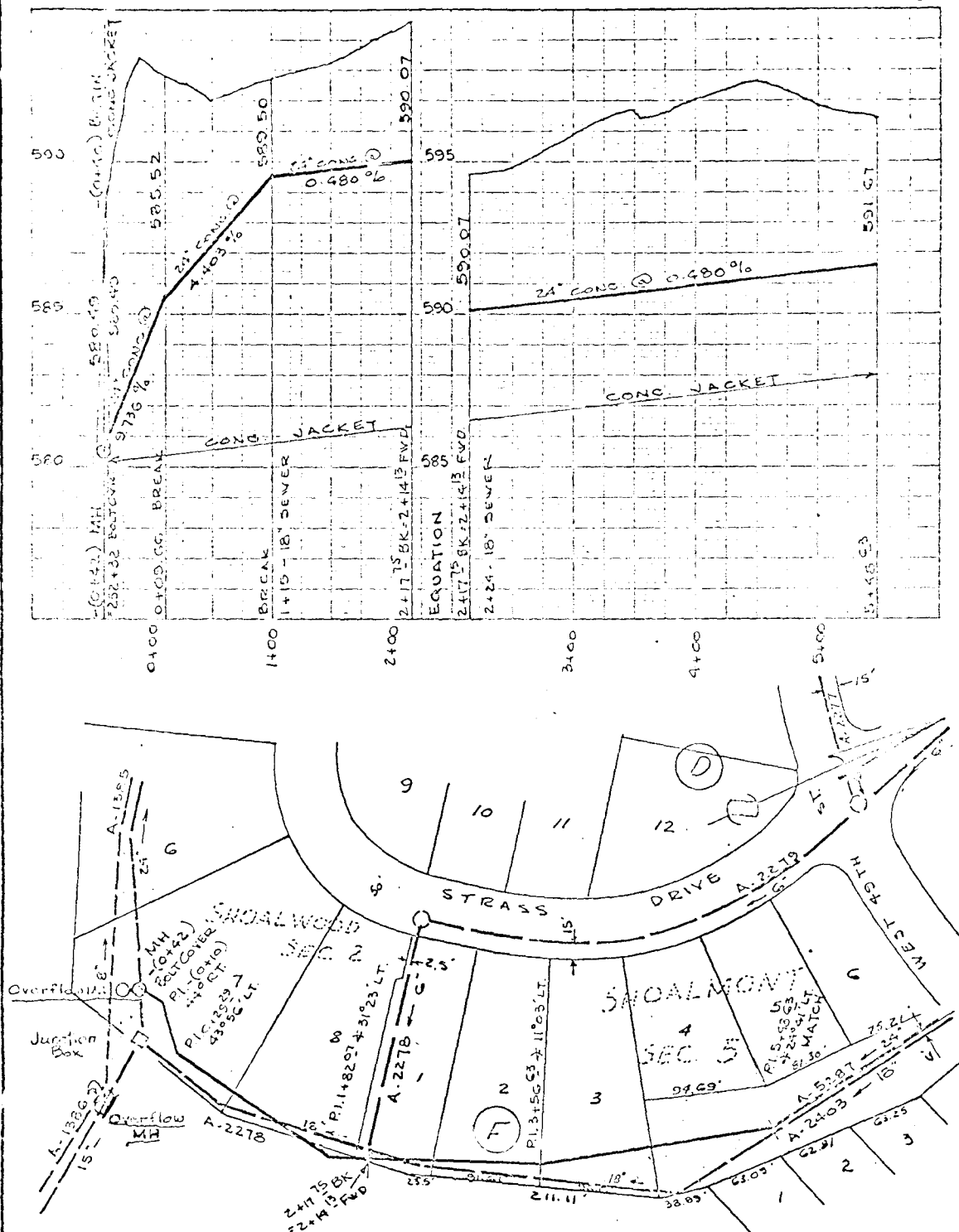
(Suggest correlation with the Freese, Nichols and
Endress Exhibit if an insight into this what
has been called a trumped-up infiltration
story to support the recommendations
by Horner and Shifrin for the
Crosstown Tunnel vs the
additions as needed to the
Lake Interceptors and pumping
stations.)



Notes:
18" Conc. Pipe
Encased in Conc. Jacket

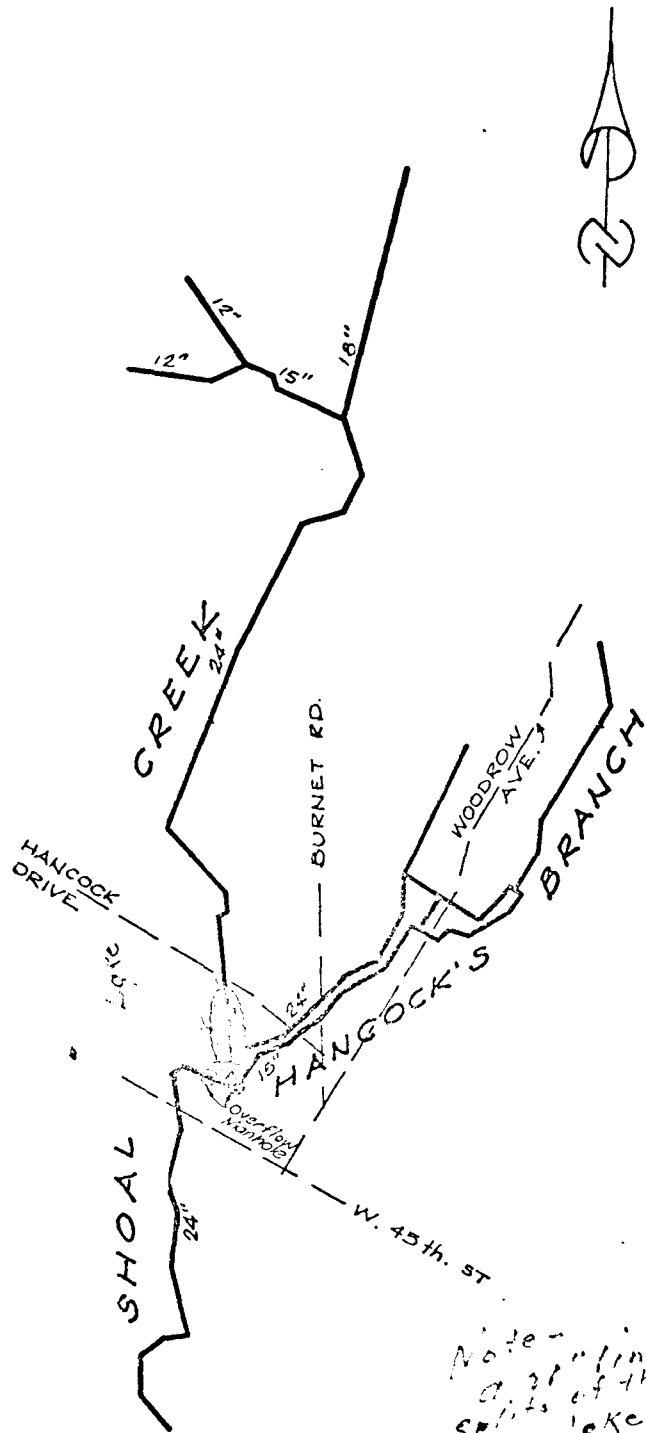
SEWER LOCATIONS
AUSTIN, TEXAS

BUILT BY JOE BLAND DATE 9-9-50 S.W. SEWER: JOE BLAND
FIELD BOOK 164 P. 47 DATE 8-18-50 LOCATION SHOAL CR.
DRAWN BY D. SELKE DATE 10-17-50 FROM HANCOCK BR.
REVISED BY _____ DATE _____ TO EAST 4TH ST.
MOBLEY DATE 11-22-50 BOOK NO. A



SEWER LOCATIONS AUSTIN, TEXAS

BUILT BY <u>KARL WAGNER</u>	DATE <u>MAR. 1961</u>	SANIT. SEWER: <u>JOB NO. 0.800645.5321</u>
FIELD BOOK <u>2518 p.45</u>	DATE <u>8-24-60</u>	LOCATION <u>SHOAL CREEK</u>
DRAWN BY <u>S. RIDLEY</u>	DATE <u>3-7-61</u>	FROM <u>GREAT OAKS PKWY. EASEMENT</u>
REVISED BY _____	DATE _____	TO <u>180' S. OF W. 49TH ST</u>
CHECKED BY _____	DATE _____	BOOK NO. <u>A</u> SHEET NO. <u>5286</u>



SHOAL CREEK &
HANCOCK'S BRANCH
CONFLUENCE

Note -
A 24 inch line
splits off the 24 inch
in the lake. It is not
shown on this sketch.
The dam is approximately
14' high. The head line is
18". Breaking at 1-24".
1-24, 1-18 and 1-15 inch.
The 8" gauge is 20 feet
on the crest.

COMMENTS AND REMARKS APPROPRIATE TO AUSTIN'S
INFILTRATION PROBLEM
(Sanitary Sewers)

An attempt was made to correlate the dates shown on one of the reproduced sheets with the rainfall records of the National Weather Service but the relationship between the days or periods of rainfall at the Austin Municipal Airport as reflected in their records and the days and time durations shown for the overflow manholes on Shoal Creek are in disagreement in several cases. And since The reproduced sheet from the Freese, Nichols and Endress Shoal Creek report states that the data was taken from the records of the City of Austin's Wastewater Department. So I asked the Superintendent about giving me a complete documentary on locations of manholes, days on which they overflowed and for how long and he was quick to tell me that he did not keep such records in his Department, and that he at present has only two (2) manholes that overflow. One is caused by a choke induced by a short section of 12-inch pipe in a 16-inch line, and that the other one had not been investigated as to cause, but would be in a few days. The other aforementioned 12-inch choke is being corrected, so he reported, and he assured me that he was not holding back on any condition. And his long-time office clerk that takes care of summarizing trouble calls and forwarding reports to the Central office said that the only sewer complaints that received attention and were reported were those where sewage backs up into houses and that she did not receive reports of overflowing manholes.

I made a similar inquiry of the Supervisor in charge of maintenance and repairs and got virtually the same report from him. I told him that I wanted to visit with him and review some of his pumping stations daily discharges to see what kind of infiltration of storm water that was entering the sanitary sewers, and he told me that the Infiltration problem in Austin is what the lawyers refer to as de minimus and I asked him if it might be possible that someone had hoaxed the Austin people in connection with the contents of the Newspaper article that this is attached to, and his reply was it may have been. --

My next inquiry to the maintenance supervisor dealt with the argument over the source of the water that is showing in the photograph and disposed of by the Freese, Nichols and Endress employee as "assumed to be infiltration water" that would require a lot of money to fix, and I explained to him that I needed to know more about his manholes, their location, height, etc. and whether he suspected pilfering, pillaging and downright thievery that in turn would allow high water to enter the sewers at such points. I told him that I had found 4 manholes on Hancock Branch (above the overflow problem) but could find none on Shoal Creek and his reply was that he kept them covered with a little soil to hide them for even though they were bolted covers, with 6 bolts normally, that such losses do occur and that open holes are the result. But he assured me that the overflow in the picture was caused by trying to force 4 sewers with high gradients into one 24-inch but when they corrected it they installed a 54-inch and the Sewer Superintendent said that he would not say that the 54 was not an overdesign and of course that is a waste of public funds. But while they were trying to let a contract for that 54 and the question of size was being discussed, one Councilman stated that he wanted to build them so large that they could not possibly overflow, and went on to assure me that the Federal Government was picking up the tab for 55% of it and that the State of Texas was supplying 25% assistance. And that brings us back to the COST OF CLEAN WATER, Vol 11. The waste in designing some of these projects is appalling.

If it is finally shown that Austin's infiltration problem is purely fictional, and our present sewers are large enough what do we do with a tunnel that is not needed. If Austins sewers are tight and pollution is not reaching the lakes from the sewer overflows but is due to other causes can't we avoid the near \$50,000,000 out lay?

The Austin American

Read by the Decision-Makers of Texas

10 Cents

Austin, Texas, Friday, October 9, 1970

50 Pages

'Super Sewer' To Save Creek

A California engineering firm was named as consultant on one of the largest contracts in the history of Austin, action began to redesign the interior of the Municipal Auditorium, and property owners along Shoal Creek were promised help in saving their back yards from erosion at the afternoon city council session Thursday.

—A. A. Mathews Inc. of Arcadia, Calif., was approved as the consulting engineering firm in the building of a planned \$14 million Crosstown Wastewater Outfall tunnel. One of the largest contracts ever proposed in Austin, the "super sewer" is planned to take care of Austin's

Hospital Criticized, Page 14

for the wastewater problems for the next 50 years.

City councilmen decided not to act yet in naming an Austin associate for the eight-foot-diameter, eight-mile-long tunneling job.

Austin firms that will be considered by the council are: Leeds, Hill, and Jewett Inc.; Forrest and Cotton Inc.; Freese Nichols and Endress; National Engineering; Bryant-Curington, Inc.; and Knowlton-Ratliff-English-Collins.

The giant tunnel will be financed by the sale of revenue bonds. (See PROJECT, Page 6)

SUPER SEWER OR SUPER HOAX!

Must we wait for time to tell us?

(From Page One)
Bonds.

6-7
Please
thank him. (4)

FREESE, NICHOLS AND ENDRESS
CONSULTING ENGINEERS

SIMON W. FREESE
S. GARDNER ENDRESS
JAMES R. NICHOLS
ROBERT L. NICHOLS
LEE B. FREESE
ROBERT S. GOOCH
JOE PAUL JONES

W. LEARY EEDS
JOE B. MAPES
OCIE C. ALLEN
ROBERT A. THOMPSON III
W. ERNEST CLEMENT
ELVIN C. COPELAND
ALBERT H. ULLRICH

MARVIN C. NICHOLS
1927-1969

September 10, 1971

Mr. Hugh C. Yantis, Jr., P. E.
Executive Director
Texas Water Quality Board
314 West 11th Street
P. O. Box 13246, Capitol Station
Austin, Texas 78711

INT	COMM	INT	ACT
	REPORTS		
	PLANNING		1
	LOCAL DISPL.		

as per note

Dear Hugh:

Before the second day Texas Water Quality Board meeting last month you indicated that you would like to have some additional information on the design criteria that we used in the design of Austin's new Shoal Creek sewer interceptor. I have prepared some comments relative to this subject and am sending you a copy herewith.

You will note that these comments are dated September 9, 1971, and that they are based on comments prepared for the City of Austin, June 23, 1970. Although the City's staff was aware of the manner used in arriving at the Shoal Creek design criteria and agreed that we should use them, the June 1970 comments were requested when the Cross-Town tunnel project feasibility study was presented to the City Council for approval. As you know, both the former and the present City Council have approved the tunnel project.

Please let me know if you require additional information on this subject.

Yours very truly,
Freese, Nichols and Endress

Albert

Albert H. Ullrich, P. E.

AHU/cf



September 9, 1971

COMMENTS RELATIVE TO DESIGN CRITERIA
DEVELOPED FOR PROPOSED SHOAL CREEK INTERCEPTORS

(Based on comments prepared for the City of Austin, June 23, 1970)

During the pre-design conference with the City's staff, it was agreed that the Shoal Creek interceptors should be designed, in so far as possible, to prevent future overflows and abate pollution in Shoal Creek from these interceptors. With this agreement as a basis, both the 1958 and 1966 Long Range Programs for sewerage improvements were reviewed and a new study encompassing the Shoal Creek drainage basin was undertaken.

The new study, in so far as design criteria are concerned, included peak dry weather flow measurements in the existing Shoal Creek interceptors, theoretical full flow capacity calculations for these interceptors, estimates of peak infiltration rates during full flow conditions, estimates of overflow rates during extreme wet weather conditions, consideration of rates of potential infiltration which could not flow into already surcharged interceptors, and consideration of the likelihood of exfiltration during periods when the existing collector lines may be surcharged.

Flow measurements made from July 31 through August 6, 1968, indicated that, during that period, the existing 30-inch Main Shoal Creek interceptor had a peak dry weather flow of 8.2 million gallons per day (MGD) at West 6 and Wood Street and that the existing 18-inch Main Shoal Creek interceptor just prior to entering the Shoal Creek Pump Station had a peak dry weather flow of 3.8 MGD. The peak dry weather flow rate of these two interceptors during this period was 12.0 MGD. The theoretical capacity of the 30-inch interceptor at West 6 and Wood Street was calculated to be 14.6 MGD and the theoretical capacity of the 18-inch interceptor at the point of measurement was calculated to be 6.2 MGD. The theoretical full flow capacities of the

two interceptors, as calculated, is 20.8 MGD. Observations made by City personnel and reported to Freese, Nichols and Endress indicate that both of these interceptors have flowed full and at their capacity during extreme wet weather conditions. The difference between theoretical full^{flow} capacity and peak dry weather flow in the two interceptors in 1968 was 8.8 MGD. It is reasonable to assume that when these interceptors have run full in the past, the difference between peak dry weather flows and their theoretical capacity has been due to infiltration. This difference of 8.8 MGD in 1968 is equal to approximately 1,100 gallons per acre per day when distributed over the approximately 8148 acres which contribute to the drainage basin served by the Main Shoal Creek interceptors.

In addition to the above estimated 1,100 gallons per acre per day of infiltration carried by the existing 30-inch and 18-inch interceptors at the lower end of Shoal Creek, unmeasured quantities of sewage and infiltrated water frequently overflowed into Shoal Creek through surcharged upstream manholes prior to the 1968 Freese, Nichols and Endress Pre-Design Study. These overflows ranged from a few inches to waterspouts in excess of two feet above the top of a manhole near the confluence of the 15-inch and 8-inch Hancock Branch interceptors and the 24-inch and 18-inch Main Shoal Creek interceptors. Overflows of this nature cannot be measured with any degree of accuracy. However, the calculated combined full flow capacity (without surcharge) of the Main Shoal Creek and Hancock Branch interceptors above their confluence is 20.62 MGD, whereas the calculated combined full flow capacities (without surcharge) of the Shoal Creek interceptors below this location, which existed in 1968, was only 9.25 MGD. The peak dry weather flow at this location in 1968 is not known. However, it is known that the interceptors below this point frequently operated at or near fully^{flow} capacity

during dry weather periods. Therefore, it was estimated that during manhole overflows which amounted to approximately two foot high waterspouts, the overflows were at rates in the order of 20.62 MGD less 9.25 MGD, or 11.37 MGD. There are approximately 6569 contributing acres above the confluence of Hancock Branch and Main Shoal Creek. On this basis it was estimated that the manhole overflows which occurred during periods of extremely wet weather amounted to approximately 1,700 gallons per acre per day.

Adding the 1,100 gallons per acre per day of infiltration calculated as being carried by the interceptors at the lower end of Shoal Creek to the 2,700 gallons per acre per day estimated as having overflowed, resulted in an estimated infiltration rate of 2,800 gallons per acre per day.

Other factors which were considered, but which cannot be measured were

- (1) that surcharged sewers will carry more flow than when merely flowing full,
- (2) that there may probably be some exfiltration from surcharged sewers and,
- (3) that infiltration may be limited to some extent when sewers are surcharged.

During the study on infiltration in the Shoal Creek sewer system a comparable study of infiltration in Austin's Williamson Creek sewer system also was made. This system was selected for comparison because its existing outfall sewer has sufficient capacity to carry all present peak wet weather flows without overflows and all flows are metered. This study revealed that in 1968 the highest average dry weather flow from July to December was 0.707 MGD, whereas the maximum daily wet weather flow during the year was 4,888 MGD. In 1968 the developed and connected area in the Williamson Creek system was 887 acres. Subtracting the peak dry weather flow (2.5 times the average or 1,767,500 gallons per day) from the peak wet weather flow (4,888,000 gallons per day) result in an infiltration rate of 3,120,500 gallons per day. Based

on a developed area of 887 acres in 1968 the peak infiltration rate into this system was therefore, approximately 3,500 gallons per acre per day. In this connection it should be noted that the infiltration rates for the Williamson Creek sewer system are based on actual metered flows.

On the basis of the above studies, it was concluded that an allowance of 3,000 gallons per acre per day for infiltration would be reasonable to use in the design of the Shoal Creek interceptors. Previous studies had indicated that an average dry weather flow of 85 gallons per capita per day with a peaking factor of 3.0 was a reasonable criteria to use for dry weather design purposes.

The 1966 Long Range Program for Austin's Sewer System includes an allowance for infiltration in a "Design Peak Flow" factor which is expressed in terms of gallons per acre per day. This factor includes peak dry weather sewage flows based on projected population densities and an infiltration allowance. For a population density of 12.5, which is the approximate average density used in the 1968 Freese, Nichols and Endress Pre-Design study for Main Shoal Creek, the 1966 Plan indicates a "Design Peak Flow" factor of approximately 3,100 gallons per acre per day. Converting the criteria proposed in the 1968 Pre-Design Study to the same basis as that used in the 1966 Plan, results in a "Design Peak Flow" factor of approximately 6,200 gallons per acre per day. This difference in the design criteria between the 1966 Plan and the 1968 Pre-Design study was brought to the City staff's attention, and it was agreed that, in order to prevent, in so far as possible, future overflows into Shoal Creek, the criteria developed in the 1968 Pre-Design Study should be used in the design of the proposed interceptors.

In further connection with these design criteria, it is noted that the 1966 Plan did not anticipate that the design criteria proposed therein would be used as an inflexible guide for the design of sewer lines in all sections of the City. Referring to the design flow criteria shown in Table VII, page 40, the 1966 report states that the table is not intended for direct application where a portion of the tributary is pumped, or where any factors can be expected to modify the time of collection encountered with ordinary gravity sewers. The study made for the 1968 Pre-Design report indicated that the time of collection at the confluence of Hancock Branch and Main Shoal Creek near West 45 Street is considerably different from that encountered with ordinary gravity sewers.

It is also noted that the 1966 Plan recognized that "infiltration is responsible for severe increases in flow at times of peak flows and thus for

the aggravation of some of the systems' more severe problems". The 1966 Plan also noted that "1957 flow measurements (made in conjunction with the 1958 report) revealed that infiltration in greater than usual quantities was occurring on the collector sewers for the Shoal Creek and Waller Creek tributary areas".

Subsequent to the 1958 report and prior to the 1966 report the City had instituted an inspection program which resulted in the location and repair of numerous sources of infiltration. The 1966 report took note of this fact and encouraged the City to continue and expand this program in order "to locate and stop or reduce present infiltration". Freese, Nichols and Endress agrees that this inspection program is a valuable tool for reducing infiltration and for the maintenance of sewer lines and should be continued. However, it is believed that the 1966 report envisioned a much greater reduction in infiltration through inspection and repair of collector lines than has been possible to attain. When the 1968 Pre-Design Study was made, the City's staff had concluded that it would be a tremendously expensive undertaking to materially reduce infiltration from then existing customer services and service connections in the areas constructed prior to the adoption of present constructions standards and construction inspection procedures.

In connection with infiltration in the Shoal Creek drainage basin, it is of interest to note that overflows have been a continuing problem. As noted in the 1968 Pre-Design Study, the existing Shoal Creek interceptors were constructed as follows: the smaller of the two existing Main Shoal interceptors (8" - 18") was constructed over a period beginning with WPA projects in 1935, to about 1945. The larger interceptor (24" - 30") was constructed in two 24-inch and one 30-inch sections. The first 24-inch section was constructed in 1947 and the second section was constructed in 1949. The 30-inch section

was constructed in 1956. It is known that overflows were reported in the early 1950's. This could possibly be attributed to the fact that the 30-inch section had not been constructed. However, overflows continued to occur after the 30-inch section was constructed in 1956. As noted in the 1968 Pre-Design Study, City Wastewater Department records show that overflows occurred on 21 separate days in 1965. This was only 9 years after the completion of the existing 30-inch interceptor. The City's records were not reviewed to determine if overflows occurred between 1956, the year of completion of this interceptor, and 1965. Overflows due to infiltration are, of course, influenced by the intensity and duration of rainfall. Wastewater Department records show that overflows occurred on 7 days in 1966, on 11 days in 1967, and on 15 days from January 9 through May 28 in 1968. During the period of record from January 23, 1965 to May 28, 1968, inclusive, there were 55 days when overflows were recorded into Main Shoal Creek from the existing interceptors.

The "Design Peak Flow" factor of approximately 6,200 gallons per acre per day computed from the 1968 Pre-Design report has been compared with design criteria for the City of Dallas, Texas, which was published in the 1969 ASCE and WPCF Manual of Practice entitled "Design and Construction of Sanitary and Storm Sewers". For the City of Dallas the estimate for this factor, based on past construction in 8,000 acre areas is in the order of 5,000 gallons per acre per day and in 1,500 acre areas this factor is in the order of 6,300 gallons per acre per day. Considering the fact that the time of collection at the confluence of Hancock Branch and Main Shoal Creek near 45 Street is considerably more critical than that encountered with ordinary gravity sewers, the approximately 6,200 gallon per acre per day criteria developed for the design of Shoal Creek interceptors compares favorably with the Dallas criteria.

In connection with the design criteria for sewerage systems it should be stated some past designs have been based on the premise that overflows at strategic and selected locations were permissible during extremely wet weather conditions. Design criteria based on this premise can no longer be justified.

In connection with the decision to design the proposed Shoal Creek interceptor to carry all projected flows independently of the capacity of the existing interceptors, the following factors were considered and discussed during conferences with the City's staff:

1. The possibility of damage to the existing 24-inch interceptor during construction of the proposed new interceptor. The working space in Shoal Creek is very limited and the possibility of damage to existing facilities cannot be ignored. As noted by the City's staff and reported in the 1968 Pre-Design Study, the existing 24-inch sections of the (24-30)-inch interceptor is non-reinforced concrete pipe.
2. Due to the extremely limited working space in Shoal Creek and with the proposed new interceptor in place, replacement of the existing interceptor at some future date would be extremely costly. There would then also be danger of damage to the new interceptor now proposed.
3. If the existing interceptor could be maintained in operable condition, it would serve a useful purpose in the event population densities in the Shoal Creek drainage area should increase beyond present forecasts and expectations.

It was agreed that these factors were of sufficient importance to warrant preparation of cost estimates for (1) design of the proposed new interceptor to carry all projected flows independently of the existing 24" - 30" interceptor and (2) design of the proposed new interceptor to carry only those flows in

excess of the existing 24" - 30" interceptor. Such cost estimates were made and are as follows:

1. Interceptor to replace 8" - 18" interceptor and carry all flow from Hancock Branch to the Shoal Creek Pump Station (independent of the capacity of the existing 24" - 30" interceptor).

From Hancock Branch to West 9 Street	\$1,940,700
--------------------------------------	-------------

From West 9 Street to Shoal Creek Pump Station	<u>380,800</u>
	\$2,321,500

2. Interceptor to replace existing 8" - 18" interceptor and carry only those flows in excess of the existing 24" - 30" interceptor:

From Hancock Branch to West 9 Street	\$1,788,300
--------------------------------------	-------------

From West 9 Street to Shoal Creek Pump Station	<u>319,500</u>
	\$2,107,800

3. Interceptor to replace existing 8" - 18" interceptor and carry all flow from Hancock Branch to the beginning of the existing 30" line at Gaston Avenue (independent of the existing 24" interceptor).

\$1,151,900

4. Interceptor to replace existing 8" - 18" interceptor and carry only those flows in excess of the existing 24" interceptor.

\$1,110,800

The difference in cost estimates 1 and 2 is \$213,700 and reflects the estimated difference in the cost for providing capacity independent of the existing 24" - 30" interceptor from Hancock Branch to the Shoal Creek Pump Station.

The difference in cost estimates 3 and 4 is \$41,000 and reflects the estimated difference in the cost for providing capacity independent of the existing 24" interceptor.

At the time these cost estimates were prepared it was not known at what location the cross-town tunnel mentioned in the 1966 Plan would, if constructed, pass under Shoal Creek. However, during discussions with the City's staff, it was agreed that in the first phase of construction, the proposed new Shoal Creek interceptor should not extend south of Gaston Avenue, pending determination of the feasibility of the cross-town tunnel. Based on this consideration, it was agreed that benefits to be derived from providing full flow capacity in the proposed new interceptor from Hancock Branch to Gaston Avenue far outweighed the \$41,000 difference in cost as shown in above estimates 2 and 3.

During subsequent conferences with the City's staff it was agreed that since the 1966 Plan indicates that the most northerly point where the tunnel would pass under Shoal Creek would be in the vicinity of West 34 Street, the first phase of construction of the proposed new interceptor should terminate at West 34 Street, pending the outcome of a tunnel feasibility study. It was then also agreed that the section of new interceptor between Hancock Branch and West 34 Street should be designed for full flow capacity and independent of the capacity of the existing 24" interceptor.



MATHEWS LEEDSHILL BRYANT • CURINGTON

Engineering Consultants to the City of Austin, Texas

8330 Burnet Road, Austin, Texas 78758 • (512) 452-9445

March 1, 1972

Environmental Protection Agency
1600 Patterson St., Suite 1100
Dallas, Texas 75201

Attention: Mr. Dan Sherwood, Air and Water Programs Div.

Re: Draft - Environmental Impact Statement
Crosstown Wastewater Interceptor - Austin, Texas

Gentlemen:

I have reviewed the Draft of the Environmental Impact Statement for Construction of Wastewater Facilities - Austin, Texas, WPC-TEX-824. I have no adverse comments to make about this statement. There are two minor corrections I would suggest.

On Page C, Paragraph 3, Sentence 1. This should read: "The tunnel construction will permit the use of tunneling machine or blasting". This then will be in accordance with design criteria.

On Page 9, B. Description of Project. Last line of the 1st Paragraph, delete 78" and insert 84". This then should read: "The diameter of the interceptor waterway ranges from 84 to 96 inches".

Thank you for the opportunity to comment on your Environmental Impact Statement.

Yours very truly,

MATHEWS LEEDSHILL BRYANT-CURINGTON

A handwritten signature in cursive script, reading "Hugh D. Blanchard".

Hugh D. Blanchard
Project Manager

HDB:ab

zc: Mr. Al Sprague, Texas Water Quality Board
Mr. A. M. Eldridge, City of Austin

MRS. F. K. EIDELBACH
5700 DRIETWOOD DR.
AUSTIN, TEXAS 78731

Mr. Arthur Bush
Public Affairs Div.
Dallas, Tex. 75201



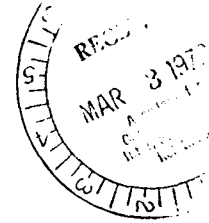
Dear Mr. Bush

I have read several
articles in the paper on
the "Super Sewer" planned
for Austin. This letter
is in protest to the
destruction of Bull Creek
and its tributaries

which are part of the
plan as I understand
it. Bull Creek tributaries
are some of the
most notable scenic
beauties in this
area. I can't see
how in the next
twenty five years
there can be a
running-water creek
remaining. Thank You
Lillian E. Clark

512-926-0108

February 29, 1972



Regional Administrator
Environmental Protection Agency
Region VI,
1600 Patterson, Suite 1100
Dallas, Texas 75201

RE: WPC-TEX-824
Impact Statement No. 7104

Dear Sir:

Enclosed please find a copy of a petition signed by some ¹⁶⁰250 persons who reside in and around the proposed site of the Walnut Creek Wastewater Disposal Plant for the City of Austin. We would like to explain to you in some detail, the main points of our objections.

We object to the location of the sewer plant in our neighborhood because it will constitute a nuisance. Several weeks ago we appeared before the Austin City Council to present our petition and our views. To rebut our contention that the new plant would cause offensive odors in the neighborhood the Council called upon the City Engineer and asked him a few pointed questions about the odor. His answers were totally inconclusive with phrases such as "generally" or "we can't say for sure"-- in short, yes, the new plant will produce offensive odors for many years to come.

Secondly, we would take direct issue with your statement on page 32 that the area to the north of the site location is going to be light industrial and commercial. The City Planning Department has indicated that this area is projected to be low-density residential. The area immediately to the ^{East} and ^{North} is already low-density residential at the present time. At the end of the Draft Statement from Morrison Enterprises indicates that they intend to subdivide their land in the future. Your map (Figure 1) is grossly outdated since it does not show any of the present residential communities which are near the proposed site, namely Craigwood and Cavalier Park.

Thirdly, you constantly refer in the statement to the year 2020 indicating that this is a design lacking to serve the future growth of the City of Austin. Yet, you have conveniently limited this progressive approval only to the Study Area, i.e., that area to be served. What about our area, the area that is going to be more harmed than benefitted. When it comes to discussing our geographical area you say that it will not change the "established land use," page 33. We consider the established land use in and around the proposed site to be residential, and who wants to live next to the sewer plant?

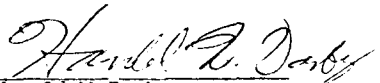
Fourthly, the alternatives for site selection were "primarily restricted to existing sites at the Walnut Creek and Govalle Sites." When you go on to say at page 41 that the Govalle Plant is almost fully developed. What kind of viable alternative site location is that? We would like to see the Plant located further to the East of Austin in an area not quite so likely to be developed for residential use in the next few years.

MAR 3 1972

In conclusion gentlemen, those odors which will be minimized by prechlorination and past chlorination procedures are fine until you have to put up with the minimum odors in your own neighborhood. If this plant were being built in West Austin instead of East Austin you can bet there would be a dandy fight.

We hope you understand the importance of our objections. ~~Your draft~~ does not fairly treat the people of East Austin who presently live near the site, nor that group of people who in the future might consider building homes and raising families in the area. Yet it intensely considers the growth prospects of West Austin.

Respectfully submitted,


Harold W. Darby
Representing Citizens In Opposition
To The Proposed Walnut Creek Sewer Plant.

CITIZEN'S PETITION IN OPPOSITION OF THE WALNUT
CREEK WASTE WATER TREATMENT PLANT

We, the residents of East Austin principally of the Cavalier Park, Craigwood, Springdale Hills, University Hills and Stonegate communities, object to the proposed site of the Walnut Creek Waste Water Treatment Plant approximately 6/10 of a mile east of Bluestein Highway on Webberville Road. This proposed site is located in the immediate area of these rapidly expanding communities which have moderately priced homes.

We are objecting upon environmental grounds in that this proposed plant will normally produce offensive odors and the prevailing wind direction (according to the meteorologist reports) is from Southeast to the Northwest toward the communities mentioned above.

This proposed plant will produce in addition to health hazards, a down-grading effect which will inhibit further expansion and growth in this area.

We are not opposed to better Waste Water Treatment facilities for the City of Austin, however, we feel that an alternate site approximately five miles further Southeast will not create a hardship and will not adversely affect existing communities. We are therefore in accord that the proposed site is totally objectionable. We respectfully submit this petition for your information and consideration and request your favorable response in alleviating this hardship to our communities.

PETITION IN OPPOSITION OF THE WALNUT CREEK WASTE
WATER TREATMENT PLANT

NAME

ADDRESS

Johnny K. Vangylen

4404 Elm Grove Dr

Mrs. Robert Anderson

John Jay 4518 Little Hill

Mr. James W. ...

Mrs. Vivian Porter 6401 Huntleigh Way

Mrs. Joyce Burleson 4522 Little Hill Cir

Mrs. Henry Barlow 4712 Craigwood Drive

Mrs. ... 4524 Little Hill Circle

Mr. ... 4524 Little Hill Cir.

Robert B. Cochrin 4535 Little Hill

Mrs. Marion Ramon 4601 Little Hill Cir

Charles E. Lewis 4603 Little Hill Cir.

Mr. ... W. Jackson 4607 Little Hill Cir.

Mrs. Robert Lee Caskey Jr. 4704 Little Hill Cir.

Arvid ... 4703 Little Hill Cir

Mr. Mac Blackwell 4705 Little Hill Cir

Mrs. Millie Sealey 4713 Little Hill Cir

Mr. James Curtis Shaw 4720 Little Hill

Mr. & Mrs. George Bell 6309 Huntleigh Way

Leonard White Jr. 6305 Huntleigh Way

Minnie L. White 6305 Huntleigh Way

Diane Patterson 3608 Webberville

Shelma Brite 6402 Craigwood Cir
Shelma Brite 71

Mrs Eugene Foster

William F. Houser 6403 Craigwood.

Mrs & Mrs Dickel McArthur 6306 Craigwood Circle

Mr & Mrs. Johnny M. Simpson 6304 Craigwood Circle

Mr & Mrs J. J. Wilson 6302 Craigwood Circle

Theodore Shelton 6300 Craigwood Circle

Samuel Gason 6301 Craigwood Circle

Mr & Mrs. Cecil E. Smith 6303 Craigwood Circle

Mrs Helen Williams

Mrs Lucile Young

Mrs. Vergell Stewart

Mr. Jesse Stein

Mr & Mrs Edward Murry 4809 Craigwood

Mr & Mrs Raymond W. Smith 4610 Sherwyn

Mrs & Mrs. Audie L. Shaw 4608 Sherwyn Dr.

Mrs Josephine Marnie 4606 Sherwyn Dr.

Andrew Walker 4604 Sherwyn Dr.

Shelton Williams

Mr. & Mrs. Ben Gray Hill

Mr & Mrs. Ray Collins 4506 Sherwyn

Mr. & Mrs. Roger Kausch 4500 Sherwyn Dr.

Mr & Mrs. Paul S. Robinson, Jr. 4500 Sherwyn Drive

Mr & Mrs Thomas J. Morris 4501 Sherwyn Drive

Mr & Mrs. Martin Jones 4505 Sherwyn Drive

Mr & Mrs. Ray M. Harrison

Mr & Mrs Robert Monrad 4603 Sherwyn Dr.

Mr. Milton Berry Jr 6400 Craigwood Circle

PROVENCIAL DRIVE + COVE

Harold W. Darby	Joyce Jordan
Lauren L. Darby	Mr & Mrs Johnnie L. Bruffhimer
Brenda M. Jewell	Henry J. Jewell
Carson Jewell	Minnie Jewell
Edgar (or Ducks)	Demoseanada Odems, Jr.
Bettie J. Ducks	Helle M. Odems
Angie Zell Jones	Harold H. Bullack
William H. Jones	Hattie M. Bullack
John H. Jones, Jr.	William H. Jeger
Myrtice Litman	Mrs & Mrs. Lucy J. Jeger
Veda C. Jones	Mr & Mrs. Roy J. Jeger
Waymon L. Clayton	Mr. & Mrs. Wellon Alexander
Maggie R. Clayton	Mr & Mrs. Isaac Cavanaugh
Brath L. Mills	Mr. L. H. H. / 5101 Provencial Dr.
Orlando L. Mills	Sepana Huff
Esther Spruance Collins	
John L. Collins Jr.	
Mr & Mrs. Alexander Hage	
Mr & Mrs. Clyde H. Neal	
Mr & Mrs. John D. Stolt	
Susanella Phillips	
Walter Phillips	
John Phillips	
Mrs. Melvin May	
Mr. Donna Ellison	
Mrs. La Faye Ellison	
Monroe Davis	
Olden Jordan	

Arthur Anderson 4515 Little Hill Cr.

Sherman Burleson 4522 Little Hill Cr.

A. J. Smith 21528 Little Hill Cr.

Lennie Woods 4532 Little Hill Cr.

Ramie Allen 4600 Little Hill Cr.

W. L. Woods 4602 Little Hill Cr.

Lois C. Harmon 4605 Little Hill Cr.

Mrs. Eddie D. Harmon 4701 Little Hill Cr.

Mrs. Johnny J. Inesch 4711 Little Hill Cr.

Col. Lane Jr. 4718 Little Hill Cr.

Matthew Rhoda 6311 Huntley Way

Kenie Rhoda 6307 Huntley Way

Mrs. Marlin Mackey 6301 Huntley Way

Mr. James L. Higgins 5113 Stonegate Dr.

William Walker 2700 Crest Ave.

W. L. Show 3001 E 12 St

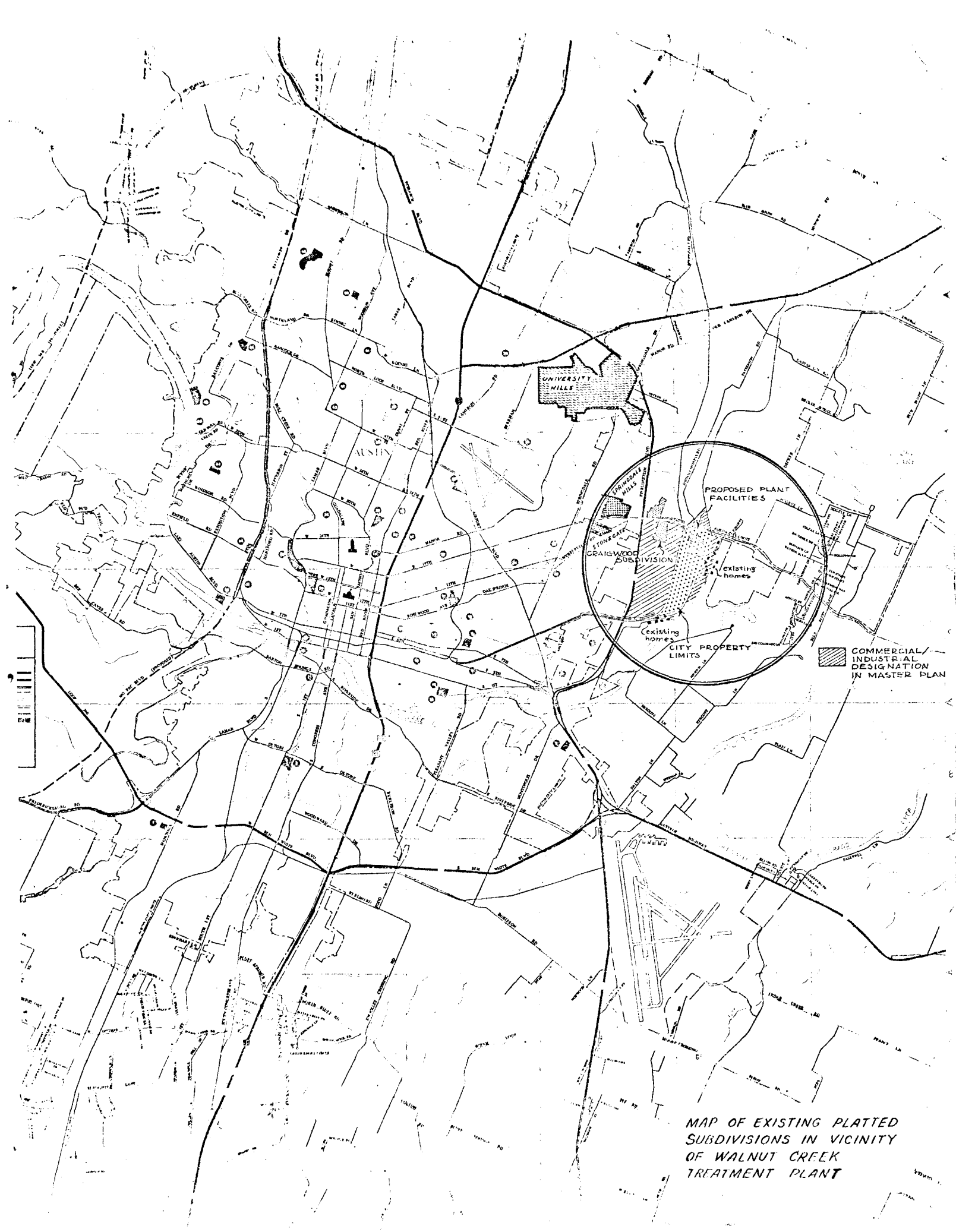
Wood Walker 6402 Huntleigh way
Geyell Walker 6402 Huntleigh way
Jimmy R. Cline 6400 HUNTLEIGH WAY
ERNA G. ATES 6400 HUNTLEIGH WAY

William E. Purcell 6308 Huntleigh way
Maymie Purcell 6308 Huntleigh way
Willie Heard Jr 6306 Huntleigh Way
Dorothy Heard 6306 Huntleigh Way
Mr. & Mrs. Ellis 6304 Huntleigh way
Ernest Organ 6300 Huntleigh way
V. T. Organ 6300 " "

Mrs. & Mrs. Hardy Austin 5101 Regency Dr.
Mattie W. Gail 5013 Regency Dr.
Olympia Green 5011 Regency Dr.
Austin & Son 5009 Regency Dr.
Rev. & Mrs. Humphrey 5102 Regency
Mr. & Mrs. Thomas Harding Sr. 5107 Regency Dr.
Mr. & Mrs. Nathan Kolitzner 5201 Regency Dr.
Pearl R. Kuyper 5203 Regency Dr.
Mr. & Mrs. Isaac Jones 5205 Regency Dr.
Mr. & Mrs. Milton H. Canoy 5301 Regency Dr.

APPENDIX 2

HEARINGS



MAP OF EXISTING PLATTED
SUBDIVISIONS IN VICINITY
OF WALNUT CREEK
TREATMENT PLANT

HEARING COMMISSION REPORT

SYNOPSIS

- I. Subject of Hearing: Review of the Highland Lakes System Comprehensive Wastewater Study, prepared by Freese, Nichols, and Endress, Consulting Engineers.

II. Hearing

- A. Date: July 21, 1971
- B. Location: Austin, Texas
- C. Hearing Commission: Lee H. Mathews, Presiding Officer
Garner Jones, P.E., Planning Representative
- D. Appearances: See attached list

III. Findings

- A. The plan was financed by a grant from the Texas Water Quality Board and was prepared with reference to and in accordance with current Water Quality Board wastewater quality standards.
- B. As required by Federal regulations and State of Texas guidelines, the plan makes a detailed study of existing sewerage systems and problems in the study area and recommends the means for correcting the problems. In accordance with Water Quality Board policy, the plan recommends the establishment of regional sewerage systems for the Austin and Highland Lakes area.
- C. Having reviewed and evaluated the plan, the Hearing Commission finds that it is responsive to the planning needs of affected persons and entities in the study area, and that it satisfies all requirements for interim planning.

- IV. Recommendations: That the Highland Lakes System Comprehensive Wastewater Study be referred to the Governor of the State of Texas with the Board's recommendation that the plan be certified as the interim water quality management plan for the Highland Lakes planning area.

SUMMARY OF THE EVIDENCE

The Texas Water Quality Board held a public hearing on July 21, 1971 in Austin, Texas to receive evidence concerning the Highland Lakes System Comprehensive Wastewater Study. The hearing was called to publicize the study and to allow those persons interested in and affected by the plan to comment on it and to determine if the plan should be certified as the interim water quality management plan for the Highland Lakes area.

The Board's staff has determined that, in order to qualify as an acceptable regional or area-wide plan for a designated planning area, the plan should (a) provide planning to achieve and maintain State of Texas water quality standards; (b) fulfill the stated policy of the Water Quality Board to encourage the establishment of regional sewerage systems; and (c) speak to matters required for regional planning by the Federal regulations.

The Hearing Commission was presented with affidavits signed by representatives of the Austin-American Statesman and the San Saba News and Star, newspapers of general circulation in the planning area, attesting that public hearing notice was published according to the Rules of the Texas Water Quality Board. Notice was also sent to those parties who could be affected by the plan.

The first speaker to appear before the Hearing Commission was Mr. Victor R. Schmidt, Jr., Director of Water and Wastewater for the City of Austin. Mr. Schmidt expressed concern that if present population growth in the planning area (including Travis, San Saba, Llano, Blanco, Burnet, and Bastrop Counties) continues, problems of pollution will only get worse, unless constructive, corrective actions are taken now. The comprehensive plan to be presented today represents an approach to water quality management for our area. Mr. Schmidt introduced Mr. Albert Ullrich, a consulting engineer with the firm of Freese, Nichols, and Endress, who prepared the plan. Some of the significant points of Mr. Ullrich's testimony are as follows:

1. The study has been divided into 4 phases. Phase I is a population study that surveys present and projected population in the study area; Phase II includes an inventory, an analysis, and an evaluation of existing sewerage and other waste facilities.

(including septic tanks) in the study area; Phase III contains recommendations and the conceptual design for area-wide facilities; Phase IV discusses cost estimates for area-wide facilities, and the question of which entity or entities should sponsor the program of wastewater collection and treatment.

2. One of the points of interest in the Phase II report concerns septic tanks. Soils analyses showed that much of the soil found in the study area is not conducive to good septic tank operations. Visual observation of shorelines along several of the Highland Lakes have shown that many homes and commercial establishments are too close to the shoreline to allow sufficient soil area for absorption. Consequently, some septic tank systems are already contributing to pollution of the lakes.
3. Other sources of potential or existing pollution were found to be solid waste disposal facilities, marinas and water craft, and agriculture runoff. The Phase II report concludes that waters in the Highland Lakes, including Lake Austin, are still of high quality; however, it is recommended that steps be taken to control existing and future sources of pollution in order to maintain this high quality.
4. What recommendations does the plan make with regard to needed facilities? Chapter 6 of the Phase III report is devoted to development of a conceptual design for area-wide wastewater collection and treatment facilities. The study area was divided into 4 sub-areas for the purpose of presenting recommendations. The sub-areas and the recommendations for each are as follows:
 - a. Sub-Area 1 - Includes Bastrop County. The principal cities in the county include Smithville, Bastrop, and Elgin. Because

of the relatively long distances between the cities, it was not considered feasible to establish an area-wide system; thus, we recommend that sewage from each city continue to be treated in individual plants as is the practice now.

- b. Sub-Area 2 - That part of Travis County below Mansfield Dam. The City of Austin is the sub-area's main population center. The plan recommends that Austin be selected as the site of an area-wide treatment plant, and that the communities of Rollingwood, West Lake Hills, Oak Hill, Pflugerville, and areas along Lake Austin which use septic tank systems, construct collection systems within their boundaries and connect these to the Austin area-wide system.
- c. Sub-Area 3 - Septic tank areas along the Highland Lakes (not including Lake Austin and Town Lake). Under this plan, the existing City of Marble Falls plant would serve as an area-wide plant for the population centers along Lake Marble Falls. Each development along the other lake areas would construct a sewage collection system within its boundaries and route the sewage to a number of "area" plants for treatment. It is anticipated that one central agency could assume responsibility for operating these plants.
- d. Sub-Area 4 - Areas within the study region not included in Sub-Areas 1, 2, and 3. The plan recommends that because of the great distances between the cities in this area, the existing individual systems should be continued and that the communities of Dripping Springs and Lometa construct their own individual systems.

Consideration should be given to designation of the Lower Colorado River Authority (hereafter referred to as the LCRA) as the operator and sponsor of the collection and/or regional systems called for

in Sub-Areas 1, 3, and 4. The City of Austin should be considered for sponsorship of the program for Sub-Area 2.

5. With regard to the problem of storm water runoff into Town Lake, the plan envisions the construction of an interceptor tunnel from the North side of Town Lake to divert storm flows from Shoal and Waller Creeks to a storm water treatment plant located below Longhorn Dam. Treated storm water would be discharged below the dam. A storm water diversion and treatment scheme such as this one would necessarily have to be preceded by detailed feasibility studies.

The first of several persons to present prepared statements to the Hearing Commission was Mr. C. C. (Pat) Patterson, who represents the local Sierra Club. Mr. Patterson made the following comments:

1. We have carefully reviewed the plan and are especially pleased to note that it recommends elimination of the septic tanks in the study area and establishment of central sewage treatment systems.
2. We are concerned that the plan implies that only BOD and suspended solids should be used for evaluation of effluent quality. We believe that other parameters, including phosphates, iron, chlorides, pH, pesticide residues, and certain heavy metals should be included in a monitoring program. In addition, the LCRA should authorize further studies to identify the limiting factors for vegetation growth in the Highland Lakes, with a view to using this information to insure that nutrients never reach a detrimental level.
3. One of the outstanding features of the Highland Lakes is its natural beauty. A comprehensive land use study of the Highland Lakes leading to a detailed watershed water quality management program is needed.

4. Finally, we feel that the LCRA and the City of Austin should undertake the implementing tasks as specified in the plan rather than create new agencies to fulfill these functions. Immediate follow-up on this plan should be taken.

Several legislators from the Austin area commented on the plan. State Representative Don Caveness, although he did not attend the hearing, informed the Hearing Commission that he supports the concepts set forth in the plan. United States Representative J. J. (Jake) Pickle was represented at the hearing by Mr. Cliff Drummond, who presented the following statement on Congressman Pickle's behalf:

1. The recommendations of the study represent a giant step forward toward abating the water pollution menace in the Highland Lakes. I was especially gratified to learn of (a) plans to provide treatment for storm waters originating around Town Lake, and (b) recommendations for a regional approach for the area around Lake Marble Falls. However, I have some reservations that the large number of treatment plants in the Highland Lakes area can be adequately maintained; hopefully, some further consolidation can be accomplished.
2. I would welcome reactions to the plan from cities, counties, State agencies, and qualified engineers who may be affected by the recommendations of the plan.
3. The LCRA and the City of Austin are being called on to assume the major role in implementing the plan. I have utmost confidence in both. The plan represents a new approach to pollution control in our area, but we must squarely face the situation to assure adequate clean water for the future.

The next witness, Mr. Jim Stewart, Associate Director of the Capitol Area Comprehensive Health Planning Commission, made the following comments and recommendations:

1. First, we are concerned about what we consider are sampling deficiencies in the plan. The water samples appear to have been taken at irregular and non-uniform intervals. There may presently be more pollution in the Highland Lakes than the Freese, Nichols, and Endress sampling studies reveal.
2. Second, there is concern over soil deficiencies along the lakes. Further soil studies for the region should be conducted before any septic tank orders or regulations are passed by the Water Quality Board. Permissible lot sizes should be determined by the character of the underlying soils. Also, we have been informed that septic tanks do not remove nitrates and phosphates; thus, allowing any further septic tank construction is questionable. We need to determine the ultimate destination of septic tank effluent before authorizing their use.
3. Uniform water quality standards should be set for the whole region and these should be enforced.

Testimony was given by Mr. R. M. Dixon of Austin concerning certain alleged deficiencies in the planning effort. The following is a summary of his remarks:

1. The City of Austin has stated that no land use analysis has been made to determine where the increasing numbers of people in the metropolitan area will be located. This type of analyses must come before other types of planning are conducted.
2. It is doubtful that this is a truly comprehensive plan. We need to study in some detail such things as land use, costs, etc., before a plan can truly be comprehensive.
3. There is a question as to the quality parameters for the lakes. The report discusses BOD and suspended solids, but does not mention other considerations such as the possible presence of phosphorus in the lake waters.

4. Enough study has not been given to the question of infiltration. Storm water is constantly infiltrating into Austin's sanitary sewers. Problems such as overflowing manholes have been prevalent in Austin in the past. This is one of several problems that should get priority attention.

Mr. Schmidt responded briefly to Mr. Dixon's statements. According to Mr. Schmidt, it is very difficult, in making long range plans, to predict exactly where people are going to locate. A plan must be flexible enough to allow for changes if later the predictions and population projections prove to be wrong. A study of viruses will soon be studied under a 3 year program originating in Dallas, Texas. Finally, Mr. Schmidt agreed that infiltration problems have often been neglected in the past, but that progress in reducing infiltration is being made, especially in the new sewer lines now being laid.

Near the conclusion of the hearing, several persons asked questions pertaining to various aspects of the plan. Mr. Brad Smith, a citizen of Rollingwood, inquired about the cost that his city will incur in implementing the recommendations of the plan as they apply to his city. The question was asked as to how pollution of Town Lake would be curtailed under the plan. Mr. Schmidt replied that surface runoff is the principle polluter of the lake, and that the plan's concept of a storm water interceptor sewer should be given serious consideration. This sewer system plus other control measures should, according to Mr. Schmidt, reduce pollution in the lake to about one-half of what it is now. Other questions were raised concerning proposals for Lake Austin, means of acquiring rights-of-way and easements, tertiary treatment, and others; these considerations were discussed and commented on by Mr. Ullrich.

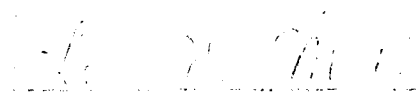
Following the conclusion of the hearing, a written statement was received from Mr. Robert J. Hearon, Jr., an attorney representing Mr. Lem Scarbrough, Jr., who owns property in the Lake Lyndon B. Johnson area. As mentioned earlier, the Phase III report recommended that for Sub-Area 3—the area along the shorelines of the Highland Lakes—a system of individual collection lines and treatment plants for the developing areas be built to eliminate the septic tank systems (Plan A). Another alternative (Plan B) was also proposed; this alternative would also entail the

Highland Lakes System
Comprehensive Water Quality Management Study
Volume 1 of 2
Page 9

construction of collection lines for each population center, but the effluent would be transported to a sub-area-wide plant located at an appropriate site near the dam creating the respective lake. This alternative was rejected because of the excessive costs involved. Mr. Hearon's letter proposed that Plan B be adopted for Lake Lyndon B. Johnson. Mr. Hearon recommends that sewer lines be constructed from the lake area to a central disposal point near the dam. He urges that even if Plan B is not adopted in its entirety, a middle ground between Plans A and B could be chosen that would be less objectionable than Plan A.

In order to obtain as wide a circulation of the plan as possible, copies of the plan were sent for review to the Water Rights Commission, the State Department of Health, the Railroad Commission, the Water Pollution Control Board, and the Texas Parks and Wildlife Department. These agencies have indicated that the plan is consistent with the plans and policies of their respective agencies.

The evidence available to the Hearing Commission indicates that the plan incorporates Water Quality Board wastewater quality standards and objectives; that it proposes regionalization of sewage facilities in areas that are favorably located for and amenable to such systems; that it speaks to the requirements of the Federal regulations for area-wide planning; and that it proposes sound conceptual alternatives to meet the needs of the citizens of the Highland Lakes area. The Hearing Commission is aware that changes, modifications, and corrections will occur as the plan is implemented, but it is felt that the flexibility and conceptual nature of the plan is such as to allow these changes within the plan's framework. Therefore, the Hearing Commission recommends that the Highland Lakes System Comprehensive Wastewater Study be adopted by the Board and referred to the Governor with the Board's recommendations that the plan be certified as the official inland water quality management plan for the Highland Lakes area.


Lee H. Johnson, Presiding Officer

Page 9

August 6, 1971

HEARING COMMISSION REPORT

SYNOPSIS

I. Applicant

- A. Name: City of Austin (Walnut Creek Plant)
B. Address: P.O. Box 1088, Austin, Texas

II. Discharge

- A. Volume: Not to exceed an average of 25,000,000 gallons per day;
Not to exceed a maximum of 40,000,000 gallons per day;
Not to exceed a maximum of 36,000 gallons per minute.
B. Type: Treated municipal sewage effluent
C. Course: Into Walnut Creek; thence into the Colorado River in the Colorado River Basin.

III. Hearing

- A. Date: August 5, 1971
B. Location: Austin, Texas
C. Hearing Commission: J. Randel Hill, Presiding Officer
Merton J. Coloton, Technical Services Representative
D. Appearances:
1) Proponents: Charles Dippel, Assistant City Attorney for City of Austin
Richard L. Hancock, Director of Electric Utilities for City of Austin
Curtis Johnson, Associate Director of Wastewater for City of Austin
Dave Smallhorst, Staff Engineer for City of Austin
2) Opponents: Mrs. Lottie Jacob, landowner

IV. Findings

- A. The proposed regional sewage treatment plant will be capable of producing an effluent conforming to the terms and conditions of the proposed waste control order attached hereto.
- B. The old plant will be completely phased out upon completion of the new plant facility. (approximate completion date December 31, 1974)

V. Recommendations

- A. Waste Control Order Granted: Yes
- B. Effective Date of Board Action: September 17, 1971
- C. Status: Preliminary Approval
- D. Special Provisions:
 - 1) Area-wide clause
 - 2) Certified Operator clause
 - 3) Self-reporting clause
 - 4) The amended waste control order has effect only after the Texas Water Quality Board has been notified in writing that the additional treatment facilities have been completed.

SUMMARY OF THE EVIDENCE

Submission of the required legal description of plant location and verification of publication of the hearing notice was completed by the applicant.

The public hearing, held on August 5, 1971, aid in developing the following evidence and information:

The City of Austin has applied for an amendment to their present Waste Control Order No. 10543 Page 11, Walnut Creek Plant. The primary purpose of the amendment is to reflect an expansion and an improvement in treatment methods. The types of treatment being considered for use in the new plant are: 1) biological process, 2) physical-chemical process and 3) a combination of both.

The domestic population currently served by the existing plant is 137,500. The proposed regional plant facility will be designed to facilitate

Hearing Commission Report - City of Austin (Walnut Creek Plant)
Summary of the Evidence
Page Three

expansion to handle a projected 250,000 domestic population in 1986. No significant industrial waste is anticipated. The area surrounding the proposed plant has some housing development, more rural than urban in nature.

The present plant will be used to treat the currently permitted volume of domestic sewage. Upon approval of plans and specifications and completion of construction, the new plant will operate to discharge 25,000,000 gallons per day of treated municipal sewage effluent at the quality level required by the Texas Water Quality Board.


Groundwater contamination, due to the presence of Escherichia coli in wells in the area, has been attributed to three possible sources: (1) septic tanks, (2) wells constructed with uncemented casings (3) unchlorinated effluent leaking from oxidation ponds of the Walnut Creek plant. This possible source number (3) will not be a threat to groundwater in the area after construction of the new plant, due to the fact that the oxidation ponds will be abandoned and the effluent also will be chlorinated.

In view of the evidence, the Hearing Commission recommends that preliminary approval be granted to the City of Austin with final approval contingent upon approval of plans and specifications.


J. Randel Hill, Presiding Officer

Date: August 26, 1971

CGF:pr


Merton J. Coloton, Technical Services
Representative

PROPOSED WASTE CONTROL ORDER

#1497

NAME: City of Austin (Walnut Creek Plant)
ADDRESS: P. O. Box 1088
CITY: Austin, Texas 78767

TYPE OF WASTE CONTROL ORDER: Amendment to Waste Control Order No. 10543

NATURE OF BUSINESS PRODUCING WASTE: Municipal sewage treatment plant

GENERAL DESCRIPTION AND LOCATION OF WASTE DISPOSAL SYSTEM:

Description: A regional sewage treatment plant proposed to be of the physical-chemical method of treatment. Actual description of facilities will be determined after submission of the preliminary engineering report by the City of Austin.

Location: Located on Walnut Creek south of and adjacent to FM 969 approximately 3/4 mile east of U.S. Highway 183 in Travis County, Texas and as shown on the maps submitted with the application.

CONDITIONS OF THE WASTE CONTROL ORDER:

Character: Treated municipal sewage effluent

Volume: Not to exceed an average of 25,000,000 gallons per day
Not to exceed a maximum of 40,000,000 gallons per day
Not to exceed a maximum of 36,000 gallons per minute

<u>Quality:</u> Item	NOT TO EXCEED		
	Monthly Average	24-Hr. Daily Composite	Individual Sample
BOD	20 mg/l	25 mg/l	30 mg/l
Total Suspended Solids	20 mg/l	25 mg/l	30 mg/l

A Chlorine residual of not less than 1.0 mg/l shall be maintained after at least a 20-minute detention time (based on peak flow).

Point of Discharge: Into Walnut Creek adjacent to the plant site in Travis County, Texas; thence into the Colorado River in the Colorado River Basin.

Proposed Waste Control Order - Page 2
City of Austin (Walnut Creek Plant)

SPECIAL PROVISIONS:

This order is granted subject to the policy of the Board to encourage the development of area-wide waste collection, treatment and disposal systems. The Board reserves the right to amend this order in accordance with applicable procedural requirements to require the system covered by this order to be integrated into an area-wide system, should such be developed; to require the delivery of the wastes authorized to be collected in, treated by or discharged from said system, to such area-wide system; or to amend this order in any other particular to effectuate the Board's policy. Such amendments may be made when, in the judgment of the Board, the changes required thereby are advisable for water quality control purposes and are feasible on the basis of waste treatment technology, engineering, financial, and related considerations existing at the time the changes are required, exclusive of the loss of investment in or revenues from any then existing or proposed waste collection, treatment or disposal system.

These public sewerage facilities shall be operated and maintained by a sewage plant operator holding a valid certificate of competency issued under the direction of the Texas State Health Department as required by Section 20 (a) of Article 4477-1, Vernon's Texas Civil Statutes.

Operation and maintenance of the facilities described by this waste control order shall be in accordance with accepted practices for this type of waste treatment facility and shall include related maintenance such as painting, proper disposal of solid waste, and weed and grass cutting.

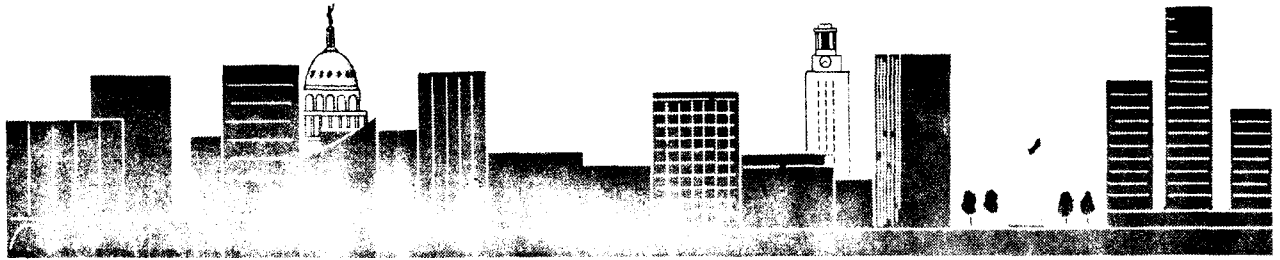
The City shall comply with the provisions of Board Order No. 69-1219-1 relative to monitoring and reporting data on effluent described in "Conditions of the Waste Control Order".

The waste control order holder shall comply with the conditions of Page 11 of Waste Control Order No. 10543 (effective March 5, 1964) until the Austin office and District Office No. 3 have been notified in writing that the additional treatment facilities described by this amendment have been completed (approximate completion date of December 31, 1974). This Waste Control Order becomes effective upon the date of issuance and is valid until amended or revoked by the Board.

MJC
MJC:el

Riv





P.O. Box 1088
Austin, Texas 78767

April 14, 1972

CITY COUNCIL

Roy Butler
MAYOR

Dan Love
MAYOR PRO TEM
COUNCILMEN

Dr. Bud Dryden
Jeffrey M. Friedman
Berl L. Handcox
Lowell H. Lebermann
Dick Nichols

Lynn H. Andrews
CITY MANAGER



Dan L. Sherwood, P. E.
Environmental Evaluation Section
Environmental Protection Agency
Region VI
1600 Patterson, Suite 1100
Dallas, Texas 75201

Re: WPC-TEX-824
Crosstown Interceptor and
Treatment Facilities
Austin, Texas

Dear Mr. Sherwood:

Enclosed are:

- (1) Minutes of the April 4, 1972 City of Austin Zoning Committee meeting regarding the City's application for a "special use permit" for the treatment facilities portion of the referenced project
- (2) The text of opposition testimony by Mr. Cleve Moten presented at the April 4, 1972 meeting
- (3) The text of the evidence summary and recommendations of the City's Planning Department presented at the April 11, 1972 meeting of the Planning Commission
- (4) A newspaper account of the Planning Commission meeting

The text of the statement by EPA's Mr. Cooper Wayman will be included in the minutes of the Zoning Committee meeting when they are published and distributed. Minutes of the Planning Commission meeting are not yet available but will be forwarded to you as soon as possible.

Contact us if you require additional information.

Sincerely,

W. M. Breneman, P.E.
Chief Engineer
Water and Wastewater Treatment Division

ph

Enclosures

Additional copies will be submitted through the Texas Water Quality Board but am sending you this direct because of our time schedule.

Copies +
Wike ←

SPECIAL PERMIT HEARING
Official Notice

The CITY PLANNING COMMISSION will hold a public hearing on the application of
City of Austin, Water and Wastewater Department for a Special Permit
for the use and development of property described below:

PROPOSED USE AND DEVELOPMENT

Expansion of the Walnut Creek Treatment Plant

DESCRIPTION

300 acres of land, more or less, located

South of FM 969 (Webberville Road) between MKT & T & N.O. Railroad
rights-of-way.

A more detailed description is on file with
the City of Austin Planning Department

BASIS OF APPLICATION AND PURPOSE OF HEARING

This application has been filed as required under Section
and according to the procedures as specified in Section 10-B of the Zoning
Ordinance of the City of Austin. The application is accompanied by the
necessary site plan showing the intended use and development of the property.

This hearing determines the advisability of granting or refusing such
application and the need of imposing any conditions on the proposed use and
development as will secure and protect the public health, safety, morals, and
general welfare, both of the property included in the application and in the
immediate neighborhood.

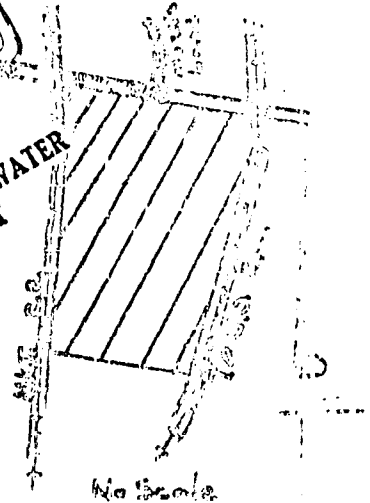
The hearing will be heard by the Planning Commission on Tues. April 4, 1972 at 7:00 p.m.
in the City Council Room, Municipal Building, 124 West 8th Street. As an
affected property owner, you are invited to inspect the site plans for their
proposed use and development. The plans are on file in the Planning Department,
Municipal Building, 124 West 8th Street, 3rd Floor. Also, you are invited to
be present at this hearing if you desire to discuss this application or the
advisability of a modification thereto.

Dated March 22, 1972

File CP14 -72-013

CITY PLANNING COMMISSION
P.O. Box 1088
Austin, Texas 78767

RECEIVED
MAR 22 1972
WATER AND WASTEWATER
DEPARTMENT



No Scale

For additional information, contact the Zoning Clerk of the Planning Department.
Municipal Building, 124 West 8th Street, 3rd Floor, 477-6511, Ext. 302.

RECEIVED
MAR 24 1972

29 MAR 1972

Summary Recommendation

This Special Permit application is to construct a new Wastewater Treatment plant at the existing Walnut Treatment Plant site. The proposed facility is designed to handle wastewater from the proposed Crosstown Tunnel and from Big and Little Walnut Creek drainage basins. Timing on this project is critical because of the following reasons:

- 1) It is important that the proposed treatment facility should be completed at the same time the Crosstown Tunnel is completed.
- 2) The existing treatment facility is approaching full capacity and the new facility is needed to provide continuing quality wastewater treatment for anticipated growth in the Big and Little Walnut Creek areas.

Public Hearing

A brief summary of the public hearing last Tuesday is as follows:

There were approximately 40 area residents at this meeting that strongly protested against the proposed facility. They did not appear to question the design of the facility but were adamantly against the proposed location. They claimed the alleged odors and the contamination of ground water were detrimental to their homes.

The City's position was that their existing plant does not pollute the ground water, as they have continually tested the ground water at their two test wells adjacent to the existing treatment facility and the results of the tests have not indicated any pollution from their existing lagoons. Also the new facility will use concrete tanks to contain the wastewater while it is being treated. The exception being the emergency storage lagoons.

Although the capacity of the plant will be greatly increase, the odor problem should not increase but should decrease as the City will have better control of the wastewater treatment. Examples of some of the safeguards are:

- 1) The crosstown tunnel will aerate the wastewater during transportation of the wastewater to the treatment facility. This should keep the wastewater from becoming septic before it reaches the plant.
- 2) The new plant will have safety features to maintain minimum treatment in almost any emergency.
- 3) The proposed treatment process will be a biological type versus the stabilization ponds in the existing facilities. This type of treatment will give the City better operational control to prevent odors.

Because the major concerns of the area residents was the location of the plant, the Zoning Committee requested additional information on the development of the area and to estimate the cost of another site location.

We have copies of the following statements on file in the Planning Department.

- 1) Statements of Water and Wastewater Department - City of Austin.
- 2) Impact statement from Environmental Protection Agency presented by Cooper Wayman at the public hearing.

- 3) Statement of Cleve Moten, an area resident.

The Austin Development Plan Adopted June 8, 1961

Original Plan

- 1) Area east of Missouri, Kansas and Texas Railroad; west of Nixon Lane; and south of 19th Street delineated as Manufacturing and Related Uses.
(Site of existing Walnut Creek Treatment Plant.)
- 2) Area west Missouri, Kansas and Texas Railroad; and south of 19th Street delineated as Suburban Residential (0.5 dwelling units per acre).
- 3) Area east of Missouri, Kansas and Texas Railroad; and north of 19th Street delineated as Suburban Residential.
- 4) Area west of Missouri, Kansas and Texas Railroad; and north of 19th Street delineated Low Density Residential (3.0 dwelling units per acre).

Austin Development Plan Amendments

March 7, 1963 - Residential to Industrial

160 acres located south of 19th Street and between Ed Bluestein Boulevard and Missouri, Kansas and Texas Railroad

November 3, 1966 - Industrial to Residential

Approximately 95 acres south of 19th Street and west of MK & T Railroad.

November 3, 1966 - Residential to Industrial

Approximately 200 acres located east of Ed Bluestein Boulevard; west of MK & T Railroad; and approximately 2,400 feet south of 19th Street.

The recommendation of the Planning Commission for the two Master Plan changes on November 3, 1966 were:

1. Retain Industrial designation of 80-acre tract.
2. Change 200-acre tract to Manufacturing and Related Uses.
3. The 100-acres south of 200-acre tract should be designated as "future" industrial.

September, 1969

58 acres from Low Density Residential to Manufacturing and Related Uses located south of 19th Street and west of MK & T Railroad to the east boundary of Craigwood Subdivision.

History

The Austin Plan dated March, 1958 (not adopted by City Council)

Page 65 - Section on Sanitary Sewers

- (4) In addition to the present plant, two additional plants be built as required during planning period, one on Williamson Creek, and the other in the Walnut Creek area.

The Austin Development Plan adopted by the City Council June 8, 1961

Page 25 - Section on Sanitary Sewers

"... a long-range plan has been developed and detail studies are being made for the extension of sewers into the Walnut Creek areas...a third treatment plant will be developed to serve the Big and Little Walnut Creek areas."

Capital Improvements Program adopted by City Council October, 1961

CIP authorized purchase of land for Walnut Creek Wastewater Treatment plant during 1961-62 fiscal year

City purchased land for site between 1962 and 1964

Present treatment facilities put into operation December, 1965

Subdivisions

Springdale Hills - First Section

Recorded October 1, 1962. First Building Permit issued August, 1965

Cavalier Park - First Section

Recorded May 8, 1968. First Building Permit issued February, 1969

Craigwood - First Section

Recorded March 14, 1969. First Building Permit issued June, 1969.

Stone Ridge - Section One (C8s-72-21)

Recorded January 24, 1972.

Estimated Cost of Alternate Plant Site

If the plant is moved about three miles to the east it will cost approximately \$8,900,000 extra. (\$8,500,000 for extension of Crosstown sewer and \$400,000 for land.) This is in addition to slightly over \$11,000,000 for the treatment plant.

Recommendation

The Planning Department recommends approval of this section as:

- 1) Departmental requirements have been met.
- 2) The project needs to be expedited for the City continues to provide wastewater service to the Walnut Creek area.
- 3) The proposed facility should improve the environmental quality of the surrounding area as compared with the existing facility.

South of FM 969 (Webberville Road) between MKT & T & N.O Rail-
road rights-of-way.

STAFF REPORT: This application has been filed as required under Section 10-B, Sub-Section 3, and according to the procedures as specified in the Zoning Ordinance of the City of Austin. This application is for the purpose of allowing expansion and improvement of the existing facilities of the Walnut Creek Sewer Treatment Plant. The site plan has been circulated to the various City departments and the comments are as follows:

Advanced Planning	-	No additional requirements.
Fire Prevention	-	No objections.
Office Engineer	-	Returns on 30-foot driveways should be 10 foot radii.
Director of Public Works	-	No objections.
Electric	-	Plat complies.
Health	-	No objections.
Water and Sewer	-	No comment.
Parks & Recreation Dept.	-	No comment.
Fire Protection	-	Existing fire protection facilities are believed to be adequate.
Storm Sewer	-	Plat complies.
Traffic Engineer	-	Must review final plans for parking, driveways, and circulation.
Building Inspector	-	1.The site plan indicates off-street parking to be provided will consist of 10 visitor spaces and 30 spaces for employees. The Ordinance does not list a parking ratio for this specific use; however, it is recommended that at least 1 space be provided for each employee and a sufficient number to accommodate visitors. 2.Does not include Building Code approval.

The applicant has satisfied all requirements. The staff recommends approval of this project.

TESTIMONY

WRITTEN COMMENT

None

CP14-72-013 City of Austin, Water and Waste Water Department - Contd.

PERSONS APPEARING

Curtis Johnson:	Director of Water and Waste Water	
Mike Breneman:	Chief Engineer with Water and Waste Water	
Glen Pierce:	Civil Engineer with Water and Waste Water	
Henry Benjes:	500 South Evary Rm. 4106	FOR
S. A. Garza:	503 Scarbrough Building	FOR
Cooper H. Wayman,	Regional General Counsel, Region VI	
Environmental Protection Agency		
1600 Patterson,	Dallas, Texas 75201	NO OPINION
Dan Sherwood,	Sanitary Engineer, EPA, Dallas	NO OPINION
Mrs. B. Jacob,	Rt. 1, Box 240	AGAINST
Cleve Moten:	4907 York Hill Drive	AGAINST
Ursula A. Brown:	5308 Northdale Drive	AGAINST
Bill W. Ellis:	7703 Delwan Lane	AGAINST
Sgt. Jones		AGAINST
R. L. Duke		AGAINST
Harold Darby		AGAINST
Lewis Huff		AGAINST
Thirty other area residents		AGAINST

SUMMARY OF TESTIMONY

Arguments Presented FOR:

Mr. Breneman, Chief Engineer with the Water and Waste Water Department, stated that this property was purchased during the time from 1962 through 1964. There has been a temporary treatment plant there since the end of 1965. The proposed plant will preclude many of the alleged faults of the present one. This new plant will serve the Crosstown Tunnel, but would be necessary even without the tunnel. In case of power failure the sewage coming in would be stored; however, two sources of energy are proposed in order to reduce the chance of a power failure. He further stated that due to new processes for the proposed plant, the possibility of odor is substantially reduced. He pointed out that it is not the Wastewater treatment plant that creates the odor but the condition of the sewage when it enters the plant. With the Crosstown Tunnel facilities, the sewage will be kept fresh and not septic. There will be no sludge handling facilities at this plant and no trees or vegetation will be destroyed during construction. The site is within both the twenty-five and one hundred year flood plains, but construction will be above the one hundred year flood plain elevation. A more detailed report from the Water and Waste Water Department is on file with the Zoning Clerk in the Planning Department.

Two representatives from the Environmental Protection Agency addressed the Committee setting forth the government's position at this time. A statement given by Mr. Cooper H. Wayman, Regional General Counsel, Region VI is on file with the Zoning Clerk in the Department of Planning, stating a favorable report and position on the site and its effects on environment, in accord with the preliminary environmental impact statement.

Arguments Presented AGAINST:

Thirty to forty area residents were present in opposition to the Special Permit request. Mr. Cleve Moten was spokesman for the majority of the residents, his statement is on file with the Zoning Clerk in the Department of Planning. The residents present were mainly objecting to the possibility of odor, alleged

CP14-72-013 City of Austin, Water and Waste Water Department - Contd.

fouling of their water wells by the present plant, and the effect the plant has had and will have on their property value, as well as the fact that the City has allowed this Waste Water Treatment Plant so close to a residential development.

Arguments Presented in REBUTTAL:

Mr. Curtis Johnson, Director of Water and Waste Water, replied to comments made by property owners present, stating that during the last eighteen months this waste water treatment plant has been the concern of numerous public hearings by the City Council, Capital Improvements Program Committee, Capital Area Planning Council (Environmental Impact Statement), and the Texas Water Quality Board. The purpose of the plant and the Crosstown Tunnel have been made quite clear and there was a full page ad in the newspaper in regards to this matter. City wells on the site have been monitored and have shown no underground water pollution. This tunnel and waste water treatment plant will serve areas of Austin north of the tunnel. The process to be used at the new plant and the process presently used are entirely different, and the possibility of odor will be drastically reduced. It was well publicized when this property was purchased from 1962 through 1964, that a major waste water treatment plant was planned for this site.

COMMENTS AND ACTION BY THE COMMITTEE

In response to questions from the Committee Mr. Johnson stated that the location five miles further down the creek is an arbitrary figure set up by someone in opposition to this site, and no such relocation has been considered. The Department would not suggest moving the plant that distance. The plant now in existence is only designed for use as a temporary facility.

Mr. Jack Alexander, Assistant Director of Planning, reported that in 1966 two Master Plan changes were granted in the area, one for Tracor and a rollback change for the developers of Craigwood, the latter change being done against the recommendation of the Planning Commission and the Planning Department.

Mr. Taniguchi stated that he did not think that this Committee would take any action on the special permit at this time but will hear the testimony, summarize it, and present it to the full Commission. He stated that a full hearing at the Planning Commission would not be necessary but that a representative of the residents and a representative of the Water and Waste Water Department should be on hand to answer any questions the Commission members might have. A report on the area subdivision activity was requested for the Planning Commission meeting. The Committee then

VOTED: To REFER to the full Planning Commission case CP14-72-013 for action.

AYE: Messrs. Taniguchi, Barrow, Betts, Faulkner and Hetherly.

We, the residents and property owners of Cavalier Park, Craigwood, Stonegate and Springdale Hills subdivisions, became involved in this fight when it came to our attention that, perhaps due to an oversight, the City of Austin was preparing itself, under the direction of certain employed, appointed and elected officials, to construct an enormous sewage treatment plant practically in our back yards.

As it was plain to see that anyone could easily surmise the deleterious effects on these communities by the construction of a 24 million gallon a day sewage treatment plant in the vicinity --- and since we had had no cause to suspect that this caliber of men represented us in city government --- most of us somehow felt that the whole matter was probably a mistake, a rumor, based, if on anything, inaccurate information. For indeed, we hadn't heard anything about it on the news, or read anything about it in the paper. And surely anything that would affect our lives and property to the extent that this would, would have made headlines.

Furthermore, what justification could the city give --- what justification could any city give --- for the strange masochism involved in the destruction of a growing and vital part of itself.

But as strange as the logic, or illogic, of it seemed, it soon became verifiable as fact. And even after formal presentation of our objections and petition embodying the signatures of approximately 250 of the residents to the city council, it was apparent that under the leadership of Mr. Butler, the council would not even attempt to redress our greivances.

But it seemed important to us to know why the city was planning to do this, to fill our lungs and those of our children with the foul air emanating from 24 million gallons of sewage daily; to depreciate the value of our homes and property for which we have had to work so hard and sacrifice so much; to destroy the residential quality of these new growing and vibrant communities and prepare them, in their turn, for the fate of still another urban renewal project.

I am certain that, were we to declare that this act was being perpetrated against us because of our race, the accusation would be met immediately by vehement denials from every quarter. But if this be not the case, then the people of Austin must realize that the same could happen to any community developed in the city of Austin --- in which case it becomes pointless for anyone to invest in a home or residential property in Austin because the city government, in chasing moon beams, can render it valueless overnight.

But the citizenry of Austin is going to be informed of much more than the speculative nature of investments in residential property here, for we are taking it upon ourselves to make them cognizant of a great deal else, that someone has obviously been careful to keep from them --- to wit: That the proposed cross-town tunnel and the presently proposed Walnut Creek sewage treatment plant is, clearly and unquestionably, the biggest fraud ever perpetrated against the people of Austin. You know, it's alright to let someone sell you a dead horse -- if, of course, you're in the soap business, ^{or some other enterprise which could render your purchase meaningful} and, no doubt, profitable. But the people of Austin, who are not in the sewer development ^{gradually and subtly} business, have been sold a cross-town sewer tunnel which it doesn't need, and a sewage treatment plant in a location which it needs even less. All to the tune of \$30 + million dollars.

If we concede that the city of Austin needs to make some improvements in ~~its~~ wastewater collection, channeling and treatment -- and we will; in fact, we will concede that the entire city's sewage system needs to be improved -- for better, more effective and efficient service, to effectively eliminate the pollution of our creeks and streams and to make Austin generally a less polluted environment sufficient to the point of endearing our lives and health and that of our posterity.

Have we justified the existence of a sewer tunnel yet?

If, after conceding that the entire city of Austin needs sewage improvements, we focus our attention on less than 1/4 of the city and commit all of our present resources and our posterity to the amortization of this bonded debt, expending literally a fortune merely to divert a portion of the wastewater in this 1/4 of the city -- gentlemen, have we even begun to solve the problem? And the rest of Austin, the entire city which needs sewage improvements.

When they discover that they will have to pay for this extravagant tunnel of finitesimal value to the tune of a \$4-\$5 a month 'sewer charge' in addition to their water bill, followed later by another increase in that water bill itself -- it might be too late.

There is only one justification for this sewer tunnel, and that is to provide a handful of "fatcats" the opportunity to add considerably to their fortunes at the expense of Austinites. The sole purpose of this sewer tunnel, ultimately, is to provide sewer service to an undeveloped area north-west of Austin - the Bull Creek area - so that a handful of men can develop it and as a result, realize a considerable profit.

Some of the would-be developers of the Bull Creek area are one and the same with the developers who, only a few years ago found it profitable to develop Springdale Hills, Craigwood, Cavalier Park, and Stonegate -- these same communities which they now, with the benevolent assistance of the city government are willing to see destroyed -- in the name of greater profits -- sacrificed for economic expediency; purely economic expediency.

I maintain that the puppets of the land developers, employed by the city, to whose salaries we all contribute, along with certain elected officials whom we all elected, were so embarrassed with the mounting costs of this impractical and unneeded sewer tunnel along with the resulting necessarily unneeded sewage treatment plant, had to make sure the allocation of funds asked for were kept as low as possible.

Therefore, it became economically expedient to sacrifice these communities rather than plan the construction of the sewage treatment plant another 5 miles out and make the already absurd, unneeded expense even more absurd and more apparent.

(In response to the City's statement (Mr. Johnson's) that the enlargement (Change) of the Walnut Creek sewage disposal ponds to a sewage treatment plant was already planned when the property on which it was constructed was purchased)
If this is true, why did the city ^{subsequently} give certain land developers permission to develop the adjacent properties as residential?

Now that there are residential communities in the area, to say that the city still has the right to go ahead with these "original plans," is in my opinion, tantamount to advocating that the federal government, if it be supposed that it (the federal government) had "earmarked" certain properties adjacent to what is now the present city of Austin for the testing of experimental weapons—still has the right to bomb this area in spite of the fact that our city has grown up here.

Commission Approves Expansion of Sewer

By MARY M. MOODY
Staff Writer

City of Austin Water and Waste Water Department Tuesday night received planning commission approval of a special permit for expansion of the Walnut Creek Sewage Treatment Plant—a move opposed by about 400 East Austin residents at last week's public hearing.

The vote was 6-2 with

Commissioner Alan Taniguchi saying his negative vote was a protest of the way the city council has approved residential subdivisions in the area which is largely commercial and industrial.

"Somebody is being wronged here," said Taniguchi, describing his protest vote as a "red flag" to alert the council that the commission wasn't fully satisfied with the matter.

Mrs. Jean Mather also cast a "no" vote. Several other members agreed with Taniguchi but some noted the sewage treatment plant had been in the area before most of the housing. Taniguchi said he felt the sewer was a symbol in the East Austin area of ill treatment. He said the residents didn't like the idea of sewage from North Austin draining into East Austin.

Chairman William Milstead said it was not a matter of direction but rather of elevation and that the sewage has to go from "up high to low."

Water and Waste Water Department Director Curtis Johnson told the commission that the odors after the extension would be less than they are now because of newer treatment methods.

The treatment plant will be at one end of the new cross-town sewer tunnel now under construction. City officials said to move the location of the plant three miles east would raise the cost of the plant by more than \$8,900,000. Construction cost of the tunnel is estimated at \$18.3 million.

The commission denied a request by area residents to have one spokesman tell their side of the issue for three minutes. A city attorney spokesman said that if new testimony was given the hearing would have to be readvertised. The official hearing on the issue was held last week before the zoning committee.

Opponents to the permit have 10 days in which to file a written notice of appeal to the city council.

In other action, the commission decided to postpone a request for an amendment to the Austin Development Plan to allow the Austin Bridge Company to build a hot mix asphalt plant north of the city at the intersection of McNeil Road and FM 1525.

A number of council members spoke in opposition to changing the land designation to allow manufacturing and industrial usage, contending that the land is developing residentially.

The matter will probably be reconsidered in June when several large tracts of land outside the city limits will be studied for new land usage, said planning director Dick Lillie.

all 12

STATEMENT TO BE PRESENTED AT THE PUBLIC HEARING
AUSTIN, TEXAS

WE APPRECIATE THE OPPORTUNITY TO PARTICIPATE IN THIS HEARING. PUBLIC HEARINGS OF THIS NATURE ARE AN EFFECTIVE MEANS WHEREBY THE ENVIRONMENTAL PROTECTION AGENCY CAN BE ASSURED THAT THE PUBLIC IS INFORMED TO THE MAXIMUM EXTENT OF PROPOSED ACTIONS THAT WILL AFFECT THE ENVIRONMENT.

THE NATIONAL ENVIRONMENTAL POLICY ACT OF 1969 REQUIRES THAT ENVIRONMENTAL ASPECTS BE GIVEN APPROPRIATE CONSIDERATION IN DECISION MAKING ALONG WITH ECONOMIC AND TECHNICAL CONSIDERATIONS FOR ALL PROJECTS WHERE A MAJOR FEDERAL ACTIVITY IS INVOLVED.

AS YOU KNOW, THE CITY OF AUSTIN HAS REQUESTED FEDERAL ASSISTANCE FOR FINANCING THE PLANNING AND CONSTRUCTION OF THE PROPOSED WASTEWATER TREATMENT FACILITIES, INCLUDING THE CROSSTOWN INTERCEPTOR AND EXPANSION AND MODIFICATIONS OF THE EXISTING WALNUT CREEK TREATMENT PLANT. THE ENVIRONMENTAL ASSESSMENT AS PERFORMED BY OUR OFFICE REVEALED THAT THE CONSTRUCTION AND OPERATION OF THESE FACILITIES MIGHT HAVE A SIGNIFICANT IMPACT ON THE QUALITY OF THE HUMAN ENVIRONMENT; CONSEQUENTLY, A DRAFT ENVIRONMENTAL IMPACT STATEMENT WAS PREPARED BY THE ENVIRONMENTAL PROTECTION AGENCY, REGION VI. THE DRAFT ENVIRONMENTAL IMPACT STATEMENT WAS DISTRIBUTED TO FEDERAL, STATE AND LOCAL AGENCIES, AND TO INDIVIDUALS. THEIR COMMENTS WILL BE INCLUDED IN AN APPENDIX TO THE FINAL ENVIRONMENTAL IMPACT STATEMENT.

THE INTENT OF THE ENVIRONMENTAL IMPACT STATEMENT PROCEDURES

APR 19 1972

IS TO ENSURE THAT PUBLIC PARTICIPATION IS AN INTEGRAL PART OF PLANNING OF PROPOSED ACTIONS BY THE ENVIRONMENTAL PROTECTION AGENCY.

COPIES OF THE ENVIRONMENTAL ASSESSMENT PREPARED BY THE CITY OF AUSTIN, THE ENVIRONMENTAL APPRAISAL AND DRAFT IMPACT STATEMENT PREPARED BY THE ENVIRONMENTAL PROTECTION AGENCY ARE AVAILABLE FOR THOSE WHO WOULD LIKE TO REVIEW THOSE DOCUMENTS.

THE CITY OF AUSTIN HAS BEEN RESPONSIVE TO SUGGESTIONS AND CRITICISMS BY ENVIRONMENTAL GROUPS. THE PROPOSED PROJECT AS PLANNED GIVES DUE CONSIDERATION TO ENVIRONMENTAL ASPECTS, AND THE CITY OF AUSTIN HAS BEEN VERY COOPERATIVE IN INCLUDING ADDITIONAL FEATURES IN THE PROJECT THAT MIGHT REDUCE ADVERSE EFFECTS ON THE ENVIRONMENT AS REVEALED BY THE ENVIRONMENTAL IMPACT STATEMENT PROCESS.

WE ARE AWARE THAT RESIDENTS OF EAST AUSTIN, IN THE VICINITY OF THE EXISTING WALNUT CREEK WASTEWATER TREATMENT PLANT, HAVE EXPRESSED OBJECTIONS TO THE LOCATION OF ADDITIONAL FACILITIES AT THE WALNUT CREEK SITE. THESE CITIZENS CONTEND THAT THE NEW PLANT WILL CAUSE OFFENSIVE ODORS IN THE NEIGHBORHOOD, PRODUCE HEALTH HAZARDS, AND WILL INHIBIT FURTHER EXPANSION AND GROWTH IN THE AREA. THE CITIZENS FEEL THAT AN ALTERNATE SITE APPROXIMATELY FIVE MILES FURTHER SOUTHEAST WILL NOT ADVERSELY AFFECT EXISTING AND FUTURE DEVELOPMENT.

HISTORICALLY, MOST OBJECTIONS TO SITE LOCATION STEM FROM ODORS ASSOCIATED WITH TREATMENT FACILITIES. UNFORTUNATELY, TREATMENT PLANTS IN THE PAST HAVE BEEN A SOURCE OF OBNOXIOUS

ODORS. MODERN DESIGN CONCEPTS CAN MINIMIZE SUCH ODORS. THE TEXAS WATER QUALITY BOARD AND ENVIRONMENTAL PROTECTION AGENCY WILL ENSURE THAT PLANS AND SPECIFICATIONS WILL INCLUDE DESIGN FEATURES TO CONTROL ODORS.

THE TUNNEL CONCEPT IN ITSELF WILL GREATLY REDUCE ODORS. OBJECTIONABLE ODORS AT THE TREATMENT SITE WILL RESULT ONLY IF INCOMING SEWAGE IS SEPTIC BECAUSE OF LONG TRAVEL TIME FROM COLLECTION TO TREATMENT. THE TUNNEL GREATLY REDUCES THE TRAVEL TIME. ALSO, THE AIR INTERCHANGE SYSTEM IN THE TUNNEL INHIBITS THE FORMATION OF HYDROGEN SULFIDE, THE PRIMARY OBJECTIONABLE ODOR.

THE ENVIRONMENTAL IMPACT OF THE PROPOSED WALNUT CREEK TREATMENT FACILITIES ON ESTABLISHED LAND USE IS OF CONCERN TO CITIZENS OF EAST AUSTIN. WE HAVE RECONNOITERED THE AREA AND REVIEWED THE HISTORY OF THE EXISTING SITE.

THE CLOSEST HOUSING IS 600-700 FEET FROM THE PROPOSED SITE; THE CLOSEST RECENT DEVELOPMENT, CRAIGWOOD, IS APPROXIMATELY 1400 FEET FROM THE SITE.

THE CITY OF AUSTIN PURCHASED THE WALNUT CREEK SITE DURING THE YEARS 1962 TO 1964 FOR THE PURPOSE OF DEVELOPING THE LAND AS A TREATMENT FACILITY. LAND USE IN THE PROXIMATE AREA SHOULD BE RESTRICTED IN THE IMMEDIATE VICINITY OF THE TREATMENT PLANT.

ALTHOUGH SITE SELECTION IS THE PRIMARY RESPONSIBILITY OF THE PUBLIC ENTITY APPLYING FOR A FEDERAL GRANT, IN THIS CASE, THE CITY OF AUSTIN, THE ENVIRONMENTAL PROTECTION AGENCY IS RESPONSIBLE FOR REVIEWING THE SITE SELECTION TO ENSURE THAT

PROPOSED LOCATION WILL MINIMIZE ADVERSE IMPACT AND WILL AVOID, TO THE FULLEST EXTENT PRACTICABLE, UNDESIRABLE CONSEQUENCES FOR THE ENVIRONMENT.

THIS PUBLIC HEARING WILL SERVE TO IDENTIFY ADDITIONAL ADVERSE IMPACT THAT SHOULD BE CONSIDERED AND WILL FACILITATE THE SOLUTION OF CONFLICT OR PUBLIC CONTROVERSY. THE COMMENTS, SUGGESTIONS, AND ISSUES SURFACED AT THIS HEARING WILL BE ADDRESSED IN THE FINAL IMPACT STATEMENT.

GRAVES, DOUGHERTY, GEE, HEARON, MOODY & GARWOOD

IRELAND GRAVES (1985-1969)
J CHRYSS DOUGHERTY
THOMAS GIBBS GEE
ROBERT J. HEARON, JR.
DAN MOODY, JR.
WILLIAM L. GARWOOD
JAMES A. WILLIAMS
BEN F. VAUGHAN, III
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THE AUSTIN NATIONAL BANK BUILDING
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AUSTIN, TEXAS 78767

W. ST. JOHN GARWOOD
OF COUNSEL

TELEPHONE
478-6421
AREA CODE 512

August 3, 1971

RECEIVED
AUG 5 1971

DEPT. OF WATER AND
WASTEWATER TREATMENT

Texas Water Quality Board
1108 Lavaca Street
Austin, Texas 78701

Re: Application of City of Austin
(Walnut Creek Plant) for amend-
ment to Waste Control Order
#10543, Walnut Creek and
Colorado River, Travis County
Hearing, August 5, 1971.

Gentlemen:

This statement is filed with reference to the above application on behalf of Morrison Enterprises, a partnership composed of Patricia Morrison Carothers, Charles H. Morrison and Gary E. Morrison, whose address is #301, Austin National Bank Building, Austin, Texas. Attendance at the hearing is not anticipated, but the Hearing Commission and the Board are respectfully urged to consider the matters here set out in passing on the application.

Morrison Enterprises is the owner of a tract of over 300 acres out of the Phillip McElroy League No. 18 fronting on the Colorado River immediately east of and adjoining the Travis State School property. The tract is bounded on the north by F.M. Road 969, on the east by a subdivision of smaller tracts, on the south by the Colorado River, and on the west by the Travis State School. Walnut Creek enters the tract near the southwest corner and crosses the tract almost to the east boundry before it enters the main body of the Colorado River. Over a large part of this distance Walnut Creek follows what is apparently an old bed of the Colorado.

The Walnut Creek Plant is located on Walnut Creek a relatively short distance upstream from the Morrison Enterprises tract, on the west side of the Travis State School. The proposed average

discharge of 25,000,000 gallons per day of domestic sewage effluent would flow down Walnut Creek, crossing the Travis School tract and the Morrison Enterprises tract before entering the Colorado River. Accordingly, Morrison Enterprises has a definite interest in this application, and requests that serious consideration and study be given to the following points:

1. Considerable erosion is now occurring along the high bank on the north side of Walnut Creek, particularly on the Travis School tract and the west portion of the Morrison Enterprises tract. This is observable on the ground and has necessitated moving fences back as the bluff line recedes. Using Walnut Creek to transport an additional 25,000,000 gallons per day average flow will obviously worsen the erosion problem along the north bank and possibly cause serious damage to the Morrison Enterprises tract.

2. The area south of Walnut Creek is generally bottom land with several higher islands. Walnut Creek itself runs across this bottom a considerable distance essentially parallel to the river before it enters the river. In fact for a part of this distance the creek flows along an abandoned segment of river bed, the main stream of the river now being further south. This entire area is subject to flooding. It seems probable that granting of the permit would not only add to the general flooding problems, but could result in stagnant pools and poor drainage in the flat bottom areas.

3. Walnut Creek is an intermittent stream with an unsteady flow except in times of flood or after recent rains. The 25,000,000 gallons per day is such a large quantity, compared to the average stream flow, that Walnut Creek would become nothing more than a conduit for the sewage effluent.

4. The highest and best use of the Morrison Enterprises tract is as subdivision land, and it ultimately will be so developed by someone. The tract to the east has already been subdivided and there are several small property owners abutting the bottom land near Walnut Creek. Hence the area should not be considered as if it were farm or ranch land only, but as potential residential property with considerably higher population density than it now has. Flowing 25,000,000 gallons per day of sewage effluent through Walnut Creek under these circumstances should be given very careful study.

The problems of erosion, stagnation and the like could be greatly reduced by dredging a more direct channel from near the Walnut Creek plant to the river. This would avoid the long

August 4, 1971

crossing of the bottom land through the meandering Walnut Creek channel and take the effluent on a more direct course to the river. It is respectfully urged that serious consideration be given to such a new direct channel as a condition to approval of the application.

It is recognized that the Board and its staff are qualified to judge the technical sufficiency of the treatment facility proposed, and Morrison Enterprises as an adjoining property owner respectfully urges that sufficiently high standards be adopted to avoid any pollution of Walnut Creek or the Colorado River.

The opportunity of presenting this statement is appreciated. We would appreciate being kept advised of the results of the hearing.

Yours very truly,

GRAVES, DOUGHERTY, GEE, HEARON,
MOODY & GARWOOD

By _____
Robert J. Hearon, Jr.

Attorneys for Morrison Enterprises

RJH/sm

cc: Mr. Dave Smallhorst
City of Austin

Morrison Investments

TABLES

Table 1
PRETREATMENT FACILITIES
DESIGN CRITERIA

Tunnel Extension			
Size (inch)	96		
Capacity (mgd)	130		
Siphon			
		<u>Diameter</u>	
	<u>30 Inch</u>	<u>30 & 42 Inch</u>	<u>30 & 2 - 42 Inch</u>
Minimum flow (mgd)	7	19	65
Maximum flow (mgd)	19	65	130
Mechanical			
Number	2		
Capacity (mgd)	130		
Aerated Grit Chamber			
Number	2		
Size (l x w x d)	60 x 18 x 16		
Volume (cu ft/gal)	34,500/259,000		
Air flow (cfm)	360 to 720		
Condition	<u>Design Average</u>	<u>Maximum Day</u>	<u>Peak Hour</u>
Flow (mgd)	27	36	131
Detention (minutes)	14	10	3
Primary Sedimentation			
Number	2		
Size (l x w x d)	120 x 120 x 8		
Area (sq ft)	28,800		
Volume (cu ft/gal)	230,000/1,728,000		
Condition	<u>Design Average</u>	<u>Maximum Day</u>	<u>Peak Hour</u>
Flow (mgd)	27	36	131
Overflow rate (gal/sq ft/day)	940	1,250	4,500
Detention (hour)	1.5	1.2	0.3
Estimated Removal			
BOD In (mg/l)	200		
BOD Out (mg/l)	150		
SS In (mg/l)	220		
SS Out (mg/l)	110		
Equalization Basins			
Number	2		
Size (l x w x d)	250 x 120 x 12		
Area (sq ft)	60,000		
Volume (cu ft/gal)	720,000/5,400,000		
Air flow (cfm)	6,000 to 12,000		
Pumping Station			
	<u>Design</u>	<u>2000</u>	
Raw Wastewater Section			
Installed capacity (mgd)	10.5	10.5	
Firm capacity (mgd)	7.0	7.0	
Number of units	3	3	
Settled Wastewater Section			
Installed capacity (mgd)	36	48	
Firm capacity (mgd)	24	36	
Number of units	3	4	
Emergency Diversion Section			
Installed capacity (mgd)	36	54	
Firm capacity (mgd)	18	36	
Number of units	2	3	

Table 2

BIOLOGICAL TREATMENT – LIQUID PROCESS DESIGN CRITERIA

Activated Sludge Process

Aeration Basins

Contact Stabilization Process

Number 2

Size (l x w x d) 36 x 144 x 15

Volume (cu ft/gal) 155,000/1,160,000

Condition Design Average

Flow (mgd) 18

BOD (lb/day) 30,000

Detention time

Contact (hr) 0.88

Recirculation (hr)* 6.20

Complete Mix Process

Number 2

Size (l x w x d) 144 x 144 x 15

Volume (cu ft/gal) 622,000/4,660,000

Condition Design Average

Flow (mgd) 18

BOD (lb/day) 30,000

Detention (hr)** 6.2

MLSS concentration (mg/l) 3,000

BOD loading

lb BOD/1000 cu ft 48

lb BOD/lb MLSS 0.26

Filtration

Number 2

Size (l x w x d) 60 x 40 x 14

Volume (cu ft/gal) 67,200/504,000

Condition Design Average

Flow (mgd)*** 30.0

Detention (hr) 0.4

Reaeration Zone

Number 2

Size (l x w x d) 108 x 144 x 15

Volume (cu ft/gal) 465,000/3,500,000

Condition Peak Flow

Flow (mgd) 24

BOD (lb/day) 40,000

Detention time

Contact (hr) 0.66

Recirculation (hr)* 4.66

Complete Mix Process

Number 2

Size (l x w x d) 144 x 144 x 15

Volume (cu ft/gal) 622,000/4,660,000

Condition Design Average

Flow (mgd) 18

BOD (lb/day) 30,000

Detention (hr)** 6.2

MLSS concentration (mg/l) 3,000

BOD loading

lb BOD/1000 cu ft 48

lb BOD/lb MLSS 0.26

Filtration

Number 2

Size (l x w x d) 60 x 40 x 14

Volume (cu ft/gal) 67,200/504,000

Condition Design Average

Flow (mgd)*** 30.0

Detention (hr) 0.4

Sedimentation

Number 2

Size (l x w x d) 140 x 140 x 12

Area (sq ft) 39,200

Volume (cu ft/gal) 470,000/3,500,000

Condition Design Average

Flow (mgd) 18

Return flow (mgd) 12

MLSS (mg/l) 3,000

Return SS (mg/l) 8,000

Detention (hr)* 2.8

Overflow rate (gpd/sq ft) 460

Underflow rate (lb/sq ft/day) 19

Estimated removal

BOD In (mg/l) 200

BOD Out (mg/l) 20

SS In (mg/l) 220

SS Out (mg/l) 20

Filtration

Number 2

Size (l x w x d) 35 x 30

Area (sq ft) 2,100

Condition Design Average

Flow (mgd) 9

Filtration rate (gpm/sq ft) 3

Estimated efficiency

BOD In (mg/l) 20

BOD Out (mg/l) 5

SS In (mg/l) 20

SS Out (mg/l) 5

Chlorine Contact Basin

Number 2

Size (l x w x d) 75 x 25 x 12

Volume (gal) 336,600

Normal flow (mgd)/Peak flow (mgd) 18/24

Contact time (minutes) 27/20

Blended quality final effluent

BOD and SS 12

Peak Flow

12

4

* Based on recirculation = 75% Q.

** Based on influent Q only.

*** Including return flow.

Table 3
BIOLOGICAL TREATMENT – SOLIDS DISPOSAL

	<u>Cell 1</u>	<u>Cell 2</u>
Aerobic Digester		
Number	2	2
Size (l x w x d)	200 x 36 x 12	130 x 36 x 12
Volume (cu ft/gal)	173,000/1,300,000	112,500/840,000
Condition	<u>Design Average</u>	<u>Peak Flow</u>
Flow (mgd)	0.145	0.18
Solids (lb/day)	24,000	30,000
Detention (days)		
Cell 1	9.0	7.2
Cell 2	5.8	4.7
Estimated removal		
Solids In (lb/day)	24,000	30,000
Solids Out (lb/day)	16,000	20,000
Land Disposal Alternative		
Transfer line		
Size (inch dia)		8
Flow rate (mgd)		0.5
Solids concentration (mg/l)		3,800
Dewatering and Disposal		
Thickener		
Number		2
Area (sq ft)		2,000
Application rate (lb/sq ft/day)		12
Float solids concentration (%)		4
Filter		
Number		4
Capacity (lb/day)		24,000
Cake solids concentration (%)		10
Land		
Area (acres)		20

TABLE 4

COMPARISON OF COSTS
TREATMENT PLANT ALTERNATIVES

CAPITAL COST	<u>Biological</u> \$	<u>Biological</u> w/Alum \$	<u>Biological</u> w/Lime \$	<u>P-C</u> w/o Recalcining \$	<u>P-C</u> w/Recalcining \$	<u>P-C</u> Z/M Process \$
Pretreatment	3,293,000	3,293,000	3,293,000	3,293,000	3,293,000	3,293,000
Secondary Treatment	<u>7,108,000</u>	<u>7,243,000</u>	<u>9,345,000</u>	<u>7,609,000</u>	<u>9,221,000</u>	<u>9,764,200</u>
TOTAL	10,401,000	10,536,000	12,638,000	10,902,000	12,514,000	13,057,200
Engr., Legal, Adm.	<u>1,040,000</u>	<u>1,054,000</u>	<u>1,264,000</u>	<u>1,090,000</u>	<u>1,251,000</u>	<u>1,306,000</u>
TOTAL CAPITAL COST	11,441,000	11,590,000	13,902,000	11,992,000	13,765,000	14,363,200
Amortized Capital Cost*	895,000	906,600	1,087,500	938,000	1,077,000	1,124,000
OPERATING COST	481,200	796,400	646,500	846,700	870,700	828,800
Total Annual Cost	1,376,200	1,703,000	1,734,000	1,784,700	1,947,700	1,952,800
Cost/Million Gallons Treated**	209	259	264	272	296	297

* - 6% - 25 years

** - based on 18 mgd.

TABLE 5

ESTIMATED EFFLUENT QUALITY

<u>Parameter</u>	<u>Biological</u>	<u>Biological w/Alum</u>	<u>Biological w/Lime</u>	<u>Physical Chemical</u>	
				<u>Low Lime</u>	<u>High Lime</u>
BOD	12	5	5	10*	6*
COD	60	45	40	25	15
SS	12	5	5	5	5
P	9	<1	<1	<1	<1

* Not including biological removal.

FIGURES

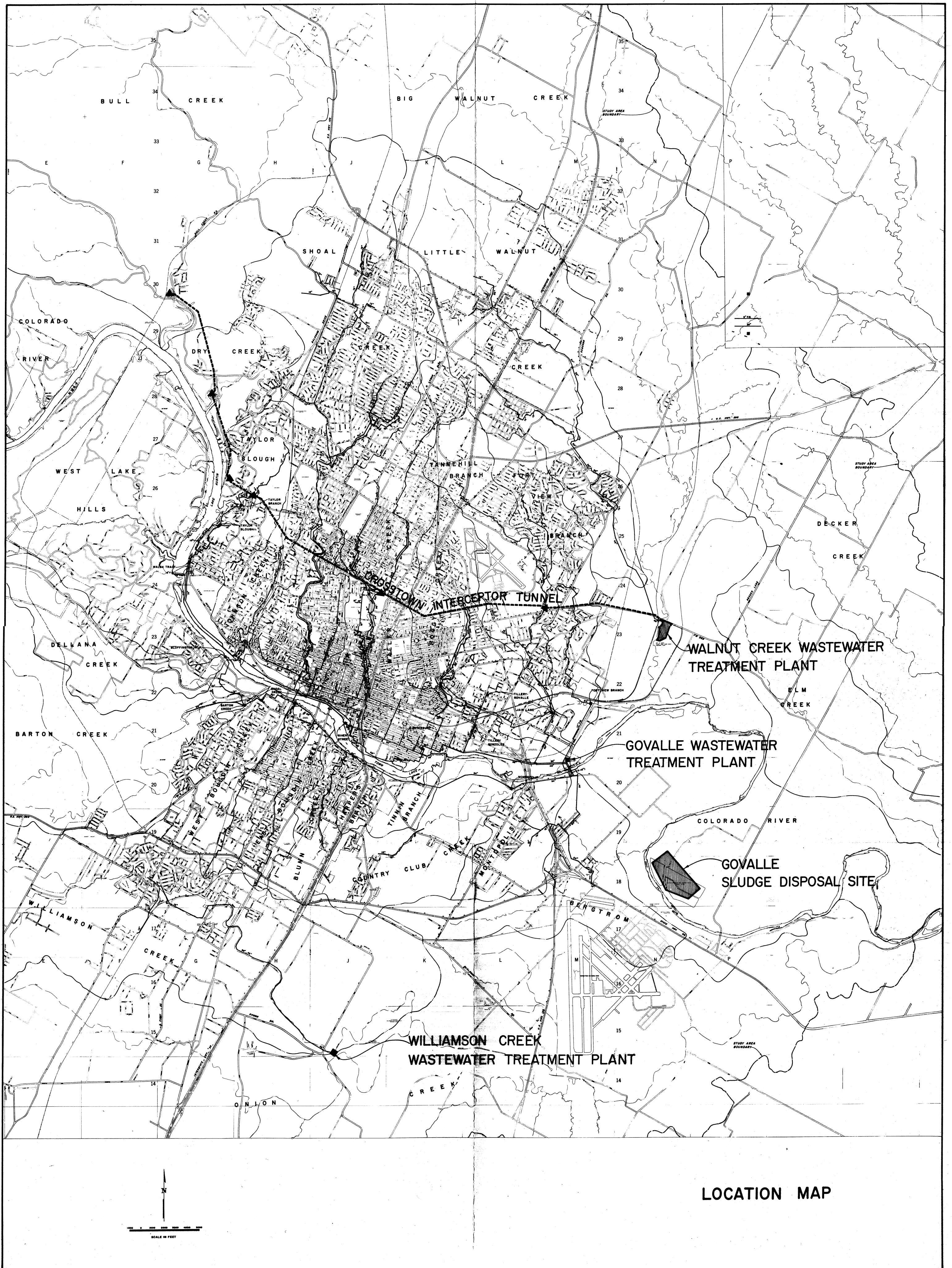


FIGURE 1

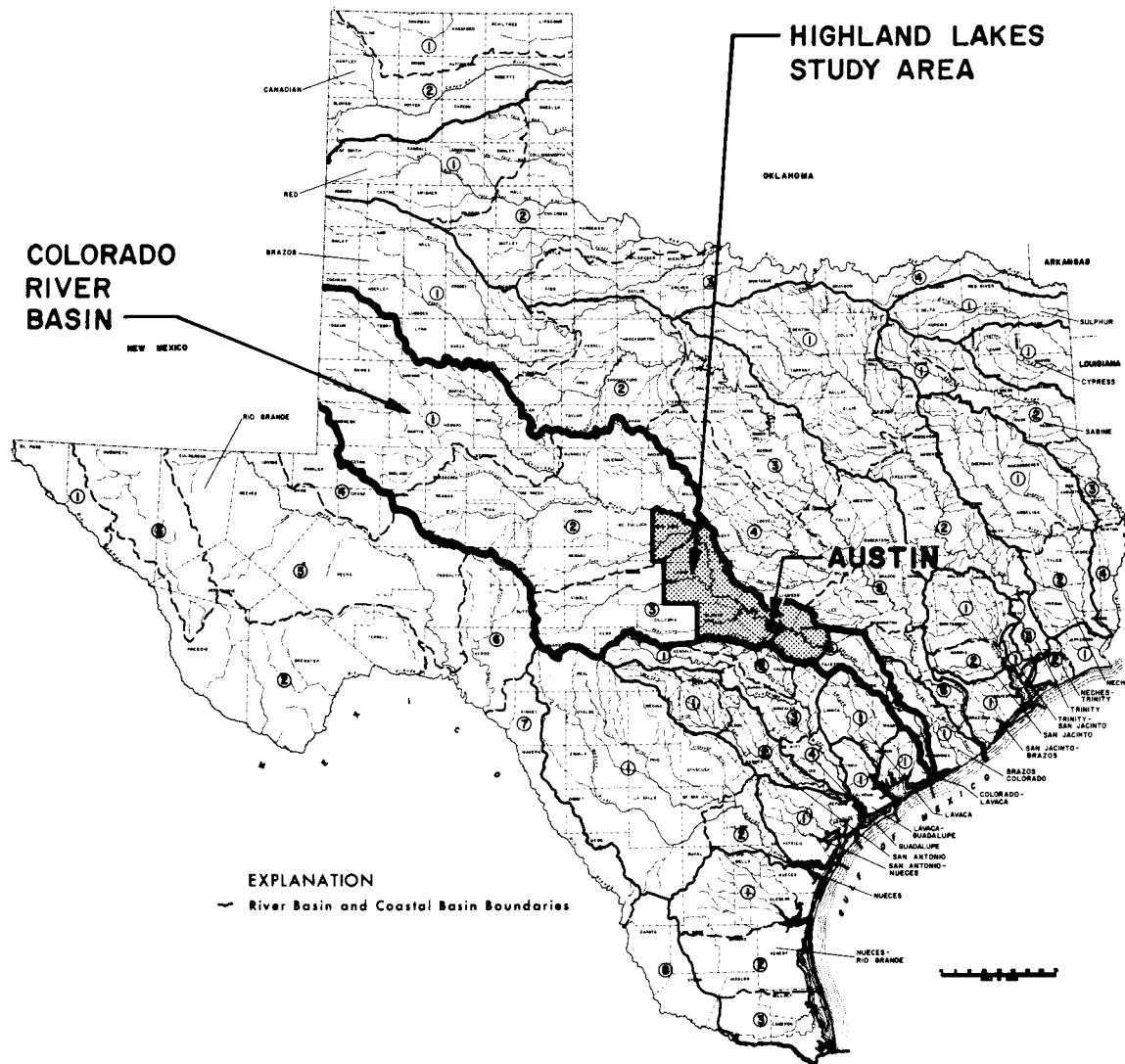


Figure 1-A

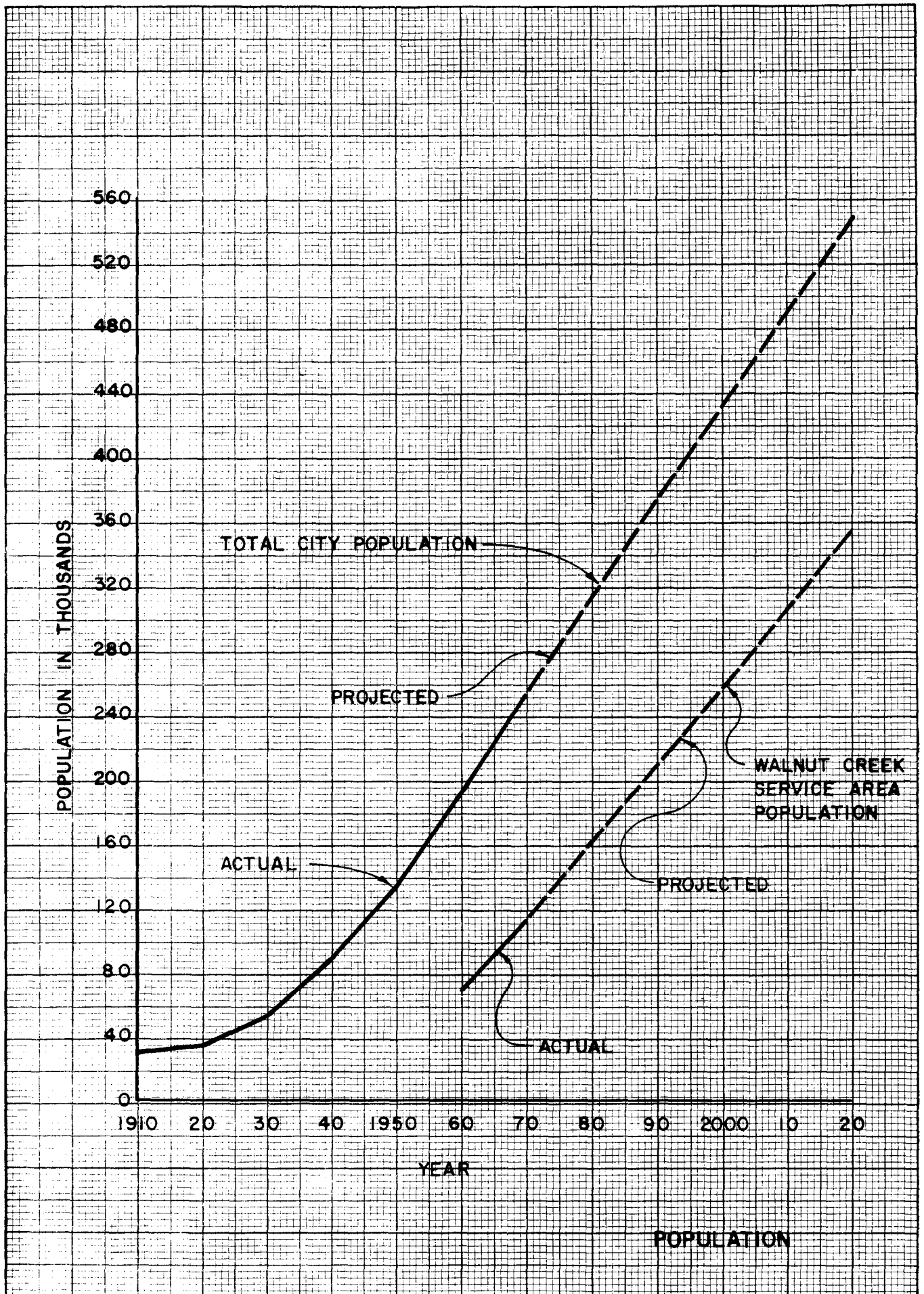
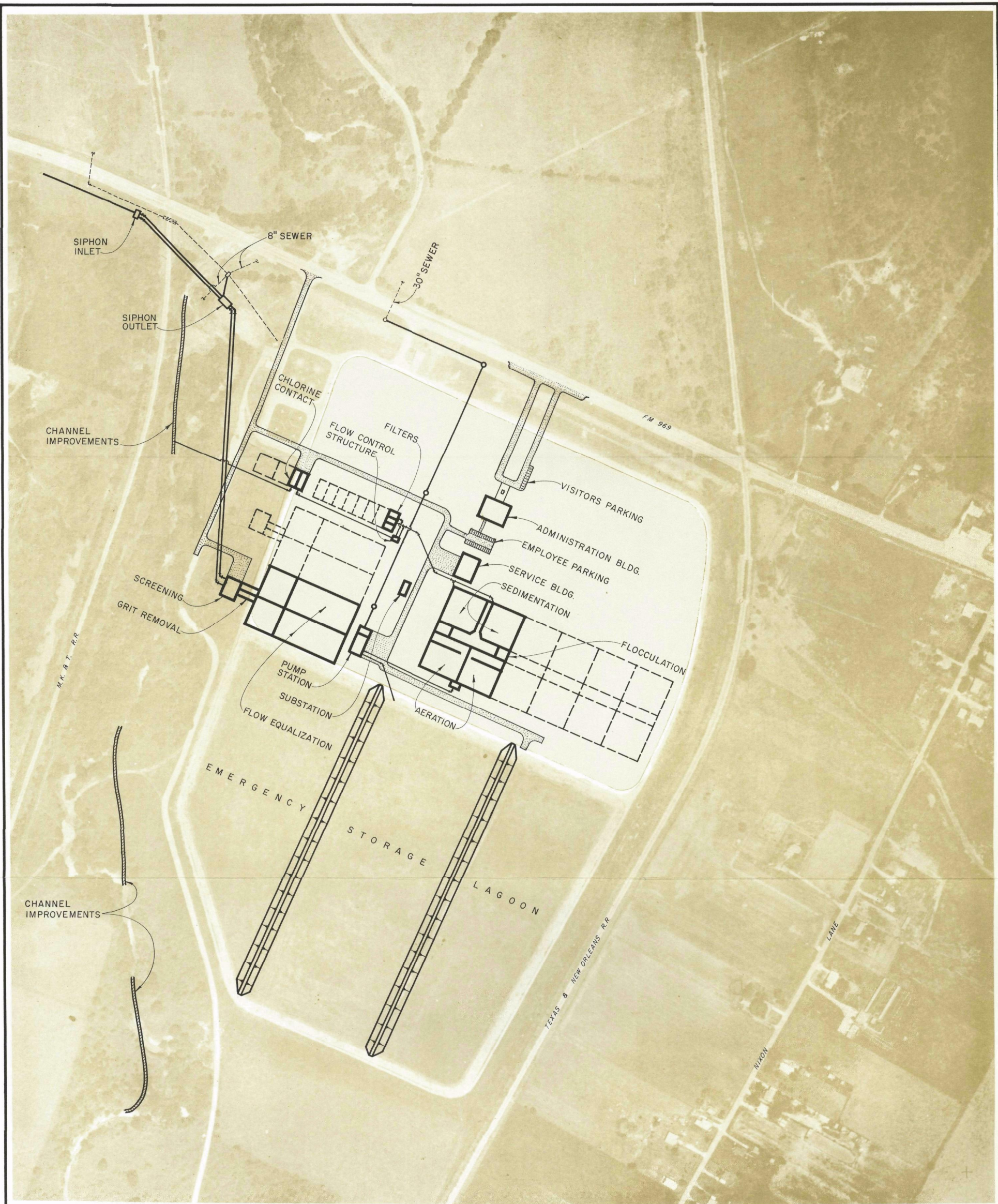
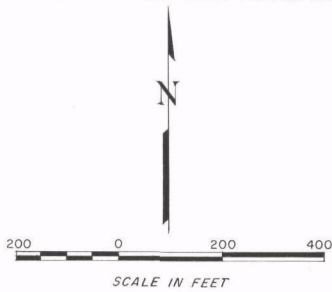


Figure 2

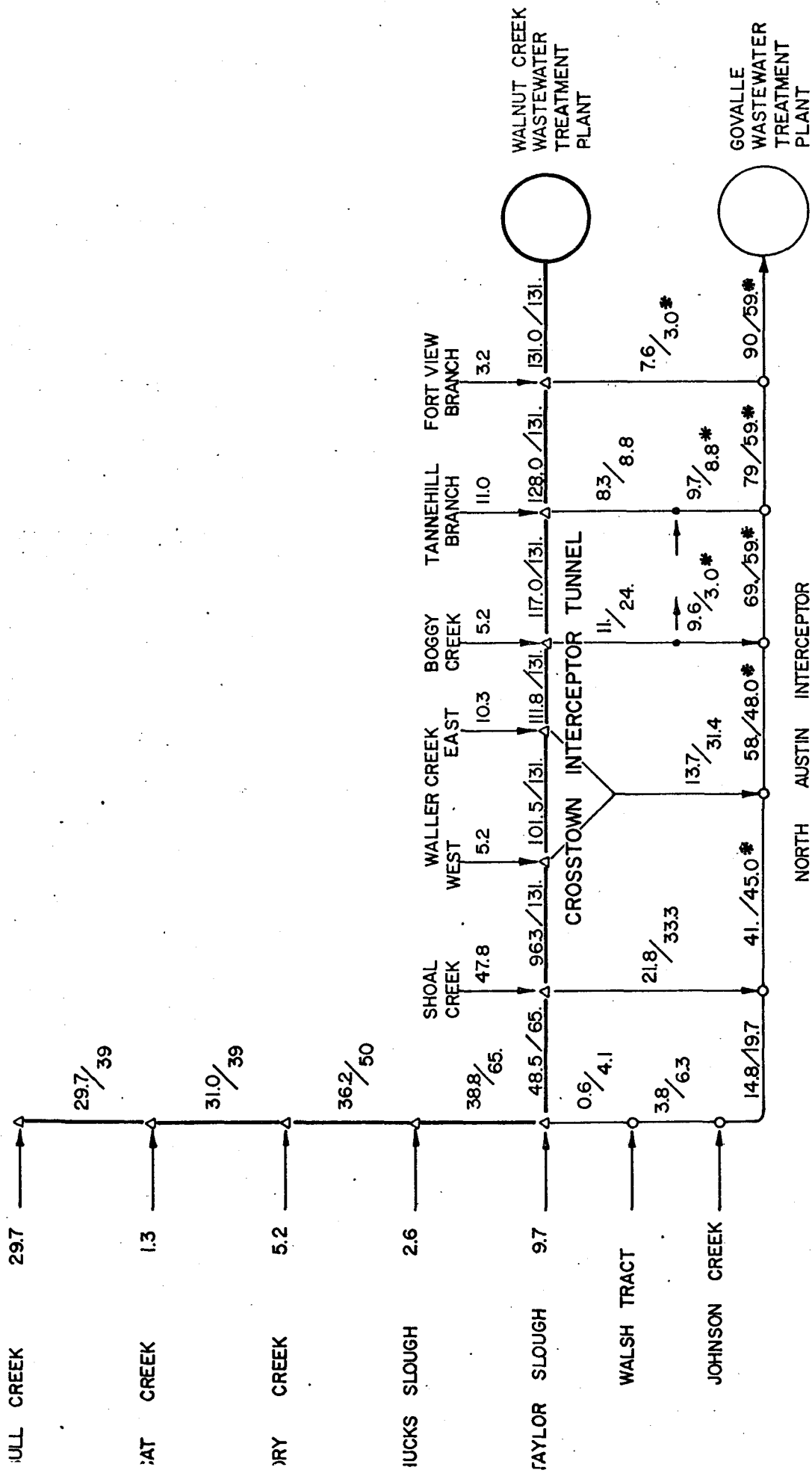


- LEGEND**
- PROPOSED STRUCTURE
 - FUTURE STRUCTURE
 - PROPOSED PIPING
 - EXISTING PIPING
 - PROPOSED DRIVE



**BIOLOGICAL TREATMENT
GENERAL LAYOUT**

FIGURE 3



LEGEND

41.0 / 45.0 — 2020 DESIGN PEAK FLOW
SEWER CAPACITY

* DENOTES THAT PLANS (NOT INCLUDED IN THIS PROJECT) ARE IN THE MASTER PLAN FOR RELIEF SEWERS AT A FUTURE DATE.

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TREATMENT PROJECT

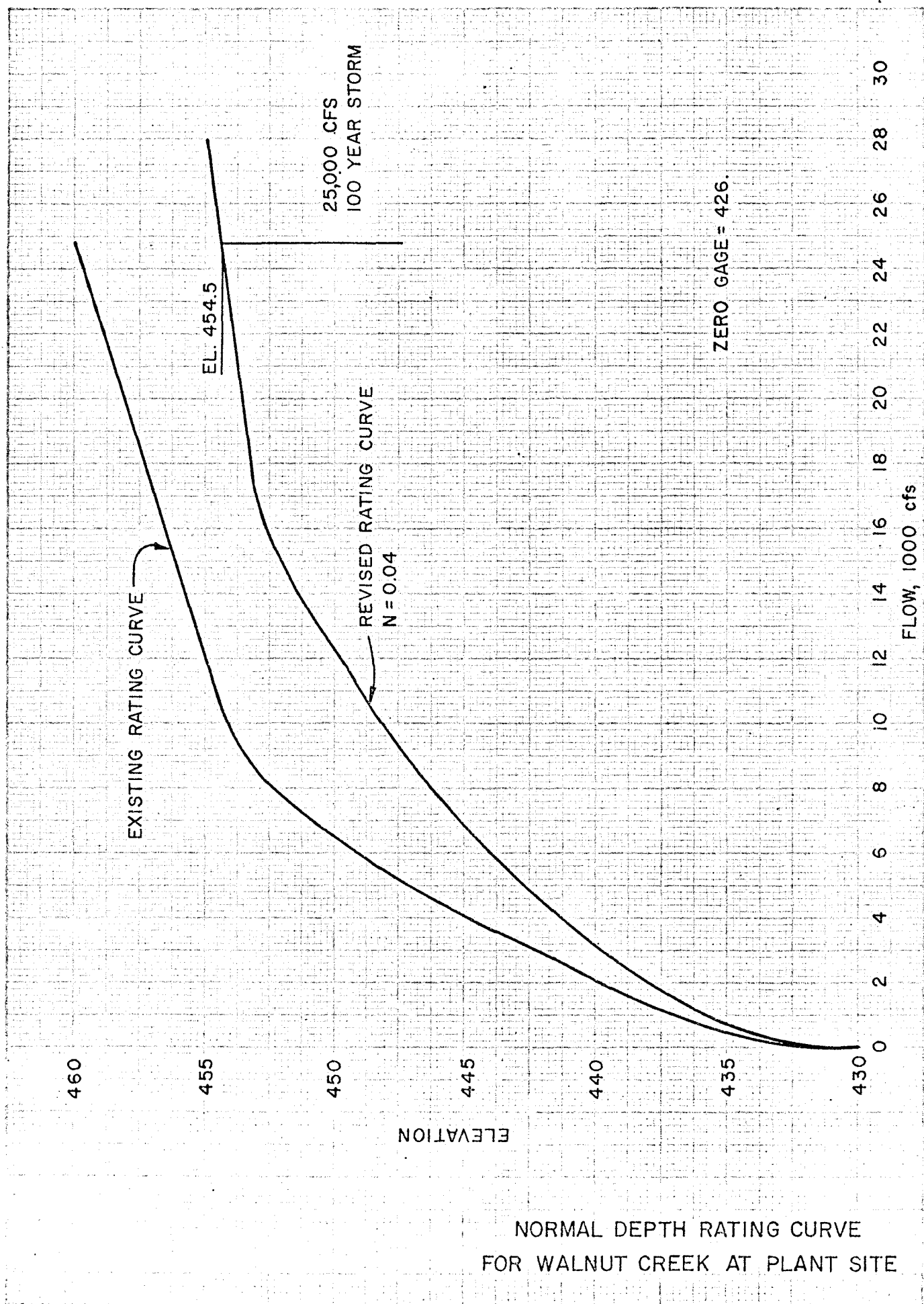
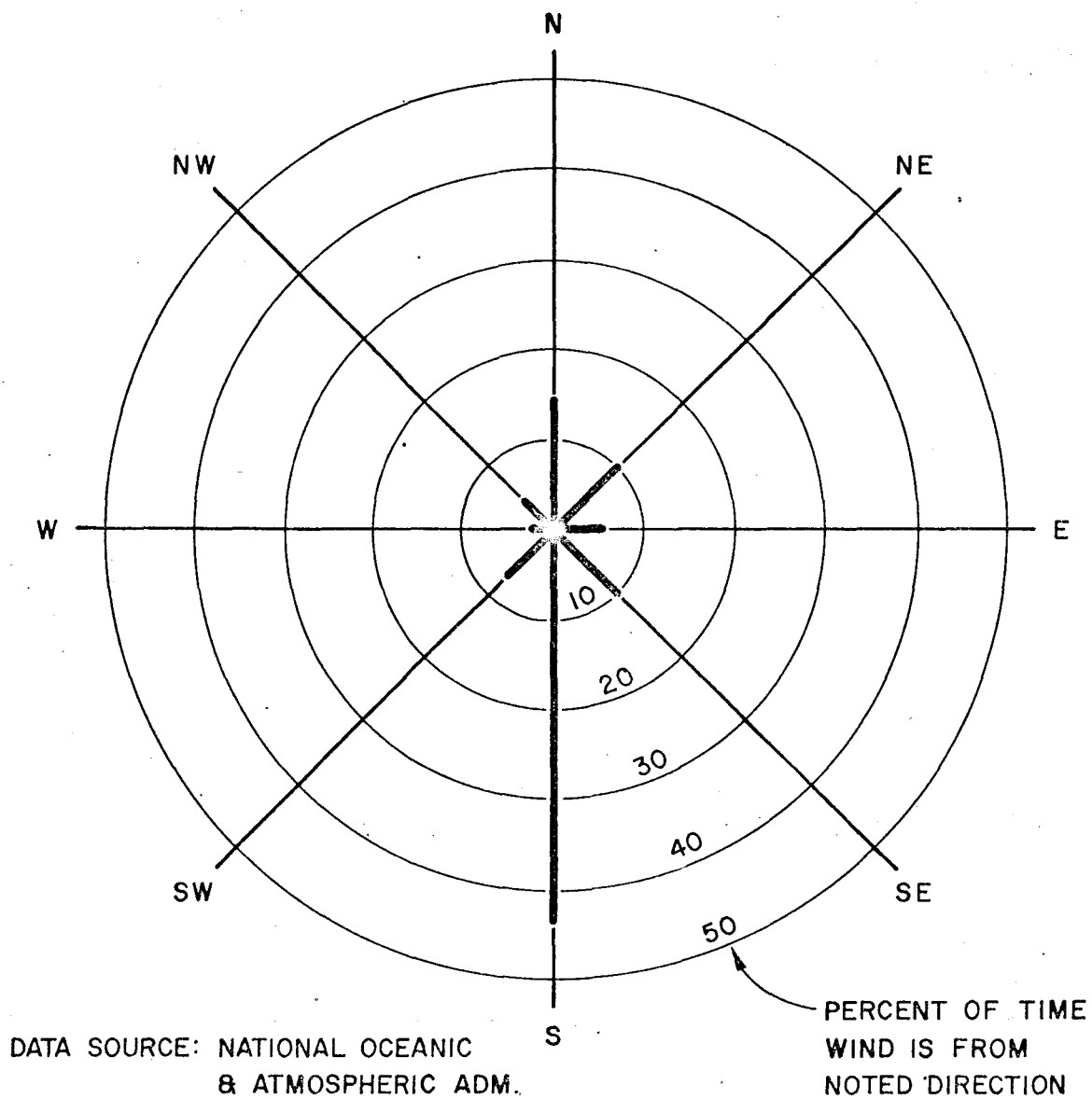


Figure 5



WINDROSE

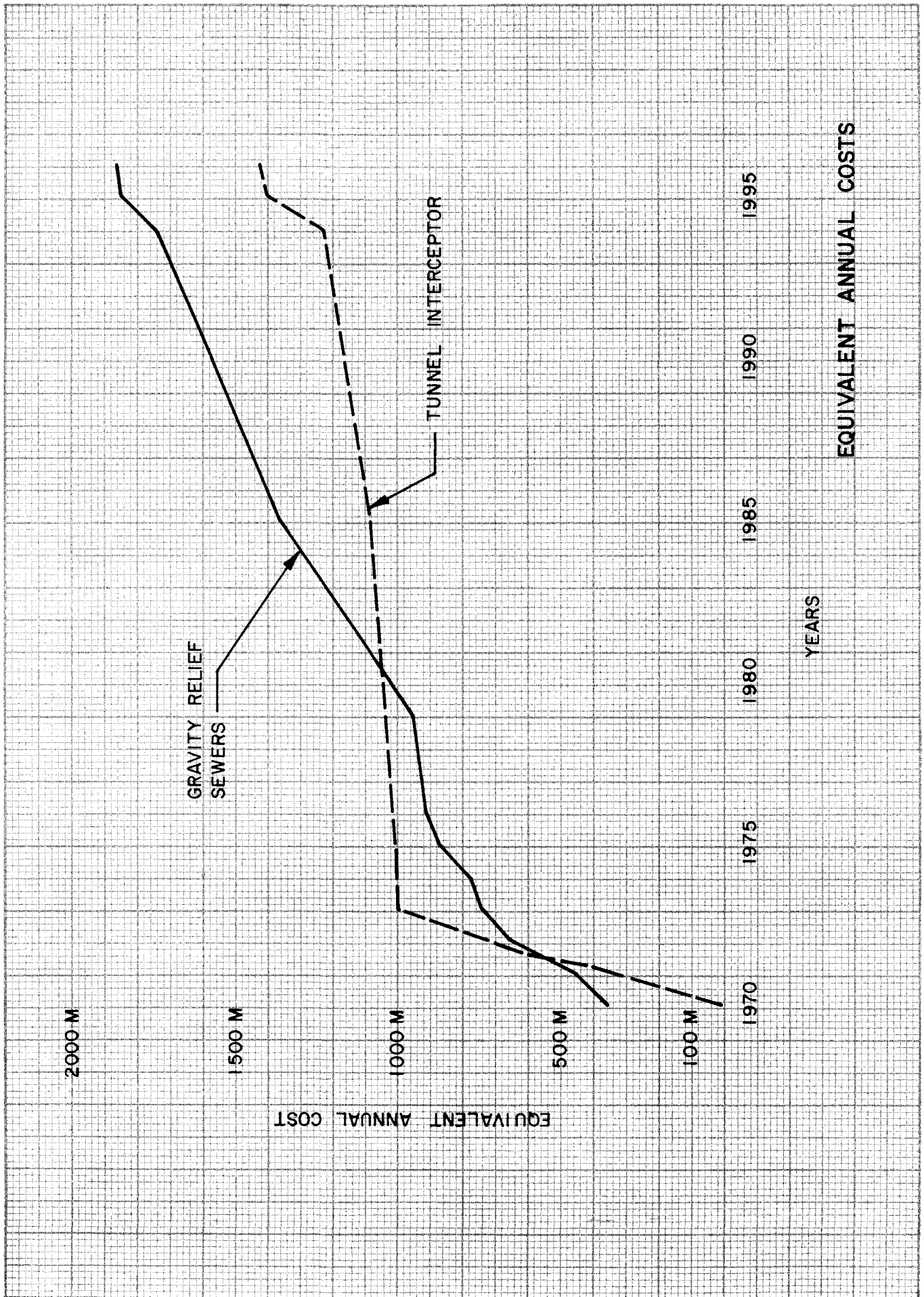


Figure 7