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AREA CODE 314
TELEPHONE 635-7166

December 9, 1980

Mr. D. Michael Hearst
Secretary
Missouri Public Service Commission
P. O. Box 360
Jefferson City, Missouri 65102

Re: Southwest Sewer Corporation, Commission Case No. SA-80-230

Dear Mr. Hearst:

Pursuant to ordered paragraph no. 3 of the Commission's order issued in the above-referenced matter on November 24, 1980 I am enclosing ten copies of the revised engineering report for waste water disposal for the Twin Hills Subdivision. This revised report was submitted to the appropriate office of the Missouri Department of Natural Resources on or about December 2nd of this year. To applicant's knowledge it has provided all necessary information required by the Missouri Department of Natural Resources in order for it to issue a construction permit for the proposed sewer collection and treatment facilities. Would you please see that this revised report is brought to the attention of the appropriate Commission personnel.

I thank you in advance for your cooperation in this matter.

Sincerely,

W. R. England, III

WRE:dd
Enclosure
cc: Office of Public Counsel
Keith Newcomb

HD

REVISED

ENGINEERING REPORT

FOR

WASTEWATER DISPOSAL

TWIN HILLS SUBDIVISION

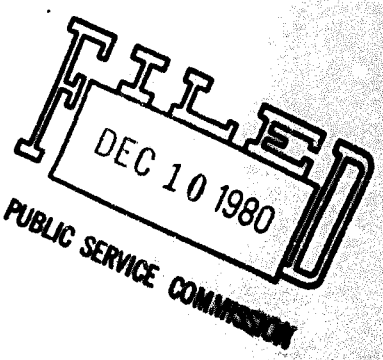
JASPER COUNTY, MISSOURI

OWNER

DON VAN HOOSER

PREPARED BY:

GORDON & ASSOCIATES INC.
2244 SOUTH CAMPBELL AVE.
SPRINGFIELD, MISSOURI, 65807



DECEMBER 1980

PROJECT # 00106

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PROJECT DESCRIPTION:

This report is a revision of a report submitted April, 1980 and approved by the Department of Natural Resources in a letter dated August 6, 1980, subject to the stated stipulations.

Due to a change in the use of Lot 45 of Twin Hills Estates Subd., this report is submitted. Lot 45 will be used for the construction of 8 two bedroom duplexes (16 units) instead of 10 condominiums as stated in the earlier report. This and the resultant calculation changes is the only variance from the previous report.

Initially 30% of Lot 45 (2 duplexes)will be constructed using the interim treatment system of the home treatment plant and lateral field. No two adjacent duplexes shall be constructed using this interim method, with at least one vacant lot being between lateral fields.

DESIGN CALCULATIONS:

This subdivision is the first phase of the complete project. Additional extensions will occur as the project reaches completion. The estimated population of the first phase is 3.7 persons per residential lot for 48 lots (178 persons) and 3.0 persons per duplex unit for 16 units (48 persons), for a total population of 226 persons.

DESIGN LOADING IS:

Single Family Residential: 3.7 persons/lotX 100 gpcd = 370 gpd/lot

.17#BOD/person/day X 3.7 person/lot

= 0.63#BOD/day/lot

Duplexes (Per Unit) 3.0 Persons/Unit X 100 gpcd = 300 gpd/lot

.17#BOD/person/day X 3.0 persons/unit

= 0.51#BOD/day/unit

Estimated Flow = 370 gpd.lot X 48 lots + 300 gpd/duplex unit
X 16 duplex units = 22,560 gpd.

Each single family lot shall be served by an individual home treatment plant Jet # J-153. Each duplex will be served by two individual home treatment plants, Jet #J-153. The Jet #J-153 is a 1200 gallon extended aeration package treatment plant.

Maximum Loading 1st Phase:

= (48 lots @ 370 gpd+ 16 duplex units @ 300 gpd) 2.5 Peak Loading Factor

= 56,400 gpd = 0.087 cfs

The test data on the home unit indicated an average reduction in B.O.D. of 89%. As a factor of safety, use 50% B.O.D. Reduction.

= (48 lots x 0.63 # BOD/day + 16 duplex units x 0.51 #BOD/day) (1.00-0.50)

= 19.2 #BOD/day

Three separate lines will carry the flow to the final treatment plant.

The south line serves 23 lots initially. Additional future subdivision could provide a like number increase bringing the total to 46 lots. This is 46 x 370 x 2.5 = 42,550 gpd = 0.066 cfs. Designed central live sewers will serve 4 lots and 16 duplex units or (4 x 370 + 16 x 300) (2.5) = 15,700 gpd = 0.024 cfs.

The remaining line to the north is to serve 20 lots initially with an ultimate loading from possibly 12 additional units which equates to 32 x 370 x 2.5 = 29,600 gpd = 0.046 cfs.

A 4" diameter PVC line at 0.5% will provide =

$$Q = \frac{1.486}{n} A R^{2/3} S^{1/2}$$

$$= \frac{1.486}{0.009} \times \pi \left(\frac{2}{12}\right)^2 \times \left[\frac{\pi \left(\frac{2}{12}\right)}{2\pi}\right]^{2/3} \times \sqrt{0.005}$$

$$= 165.11 \times 0.087 \times 0.189 \times 0.0707$$

$$= 0.193 \text{ cfs}$$

Smaller than usually provided collection lines will be used with the home units. The indiviudal units receive the effluent and settles out the solids to a sludge layer in a primary treatment compostment. Next the aeration chamber mixes the pre-treated sewage injecting ample supplies of air, then a final phase or settling/clarifier is provided, settling out the remaining solids and returning them to the aeration chamber, leaving effluent to be discharged to the 4" PVC sewer line.

Holding tank size = 22,560 gal/day ÷ 24 hr/day x 3 hrs.

= 2820 gal.

Two 3700 gal. holding tanks will be provided at the termination of the collection line prior to entering the sand filter system. These tanks will provide velocity dissipation and additional settling if a temporary upstream failure should occur. Additional holding capacity can be added in the future as required.

Missouri Public Service Commission

Area Code 314
751-3234

P.O. BOX 360
JEFFERSON CITY
MISSOURI 65102

October 20, 1981

Mr. Keith Newcomb
Southwest Sewer Corporation
116 West Cherry
Mt. Vernon, MO 65712

Dear Mr. Newcomb:

In reference to the Commission's Report and Order in Cases No. SA-80-13 and SA-80-230, our records indicate that Southwest Sewer Corporation has not fully complied with several orders as of this date. Enclosed are copies of the Report and Order relevant to each case, you will find the orders not complied with indicated by check marks.

I certainly assume that you are aware of the orders, and your responsibility to comply with them. Since we have not received the necessary filings ordered in the aforementioned cases, we would like to know the status at which these matters stand. It is therefore requested that you notify this office of your position as soon as possible. Your cooperation will be appreciated.

If you have any questions, please call.

Sincerely,

Bill L. Sankpill

Bill L. Sankpill, P.E.
Director, Water and Sewer Department

BLS:SJ/bjh

Enclosures

A 4" diameter PVC line at 0.5% will provide =

$$Q = \frac{1.486}{n} A R^{2/3} S^{1/2}$$

$$= \frac{1.486}{0.009} \times \pi \left(\frac{2}{12}\right)^2 \times \left[\frac{\pi \left(\frac{2}{12}\right)^2}{2\pi \quad \frac{2}{12}}\right]^{2/3} \times \sqrt{0.005}$$

$$= 165.11 \times 0.087 \times 0.189 \times 0.0707$$

$$= 0.193 \text{ cfs}$$

Smaller than usually provided collection lines will be used with the home units. The indiviudal units receive the effluent and settles out the solids to a sludge layer in a primary treatment compostment. Next the aeration chamber mixes the pre-treated sewage injecting ample supplies of air, then a final phase or settling/clarifier is provided, settling out the remaining solids and returning them to the aeration chamber, leaving effluent to be discharged to the 4" PVC sewer line.

Holding tank size = 22,560 gal/day ÷ 24 hr/day x 3 hrs.

= 2820 gal.

Two 3700 gal. holding tanks will be provided at the termination of the collection line prior to entering the sand filter system. These tanks will provide velocity dissipation and additional settling if a temporary upstream failure should occur. Additional holding capacity can be added in the future as required.

Filter Design

Filter Area = BOD loading x allowable rate of BOD loading

$$= 19.2 \frac{\text{lb. BOD}}{\text{day}} \times \frac{\text{Acre - Day}}{165 \text{ lb. BOD}} \times \frac{43{,}560 \text{ ft}^2}{\text{Area}}$$

$$= 5069 \text{ ft}^2$$ 3 gal / sft / day

Use two 51 ' x 51 ' filters

Use a Tait WH-10 pump

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