

Region SCRCounty GrantReviewed by UBubDate 3/2004Water Body: Austin Branch Trib toReport Date 7/1/89Classification LALDischarger: Orchard Manor WWTP

If stream is classified as Limited Forage Fish (LFF) or Limited Aquatic Life (LAL), check any of the following Use Attainability Analysis factors that are identified in the classification report:

☐ Naturally occurring pollutant concentrations prevent the attainment of use

☒ Natural, ephemeral, intermittent or low flow conditions or water levels prevent the attainment of the use, unless these conditions may be compensated for by the discharge of sufficient volume of effluent discharges without violating State water conservation requirements to enable uses to be met

☐ Human caused conditions or sources of pollution prevent the attainment of the use and cannot be remedied or would cause more environmental damage to correct than to leave in place

☐ Dams, diversions or other types of hydrologic modifications preclude the attainment of the use, and it is not feasible to restore the water body to its original condition or operate such modification in a way that would result in the attainment of the use

☐ Physical conditions related to the natural features of the water body, such as the lack of a proper substrate, cover, flow, depth, pools, riffles, and the like, unrelated to water quality, preclude attainment of aquatic life protection uses

☐ Controls more stringent than those required by sections 301(b) and 306 of the Act would result in substantial and widespread economic and social impact

Supporting Evidence in the report (include comments on how complete/thorough data is)

☒ Biological Data (fish/invert) macro, fish

☐ Chemical Data (temp, D.O., etc.)

☐ Physical Data (flow, depth, etc.)

☒ Habitat Description

☒ Site Description/Map

☒ Other: photos

Historical Reports in file:

July 1989 - Roger Schlesser

1/24/77 - Tom Bainbridge

4/15/81 - Roger Schlesser

Additional Comments/How to improve report:

- Austin Branch - Class 2 Trout water -
- discharge to dry run - low flow
- check to see what flow conditions are currently like
- check w/ region of class'n

DRY RUN TO AUSTIN BRANCH
AT ORCHARD MANOR

TRIENNIAL STANDARDS REVIEW
ORCHARD MANOR WWTP

JULY, 1989
ROGER SCHLESSER, SOUTHERN DISTRICT

BUREAU OF WATER RESOURCES MANAGEMENT
WISCONSIN DEPARTMENT OF NATURAL RESOURCES

TABLE OF CONTENTS

Summary	1
Introduction	1
General Description	2
Stream Habitat, Water Quality, Biology	2-3
Map #1	3a
Table I. Hilsenhoff Biotic Index	4-5
Table II. Fish Survey Results	6
WWTP	7
Classification	7
PHOTOGRAPHS (3 pages)	
APPENDIX I. Stream System Habitat Rating Form (1 page)	
APPENDIX II. 1988 DMR Data (2 pages)	
APPENDIX III. 1977 Stream Classification (1 page)	
APPENDIX IV. Final Effluent Limitations and Monitoring Requirements (1 page)	
APPENDIX V. Chapter NR104 (9 pages)	

SUMMARY

The dry run below the Orchard Manor WWTP was originally classified as marginal-diffused surface waters (E) due to the absence of any stream flow. The marginal section extends to the juncture with Austin Branch which is classified as continuous fish and aquatic life (A). This review indicates the existing classification is correct and should remain the same.

INTRODUCTION

This paper presents the results of an evaluation of the stream classification for a dry run which is the receiving stream for the Orchard Manor WWTP. The evaluation was conducted as part of the Triennial Standards Review.

The sites being reviewed are listed in NR 104.05 (Appendix V). These sites received a variance due to one or more of the following criteria:

- (a) The presence of inplace pollutants
- (b) Low natural stream flow
- (c) Natural background conditions, and
- (d) Irretrievable cultural alterations

GENERAL DESCRIPTION

Orchard Manor discharges its effluent to a dry run which flows approximately 2,000' before entering the Austin Branch. The upper end of the dry run is well vegetated with grass. The area adjacent to the dry run below the outfall is heavily pastured with soil erosion occurring during periods of runoff. Sediment has accumulated in the dry run in its lower reaches.

The reach included in this evaluation is a 2,500' stretch which extends a 0.1 mile above the outfall downstream to, and including the Austin Branch. The land use adjacent to Austin Branch is also heavily pastured. A small private pond discharges to Austin Branch just upstream of the entrance of the dry run. Sedimentation is a problem in Austin Branch also, and was noted during this survey.

USGS did not take any flows at the outfall since it was a dry run. Obviously the Q₇₁₀ was 0 cfs. Flows were taken by USGS at the mouth of Austin Branch, but were not indicative of the conditions in the headwaters.

STREAM HABITAT, WATER QUALITY, BIOLOGY

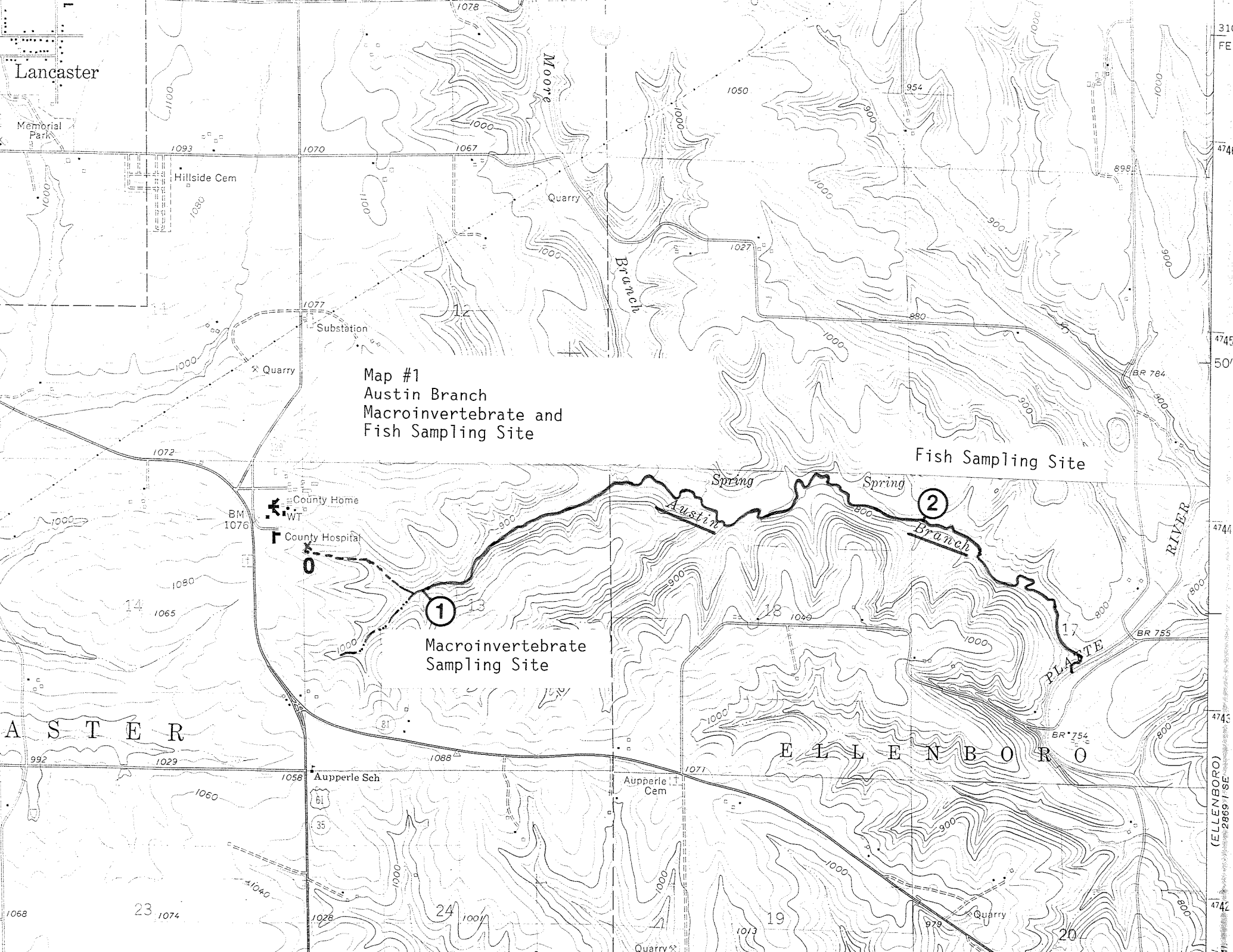
Orchard Manor discharges to a dry run of Austin Branch (Map #1). Not much can be said about the aquatic community since it is solely dependent on the flow of effluent from the WWTP. Cattle have helped to erode much of the area

adjacent to the dry run. Consequently it also carries an additional load of sediment during run-off periods.

Austin Branch is presently classified as Class II trout water for its entire length. A heavy growth of watercress was present upstream and at the juncture of the dry run. Sedimentation is also a problem in its upper reaches along with heavy pasturing on steep slopes.

A Hilsenhoff Biotic Index sample was taken in Austin Branch approximately 60 feet below the entrance of the dry run (Map #1). The Biotic Index was 5.381 which would indicate "good water quality" on the Hilsenhoff scale (Table 1). The sample was dominated by caddis fly larvae (47%) especially Hydropsyche betteni and Chimarra aterrima. The next highest percentage of the sample was dominated by Elmidae, genus Optioservus sp. (28%). The remainder of the sample contained mostly Asellus intermedius (18%).

A fish survey was conducted on July 31, 1975 as part of the fish distribution study (Table II). Seventeen species were found with numerous tolerant and intolerant species being present. The sample included two ozark minnows which are presently on the threatened list. The macroinvertebrate and fish data would indicate that Austin Branch is capable of supporting the full fish and aquatic life classification.



Map #1
Austin Branch
Macroinvertebrate and
Fish Sampling Site

Fish Sampling Site

Macroinvertebrate
Sampling Site

A S T E R

E L L E N B O R O

(ELLENBORO)
2869 1 SE

SOUTHERN DISTRICT District Biotic Index Report

TABLE I

HBI _ 5.381 Rep1 _ Rep2 _ Rep3 _
 Sample ID # _881003-22-01 Waterbody Name _AUSTIN BR.
 Water Temp (Celsius) _ Dissolved Oxygen (mg/l) _
 Sample Location: SE NW S13 T 4N R 3W Master Waterbody # _
 Project Name _TRIENNIAL STANDARDS Storet Station # _ 4
 Ave. Stream Width (Ft.) at Site _2.0 Ave. Stream Depth (Ft.) at Site _0.25
 Collector _SCHLESSER, R. Field # 01 Rep 1_
 Measured Velocity (fps) _
 Sorter _GEHRING, T. Est. Velocity (fps) _
 Est % of sample sorted _20 Moderate (0.5-1.5)
 Taxonomist _DIMICK, J. Sampled Habitat
 Location Description _60 FT. BELOW JUNCTURE WITH _1. Riffle
 _EFFLUENT

Est. Time Spent Sampling (Min.) _ 4__
 Sampling Device _1. D Frame

Substrate at Site Location (%)

0.0 Bedrock	60.0 Rubble	5.0 Sand	0.0 Clay	0.0 Muck
0.0 Boulders	15.0 Gravel	10.0 Silt	0.0 Detritus	10.0 Debris/Veg

Substrate Sampled (%) (Same as above Yes)

0.0 Bedrock	0.0 Rubble	0.0 Sand	0.0 Clay	0.0 Muck
0.0 Boulders	0.0 Gravel	0.0 Silt	0.0 Detritus	0.0 Debris/Veg

Aquatic Vegetation 0 % of Total Stream Channel at Sampling Site

Observed Instream Water Quality Indicators (Perceived WQ _Fair____)

	Not Present	Insig- nificant	Sig- nificant	Comments
Turbidity	1			
Chlorine or Toxic Scour	1			
Macrophytes	1			
Filamentous Algae	1			
Planktonic Algae	1			
Slimes	1			
Iron Bacteria	1			

Factors Which May Be Affecting Habitat Quality

Sludge Deposits	1		
Silt and Sediment			3
Channel Ditching	1		
Down/Up Stream Impoundment	1		
Low Flows			3
Wetlands		2	

Pollutant Sources

Livestock Pasturing			3
Barnyard Runoff			3
Cropland Runoff			3
Tile Drains			
Septic Systems			
Stream Bank Erosion			3
Urban Runoff		2	
Construction Runoff	1		
Point Source(Specify Type)		2	ORCHARD MANOR STP
Other (Specify)			

*** SOUTHERN DISTRICT DISTRICT BIOTIC INDEX REPORT ***

5

SAMPLE ID# 881003-22-01

***	TAXA	***	TAXONOMIC	TOL	ORGANISM	ORGANISM			
		SPECIES	KEY	VAL	ID	COUNT	REP1	REP2	REP3
			USED						
EPHEMEROPTERA									
HEPTAGENIIDAE									
STENACRON		INTERPUNCTATUM	*1	7.00	02060501	1	0	0	0
ODONATA									
COENAGRIONIDAE									
ARGIA		***POOR SPECIMEN***	*1		03030208	1	0	0	0
TRICHOPTERA									
HYDROPSYCHIDAE									
CHEUMATOPSYCHE			*1	5.00	04040100	1	0	0	0
HYDROPSYCHE		BETTENI	*2	6.00	04040201	32	0	0	0
CERATOPSYCHE		SLOSSONAE	*2	4.00	04040706	4	0	0	0
PHILOPOTAMIDAE									
CHIMARRA		ATERRIMA	*3	4.00	04110101	19	0	0	0
COLEOPTERA									
ELMIDAE									
OPTIOSERVUS			*1	4.00	07020500	33	0	0	0
STENELMIS			*1	5.00	07020600	4	0	0	0
DIPTERA									
SIMULIIDAE									
SIMULIUM		VITTATUM	*4	7.00	08110217	1	0	0	0
TIPULIDAE									
TIPULA			*1	4.00	08141200	1	0	0	0
ISOPODA									
ASELLIDAE									
ASELLUS		INTERMEDIUS	*5	8.00	10010101	22	0	0	0

*** TOTALS: *** 119

0

*** BIOTIC INDEX: *** 5.381

Taxonomic Key Code References

- *1 Hilsenhoff 1981
- *2 Hilsenhoff 1981,86
- *3 Hilsenhoff 1981,82
- *4 Hilsenhoff 1985
- *5 Williams 1972

TABLE: II List of fish for sampling site: FS 2

DATE: 7/31/75 Twn 4N, R2W, SEC. 17, NW STREAM: AUSTIN BRANCH

Station mileage: 1.0 County: 22

SOURCE OF DATA: 33 GEAR: 2 EFFORT: 06

CODE	COMMON NAME	FAMILY	GENUS/SPECIES	# FISH	TOLERANCE LEVEL
M05	STONEROLLERS	CYPRINIDAE	Campostoma spp.	60	Intolerant
M14	BRASSY MINNOW	CYPRINIDAE	Hybognathus hankinsoni	2	
M19	HORNYHEAD CHUB	CYPRINIDAE	Nocomis biguttatus	12	Intolerant
M28	COMMON SHINER	CYPRINIDAE	Notropis cornutus	37	Tolerant
M29	BIGMOUTH SHINER	CYPRINIDAE	Notropis dorsalis	18	
M34	OZARK MINNOW (Threatened)	CYPRINIDAE	Notropis nubilus	2	
M41	SUCKERMOUTH MINNOW	CYPRINIDAE	Phenacobius mirabilis	5	
M43	SOUTHERN REDBELLY DACE	CYPRINIDAE	Phoxinus erythrogaster	28	Intolerant
M45	BLUNTNose MINNOW	CYPRINIDAE	Pimephales notatus	11	Tolerant
M46	FATHEAD MINNOW	CYPRINIDAE	Pimephales promelas	2	Very Tolerant
M48	BLACKNOSE DACE	CYPRINIDAE	Rhinichthys atratulus	1	Intolerant
M49	LONGNOSE DACE	CYPRINIDAE	Rhinichthys cataractae	12	Intolerant
M50	CREEK CHUB	CYPRINIDAE	Semotilus atromaculatus	6	Tolerant
M58	STONEROLLERS X SO. REDBELLY DACE	CYPRINIDAE		1	
N09	WHITE SUCKER	CATOSTOMIDAE	Catostomus commersoni	11	Tolerant
X10	FANTAIL DARTER	PERCIDAE	Etheostoma flabellare	3	Intolerant
X12	JOHNNY DARTER	PERCIDAE	Etheostoma nigrum	3	Tolerant

WWTP

Appendix II contains the 1988 DMR monthly averages for flow, BOD, TSS, and $\text{NH}_3\text{-N}$. According to this data the WWTP is achieving good treatment. No violations were noted during the 12 month period.

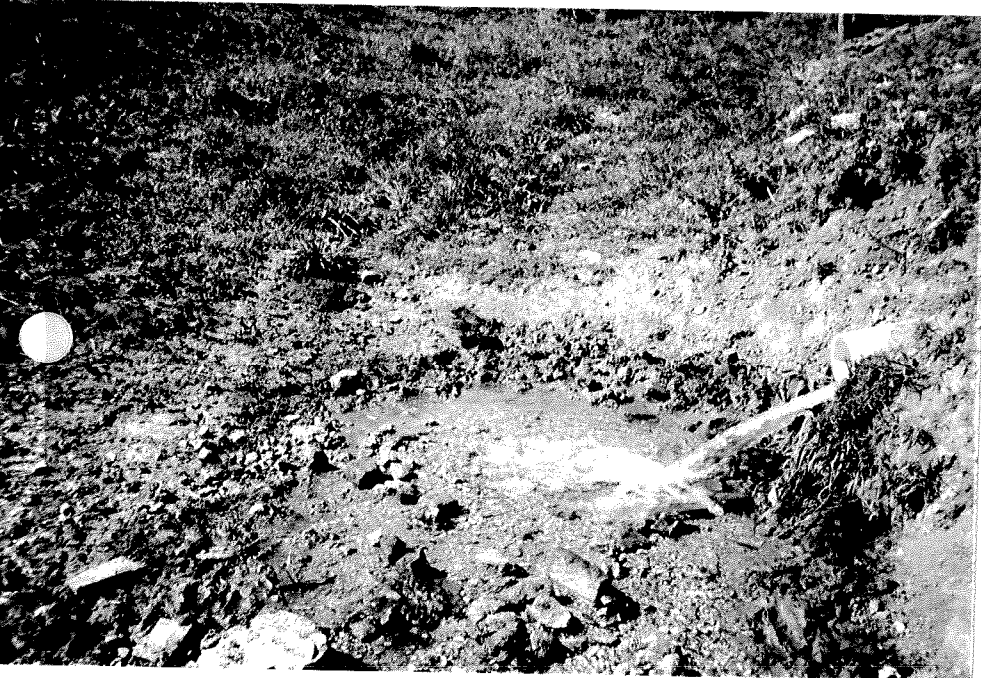
CLASSIFICATION

Based on this review of available chemical, physical, and biological data, the dry run is properly classified as marginal-diffused surface water (E). Austin Branch should remain classified as continuous fish and aquatic life (A).



Orchard Manor

Discharge to dry run.



Orchard Manor

Discharge to dry run.



Orchard Manor

Downstream of outfall.

Austin Branch

Upstream of juncture
with effluent; culvert
from private pond -
upper right-hand corner.



Effluent flow from
Orchard Manor entering
Austin Branch from
right-hand side.



Austin Branch

Juncture of Austin
Branch and effluent
flow.



Austin Branch

Downstream of effluent
entrance.



Austin Branch

Downstream of effluent
entrance,
macroinvertebrate
sampling site.

APPENDIX I

Dry Run to
Stream Austin Br. Reach Location Orchard Manor Outfall to Austin Br. Reach Score/Rating 239/E
County Grant Date 10/3/88 Evaluator R. Schlesser Classification Marginal

Rating Item	Category			
	Excellent	Good	Fair	Poor
Watershed Erosion	No evidence of significant erosion. Stable forest or grass land. Little potential for future erosion. 8	Some erosion evident. No significant "raw" areas. Good land mgmt. practices in area. Low potential for significant erosion. 10	Moderate erosion evident. Erosion from heavy storm events obvious. Some "raw" areas. Potential for significant erosion. 14	Heavy erosion evident. Probable erosion from any run off. 16
Watershed Nonpoint Source	No evidence of significant source. Little potential for future problem. 8	Some potential sources (roads, urban area, farm fields). 10	Moderate sources (small wetlands, tile fields, urban area, intense agriculture). 14	Obvious sources (major wetland drainage, high use urban or industrial area, feed lots, impoundment). 16
Bank Erosion, Failure	No evidence of significant erosion or bank failure. Little potential for future problem. 4	Infrequent, small areas, mostly healed over. Some potential in extreme floods. 8	Moderate frequency and size. Some "raw" spots. Erosion potential during high flow. 16	Many eroded areas. "Raw" areas frequent along straight sections and bends. 20
Bank Vegetative Protection	90% plant density. Diverse trees, shrubs, grass. Plants healthy with apparently good root system. 6	70-90% density. Fewer plant species. A few barren or thin areas. Vegetation appears generally healthy. 9	50-70% density. Dominated by grass, sparse trees and shrubs. Plant types and conditions suggest poorer soil binding. 15	<50% density. Many raw areas. Thin grass, few if any trees and shrubs. 18
Lower Bank Channel Capacity	Ample for present peak flow plus some increase. Peak flow contained. W/D ratio <7. 8	Adequate. Overbank flows rare. W/D ratio 8-15. 10	Barely contains present peaks. Occasional overbank flow. W/D ratio 15-25. 14	Inadequate, overbank flow common. W/D ratio >25. 16
Lower Bank Deposition	Little or no enlargement of channel or point bars. 6	Some new increase in bar formation, mostly from coarse gravel. 9	Moderate deposition of new gravel and coarse sand on old and some new bars. 15	Heavy deposits of fine material, increased bar development. 18
Bottom Scouring and Deposition	Less than 5% of the bottom affected by scouring and deposition. 4	5-30% affected. Scour at constrictions and where grades steepen. Some deposition in pools. 8	30-50% affected. Deposits and scour at obstructions, constrictions and bends. Some filling of pools. 16	More than 50% of the bottom changing nearly year long. Pools almost absent due to deposition. 20
Bottom Substrate/Available Cover	Greater than 50% rubble, gravel or other stable habitat. 2	30-50% rubble, gravel or other stable habitat. Adequate habitat. 7	10-30% rubble, gravel or other stable habitat. Habitat availability less than desirable. 17	Less than 10% rubble gravel or other stable habitat. Lack of habitat is obvious. 22
Avg. Depth Riffles and Runs	Cold >1' 0	6" to 1' 6	3" to 6" 18	<3" 24
	Warm >1.5' 0	10" to 1.5' 6	6" to 10" 18	<6" 24
Avg. Depth of Pools	Cold >4' 0	3' to 4' 6	2' to 3' 18	<2' 24
	Warm >5' 0	4' to 5' 6	3' to 4' 18	<3' 24
Flow, at Rep. Low Flow	Cold >2 cfs 0	1-2 cfs 6	.5-1 cfs 18	<.5 cfs 24
	Warm >5 cfs 0	2-5 cfs 6	1-2 cfs 18	<1 cfs 24
Pool/Riffle, Run/Bend Ratio (distance between riffles ÷ stream width)	5-7. Variety of habitat. Deep riffles and pools. 4	7-15. Adequate depth in pools and riffles. Bends provide habitat. 8	15-25. Occasional riffle or bend. Bottom contours provide some habitat. 16	>25. Essentially a straight stream. Generally all flat water or shallow riffle. Poor habitat. 20
Aesthetics	Wilderness characteristics, outstanding natural beauty. Usually wooded or un-pastured corridor. 8	High natural beauty. Trees, historic site. Some development may be visible. 10	Common setting, not offensive. Developed but uncluttered area. 14	Stream does not enhance aesthetics. Condition of stream is offensive. 16
Column Totals:	0	0	87	152

Column Scores E 0 +G 0 +F 87 +P 152 = 239 = Score

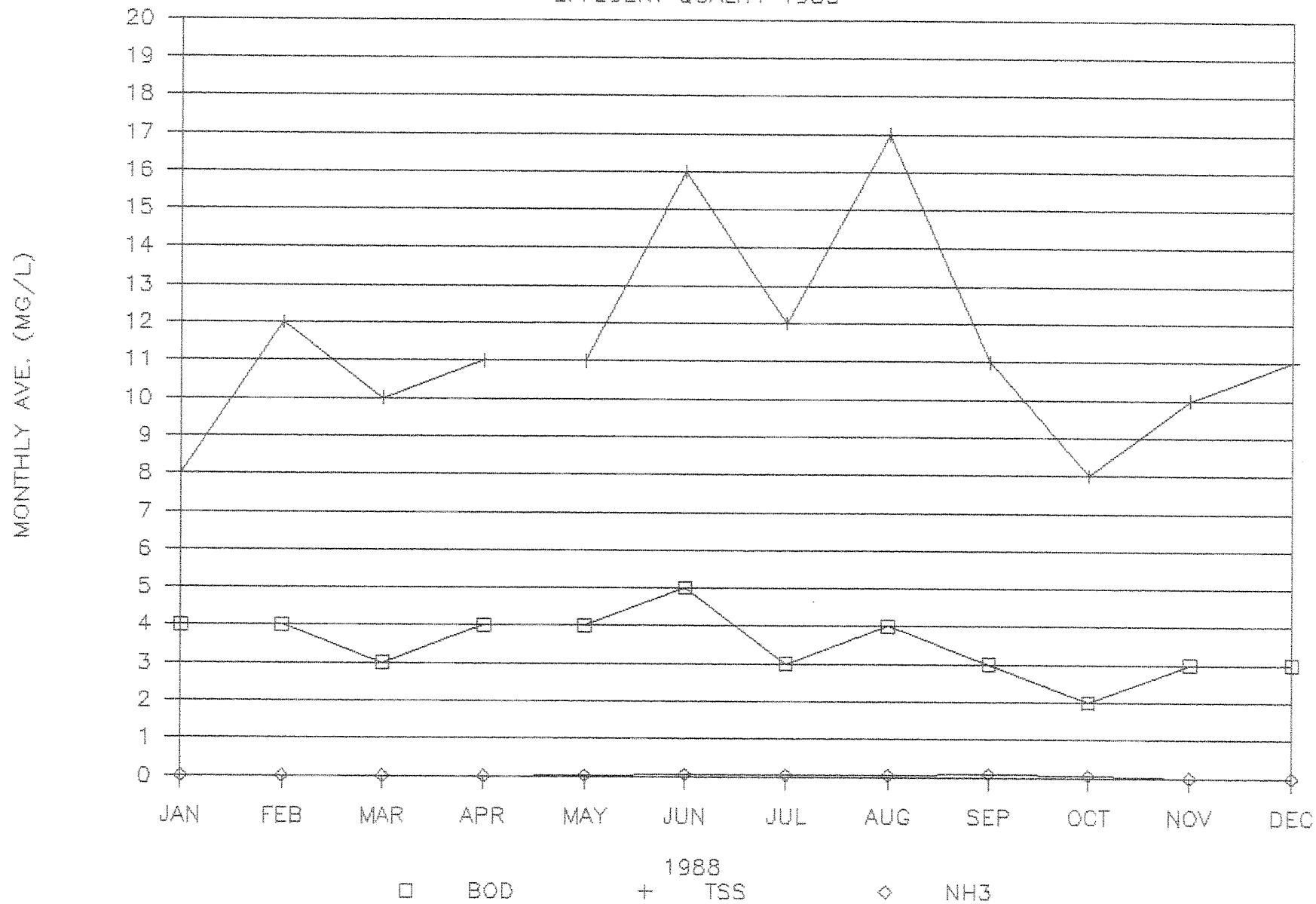
APPENDIX II

ORCHARD	MANOR	SEWAGE	TREATMENT	PLANT
		EFFLUENT	QUALITY	1988

	FLOW (MGD)	BOD (MG/L)	TSS (MG/L)	NH3-N (MG/L)
JAN	0.0510	4.00	8.00	
FEB	0.0525	4.00	12.00	
MAR	0.0525	3.00	10.00	
APR	0.0516	4.00	11.00	
MAY	0.0501	4.00	11.00	0.01
JUN	0.0501	5.00	16.00	0.05
JUL	0.0523	3.00	12.00	0.03
AUG	0.0527	4.00	17.00	0.03
SEP	0.0425	3.00	11.00	0.08
OCT	0.0422	2.00	8.00	0.04
NOV	0.0432	3.00	10.00	
DEC	0.0433	3.00	11.00	

ORCHARD MANOR SEWAGE TREATMENT PLANT

EFFLUENT QUALITY 1988



APPENDIX III

Orchard Manor
Grant County

January 24, 1977

Orchard Manor discharges to a dry run which drains into the Austin Branch.

Austin Branch - Surface Acres = 2.25 Miles, Miles = 3.1, Gradient = 65 feet per mile.

A moderate gradient spring-fed stream beginning one mile east of Lancaster and emptying into the Platte River three miles north of Ellenboro. Two and one-half miles of this stream are considered trout water but water temperatures approach the maximum tolerance for trout on hot summer days. Brown trout fingerlings and yearlings are stocked by the Lancaster Sportsmans Club and the Department of Natural Resources. Fishing pressure is heavy during the early season. Forage fish are common throughout the stream and only a few smallmouth bass are found even though the water quality and instream cover are excellent for this species. Flooding and heavy bank erosion are severe use problems. Muskrats are found throughout the stream. Upland game species including deer, raccoon, squirrels, ruffed grouse, and quail are found nearby.

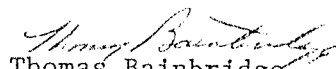
Recommendations

From the Orchard Manor outfall to the juncture with the Austin Branch the classification should be diffused surface waters. From this juncture and for the remainder of the Austin Branch the classification should be continuous fish and aquatic life.

The above recommendations represent a concurrence of opinion of the stream classification team who are as follows:

Dennis Iverson - District Engineer
Gene Van Dyck - Area Fish Manager
Tom Bainbridge - District Biologist
Roger Schlessner - Natural Resources Technician

Respectfully submitted,


Thomas Bainbridge
Stream Classification Coordinator

RS:js

APPENDIX IV

B. FINAL EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning on the effective date of this permit and lasting until December 31, 1988, the permittee is authorized to discharge from outfall serial number 001.

Samples taken in compliance with the monitoring requirements specified below shall be taken at the composite sampler for BOD₅, suspended solids and ammonia nitrogen and after the chlorine contact tank for the other parameters.

There shall be no discharge of visible or floating solids in other than trace amounts.

During any 30 consecutive days, the average effluent concentrations of BOD₅ and of total suspended solids shall not exceed 15% of the average influent concentrations, respectively.

EFFLUENT PARAMETERS	EFFLUENT LIMITATIONS					MONITORING REQUIREMENTS	
	Quantity-kg/day(lbs/day)		Other Limitations (Specify Units)			Sample Frequency	Sample Type
	Average	Maximum	Minimum	Average	Maximum		
Flow	-	-	-	-	-	Continuous	
BOD ₅ (monthly)	2.3 (5.0) ¹	-	-	15 mg/l	-	3xWeekly	24-hr. Comp. ²
BOD ₅ (daily)	4.5 (10.0) ¹	-	-	-	30 mg/l	3xWeekly	24-hr. Comp. ²
Suspended Solids (monthly)	3.0 (6.6) ¹	-	-	20 mg/l	-	3xWeekly	24-hr. Comp. ²
Suspended Solids (daily)	4.5 (10.0) ¹	-	-	-	30 mg/l	3xWeekly	24-hr. Comp. ²
Ammonia Nitrogen (weekly/May-October)	0.45(1.0) ¹	-	-	3.0 mg/l	-	3xWeekly	24-hr. Comp. ²
pH	-	-	6.0 s.u.	-	9.0 s.u.	Daily	Grab
Fecal Coliforms ^{3,1} (monthly)	-	-	-	#/100 ml ³	-	1xWeekly	Grab
Dissolved Oxygen (daily)	-	-	4.0 mg/l	-	-	Daily	Grab
Residual Chlorine ^{3,1}	-	-	-	-	0.5 mg/l	Daily	Grab

¹Based on a design flow of 0.04 MGD, 40,000 gallons per day.

²Samples shall be composited on a flow proportional basis.

³At such time as effluent limitations for fecal coliform and residual chlorine are established in the Grant-Platte River Basin Plan or by special study, this permit may be modified to incorporate either the final limitations or interim limitations and a compliance schedule to achieve the final limitations.