

**SECTION 208  
WATER QUALITY  
MANAGEMENT PLAN**

**Pueblo County and  
Pueblo Area Council of Governments**

**VOLUME VII**

**1993 Update**

**September 1994**

A RESOLUTION ADOPTING VOLUME VII: 1993 UPDATE OF THE WATER QUALITY MANAGEMENT PLAN FOR THE PUEBLO REGION

WHEREAS, the Pueblo Area Council of Governments (PACOG) is the designated areawide water quality management planning agency for the Pueblo Region; and

WHEREAS, the Colorado Water Quality Control Commission has requested that each areawide's water quality management plan be updated; and

WHEREAS, the changes in the water quality planning, strategy, and policy which have occurred since 1987 justify an updating of the Water Quality Management Plan for the Pueblo Region; and

WHEREAS, the PACOG held an informational meeting on Volume VII: 1993 Update of the Water Quality Management Plan for the Pueblo Region on August 25, 1994, and a public hearing on September 22, 1994; and

WHEREAS, the Environmental Policy Advisory Committee, at its meeting on September 8, 1994 recommended to PACOG the adoption of Volume VII: 1993 Update of the Water Quality Management Plan for the Pueblo Region.

NOW, THEREFORE, BE IT RESOLVED BY THE PUEBLO AREA COUNCIL OF GOVERNMENTS that:

SECTION 1.

The PACOG hereby adopts Volume VII: 1993 Update of the Water Quality Management Plan for the Pueblo Region attached hereto and incorporated herein by reference, as an update to the Water Quality Management Plan for the Pueblo Region.

SECTION 2.

The PACOG authorizes the submission of said Volume VII: 1993 Update of the Water Quality Management Plan for the Pueblo Region to the Colorado Water Quality Control Commission for its consideration for inclusion in the State's Water Quality Management Plan.

SECTION 3.

The PACOG authorizes the PACOG's staff to represent the PACOG before the Colorado Water Quality Control Commission in the matter of its consideration of said Volume VII: 1993 Update of the Water Quality Management Plan for the Pueblo Region and to take such actions as he deems necessary.

SECTION 4.

The PACOG directs that a copy of Volume VII: 1993 Update of the Water Quality Management Plan for the Pueblo Region be placed on file with the Recording Secretary to the Pueblo Area Council of Governments, and that said Volume be made available to the public for review and inspection.

INTRODUCED September 22, 1994

APPROVED:

  
\_\_\_\_\_  
Chairman  
Pueblo Area Council of Governments

ATTEST:

  
\_\_\_\_\_  
Recording Secretary

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The preparation of this report and the studies described herein were made possible through Section 208 and Section 205(j) of the Clean Water Act funds provided by the U.S. Environmental Protection Agency, administered by the Water Quality Control Division of the Colorado Department of Public Health and Environment, and by funds provided by the Pueblo Area Council of Governments.

## **EXECUTIVE SUMMARY**

## EXECUTIVE SUMMARY

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The Pueblo 208 Water Quality Management Plan--1993 Update is a requirement under Section 208 of the (Federal) Clean Water Act (Public Law 92-500). A purpose of the Act is the protection and enhancement of the Nation's waters. This management plan is an update of Pueblo's Water Quality Management Plan, which was adopted in 1977 and updated in 1981, 1984, and 1987 by the Pueblo Area Council of Governments (PACOG). This plan must also be approved by the PACOG. After PACOG approval, the Plan must be approved by the Colorado Water Quality Control Commission and certified by the Governor.

The 1993 Update adds a seventh volume to the set of plans and updates and is assigned a "short title" as follows:

- Volume VII: *208 Plan Update, 1993*, September 1993

The 1993 Update does not repeal or replace the Plans adopted in 1977, 1981, 1984, and 1987. In selected areas (e.g., data, recommendations), the Update may be inconsistent with the prior Plans, and in such instances the 1993 Update constitutes an *amendment* to the prior Plans and is controlling. The 1993 Update is generally a continuation and expansion of the 1977 Plan and subsequent Updates. However, this update of the plan focuses on changes that have occurred in the management area (Pueblo County) since the 1987 Update, with particular emphasis on population, interjurisdictional services, and proposed improvements in some of the districts as outlined in Section 201 Wastewater Facility Plans.

Section 201 Wastewater Facility Plans have been prepared for St. Charles Mesa and the Town of Rye. The reports recommend the following actions for each jurisdiction.

- *St Charles Mesa Sanitation District*: The Planning Area, which includes Baxter, the MeadowBrook Mobile Home Community, the area presently served by the City of Pueblo, and the remaining areas served by Individual Sewage Disposal Systems (ISDS), should be served by a regional facility. The facility is proposed to be located east of Baxter and north of the Arkansas River. A central collection system and the treatment plant, an oxidation ditch biological treatment process, would be constructed over a ten-year period. Sludge disposal would be accomplished via giveaway and dedicated land application sites. In addition, the District should develop and implement an ISDS management program for those areas not served by the proposed system.
- *Town of Rye*: The 201 Plan recommended implementation of treatment at the Colorado City WWTF. This would be comprised of abandoning the existing lagoon in the Town, recovering the site, and extending an 8-inch gravity sewer line approximately two miles to the east of the Town facilities to connect with an existing 10-inch line at the westerly boundary of Colorado City.

In addition, the Avondale Water and Sanitation District is currently making improvements to its system. The wastewater treatment facilities at Avondale are being upgraded by expanding and dividing the existing treatment ponds. The existing, single pond configuration is being split into three ponds including the expansion of the original pond. These improvements will allow the District to remain in compliance with the NPDES discharge permit.

The recommendations for Rye and St. Charles Mesa and the improvements for Avondale are discussed in more detail in the body of the report.

Population figures and projections are based upon the 1990 Census and were generated from TIGER data files using the Pueblo County Geographic Information System (GIS).

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## FOREWORD

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The Pueblo 208 Water Quality Management Plan--1993 Update is an update of Pueblo's Water Quality Management Plan which was adopted in 1977 and updated in 1981, 1984, and 1987 by the Pueblo Area Council of Governments (PACOG). Water quality management planning is a requirement under Section 208 of the (Federal) Clean Water Act (Public Law 92-500). A purpose of the Act is the protection and enhancement of the Nation's waters. After PACOG approval, the Plan must be approved by the Colorado Water Quality Control Commission and certified by the Governor.

The Pueblo Water Quality Management Plan, first adopted in 1977, was comprised of three (3) volumes:

- Volume I: *208 Stream Segment Analysis*, June 1977;
- Volume II: *208 Point Source, Nonpoint Source, Institution/Management Subplans*, June 1977; and
- Volume III: *208 Final Plan and Implementation Schedule*, July 1977.

The 1981, 1984, and 1987 Updates added fourth, fifth, and sixth volumes and were assigned "short titles" as follows:

- Volume IV: *208 Plan Update, 1981*, December 1981; and
- Volume V: *208 Plan Update, 1984*, December 1984.
- Volume VI: *208 Plan Update, 1987*, December 1987.

The 1993 Update adds a seventh volume and is assigned a "short title" as follows:

- Volume VII: *208 Plan Update, 1993*, September 1993

The 1993 Update does not repeal or replace the Plans adopted in 1977, 1981, and 1984, and 1987. In selected areas (e.g., data, recommendations), the Update may be inconsistent with the prior Plans, and in such instances the 1993 Update constitutes an *amendment* to the prior Plans and is controlling. The 1993 Update is generally a continuation and expansion of the 1977 Plan and subsequent Updates. However, this update focuses on population changes and projections as they pertain to the various districts and area discussed in this report.

**MANAGEMENT AGENCY JURISDICTION**

# MANAGEMENT AGENCY JURISDICTION

The establishment of water quality policies based upon parameters developed by the State of Colorado rests with water quality management agencies for the region. The City of Pueblo and the County of Pueblo were designated by the 1977 208 Plan as the Areawide Water Quality Management Agencies for the Pueblo Region. The management agencies are responsible for the coordination of water quality management projects for both point sources and nonpoint sources within their respective jurisdiction to the City's jurisdiction.

The City of Pueblo is the water quality management agency for land, systems, and projects within the boundaries of the following political subdivisions:

- City of Pueblo;
- Salt Creek Sanitation District;
- Blende Sanitation District;
- a portion of the St. Charles Mesa Sanitation District; and
- Pueblo Memorial Airport and Pueblo Airport Industrial Park.

The management jurisdiction will change as these boundaries change (e.g., annexation).

The City is the management agency for Salt Creek and Blende because their sanitary waste is treated by the City's treatment plant. A portion of St. Charles Mesa is also served by the City's wastewater treatment plant via the Blende collection system and outfall. The Airport is under City management because:

- (1) a portion of the land has been annexed by the City;
- (2) the land is either under City ownership or general control;
- (3) potable water for the Airport is available on-site from the Pueblo Board of Water Works; and
- (4) the Airport's wastewater is treated by the City's treatment plant.

The County of Pueblo is the water quality management agency for the remaining land, systems, and projects within the geographic limits of Pueblo County, and that are not otherwise under the City's jurisdiction. These include the following:

- Pueblo West Metropolitan District
- Pueblo Reservoir State Recreation Area
  - Arkansas Point
  - Northern Plains
  - Rock Canyon
- St. Charles Mesa Sanitation District (that portion not under the City's jurisdiction as noted above);
- CF&I Steel, L.P.
- Avondale Water and Sanitation District
- Town of Boone - Sanitation
- Town of Rye
- Colorado City Metropolitan District

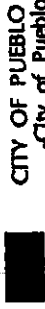
Table VII-1  
POPULATION SUMMARY

<u>District</u>	<u>1990</u>	<u>Current</u>	<u>1995</u>	<u>2000</u>	<u>2005</u>	<u>2010</u>
Avondale	1,278	1,365	1,423	1,568	1,714	1,862
Boone	319	351	512	568	622	675
Colorado City	1,229	1,318	1,345	1,446	1,555	1,979
City of Pueblo Wastewater Treatment Plant (WWTP)						
City of Pueblo <sup>(1)</sup>	111,323	114,030	129,025	134,922	139,630	142,730
Blende	556	625	674	674	674	674
Salt Creek	587	733	973	973	973	973
St. Charles Mesa <sup>(3)</sup>	255	255	255	255	255	255
Subtotal City WWTP <sup>(2)</sup>	111,323	114,030	129,025	134,922	139,630	142,730
St. Charles Mesa <sup>(3)</sup>			1,641	2,768	8,812	9,591
Pueblo West	2,967	3,800	4,254	5,639	4,776	6,331
Rye	265	267	271	275	279	284
Subtotal	117,381	121,131	138,471	147,186	157,388	163,452
Other	5,670	6,216	4,712	4,416	4,722	4,904
<b>TOTAL<sup>(4)</sup></b>	<b>123,051</b>	<b>127,347</b>	<b>143,183</b>	<b>151,602</b>	<b>162,110</b>	<b>168,356</b>

## Notes

1. Population projections for the City of Pueblo are based upon information from the 201 Facilities Plan.
2. The subtotal for the City of Pueblo WWTP is the same as for the City because the indicated populations for Blende, Salt Creek, and St. Charles Mesa are included in the City WWTP figures.
3. St. Charles Mesa is shown for both the City of Pueblo WWTP subtotal and separately due to the expected construction of a regional collection and treatment system by the District. The population projections for the line outside the City WWTP subtotal are based upon the 201 Facilities Plan and assume the current population served by the City will remain stable.
4. The population projection totals are based upon information extrapolated from the City of Pueblo 201 Facilities Plan, the Division of Local Government, and Traffic Analysis Zone figures.

# LEGEND



## CITY OF PUEBLO

- City of Pueblo
- Pueblo Memorial Airport
- Salt Creek Sanitation District
- Blende Sanitation District
- St. Charles Mesa Sanitation District(\*)



## COUNTY OF PUEBLO

- Pueblo West Metropolitan District
- Pueblo Reservoir State Recreation Area
- St. Charles Mesa Sanitation District(\*)
- CF&I Steel, L.P.
- Aوندale Water and Sanitation District
- Town of Boone - Sanitation
- Town of Rye
- Colorado City Metropolitan District
- All other areas not under City of Pueblo Management

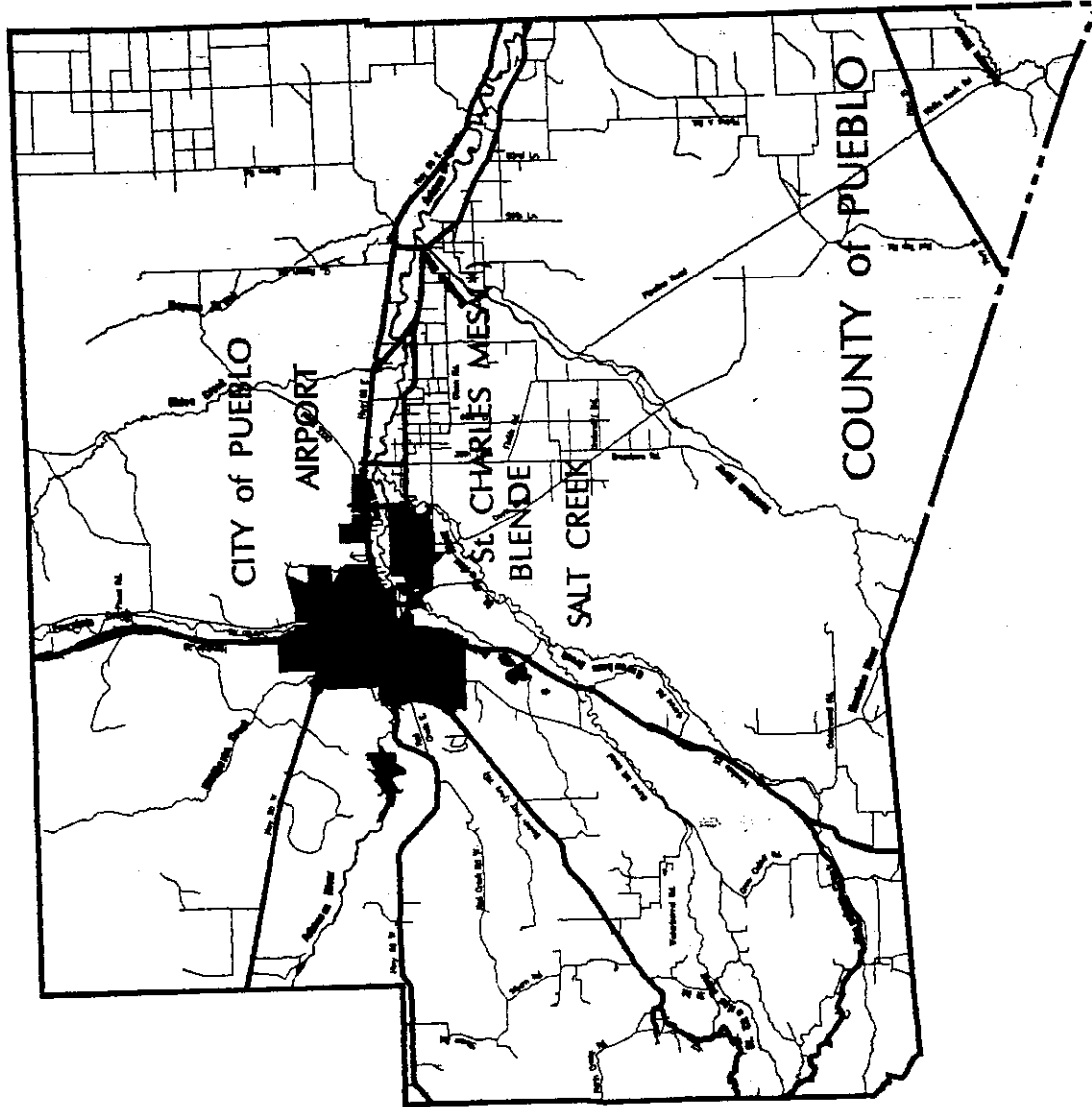
(\*)St. Charles Mesa is covered by both the City of Pueblo and Pueblo County. See narrative for details.



Scale - 1:608890



Scale in Miles



1993 Section 206 Water Quality Management Plan

# FIGURE VII-1 MANAGEMENT AGENCIES JURISDICTIONAL AREAS

**POINT SOURCE DISCHARGERS**

## **INTRODUCTION - POINT SOURCE DISCHARGERS**

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The point source dischargers are the focus of this 1993 Update. Table VII-2 lists the *current* (expired or invalid permits have been excluded except as noted) NPDES permit holders in Pueblo County; however, only the major dischargers are reviewed in detail in the Update. These are the jurisdictions discussed in the section on Management Agency Jurisdiction.



Table VII-2  
POINT SOURCE DISCHARGERS IN PUEBLO COUNTY

<u>Discharger</u>	<u>Type<sup>(1)</sup></u>	<u>Site</u>	<u>NPDES No.</u>	<u>Expiration Date</u>
American Iron and Metal Co.	HI		COR-020115	
Avondale Water and Sanitation District			CO-0021075	February 29, 1996
Tony J. Beltramo & Sons, Inc.	S&G	Baca Pit	COG-500855	
Tony J. Beltramo & Sons Inc.	CA	USC, Parking Lot W-2	COR-030468	
Town of Boone - Sanitation			CO-0023477	December 31, 1983 <sup>(2)</sup>
BOWW -Pueblo			COG-640025	December 31, 1994
Broadacre Landfill	HI		COR-020077	
Broderick & Gibbons	S&G	Chantala Pit	COG-500661	
Broderick & Gibbons, Inc.	LI	Pueblo Asphalt	COR-010313	
Castle Concrete Co.	S&G	Hobson Ranch Pit and Pit #2	COG-500596	
Centel Electric - Colorado			CO-0000574	February 28, 1997
CF&I Steel Corp.	HI	Pueblo Plant	COR-020163	
CF&I Steel, L.P.			CO-0000621	October 31, 1998
City of Pueblo			CO-0026646	
City of Pueblo	HI	Pueblo Memorial Airport	COR-020033	
Colorado City Metropolitan District			CO-0021121	August 31, 1994 <sup>(2)</sup>
Cortner Feedlot, Inc.	S&G	Cortner #2	COG-500604	

Table VII-2  
POINT SOURCE DISCHARGERS IN PUEBLO COUNTY  
(Continued)

<u>Discharger</u>	<u>Type<sup>(1)</sup></u>	<u>Site</u>	<u>NPDES No.</u>	<u>Expiration Date</u>
DFG Ceramics	S&G	Stone City Mine	COG-500772	
Doane Products Company	LI		COR-010148	
B.F. Goodrich	LI	Carbon Brake Facility	COR-010401	
HVH Transportation, Inc.	LI		COR-010348	
William C. Koch	LI	Piston Plant of Dana Corp	COR-010357	
Kock Materials Co.	HI		COR-020130	
Martin Sand and Gravel	S&G	Piscotta Pit	COG-500000	
McDonell Douglas Astro.	LI	Pueblo Facility	COR-010469	
Meadowbrook Mobile Home Park			CO-0040801	December 31, 1995
Meadowcreek Water and Sanitation District			CO-0031470	December 31, 1983 <sup>(2)</sup>
NW Transport Service, Inc.	LI		COR-010-282	
O.W. Carruth	S&G	Wayt Pit	COG-500745	
Pepsi Cola Metro Bottling Co.	HI		COR-020259	
Ina C. Pope	S&G	Pope Pit No. 2	COG-500658	
Pueblo Board of Water Works			CO-0000787	June 30, 1992
Pueblo County Public Works	S&G	Ross Pit	COG-500696	
Pueblo County Public Works	CA	1993 Beulah Roads	COR-030402	
Pueblo County Public Works	S&G	Popes Pit No. 1	COG-500690	

Table VII-2  
POINT SOURCE DISCHARGERS IN PUEBLO COUNTY  
(Continued)

<u>Discharger</u>	<u>Type<sup>(1)</sup></u>	<u>Site</u>	<u>NPDES No.</u>	<u>Expiration Date</u>
Pueblo County Public Works	S&G	Fisher Pit	COG-500689	
Pueblo County Public Works	S&G	Lucero Pit	COG-500695	
Pueblo County Public Works	S&G	Nepesta Hills Pit	COG-500693	
Pueblo County Public Works	S&G	Asbridge Pit	COG-500692	
Pueblo County Public Works	S&G	Simonson Pit	COG-500691	
Pueblo Metals Co.	HI		COR-020164	
Pueblo Railroad Service Co.	LI		COR-010359	
Pueblo Reservoir State Recreation Area				
Rock Canyon			CO-0038466	June 30, 1987 <sup>(4)</sup>
Arkansas Point Wastewater Treatment Plant			CO-0037630	December 31, 1985
Northern Plains Wastewater Treatment Plant			CO-0033936	September 30, 1986
Pueblo Reservoir Fish Hatchery			CO-0043281	April 30, 1998
Pueblo West Metropolitan District				
Aerated Wastewater Pond System			CO-0040789	December 31, 1995 <sup>(5)</sup>
Wastewater Treatment Plant No. 1			CO-0024155	June 30, 1985 <sup>(5)</sup>
Wastewater Treatment Plant No. 2			CO-0033979	June 30, 1985 <sup>(5)</sup>
RBK Construction Inc.	S&G	RBK Pit #30	COG-500086	September 30, 1997
Robert R. McKee	CA	Target Distribution Center	COR-030325	
Robinson Brick Co.	S&G	Tomahawk Pit	COG-500726	

Table VII-2  
POINT SOURCE DISCHARGERS IN PUEBLO COUNTY  
(Continued)

<u>Discharger</u>	<u>Type<sup>(1)</sup></u>	<u>Site</u>	<u>NPDES No.</u>	<u>Expiration Date</u>
Rockwool Industries, Incorporated	CA		COR-030560	
Southway Construction Co.	S&G	Fillmore Pit	COG-500907	
Town of Rye			CO-0032034	September 30, 1983
Trane Company	LI	Trane Company	COR-010165	
Valco, Inc.	S&G	Pueblo Concrete Division	COG-500035	September 30, 1997
Valco, Inc.	S&G	Valco East Pit	COG-500095	September 30, 1997
Valco, Inc.	S&G	Barnhart Pit	COG-500205	September 30, 1997
Valco, Inc.	S&G	Oak Leaf Pit	COG-500082	September 30, 1997
Waste Management of CO	LI	Waste Mngmnt of Pueblo	COR-010418	
Westplains Energy	HI	Pueblo Plant	COR-020142	

Notes

1. Abbreviations for permit types are as follows: LI - Light Industry, HI - Heavy Industry, CA - Construction Activities, MM - Metal Mining, and S&G - Sand and Gravel Mining.
2. Non-discharging; NPDES permit not required.
3. Meadowcreek Water and Sanitation District was annexed to the Colorado City in December, 1983. It now discharges into the Colorado City Wastewater Collection System.
4. Rock Canyon's NPDES Permit is no longer necessary due to non-use of chemicals for any type of water or pest treatments.
5. Pueblo West constructed an aerated wastewater Pond system that replaced Treatment Plant No. 1 and No. 2 as of July, 1985.

**PUEBLO WEST METROPOLITAN DISTRICT**

# PUEBLO WEST METROPOLITAN DISTRICT

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I. MANAGEMENT AGENCY: Pueblo County

II. DISCHARGE PERMIT DATA

DATE OF UPDATE: 1993  
NPDES PERMIT NO. CO-0040789  
DATE PERMIT EXPIRES: December 31, 1995

III. OPERATING AGENCY

Pueblo West Metropolitan District

IV. DATE OF MANAGEMENT AGENCY AGREEMENT

1977 (as established by the 1977 Pueblo 208 Plan).

V. DESCRIPTION OF THE TREATMENT FACILITY

The lagoon-type facility consists of three aerated ponds, one polishing pond, a partial flume, and chlorine contact chamber/chlorination.

VI. WATER QUALITY DATA

A. Receiving Water

The wastewater treatment plant discharges into Pesthouse Gulch, which flows to Dry Creek, a tributary to the Arkansas River. The Water Quality Control District (WQCD) parameters are as follows.

B. WQCD Stream Segment Description - Middle Arkansas River No. 4

*All tributaries to the Arkansas River and Pueblo Reservoir from the inlet to Pueblo Reservoir to the Colorado Canal headgate, except for specific listings in the Fountain Creek subbasin and in Segments 5 through 21 and 24.*

C. Adopted Stream Segment Classification - Middle Arkansas River No. 4

*Aquatic Life, Warm Water Class 2  
Recreation Class 2  
Agriculture  
Use-Protected*

Table VII-3  
 WATER QUALITY STANDARDS  
 PUEBLO WEST METROPOLITAN DISTRICT

<u>Characteristic</u>	<u>Federal/State Standard</u>
<b>Physical and Biological</b>	
D.O.	5.0 mg/l <sup>1</sup>
Ph	6.5-9.0
Fecal Coliforms	2000/100ml
<b>Inorganic</b>	
NH <sub>3</sub> (ac)	TVS <sup>2</sup>
NH <sub>3</sub> (ch)	0.1 mg/l
CL <sub>2</sub> (ac)	0.019 mg/l
CL <sub>2</sub> (ch)	0.011 mg/l
Cyanide (free)	0.005 mg/l <sup>3</sup>
S as H <sub>2</sub> S	0.002 mg/l
Boron	0.75 mg/l
Nitrite (NO <sub>2</sub> )	0.5 mg/l
Nitrate (NO <sub>3</sub> )	10 mg/l
Chloride (Cl)	250 mg/l
Sulfate (SO <sub>4</sub> )	1800mg/l
<b>Metals</b>	
Arsenic (As)(ac)	50 ug/l (Trec)
Cadmium (Cd)(ac/ch)	TVS <sup>2</sup>
Cadmium (Cd)(ch)	TVS <sup>2</sup>
Chromium (tri)(CrIII)(ac)	50 ug/l (Trec)
Chromium (hex)(CrIV)(ac/ch)	TVS <sup>2</sup>
Copper (Cu)(ac/ch)	TVS <sup>2</sup>
Iron (Fe, sol)(ch)	300 ug/l (dis)
Iron (Fe, sol)(ch)	1400 ug/l (Trec)
Lead (Pb)(ac/ch)	TVS <sup>2</sup>
Manganese (Mn, sol)(ch)	50 ug/l (dis)
Manganese (Mn, sol)(ch)	1000 ug/l (Trec)
Mercury (Hg)(ch)	0.01 ug/l (Trec)
Nickel (Ni)(ac/ch)	TVS <sup>2</sup>
Selenium (Se)(ch)	10 ug/l (Trec)
Silver (Ag)(ac)	TVS <sup>2</sup>
Silver (Ag)(ch)	TVS <sup>2</sup>
Zinc (Zn)(ac/ch)	TVS <sup>2</sup>

Notes

1. See Appendix B for special conditions pertaining to Dissolved Oxygen for this stream segment.
2. See Appendix A for these Numeric Standards.
3. See Appendix B for special conditions pertaining to Cyanide for this stream segment.

**VII. SERVICE AREA POPULATION**

Table VII-4  
EXISTING AND PROJECTED POPULATIONS  
PUEBLO WEST METROPOLITAN DISTRICT

DISTRICT POPULATION<sup>1</sup>

<u>1990</u>	<u>Current<sup>2</sup></u>	<u>1995</u>	<u>2000</u>	<u>2005</u>	<u>2010</u>
4,310 <sup>3</sup>	6,000	6,268	8,309	11,015	14,602

SERVICE AREA AND USER POPULATION<sup>1</sup>

<u>1990</u>	<u>Current<sup>2</sup></u>	<u>1995</u>	<u>2000</u>	<u>2005</u>	<u>2010</u>
2,967 <sup>3</sup>	3,800	4,254	5,639	4,776	6,331

Notes:

1. Population projections are based upon figures from 1990 Census data and the Pueblo Traffic Zone Analysis.
2. Current population figures were provided by Mr. Richard Hayes, Superintendent of water and wastewater, September 1994.
3. Population figures for 1990 are from Census block level data obtained from TIGER files via the Pueblo County GIS.

**VIII. CAPACITIES**

Table VII-5  
EXISTING AND PROJECTED CAPACITIES  
PUEBLO WEST METROPOLITAN DISTRICT

<u>Capacity</u>	<u>Design</u>	<u>Existing</u>	<u>Year at 80%<sup>1</sup></u>	<u>Year at 95%<sup>1</sup></u>
Flow (MGD)	0.3 <sup>2</sup>	0.35 <sup>2</sup>	1990	1991
Organic (lbs/day)	610	294	1990	1991

Notes:

1. Based on 86 gpcd and 0.176 lbs/day (250 mg/l) BOD/capita/day.
2. The District submitted a Request to Amend an Approved Site Application in August 1994, which would revise the design flow to 0.45 MGD, based upon a decreased detention time of 15 days from the present 28 days (See additional comments in the narrative).



**IX. PROGRAM CHANGES:**

In 1992, the discharge permit was amended to allow the reporting of CBOD, rather than BOD.

In August 1994, the District submitted a Request to Amend an Approved Site Application in August. If approved, the District will revise the daily design flow to from 0.30 MGD to 0.45 MGD, based upon a decreased detention time of 15 days. The requested change is based upon operating experience conducted over the past five years and is within State guidelines for aerated detention ponds. Based upon the experience of the District, the reduced detention times will not result in a measurable difference in effluent quality, and will reduce algae growth.

**X. EFFLUENT LIMITS REQUIRED BEYOND SECONDARY TO MEET STREAM STANDARDS: None**

**XI. WASTELOAD ALLOCATIONS**

A wasteload allocation study has not been conducted.

**XII. MAJOR CONSTRUCTION: See XIII, below.**

**XIII. ESTIMATED FIVE-YEAR CONSTRUCTION NEEDS**

The district is currently studying the feasibility of expanding the wastewater treatment facilities to meet projected growth. The District is investigating multiple options including the expansion of the existing facilities, restoring the dormant mechanical treatment plant (No. 1 and No. 2) temporarily, which would provide 0.15 MGD of additional capacity, and temporarily reopening the non-discharging lagoon in the western area of the District, which would provide an additional 0.05 MGD (See XV, below). The preferred option is the expansion of the existing treatment plant, which if feasible, is expected to be constructed by the end of 1995.

**XIV. FINAL PLAN STATEMENT**

The District will continue to extend sewer service in an orderly manner to those properties, both in the District and extraterritorial agreement, which can be feasibly served by the existing treatment facility.

In areas where central collection is not feasible, individual on-site sewage disposal systems (e.g., septic systems) will be used. The District will also encourage the protection of groundwater quality through public information regarding septic system maintenance.

## XV. DESCRIPTION AND STATUS

In July, 1985, an aerated lagoon replaced Treatment Plant No. 1 (CO-0024155), an activated sludge plant followed by a polishing pond and Treatment Plant No. 2 (CO-0033979), a non-aerated three-cell lagoon. Both permits have expired and are no longer active. The new lagoon type facility (CO-0040789) is the only active in-use facility for Pueblo West. The old lagoon has been abandoned; however, in the event of an emergency it will serve as a stand-by lagoon.

The "Service Area" and "User" population figures are the same since all residents of the sewered area (service area) are assumed to be users of the system. Although there may be a few isolated instances where a household within the service area may have an on-site system. See Figure VII-2 for the vicinity map. Based upon population figures and the capacity of the treatment plant, if Table VII-5 is accurate, this indicates that the plant is operating in excess of the allowable capacities and has been since 1990.


There are approximately 491 households outside of the service area which are served by on-site disposal systems, mostly septic tanks. The Pueblo Regional Planning Commission conducted a septic tank maintenance demonstration project in Pueblo West during 1981 and prepared a "Pueblo West Septic Tank Maintenance Program Plan" in September of 1981. However, the plan has not been implemented due to an inadequate response by homeowners who would be affected by the plan.


The PWMD does have a formal policy concerning the disposal of effluent pumped from individual septic systems. The PWMD Sewer Regulations prohibit the discharge of septic tank sludge into the sanitary sewer system without a permit. The district has not permitted this discharge in the past, and no permits are pending.


The Board of the Pueblo West Metropolitan District (PWMD) does not anticipate increasing the area to be served by the new sewage treatment plant beyond that currently served by the aerated pond system. The new Pueblo West aerated pond system facility is expected to be expanded in 1995 and is should adequately accommodate its service area population through the Year 2000 without an adverse impact on the water quality of the receiving Arkansas River. The present loading of the system is in excess of standards; however, other parameters are in compliance.

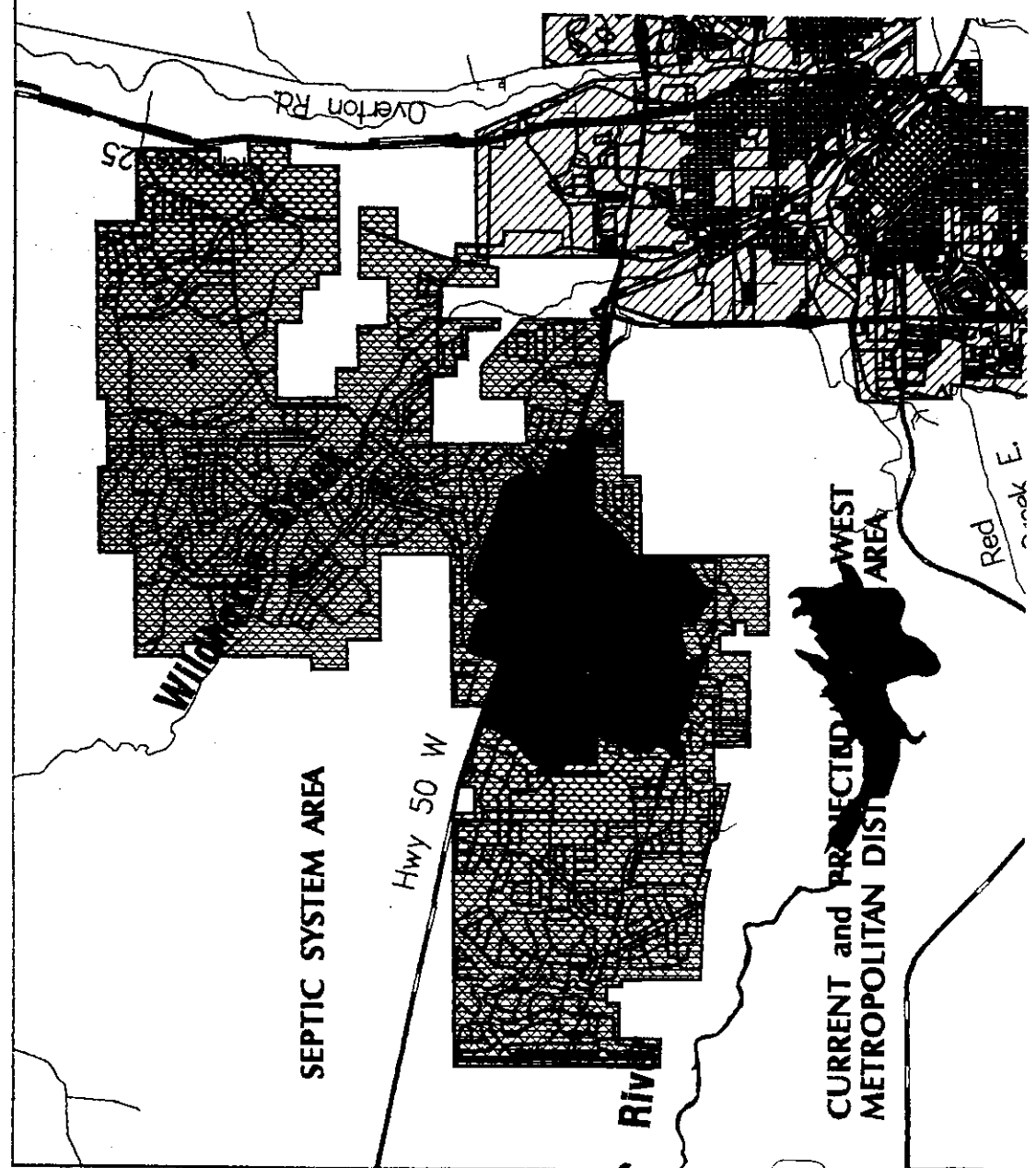
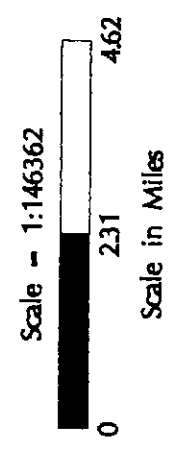
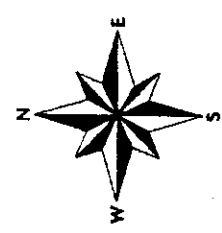
The system's ability to serve the District's needs could change if a substantially greater number of households locate in the district than is anticipated or if several industrial wastewater generators are introduced to the system. However, as indicated above, the District is investigating improvements for the existing system that will allow it to handle potential increased loads.

# LEGEND

 Pueblo West Metropolitan District  
 Current and Projected Service Area  
 Boundaries

 Septic System Area

 City of Pueblo  
 (See Figure VII-5)



1993 Section 208 Water Quality Management Plan

**FIGURE VII-2 SERVICE AREA BOUNDARIES  
PUEBLO WEST METROPOLITAN DISTRICT**

**PUEBLO STATE RECREATION AREA  
ARKANSAS POINT SEWER SYSTEM**

# ARKANSAS POINT SEWER SYSTEM

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I. **MANAGEMENT AGENCY:** Pueblo County

II. **DISCHARGE PERMIT DATA**

DATE OF UPDATE: 1993  
NPDES PERMIT NO. CO-0037630  
DATE PERMIT EXPIRES: Permit Expired

III. **OPERATING AGENCY**

Colorado Division of Parks and Outdoor Recreation, Facility: Arkansas Point Sewer System.

IV. **DATE OF MANAGEMENT AGENCY AGREEMENT**

1981 (as established by the 1981 Pueblo 208 Plan Update).

V. **DESCRIPTION OF TREATMENT FACILITY**

This is an aerated non-discharging lagoon system consisting of two aeration ponds, a polishing pond, chlorination facilities, and a sand filter. Scaled to Colorado Department of Health Standards in 1983.

VI. **WATER QUALITY DATA**

This is a non-discharging system and, therefore, the water quality standards for the Arkansas River Basin are not applicable.

VII. **SERVICE AREA POPULATION**

The service area for the Arkansas Point Sewer System does not have a permanent population. Population requirements, based on a transient population and related recreational activities, were used to calculate BOD<sub>5</sub> loading for facility design. These equivalents are presented on Table VII-7.

VIII. **CAPACITIES**

Table VII-6  
EXISTING AND PROJECTED CAPACITIES  
ARKANSAS POINT SEWER SYSTEM

<u>Capacity</u>	<u>Design</u>	<u>Existing</u>	<u>Year at 80%</u>	<u>Year at 95%</u>
Flow (MGD)	0.135	0.0675	Facility was designed to accommodate ultimate projected loading.	
Organic (lbs/day)	276	138		

**IX. PROGRAM CHANGES:** None.

**X. EFFLUENT LIMITS REQUIRED BEYOND SECONDARY TO MEET STREAM STANDARDS:** None.

**XI. WASTELOAD ALLOCATIONS**

A wasteload allocation study has not been conducted.

**XII. MAJOR CONSTRUCTION**

The Fish Hatchery and two (2) residences were constructed and began operating March 1, 1988. Additionally, one-hundred (100) developed campsites and five (5) semi-developed vault toilets were constructed in March 1993.

**XIII. ESTIMATED FIVE-YEAR CONSTRUCTION NEEDS:** None.

**XIV. FINAL PLAN STATEMENT:** None.

**XV. DESCRIPTION AND STATUS**

The Arkansas Point Wastewater Treatment Facility, completed in June, 1981, serves both the Rock Canyon (on the downstream side of the Pueblo Dam) and Arkansas Point (on the south abutment of the Pueblo Dam) recreation areas (See Figure VII-3). Table VII-8 lists the various activities the facility is designed to serve. Of these activities, the Visitor Center, Rock Canyon Picnic and Swimming Area, and the unlisted Maintenance Shop are being served. Most of the remaining activities are scheduled for completion in 1988 and 1989.

Several of the activities are served by alternate forms of waste disposal. The entrance station is served by a septic system, and the Marina is served by vault toilets. The concession stand is served by vault toilets. Pumping and disposal of waste matter from these facilities is provided by private contractors. Table VII-8 lists the expected BOD to be served by the facility. See Figure VII-3 for the vicinity map of this facility.

The facility provides 15 days of wastewater detention time in each cell, with a total of 30 days at the peak-week flow rate. There are not presently any provisions for using treated effluent for irrigation purposes. Table VII-9 summarizes the projected ultimate hydraulic loading of the facility.

Table VII-7  
 EXPECTED BOD<sub>5</sub> LOADING  
 ARKANSAS POINT WASTEWATER TREATMENT FACILITY<sup>1</sup>

<u>Description</u>	<u>lbs/BOD<sub>5</sub>/Day</u>
96 Camp Sites @ 0.33 lbs x 0.404 Vacancy Factor	12.8
Fish Cleaning Station: 2 @ 9.1 lbs/day	18.2
Laundromat: 4 machines @ 0.5 lbs/day	2.0
Visitor Center: 2,000 people @ 0.03 lbs/capacity	60.0
Swimming Area: 9,000 Swimmer capacity x 0.03 lbs x 0.404 Vacancy Factor	109.0
Maintenance Shop: 10 employees x 4 visits x 0.03 lbs	1.2
Picnic Area: 1,000 persons x 0.0375 lbs capacity x 0.404 Vacancy Factor	15.2
2 Hatchery Residences: 4 persons/residence x 2 x 0.20 lbs	1.6
<b>TOTAL</b>	<b>215.0</b>

Notes

1. Source: Richard M. O'Rourke, Parks Manager, Pueblo Reservoir State Recreation Area, 1987 and updated in 1994 by Mr. Mike French.

Table VII-8  
 PROJECTED ULTIMATE BOD<sub>5</sub> LOADING  
 ARKANSAS POINT WASTEWATER TREATMENT FACILITY<sup>1,3</sup>

<u>Description</u>	<u>lbs/BOD<sub>5</sub>/Day</u>
96 <sup>2</sup> Camp Sites @ 0.33 lbs. x 0.404 Vacancy Factor	12.8
Concessions: Assume 500 meals/day @ 0.015 lbs/meal plus 2,000 gpd from rest rooms	7.5 <u>4.9</u> 12.4
Marina: 1,000 persons/day @ 0.0228	22.8
Fish Cleaning Station: 2 @ 9.1 lbs/day	18.2
Laundromat: 9 machines @ 0.5 lbs	4.5
Entrance Station: 100 gpd	0.6
Visitor Center: 2,000 people @ 0.03 lbs/capacity	60.0
(800) <sup>2</sup> Swimming Area: 800 Swimmer capacity x 0.03 lbs x 0.404 Vacancy Factor	109.0
(200) <sup>2</sup> Picnic Area: 200 persons x 0.0375 lbs capacity x 0.404 Vacancy Factor	15.2
2 Hatchery Residences: 4 persons/residence x 2 x 0.20 lbs	1.6
<b>TOTAL</b>	<u>259.0</u>

Notes

1. *Recreation and General Development Planning, Pueblo Reservoir State Recreation Area* (U.S. Department of the Interior, Bureau of Reclamation, National Park Service and State of Colorado, Division of Parks and Outdoor Recreation), 1975. Phillip E. Flores Associates, Inc., Denver, Colorado.
2. Current figures for facilities and user population as of August 1994.
3. Source: Mr. Mike French, Parks Manager, Pueblo Reservoir State Recreation Area, 1994.



Table VII-9  
 PROJECTED ULTIMATE HYDRAULIC LOADING<sup>1</sup>  
 ARKANSAS POINT WASTEWATER TREATMENT FACILITY<sup>2</sup>

Peak Flow (gpm)	Peak Day (gals)	Peak Week (gals)	Peak Month (gals)	Avg Day (gals)	Avg Week (gals)	Avg Month (gals)	Avg Winter Week (gals)
367	134,400 <sup>3</sup>	571,000 <sup>3</sup>	1,814,000 <sup>3</sup>	39,690 <sup>3</sup>	275,900 <sup>3</sup>	1,262,200 <sup>3</sup>	1,000

Notes

1. The projected ultimate hydraulic loadings are felt to be high by about 20 percent, except for average winter week loading, which is accurate, according to Richard M. O'Rourke, June 24, 1987 and confirmed in 1994.
2. *Recreation and General Development Planning, Pueblo Reservoir State Recreation Area* (U.S. Department of the Interior, Bureau of Reclamation, National Park Service and State of Colorado, Division of Parks and Outdoor Recreation), 1975. Phillip E. Flores Associates, Inc., Denver, Colorado.
3. For three summer months only.

**PUEBLO STATE RECREATION AREA  
NORTHERN PLAINS WASTEWATER  
TREATMENT SYSTEM**

# **NORTHERN PLAINS WASTEWATER TREATMENT SYSTEM**

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**I. MANAGEMENT AGENCY:** Pueblo County

**II. DISCHARGE PERMIT DATA**

DATE OF UPDATE: 1993  
NPDES PERMIT NO. CO-0033936  
DATE PERMIT EXPIRED: Permit Expired

**III. OPERATING AGENCY**

Colorado Department of Natural Resources, Facility: Northern Plains  
Wastewater Treatment System.

**IV. DATE OF MANAGEMENT AGREEMENT**

1981 (as established by the 1981 Pueblo 208 Plan Update)

**V. DESCRIPTION OF TREATMENT FACILITY**

This facility is non-discharging and consists of a two-cell primary lagoon, chlorination, discharge to second lagoon, and sand filter which was sealed to Colorado State Standards in 1983.

**VI. WATER QUALITY DATA**

This is a non-discharging system; therefore, the water quality standards for the Arkansas River Basin are not applicable.

**VII. SERVICE AREA POPULATION**

The service area for the Northern Plains System does not have a permanent population. Population requirements, based on a transient population and related recreational activities, were used to calculate BOD<sub>5</sub> loading for facility design. These equivalents are presented on Table VII-12.

**VIII. CAPACITIES**

Table VII-10  
EXISTING AND PROJECTED CAPACITIES  
NORTHERN PLAINS WASTEWATER TREATMENT SYSTEM

<u>Capacity</u>	<u>Design</u>	<u>Existing</u>	<u>Year at 80%<sup>1</sup></u>	<u>Year at 95%<sup>1</sup></u>
Flow (MGD)	0.10	0.07	1988	1994
Organic (lbs/day)	173	80	1988	1994

Notes

1. See XV. DESCRIPTION AND STATUS below.

**IX. PROGRAM CHANGES:** None.

**X. EFFLUENT LIMITS REQUIRED BEYOND SECONDARY TO MEET STREAM STANDARDS:** None.

**XI. WASTELOAD ALLOCATIONS**

A wasteload allocation study has not been conducted.

**XII. MAJOR CONSTRUCTION:** None.

**XIII. ESTIMATED FIVE-YEAR CONSTRUCTION NEEDS:** None.

**XIV. FINAL PLAN STATEMENT:** None.

**XV. DESCRIPTION AND STATUS**

The Northern Plains Recreation Area is accessible from U.S. Highway 50 through Pueblo West. It stretches from the bluffs adjacent to the North Shore Marina at Pueblo Reservoir to the southern boundary of Pueblo West. The entire area was opened for visitors in 1982.

The Northern Plains Wastewater Treatment System currently holds an expired NPDES Permit. The permit was allowed to expire because the system has been sealed; no discharge is being released nor is any anticipated to be released within the next ten years.

The facility was constructed to handle the ultimate hydraulic and organic loadings based on the level of development outlined in the *Recreation and General Development Planning, Pueblo Reservoir State Recreation Area* document. Tables VII-12 and VII-14 illustrate the ultimate BOD<sub>5</sub> and hydraulic loading for the system. However, actual loading of the system is much less and is not expected to reach the ultimate loading for a number of reasons.

Table VII-11 illustrates the existing BOD<sub>5</sub> loading. By comparing Table VII-11 with corresponding Table VII-12, some differences are evident. First of all, only 214 campsites (as opposed to 700) have been developed. Also, the number of visitors to the picnic area is less than was originally anticipated (250 versus 576 people).

As Tables VII-13 and VII-14 illustrate, existing hydraulic loading of the facility is 10 percent of capacity.

No new construction is foreseen in the immediate future, and full development of the service area is not anticipated at the present time.

The Northern Plains facility will be required to renew its NPDES Permit should a future need for the release of effluent occur. See Figure VII-3 for the vicinity map of this facility.

TABLE VII-11  
EXISTING BOD<sub>5</sub> LOADING  
NORTHERN PLAINS WASTEWATER TREATMENT FACILITY<sup>1</sup>

<u>Description</u>	<u>lbs/BOD<sub>5</sub>/DAY</u>
214 Camp Sites @ 0.33 lbs. x 0.404 Vacancy Factor	28.5
Picnic Area: 250 People @ 0.015	3.75
Fish Cleaning Station: 2,500 gpd	9.1
Laundromat: 9 Machines @ 0.5 lbs/day	4.5
<b>TOTAL</b>	<u>45.85</u>

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Notes

1. Source: Richard M. O'Rourke, Parks Manager, Pueblo Reservoir State Recreation Area, June 24, 1987 and confirmed in 1994.

TABLE VII-12  
PROJECTED ULTIMATE BOD<sub>5</sub> LOADING  
NORTHERN PLAINS WASTEWATER TREATMENT FACILITY<sup>1</sup>

<u>Description</u>	<u>lbs/BOD<sub>5</sub>/DAY</u>
214 Camp Sites @ 0.33 lbs x 0.404 Vacancy Factor (Originally, 700 camp sites were projected)	28.5
Picnic Area: 576 People @ 0.015 lbs	8.7
Concessions: Assume 500 meals/day @ 0.015 lbs/meal plus 2,000 gpd from rest rooms	7.5 <u>4.9</u> 12.4
North Shore Marina: 1,000 persons/day @ 0.0228	22.8
Fish Cleaning Station: 2,500 gpd	9.1
Laundromat: 9 machines @ 0.5 lbs/day	4.5
<b>TOTAL</b>	<u>86.0</u>

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Notes

1. *Recreation and General Development Planning, Pueblo Reservoir State Recreation Area* (U.S. Department of the Interior, Bureau of Reclamation, National Park Service and State of Colorado, Division of Parks and Outdoor Recreation), 1975. Phillip E. Flores Associates, Inc., Denver, Colorado.

TABLE VII-13  
EXISTING HYDRAULIC LOADING  
NORTHERN PLAINS WASTEWATER TREATMENT FACILITY<sup>1</sup>

Peak Flow (gpm)	Peak Day (gals)	Peak Week (gals)	Peak Month (gals)	Avg Day (gals)	Avg Week (gals)	Avg Month (gals)	Avg Winter Week (gals)
30	9,180	39,000	124,000	2,294	16,060	68,820	100

Notes

1. Source: Richard M. O'Rourke, Parks Manager, Pueblo Reservoir State Recreation Area, 1987 and confirmed in 1994.

Table VII-14  
PROJECTED ULTIMATE HYDRAULIC LOADING  
NORTHERN PLAINS WASTEWATER TREATMENT FACILITY<sup>1</sup>

Peak Flow (gpm)	Peak Day (gals)	Peak Week (gals)	Peak Month (gals)	Avg Day (gals)	Avg Week (gals)	Avg Month (gals)	Avg Winter Week (gals)
300	91,800	390,000	1,240,000	22,940	160,600	688,200	1,000

Notes

1. *Recreation and General Development Planning, Pueblo Reservoir State Recreation Area* (U.S. Department of the Interior, Bureau of Reclamation, National Park Service and State of Colorado, Division of Parks and Outdoor Recreation), 1975. Phillip E. Flores Associates, Inc., Denver, Colorado.

**PUEBLO STATE RECREATION AREA  
ROCK CANYON RECREATION LAKES**



# ROCK CANYON RECREATION LAKES

I. **MANAGEMENT AGENCY:** Pueblo County

II. **DISCHARGE PERMIT DATA**

DATE OF UPDATE: 1993

NPDES PERMIT NO. CO-0038466

YEAR PERMIT EXPIRES: Permit renewed indefinitely

III. **OPERATING AGENCY**

Colorado Department of Natural Resources, Facility: Rock Canyon  
Recreation Lakes

IV. **DATE OF MANAGEMENT AGREEMENT**

1981 (as established by the 1981 Pueblo 208 Plan Update)

V. **DESCRIPTION OF TREATMENT FACILITY:** None

VI. **WATER QUALITY DATA**

A. Receiving Water: Arkansas River

B. Stream Segment Description - Middle Arkansas River No. 2

*Mainstream of the Arkansas River from the outlet of Pueblo Reservoir to  
a point immediately above the confluence with Wildhorse/Dry Creek  
Arroyo.*

C. Adopted Stream Segment Classification - Middle Arkansas River No. 2

*Agriculture  
Water Supply  
Recreation—Class 1  
Aquatic Life—Class 1, Cold Water*

VII. **SERVICE AREA POPULATION**

The service area for the Rock Canyon Recreation Lakes does not have a permanent population. The population served is limited to swimmers at the Recreation Lakes, but does not include the rest rooms, concession stand, and showers, which discharge to the Arkansas Point Treatment Facility.

VIII. **CAPACITIES:** Not Applicable

IX. **PROGRAM CHANGES:** None

Table VII-15  
WATER QUALITY STANDARDS  
ROCK CANYON

<u>Characteristic</u>	<u>Federal/State Standard</u>
<b>Physical and Biological</b>	
D.O.	6.0 mg/l <sup>1</sup>
D.O. (sp)	7.0 mg/l <sup>1</sup>
ph	6.5-9.0
Fecal Coliforms	200/100ml
<b>Inorganic</b>	
NH <sub>3</sub> (ac)	TVS <sup>2</sup>
NH <sub>3</sub> (ch)	0.02 mg/l
CL <sub>2</sub> (ac)	0.019 mg/l
CL <sub>2</sub> (ch)	0.011 mg/l
Cyanide (free)	0.005 mg/l <sup>3</sup>
S as H <sub>2</sub> S	0.002 mg/l
Boron	0.75 mg/l
Nitrite (NO <sub>2</sub> )	0.5 mg/l
Nitrate (NO <sub>3</sub> )	10 mg/l
Chloride (Cl)	250 mg/l
Sulfate (SO <sub>4</sub> )	250 mg/l
<b>Metals</b>	
Arsenic (As)(ac)	50 ug/l (Trec)
Cadmium (Cd)(ac)	TVS <sup>2</sup> (tr)
Cadmium (Cd)(ch)	TVS <sup>2</sup>
Chromium (tri)(CrIII)(ac)	50 ug/l (Trec)
Chromium (hex)(CrIV)(ac/ch)	TVS <sup>2</sup>
Copper (Cu)(ac/ch)	TVS <sup>2</sup>
Iron (Fe, sol)(ch)	300 ug/l (dis)
Iron (Fe, sol)(ch)	1000 ug/l (Trec)
Lead (Pb)(ac/ch)	TVS <sup>2</sup>
Manganese (Mn)(ch)	50 ug/l (dis)
Manganese (Mn)(ch)	1000 ug/l (Trec)
Mercury (Hg)(ch)	0.01 ug/l (Trec)
Nickel (Ni)(ac/ch)	TVS <sup>2</sup>
Selenium (Se)(ch)	10 ug/l (Trec)
Silver (Ag)(ac)	TVS <sup>2</sup>
Silver (Ag)(ch)	TVS <sup>2</sup> (tr)
Zinc (Zn)(ac/ch)	TVS <sup>2</sup>

Notes

1. See Appendix B for special conditions pertaining to Dissolved Oxygen for this stream segment.
2. See Appendix A for these Numeric Standards.
3. See Appendix B for special conditions pertaining to Cyanide for this stream segment.

**X. EFFLUENT LIMITS REQUIRED BEYOND SECONDARY TO MEET STREAM STANDARDS: None.**

**XI. WASTELOAD ALLOCATIONS**

A wasteload allocations study has not been conducted.

**XII. MAJOR CONSTRUCTION: None**

**XIII. ESTIMATED FIVE-YEAR CONSTRUCTION NEEDS**

Measuring device to measure effluent from Lake 2 into the Arkansas River.

**XIV. FINAL PLAN STATEMENT**

Continue to maintain effluent quality in accordance with stream classification and Water Quality Standards.

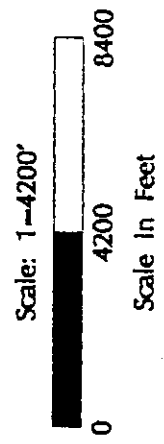
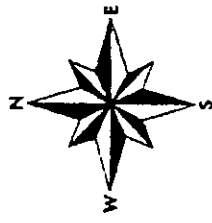
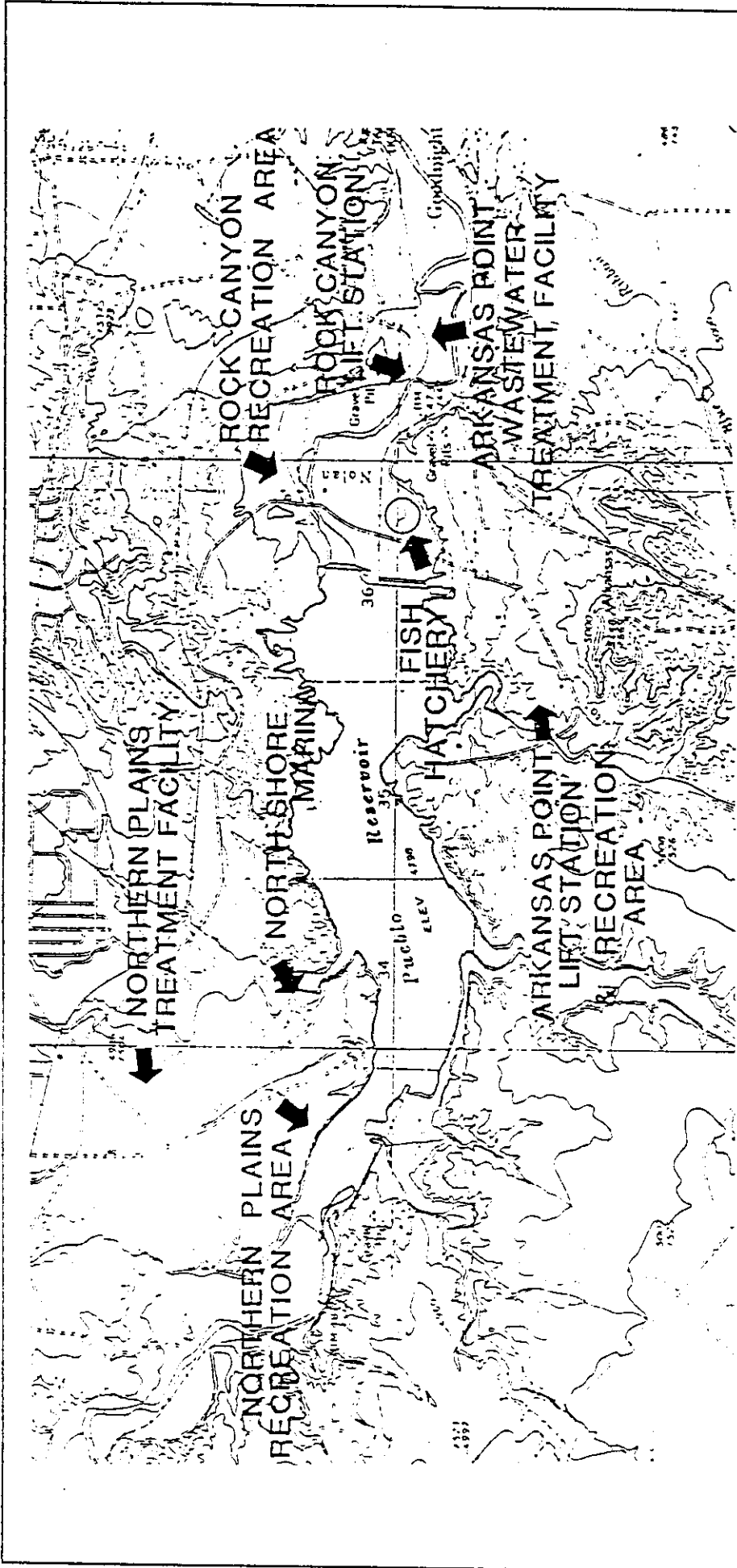
**XV. DESCRIPTION AND STATUS**

As part of the recreational plan for Pueblo Reservoir, two recreational lakes were completed the summer of 1985. The lakes were developed on the north bank of the Arkansas River downstream from Pueblo Dam.

The majority of water for the lakes is originated from groundwater underflow from the alluvial aquifer. Up to 15 cfs of surface water is diverted from the Arkansas River to maintain the water level in the lakes. The diversion of surface water is generally made from May through September each year.

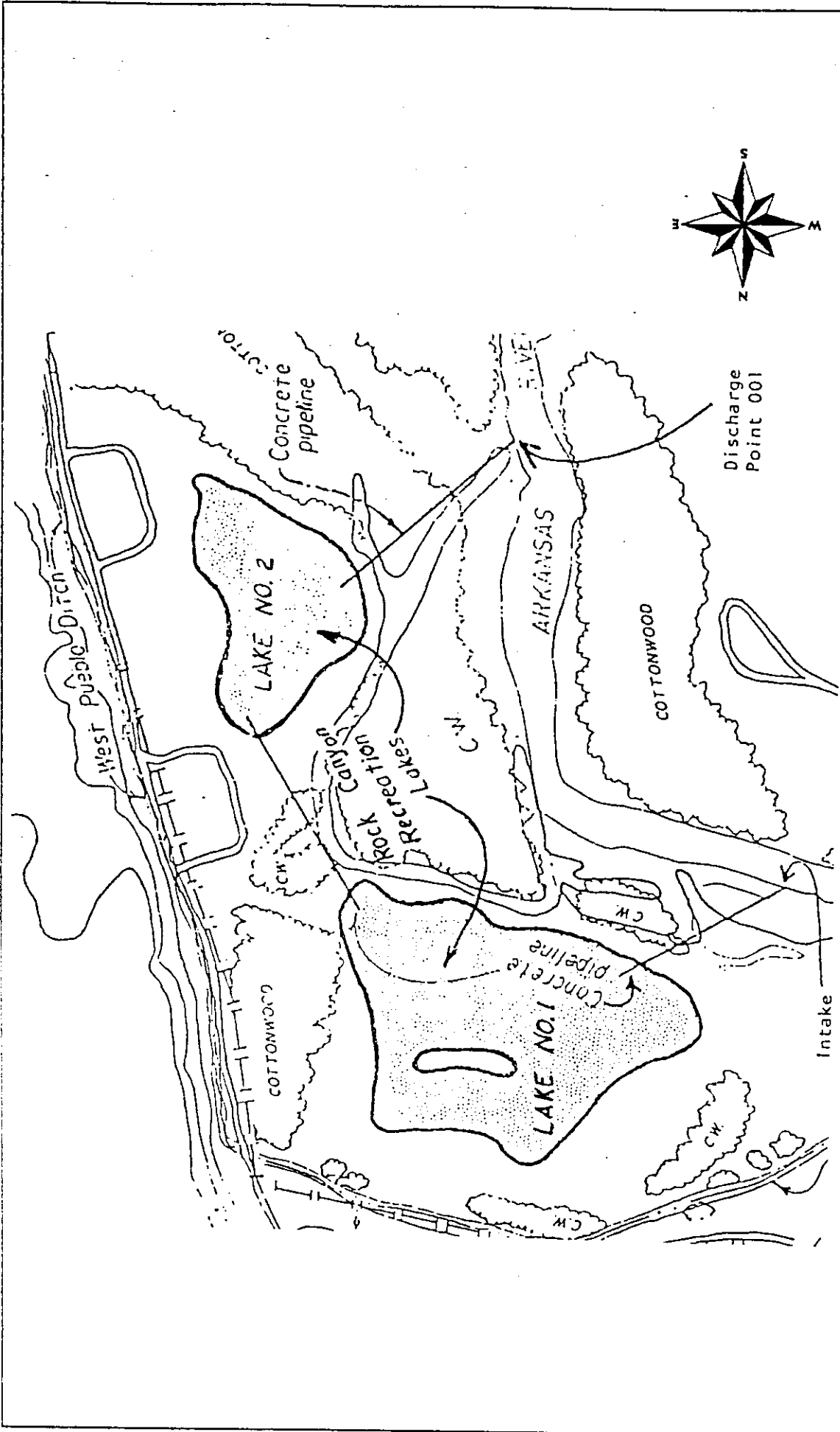
Surface water is diverted from the Arkansas River just above Lake No. 1. It flows through Lake 1, then 2, and is discharged back to the Arkansas River at a point 1/4 mile below the intake structure (see Figure VII-4).

The Recreation Lakes were initially treated with copper sulphate in 1985 to improve visibility for swimmers. Carp was stocked in the Recreation Lakes for the purpose of reducing algae; therefore, improving water visibility. Copper sulphate has not been used since 1985.



1993 Section 208 Water Quality Management Plan

**FIGURE VII-3 TREATMENT FACILITIES  
PUEBLO STATE RECREATION AREA**



1993 Section 208 Water Quality Management Plan

Scale: No Scale

**FIGURE VII-4  
ROCK CANYON LAKES**

**CITY OF PUEBLO WASTEWATER  
TREATMENT PLANT**

# CITY OF PUEBLO WASTEWATER TREATMENT PLANT

---

I. MANAGEMENT AGENCY: City of Pueblo

II. DISCHARGE PERMIT DATA

DATE OF UPDATE: 1993  
NPDES PERMIT NO. CO-0026646  
DATE PERMIT EXPIRES: \*

\* The Water Quality Control Division is in the process of issuing the City a renewal permit and has consequently extended the existing permit indefinitely.

III. OPERATING AGENCY

City of Pueblo - Pueblo Wastewater Treatment Plant

IV. DATE OF MANAGEMENT AGENCY AGREEMENT

1977 (as established by the Pueblo 208 Plan)

V. DESCRIPTION OF TREATMENT FACILITY

Preliminary treatment is achieved by screening large objects and debris through bar screens and removing grits by way of a grit chamber. Primary clarifiers initially treat the wastewater. Secondary treatment is via a high rate trickling filter coupled with aeration basins (activated sludge). Secondary clarifiers are also part of the secondary treatment. Chlorine injection is used to disinfect the water which is ultimately neutralized (dechlorinated) with sulfur dioxide. Biosolids (sludges) are anaerobically digested after excess water is removed in the gravity thickener and dissolved air flotation thickeners, (DAF's). Centrifuges are used to dewater digested liquid biosolids. Sludge drying beds are also used in place of the centrifuges.

VI. WATER QUALITY DATA

A. Receiving Water: Arkansas River

B. WQCD Stream Segment Description - Lower Arkansas River No. 1

*Mainstream of the Arkansas River from a point immediately above the confluence with Fountain Creek to the Colorado/Kansas border.*

C. Adopted Stream Segment Classification - Lower Arkansas River No. 1

*Agriculture  
Water Supply  
Recreation--Class 2*

*Aquatic Life--Class 2, Warm Water  
Use Protected*

Table VII-16  
WATER QUALITY STANDARDS  
CITY OF PUEBLO WASTEWATER TREATMENT PLANT

<u>Characteristic</u>	<u>Federal/State Standard</u>
<b>Physical and Biological</b>	
D.O.	5.0 mg/l <sup>1</sup>
Ph	6.5-9.0
Fecal Coliforms	2000/100ml
<b>Inorganic</b>	
NH <sub>3</sub> (ac)	TVS <sup>2</sup>
NH <sub>3</sub> (ch)	0.1 mg/l
CL <sub>2</sub> (ac)	0.019 mg/l
CL <sub>2</sub> (ch)	0.011 mg/l
Cyanide (free)	0.005 mg/l <sup>3</sup>
S as undissociated H <sub>2</sub> S	0.002 mg/l
Boron	0.75 mg/l
Nitrite as N (NO <sub>2</sub> )	0.5 mg/l
Nitrate as N (NO <sub>3</sub> )	10 mg/l
Chloride (Cl)	250 mg/l
Sulfate (SO <sub>4</sub> )	1800 mg/l
<b>Metals</b>	
Arsenic (As)(ac)	50 ug/l (Trec)
Cadmium (Cd)(ac/ch)	TVS <sup>2</sup>
Cadmium (Cd)(ch)	TVS <sup>2</sup>
Chromium (tri)(CrIII)(ac)	50 ug/l (Trec)
Chromium (hex)(CrIV)(ac/ch)	TVS <sup>2</sup>
Copper (Cu)(ac/ch)	TVS <sup>2</sup>
Iron (Fe, sol)(ch)	300 ug/l (dis)
Iron (Fe, sol)(ch)	1400 ug/l (Trec)
Lead (Pb)(ac/ch)	TVS <sup>2</sup>
Manganese (Mn, sol)(ch)	50 ug/l (dis)
Manganese (Mn, sol)(ch)	1000 ug/l (Trec)
Mercury (Hg)(ch)	0.01 ug/l (Trec)
Nickel (Ni)(ac/ch)	TVS <sup>2</sup>
Selenium (Se)(ch)	10 ug/l (Trec)
Silver (Ag)(ac)	TVS <sup>2</sup>
Silver (Ag)(ch)	TVS <sup>2</sup>
Zinc (Zn)(ac/ch)	TVS <sup>2</sup>

Notes

1. See Appendix B for special conditions pertaining to Dissolved Oxygen for this stream segment.
2. See Appendix A for these Numeric Standards.
3. See Appendix B for special conditions pertaining to Cyanide for this stream segment.



**VII. SERVICE AREA POPULATION**

Table VII-17  
EXISTING AND PROJECTED POPULATIONS<sup>(1)</sup>  
CITY OF PUEBLO WASTEWATER TREATMENT PLANT

**SERVICE AREA POPULATION**

<u>1990</u>	<u>Current</u>	<u>1995</u>	<u>2000</u>	<u>2005</u>	<u>2010</u>
98,640	101,038	107,445	109,442	111,680	112,489

Extraterritorial Population: 1,882<sup>(2)</sup>

**USER POPULATION<sup>(1)</sup>**

<u>1990</u>	<u>Current</u>	<u>1995</u>	<u>2000</u>	<u>2005</u>	<u>2010</u>
111,323	114,030	129,025	134,922	139,630	142,730

**Notes:**

1. The 1990 service area population is from the 1990 Census. The service area and user population projections for Current through 2010 are based on adjusted information provided in the 1987 208 Water Quality Management Plan and 201 Facility Plan. The user population is based upon actual and projected populations including existing extraterritorial service population together with the user equivalent population attributable to commercial and industrial use within the City and Airport Industrial Park.
2. The City of Pueblo's wastewater treatment plant (WWTP) treats wastewater from three (3) sanitation districts. On December 10, 1990, the Blende Sanitation District entered into a new agreement with the City of Pueblo which provides for treatment of Blende's wastewater by the City. The agreement also defines mutual responsibilities and addresses requirements of law. In turn, the Blende Sanitation District receives wastewater from the Salt Creek Sanitation District and St. Charles Mesa Sanitation District and discharges said wastewater into the City's WWTP pursuant to the requirements of the new agreement.

The Blende Sanitation District serves approximately 644 persons, Salt Creek serves approximately 733 persons, and St. Charles Mesa serves approximately 255 persons as provided by KLH Engineering, the Districts' Engineer. The amount of persons for each District is based on the number of residential equivalents times 3.5 people per residential equivalent, unless otherwise noted.

The City of Pueblo also has extraterritorial sanitary sewer agreements with Sunset Mobile Home Park (Sudduth Subdivision), Abex, seven (7) commercial and residential dwellings along Thatcher Avenue, and eight (8) residential dwellings in the Park Drive/Goodnight area; all of which equates to approximately 250 persons.

On April 11, 1988, City Ordinance No. 5467 was approved which prohibited the approval of any new extraterritorial sewer services outside the City of Pueblo or outside the Pueblo Memorial Airport. The Ordinance was renewed annually until Ordinance 5690 was passed July 8, 1991. The passage of Ordinance 5690 prohibits new extraterritorial services for an indefinite period. Subsection (d) of said Ordinance reads as follows.

*"Notwithstanding any other provision of this Chapter to the contrary, no land located outside the City of Pueblo or outside the Pueblo Memorial Airport not presently being served by City's sewer system shall be eligible to receive extraterritorial sewer service or be permitted to discharge wastewaters into City's wastewater sewage treatment facilities and no application for such service may be filed with or approved by the City."*

The extraterritorial population is not projected.

### VIII. CAPACITIES

Table VII-18  
EXISTING AND PROJECTED CAPACITIES<sup>(1)</sup>  
CITY OF PUEBLO WASTEWATER TREATMENT PLANT

<u>Capacity</u>	<u>Design</u>	<u>Existing</u>	<u>Year at 80%</u>	<u>Year at 95%</u>
Flow (MGD)				
Peak	34	21.4	N/A	N/A
Daily	19	11.2	N/A	N/A
Organic (lbs/day)				
CBOD <sub>5</sub> <sup>(2)</sup>	33,100	18,792	N/A	N/A
Suspended Solids	36,000	20,552	N/A	N/A

Notes:

1. The plant is capable of serving a community of up to 147,900 persons based upon design for a secondary treatment level of treatment.  
  
The existing flow and organic loading is based on 1992 data.
2. On April 16, 1990, the City of Pueblo requested, from the State Health Department, that the effluent limit be established for carbonaceous biochemical oxygen demand (CBOD<sub>5</sub>) instead of biochemical oxygen demand (BOD<sub>5</sub>). Because of the treatment process, the BOD<sub>5</sub> analysis were producing misleading results, although the plant was producing a high level of treatment. The CBOD<sub>5</sub> effluent limit was approved by the State and became effective September 1, 1990.

**IX. PROGRAM CHANGES**

Effective January 1, 1990, any person conducting a septic waste business is required to obtain a permit from the City of Pueblo Wastewater Department. Prior to receiving a permit, each truck must be inspected and approved by the City-County Health Department. The hauler is also required to maintain a manifest record for all septic wastes removed or transported by the permittee. No person engaged in the septic waste business shall discharge septic wastes other than to either the secured designated receiving point located at the City's WWTP or another facility duly authorized to accept such wastes. Haulers are not allowed to discharge wastewater (septage) from outside Pueblo County into the City of Pueblo's sewage system. No hazardous waste shall be transported in vehicles used to transport septic wastes, nor shall any such hazardous wastes be discharged into the City's sewer system or the designated receiving point.

Pursuant to the federal Clean Water Act, the City of Pueblo regulates non-domestic (Industrial) users in accordance with its EPA approved Pretreatment program. On October 23, 1990, the City of Pueblo submitted a request to amend its program. The request included changes to industrial user permit requirements and procedures and enforcement in the industrial pretreatment program. On July 29, 1991, the EPA approved the City's request and all applicable dischargers and industries are required to be permitted by the City.

**X. EFFLUENT LIMITS REQUIRED BEYOND SECONDARY  
TO MEET STREAM STANDARDS**

Unless there are major changes required at the City's WWTP related to the new discharge permit, the secondary level of treatment appears to meet current stream standards. As stated in the 1987 208 Water Quality Management Plan, advanced secondary treatment was considered by the City of Pueblo, the Colorado Department of Health, and the Environmental Protection Agency. It was determined by the Colorado Department of Health that the secondary level of treatment at the Pueblo Wastewater Treatment will meet stream standards protective to the uses for which the receiving segment of the Arkansas River is classified.

**XI. WASTELOAD ALLOCATIONS**

A Wasteload Allocation (WLA) Study was conducted by the Pueblo Area Council of Governments for the Arkansas River below the City of Pueblo's Wastewater Treatment Plant. The critical water quality constituent was unionized ammonia ( $\text{NH}_3$ ), and the critical stream segment was the Arkansas River below the City's WWTP. The study involved computer simulations of

the Arkansas River in Pueblo County, a cost-benefit assessment, a mixing zone study, and an aquatic bioassay as well as alternative wasteload allocations. The "Summary Report of Pueblo Wasteload Allocation Studies" (WLA Summary Report), printed in October, 1980, presents the results and conclusions of the various components of the studies. The provisions have been previously summarized in the 1981 208 Update and also referenced in the 1987 Update.

## XII. MAJOR CONSTRUCTION

In 1985, construction began on a new 19 million gallon per day (MGD) high-rate trickling filter/activated sludge wastewater treatment plant. In May 1989 the City began operating the new plant. The plant was constructed in accordance with its Facility Plan.

In 1988, CH<sub>2</sub>M Hill (Consulting Engineers for the City) conducted a preliminary study of the City of Pueblo's Airport Industrial Park (AIP) wastewater treatment plant. The study reviewed wastewater management alternatives for the AIP. Five (5) alternatives were evaluated:

- Pump to main WWTP
- New Plant -- Activated Sludge/Mechanical Dewatering
- New Plant -- Activated Sludge/Sludge Drying Beds
- New Plant -- RBC/Mechanical Dewatering
- New Plant -- RBC/Sludge Drying Beds

Based on the study results and engineers recommendation, the City decided to pump the wastewater from the AIP to the City's main WWTP.

In 1989, CH<sub>2</sub>M Hill completed a supplemental study which explored the economic feasibility of continuing to operate the AIP WWTP to its maximum capability, while also operating a pumping system to the City's main WWTP. Based on lowest capital and present work costs, a multiple pump station was still recommended.

In July, 1991, the City of Pueblo received competitive bids on a pipeline project to convey all the wastewater from the Airport and Industrial Park to the City's main WWTP. Construction began January, 1992 and the system went into operation in September, 1992. The project consisted of four (4) pumping stations, approximately 2.8 miles of gravity sewer, approximately 3.7 miles of force main, and miscellaneous appurtenances. All wastewater within the City and AIP is now treated at the City's main WWTP.

**XIII. ESTIMATED FIVE-YEAR CONSTRUCTION NEEDS**

To estimate five-year construction needs at this time is very difficult. As stated herein, the State is in the process of renewing the City's NPDES discharge permit. The final permit discharge limits and mixing zone determination will dictate the construction needs, if any. Also, the EPA has recently promulgated its new 40 CFR, Part 503 Regulations related to biosolids (sludge). The new biosolids regulation has impacted the City's biosolids program. The City has sought judicial review of the EPA regulation. The outcome of such review may dictate the future direction of the City's biosolids program and may be a factor in determining additional construction required at the WWTP.

**XIV. FINAL PLAN STATEMENT**







The City of Pueblo's new WWTP began operation in May, 1989. It is capable of treating 19 MGD and will serve the needs of the community to the year 2004 and beyond. The City will continue to treat wastewater from within the approved service areas of Blende, Salt Creek, and St. Charles Mesa Sanitation Districts. The Districts may not expand their respective service areas unless they either annex into the City of Pueblo, if permitted by the City, or receive special approval to do so by a duly adopted resolution of the City Council.

Figure VII-5 is a map of the City's current and projected service area boundaries. Figure VII-6 is a vicinity map of the Pueblo Wastewater Treatment Plant.

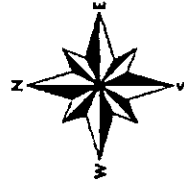
**XV. DESCRIPTION AND STATUS**

The City currently operates a 19 MGD treatment plant with capacity to serve 147,000 users. The City provides wastewater both within its boundaries and by extraterritorial agreement. For further information see XII, above.

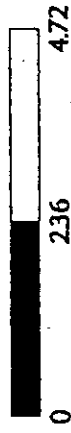
# LEGEND

-  City of Pueblo Current Service Area
-  City of Pueblo Projected Service Area
-  Blende Sanitation District(\*)
-  Salt Creek Sanitation District(\*)
-  St. Charles Sanitation District(\*)
-  Pueblo West Metropolitan District

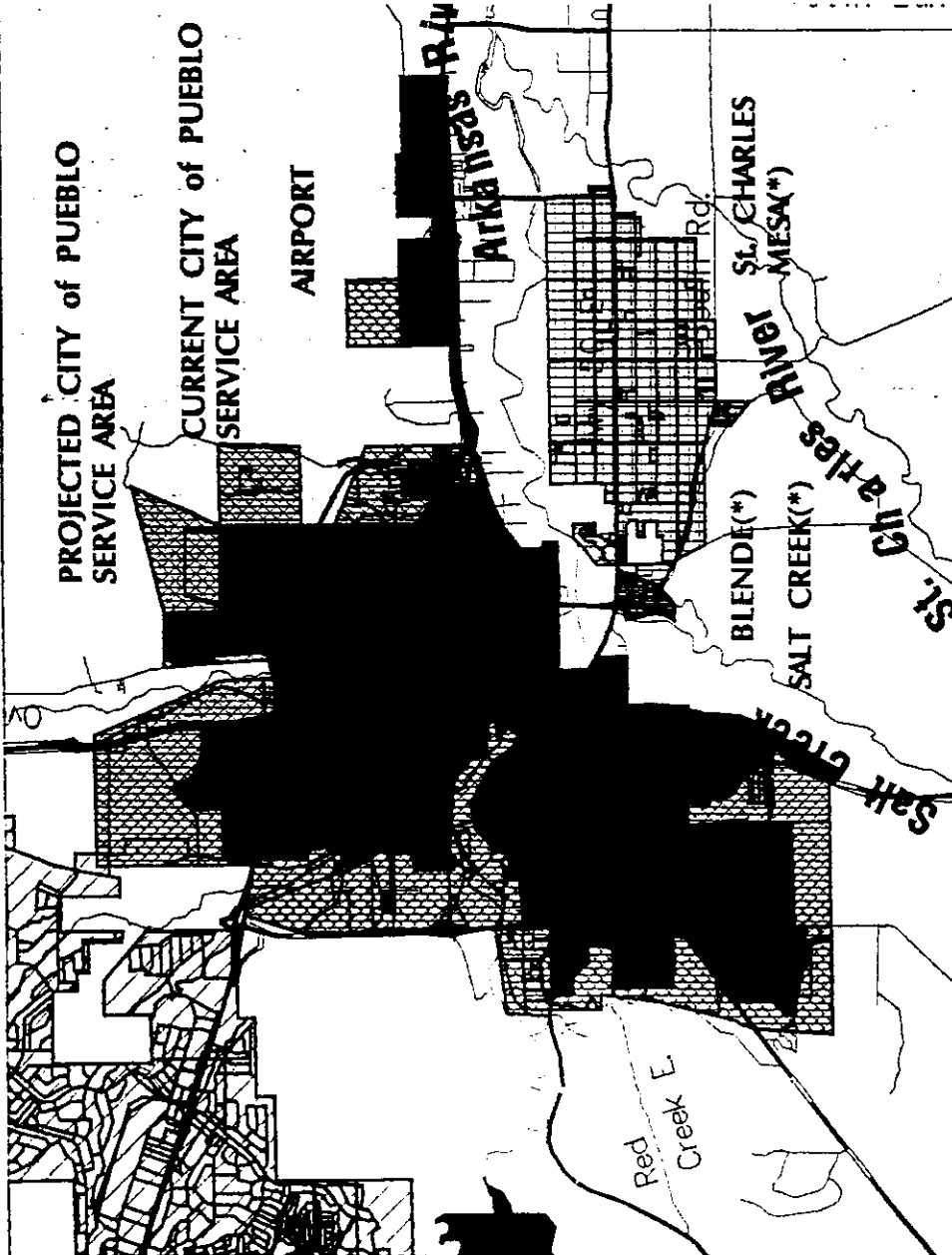
(\*)Salt Creek, Blende, and St. Charles Mesa are served in part by the City of Pueblo.



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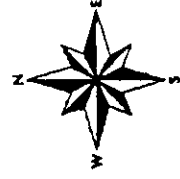
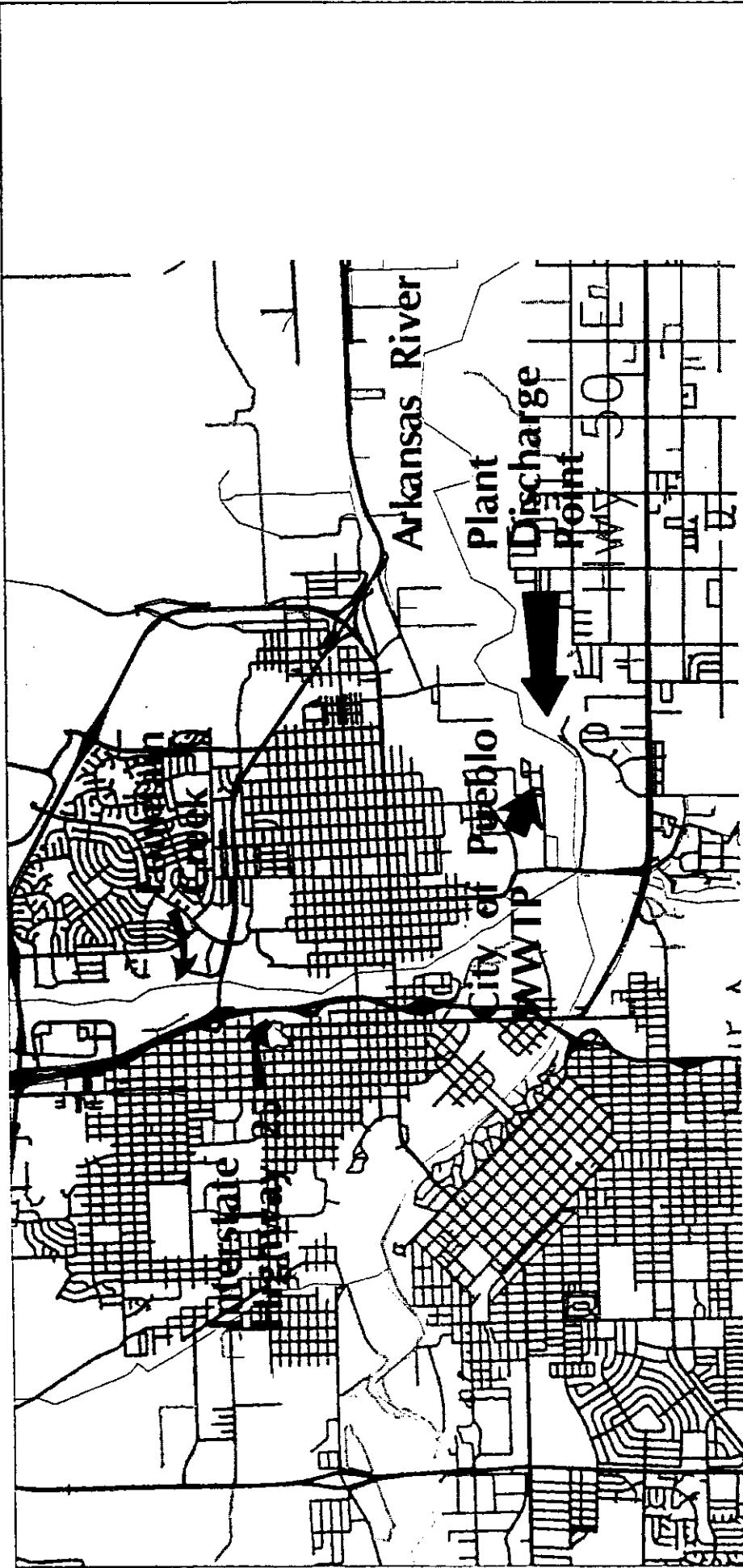


Scale in Miles



1993 Section 208 Water Quality Management Plan

**FIGURE VII-5 SERVICE AREA BOUNDARIES  
CITY OF PUEBLO**



Scale - 1:54816



Scale in Feet

1993 Section 208 Water Quality Management Plan

**FIGURE VII-6 VICINITY MAP  
CITY OF PUEBLO TREATMENT FACILITIES**

**BLENDE SANITATION DISTRICT**



# BLENDE SANITATION DISTRICT

I. **MANAGEMENT AGENCY:** City of Pueblo

II. **DISCHARGE PERMIT DATA**

DATE OF UPDATE: 1993  
NPDES PERMIT NO.: N/A  
YEAR PERMIT EXPIRES: N/A

III. **OPERATING AGENCY**

Blende Sanitation District

IV. **DATE OF MANAGEMENT AGENCY AGREEMENT**

1977 (as established by the Pueblo 208 Plan)

V. **DESCRIPTION OF TREATMENT FACILITY**

The sewage collection system transports sewage flows to the City of Pueblo's Wastewater Treatment Plant via an interceptor line, which crosses the Arkansas River and connects with the 66-inch City wastewater line.

VI. **WATER QUALITY DATA**

See the City of Pueblo Wastewater Treatment Plant, Paragraph VI, on Page VII-30 for water quality data applicable to the Blende Sanitation District.

VII. **SERVICE AREA POPULATION**

Table VII-19  
EXISTING AND PROJECTED POPULATIONS<sup>(1)</sup>  
BLENDE SANITATION DISTRICT

DISTRICT POPULATION					
<u>1990</u>	<u>Current</u>	<u>1995</u>	<u>2000</u>	<u>2005</u>	<u>2010</u>
252	252	282	282	282	282

Table VII-19  
 EXISTING AND PROJECTED POPULATIONS<sup>(1)</sup>  
 BLENDE SANITATION DISTRICT  
 (Continued)

USER POPULATION<sup>(2)</sup>

<u>1990</u>	<u>Current</u>	<u>1995</u>	<u>2000</u>	<u>2005</u>	<u>2010</u>
556	644	674	674	674	674

Notes

1. Population projections for the Blende Sanitation District are included in the City of Pueblo's Wastewater Treatment Plant population projections because the City treats the District's wastewater. Additional residential growth is anticipated in the mobile home subdivision area with the addition of 12 units (30 persons) by the year 2000 and reflected as occurring before 1995 in this update. Population is expected to remain stable through the planning period.
2. Includes "residential equivalents" for non-residential discharges such as churches, commercial, and industrial uses. See discussion in accompanying text.

VIII. CAPACITIES

Table VII-20  
 EXISTING AND PROJECTED CAPACITIES  
 BLENDE SANITATION DISTRICT

<u>Capacity</u>	<u>Design</u>	<u>Existing</u>	<u>Year at 80%</u>	<u>Year at 95%</u>
Flow(MGD)	N/A	0.035 <sup>1</sup>	N/A	N/A
Organic(lbs/day)	N/A	N/A	N/A	N/A

Notes

1. Based on average of 6,500 gallons per month per tap x 161 taps, per Ray Koester, KLH Engineering, August 17, 1994.

IX. PROGRAM CHANGES: None

X. EFFLUENT LIMITS REQUIRED BEYOND SECONDARY TO MEET STREAM STANDARDS: N/A

XI. WASTELOAD ALLOCATIONS: N/A

- XII. MAJOR CONSTRUCTION: None
- XIII. ESTIMATED FIVE-YEAR CONSTRUCTION NEEDS: N/A
- XIV. FINAL PLAN STATEMENT

The District will continue to operate a collection system with treatment provided via extraterritorial service at the City of Pueblo's municipal treatment plant.

XV. DESCRIPTION AND STATUS

The Blende Sanitation District serves an area located just east of the City of Pueblo, along U.S. Highway 50 East (business). The District's boundaries encompass approximately 128 acres. Two additional areas are currently served through extraterritorial agreements with the District. They are the Salt Creek Water and Sanitation District and St. Charles Mesa Sanitation District.

Since 1971, treatment of the District's sewage effluent has been carried out by the City of Pueblo. The effluent is collected and transported, via a pipe beneath the Arkansas River, into a 66-inch main which discharges into the City's sewage treatment plant. The updated December 10, 1990, agreement for treatment services between the City of Pueblo and the Blende Sanitation District requires the City's approval of any extension of service outside the District's formal boundary.

The agreement with the City also provides that the District may not accept any commercial or industrial wastewater except with the expressed consent of the City. Additionally, the City has the right to discontinue service to the District should the City's treatment plant's capacity be needed to serve the City's residents.

In January, 1980, the Blende Sanitation District was expanded when the Blende Industrial Park and Mobile Home Subdivision were annexed. This annexation added 96.5 acres to the District. Both of these areas were formerly served by the District through extraterritorial agreement. A total of 161 taps (population equivalent of 644) are served by the District as of August 17, 1994.

In November 1981, the Blende Sanitation District was expanded when the St. Joseph's Church was annexed. This annexation added 10.5 acres and seven taps into the District.

The District is not expected to expand its boundaries to any great extent through the year 2000 following the St. Joseph's Church area annexation. The map in Figure VII-7 shows the District's existing and projected future boundaries, as approved by the Board of Directors.

Some extension of service will occur within the District's boundaries. It is projected by KLH Engineering Consultants, Inc., that at least 12 more lots in the Blende Mobile Home Subdivision will be developed by the Year 2000 and reflected as occurring before 1995 in this update.





The Blende System conveys sanitary wastes also from the Salt Creek Sanitation District and St. Charles Mesa Sanitation District.

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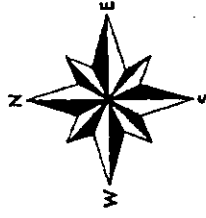
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( )

# LEGEND

-  Blende Sanitation District
-  City of Pueblo
-  Salt Creek Sanitation District(\*)
-  St. Charles Mesa Sanitation District(\*)

(\*)Blende, Salt Creek, and St. Charles Mesa are served in part by the City of Pueblo



Scale - 1:27036



Scale in Feet

Arkansas River

Blende Sanitation District Service Area

City of Pueblo

Salt Creek Sanitation District

St. Charles Mesa Sanitation District

1993 Section 208 Water Quality Management Plan

## FIGURE VII-7 SERVICE AREA BOUNDARIES BLENDE SANITATION DISTRICT

**SALT CREEK SANITATION DISTRICT**

# SALT CREEK SANITATION DISTRICT

I. MANAGEMENT AGENCY: City of Pueblo

II. DISCHARGE PERMIT DATA

DATE OF UPDATE: 1993  
NPDES PERMIT NO.: N/A  
YEAR PERMIT EXPIRES: N/A

III. OPERATING AGENCY

Salt Creek Sanitation District

IV. DATE OF MANAGEMENT AGENCY AGREEMENT

1977 (as established by the Pueblo 208 Plan)

V. DESCRIPTION OF TREATMENT FACILITY

This collection system discharges into the Blende Sanitation District with an 8-inch line, which is then conveyed to the City of Pueblo Wastewater Treatment Plant.

VI. WATER QUALITY DATA

See the City of Pueblo Wastewater Treatment Plant, Paragraph VI, on Page VII-30 for water quality data applicable to the Salt Creek Sanitation District.

VII. SERVICE AREA POPULATION

Table VII-21  
EXISTING AND PROJECTED POPULATIONS<sup>1</sup>  
SALT CREEK SANITATION DISTRICT

DISTRICT POPULATION					
<u>1990</u>	<u>Current</u>	<u>1995</u>	<u>2000</u>	<u>2005</u>	<u>2010</u>
587	733	973	973	973	973

Table VII-21  
EXISTING AND PROJECTED POPULATIONS<sup>1</sup>  
SALT CREEK SANITATION DISTRICT  
(Continued)

USER POPULATION<sup>2</sup>

<u>1990</u>	<u>Current</u>	<u>1995</u>	<u>2000</u>	<u>2005</u>	<u>2010</u>
587	733	973	973	973	973

Notes

1. Population projections for the Salt Creek Sanitation District are included in the City of Pueblo's population projections in the 1993 Update because Salt Creek is in the City's 201 Planning Area. Existing service area population is based on the 1990 Census. There are no projected increases through the Year 2010 because the population of the area is expected to remain stable.
2. The user population is projected for 256 paid taps at 3.8 persons/tap; however, as of August 17, 1994 only 193 taps are paying the monthly service fee. The remaining 63 taps are either vacant building sites, vacant structures, or occupied structures that are still served by septic systems. For user population projections for 1995-2010, it is assumed that the collection system will be at full capacity and the user population will equal the service area population.

VIII. CAPACITIES

Table VII-22  
EXISTING AND PROJECTED CAPACITIES  
SALT CREEK SANITATION DISTRICT

<u>Capacity</u>	<u>Design</u>	<u>Existing</u>	<u>Year at 80%</u>	<u>Year at 95%</u>
Flow (MGD)	N/A	0.042 <sup>1</sup>	N/A	N/A
Organic (lbs/day)	N/A	N/A	N/A	N/A

Notes

1. Based on average of 6,500 gallons per month per tap x 193 taps, per Ray Koester, KLH Engineering, August 17, 1994.



- IX. PROGRAM CHANGES: None
- X. EFFLUENT LIMITS REQUIRED BEYOND SECONDARY TO MEET STREAM STANDARDS: N/A
- XI. WASTELOAD ALLOCATIONS: N/A
- XII. MAJOR CONSTRUCTION: None
- XIII. ESTIMATED FIVE-YEAR CONSTRUCTION NEEDS

Purchase of equipment and cleaning program for system maintenance.

XIV. FINAL PLAN STATEMENT

The District will continue to operate a central collection system with treatment provided via extraterritorial service at the City of Pueblo's municipal treatment plant.

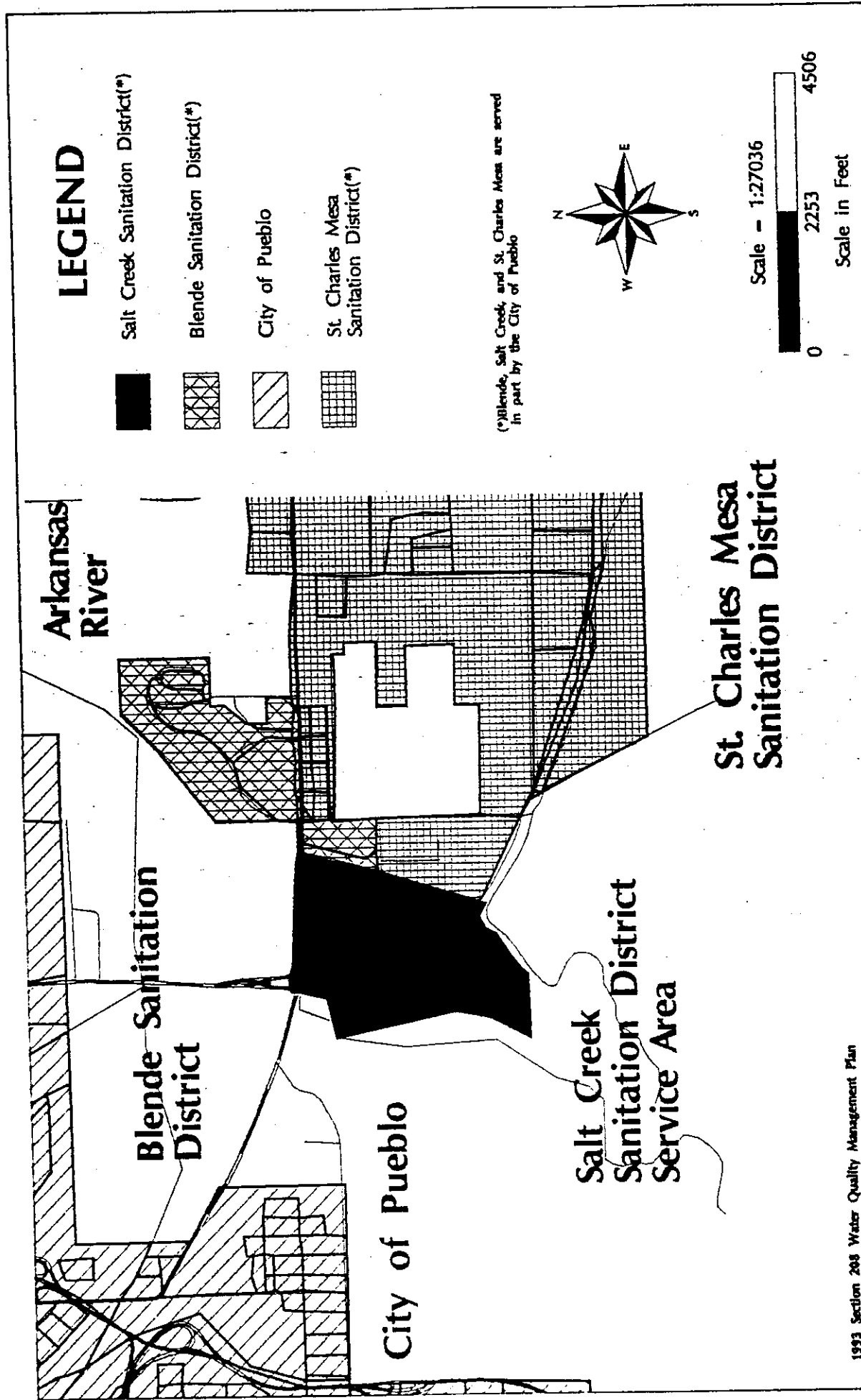
XV. DESCRIPTION AND STATUS

The Salt Creek Sanitation District encompasses an unincorporated community near the eastern Pueblo City limits. The District's collection system became operational on or about October 15, 1981. The District discharges into the Blende collection system with treatment by the City of Pueblo's wastewater treatment plant. Until recently, the area had been totally dependent on individual on-site septic systems for wastewater treatment. The District is the descendent of the Salt Creek Water and Sanitation District. The Salt Creek Water District was dissolved in May 4, 1988. The District became a part of the St. Charles Mesa Water District and residents of the Salt Creek area are served by the St. Charles Mesa Water District.

In April, 1980, the District received a grant of \$437,800 from the Colorado Department of Local Affairs and \$63,000 from County Revenue Sharing Funds to construct a sewer collection system. The system is designed and built for a maximum of 310 taps, with 270 taps being optimum.

There were 587 persons counted in the Salt Creek District's service area for the 1990 Census; however, the District currently has 256 paid taps, with 193 in service; population was calculated based upon an average of 3.8 persons per paid tap. When the collection system is fully utilized, the service area population will equal the user population for the area. The population is expected to be stable through the Year 2000.

No annexation is expected by the District. The area immediately north of Salt Creek and south of the Arkansas River can be served by means of extraterritorial agreement with the District if the demand for sewer service arises. Figure VII-8 is the map of the Salt Creek Sanitation District.



1993 Section 208 Water Quality Management Plan

**FIGURE VII-8 SERVICE AREA BOUNDARIES  
SALT CREEK SANITATION DISTRICT**

**ST. CHARLES MESA  
SANITATION DISTRICT**

# ST. CHARLES MESA SANITATION DISTRICT

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I. **MANAGEMENT AGENCY:** Pueblo County and the City of Pueblo  
(that portion of the District which discharges to the City WWTP)

II. **DISCHARGE PERMIT DATA**

DATE OF UPDATE: 1993  
NPDES PERMIT NO.: N/A  
DATE PERMIT EXPIRES: N/A

III. **OPERATING AGENCY**

St. Charles Mesa Sanitation District

IV. **DATE OF MANAGEMENT AGENCY AGREEMENT**

1977 (as established by the Pueblo 208 Plan)

V. **DESCRIPTION OF TREATMENT FACILITY**

Wastewater flow from the western-most part of the District discharges into the Blende Sanitation District collection system and is transported through an interceptor line to the City of Pueblo's Wastewater Treatment Plant. The majority of wastewater in the District is treated via individual sewage disposal systems (septic systems), which are problematic due to a significant failure rate.

VI. **WATER QUALITY DATA**

See the City of Pueblo Wastewater Treatment Plant, Paragraph VI, on Page VII-30 for water quality data applicable to the St. Charles Mesa Sanitation District.

VII. **SERVICE AREA POPULATION**

Table VII-23  
EXISTING AND PROJECTED POPULATIONS<sup>(1)</sup>  
ST. CHARLES MESA SANITATION DISTRICT

DISTRICT POPULATION					
<u>1990</u>	<u>Current</u>	<u>1995</u>	<u>2000</u>	<u>2005</u>	<u>2010</u>
5,423	6,751	7,521	8,295	9,067	9,846

Table VII-23  
EXISTING AND PROJECTED POPULATIONS<sup>(1)</sup>  
ST. CHARLES MESA SANITATION DISTRICT  
(Continued)

USER POPULATION <sup>(2)</sup>					
<u>1990</u>	<u>Current</u>	<u>1995</u>	<u>2000</u>	<u>2005</u>	<u>2010</u>
255	255	1,896	3,023	9,067	9,846

Notes

1. Population projections for 1990-2010 are based on the *Wastewater Facilities Plan for St. Charles Mesa and Baxter Areas*, prepared by Gilbert, Meyer, & Sams, Inc., in March 1992.
2. User population and projections are based on information from the District's Engineer, KLH Engineering and assume the recommendations of the *Wastewater Facilities Plan for St. Charles Mesa and Baxter Areas* will be implemented during the planning period and the District will be served by a regional collection and treatment system.

VIII. CAPACITIES

Table VII-24  
EXISTING AND PROJECTED CAPACITIES  
ST. CHARLES MESA SANITATION DISTRICT

<u>Capacity</u>	<u>Design</u>	<u>Existing</u>	<u>Year at 80%</u>	<u>Year at 95%</u>
Flow (MGD)	N/A	0.059 <sup>(1)</sup>	N/A	N/A
Organic (lbs/day)	N/A	N/A	N/A	N/A

Notes

1. Based on an average monthly discharge of 1,760,000 gallons, of which Candy's Tortilla Factory is the largest contributor with 1,500,000 gallons per month.

IX. PROGRAM CHANGES: None

X. EFFLUENT LIMITS REQUIRED BEYOND SECONDARY TO MEET STREAM STANDARDS: None

- XI. WASTELOAD ALLOCATIONS: N/A
- XII. MAJOR CONSTRUCTION: None
- XIII. ESTIMATED FIVE-YEAR CONSTRUCTION NEEDS:

The *Wastewater Facility Plan*, prepared by Gilbert, Meyer, & Sams, Inc. in 1992 assessed numerous alternatives for the provision of wastewater collection and treatment to the St. Charles Mesa planning area, which included financial analysis of each alternative considered. The alternatives analyzed were the following.

- Individual Sewage Disposal System (ISDS) Management System
- Satellite Wastewater Management (four alternatives)
- Planning Area Regional Treatment
  - Aerated Lagoon
  - Extended Aeration
  - Coupled System
- Consolidation with the City of Pueblo

The *Wastewater Facility Plan* recommended the construction of a centralized collection system and regional treatment facility utilizing an oxidation ditch biological treatment process as the solution to the St. Charles planning area wastewater problems. The Plan envisions the construction of central collection system over a 10-year period. The Plan recommended construction of both the collection system and treatment facility in phases due to cost factors. The first phase would extend service to the ISDS areas with the highest incidence of problems. This construction should take place during the first five years of the system development. Construction of the treatment facility should take place in two phases to correspond to construction of the centralized collection system. Therefore, the combined five-year construction needs recommended for the District are first phase of a centralized collection system and regional treatment facility.

XIV. FINAL PLAN STATEMENT:

The long term plan for the District is to eliminate the problematic septic tank systems in the District and provide a centralized wastewater collection and treatment system. Achieving this goal is contingent upon implementation of the recommendations contained in the *Wastewater Facility Plan* outlined in Part X above.

In addition to the capital infrastructure improvements contained in the *Wastewater Facility Plan*, the Plan also recommends the development and implementation of an ISDS Management Program for the interim period during system construction, and for the areas of the District which cannot be served cost-effectively by a central collection system.

The District's current policy is that it will not proactively seek the annexation of areas outside its present boundaries. However, it will consider requests for annexation or the provision of extraterritorial service if appropriate financial arrangements are included.

#### XV. DESCRIPTION AND STATUS

The St. Charles Mesa Sanitation District was formed in 1969. A referendum on a bond issue to finance construction of wastewater facilities was defeated by the voters of the District in 1976. The District's Board of Directors continues to explore other avenues to implement wastewater treatment and future development, including the preparation of a "Sanitary Survey" for the purpose of upgrading the District's category on the Colorado Sewer Needs Categorization List. Also, a *Wastewater Facilities Plan* (Section 201 Facilities Plan) was completed in March 1992; this is discussed below.

In 1979, the District was granted approval to collect wastewater and convey it to City of Pueblo's wastewater treatment plant via the Blende Sanitation District sewage collection system. The original approval was limited to the collection and disposal of wastewater from 43 existing residences located on the south side of Liberty Drive and on Independence Drive, between Aspen and Eagle Streets.

Existing collection system user population is based on 40 residential taps at 3.8 persons per tap (includes Roselawn Cemetery considered as a residential tap), Candy's Tortilla Factory with a population equivalent of 170, and the El Pueblo Boys Ranch with a population equivalent of 50.

The *Wastewater Facility Plan* (201 Plan) found that individual, on-site septic systems serve most properties in the District and planning area. Estimates of 2,350 septic systems in the planning area and 1,845 systems within the District have been made; however, the exact number of systems is uncertain.

As the foregoing discussion implies, wastewater management in the planning area is accomplished almost entirely by means of individual septic systems. To date, this has been a satisfactory method of disposal because of the low density of the area. However, as densities increase, which is occurring in the planning area, loadings on the assimilative capacities of the soil and groundwater may be pushed to the limit. Currently, the failure rate for septic systems is two percent per year according to the 201 Plan.

The 201 Plan evaluated nine alternative wastewater management techniques for the St. Charles and Baxter planning areas. The alternatives analyzed were the following.

- Individual Sewage Disposal System (ISDS) Management System
- Satellite Wastewater Management (four alternatives)
- Planning Area Regional Treatment
  - Aerated Lagoon
  - Extended Aeration
  - Coupled System
- Consolidation with the City of Pueblo

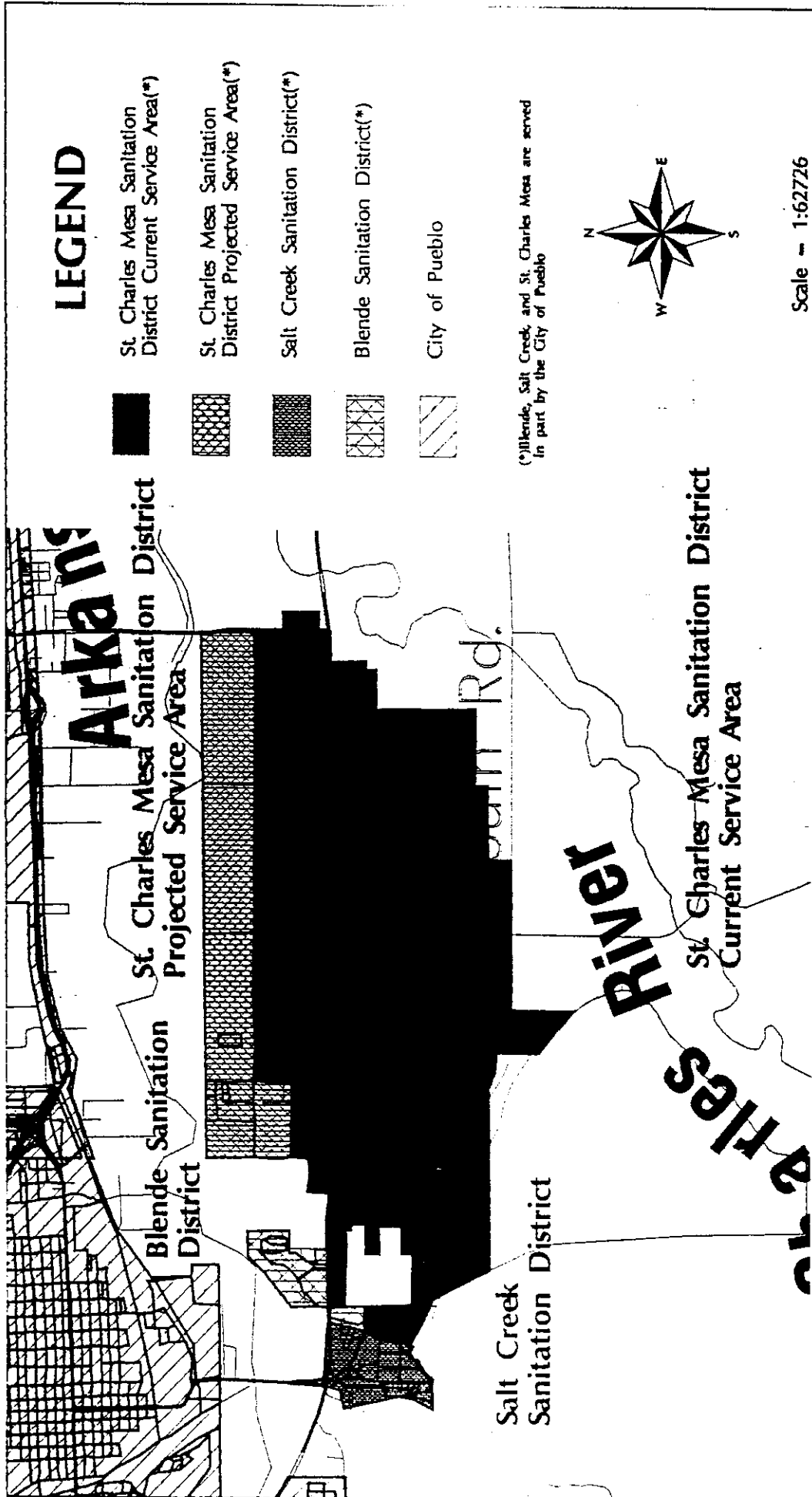
The 201 Plan recommended the construction of a centralized collection system and regional treatment facility utilizing an oxidation ditch biological treatment process as the solution to the St. Charles planning area wastewater problems. The Plan envisions the construction of central collection system over a 10-year period. Construction would extend service to the ISDS areas with the highest incidence of problems first, with the remaining areas to follow. The system would be constructed over a ten-year period to meet the current and projected needs of the District, with future expansion dependent upon need. The proposed location of a regional treatment facility is north of the Arkansas River and East of the Baxter area (see Figure VII-10).

Currently, the Baxter area and the Meadowbrook Mobile Home Community are not within the District's boundaries, which is an important factor for the construction of a regional system. The District policy against proactive annexation is a potential impediment to construction of the system. The 201 Plan points out that the present population of the District is probably incapable of supporting the debt service constructing the system would impose. The Baxter and Meadowbrook communities are estimated to contain 20 percent of the planning area population and this was incorporated into the 201 Plan analysis. Also, these communities are in proximity to the proposed wastewater treatment facility location; therefore, they could be fully served early in the development of the system, providing significant revenue early in the implementation phase. The inclusion of these areas could be critical to the implementation of the 201 Plan recommendations.

The 201 Plan also recommends a sludge management program as part of the operation of the regional treatment facility. This includes a primary program of giveaway to farmers and others for soil conditioning and fertilizer and the development of a dedicated sludge disposal site. The 201 Plan recommends the District develop a site of its own. The District has not recommended adoption and implementation of the regional plan to its residents, although it is expected to do so and put it to a vote in early 1995.

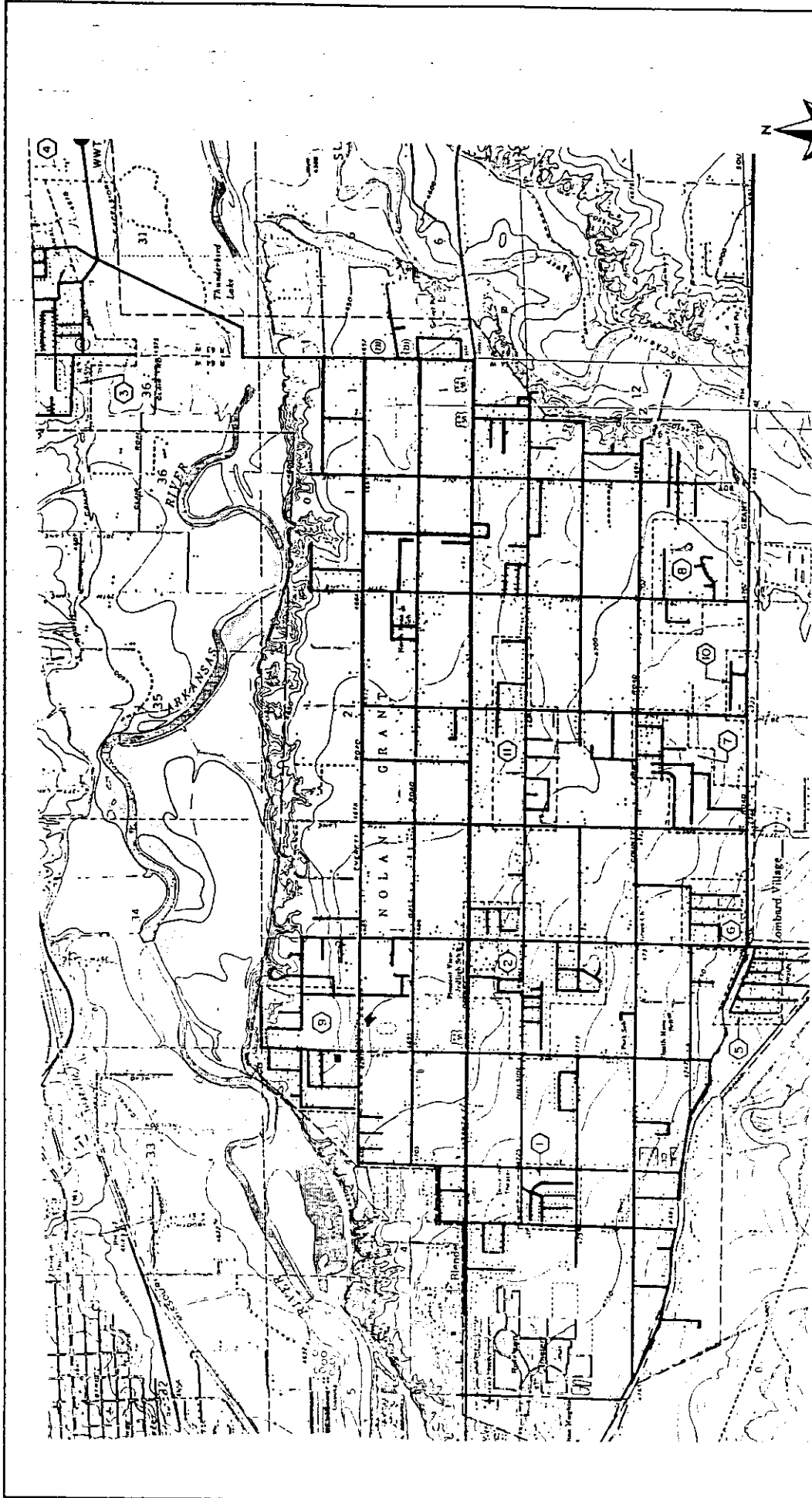
Figure VII-9 depicts the current boundaries of the St. Charles Mesa Sanitation District and the projected boundaries as proposed by the District's Board of Directors.





1993 Section 208 Water Quality Management Plan

**FIGURE VII-9 SERVICE AREA BOUNDARIES  
ST. CHARLES MESA SANITATION DISTRICT**



Scale: No Scale

1993 Section 208 Water Quality Management Plan

**FIGURE VII-10 PROPOSED REGIONAL WASTEWATER SYSTEM  
ST. CHARLES MESA SANITATION DISTRICT**

**CF&I STEEL, L.P.**

# **CF&I STEEL, L.P.**

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**I. MANAGEMENT AGENCY:** Pueblo County

**II. DISCHARGE PERMIT DATA**

DATE OF UPDATE: 1993

NPDES PERMIT NO. CO-0000621

DATE PERMIT EXPIRES: October 31, 1998

**III. OPERATING AGENCY**

CF&I Steel, L.P.

**IV. DATE OF MANAGEMENT AGENCY AGREEMENT**

1977 (as established by the Pueblo 208 Plan)

**V. DESCRIPTION OF TREATMENT FACILITY**

CF&I waste water treatment facilities include the domestic sewage treatment and the industrial waste water treatment facilities that discharge through a single point to the Arkansas River.

The domestic sewage treatment plant consists of aeration-biological treatment basins, final clarifier with recirculation, and chlorine contact chamber. The domestic sewage discharge must meet BOD<sub>5</sub> permit requirements before it is discharged to the industrial waste water system.

The industrial waste water facilities include scale pits at production units for primary solids and oil removal, clarifiers for additional solids and oil removal, and two final treatment lagoons for solids removal and biological treatment. Mechanical aerators are available at the final treatment lagoons, but are not used because sufficient dissolved oxygen is present in the water. Several internal treatment and recirculation systems provide specific treatments as follows: Arc Furnace Cooling Tower System, Round Caster Cooling Water System, Arc Furnace Duct and Ladle Treatment Cooling System, South Mills Recycle System, Wire Mill Clarifier System and the domestic Sewage Treatment Facility.

Table VII-25  
WATER QUALITY STANDARDS  
CF&I STEEL, L.P.

<u>Characteristic</u>	<u>Federal/State Standard</u>
<b>Physical and Biological</b>	
D.O.	5.0 mg/l <sup>1</sup>
Ph	6.5-9.0
Fecal Coliforms	2000/100ml
<b>Inorganic</b>	
NH <sub>3</sub> (ac)	TVS <sup>2</sup>
NH <sub>3</sub> (ch)	0.1 mg/l
CL <sub>2</sub> (ac)	0.019 mg/l
CL <sub>2</sub> (ch)	0.011 mg/l
Cyanide (free)	0.005 mg/l <sup>3</sup>
S as H <sub>2</sub> S	0.002 mg/l
Boron	0.75 mg/l
Nitrite (NO <sub>2</sub> )	0.5 mg/l
Nitrate (NO <sub>3</sub> )	10 mg/l
Chloride (Cl)	250 mg/l
Sulfate (SO <sub>4</sub> )	1800 mg/l
<b>Metals</b>	
Arsenic (As)(ac)	50 ug/l (Trec)
Cadmium (Cd)(ac/ch)	TVS <sup>2</sup>
Cadmium (Cd)(ch)	TVS <sup>2</sup>
Chromium (tri)(CrIII)(ac)	50 ug/l (Trec)
Chromium (hex)(CrIV)(ac/ch)	TVS <sup>2</sup>
Copper (Cu)(ac/ch)	TVS <sup>2</sup>
Iron (Fe, sol)(ch)	300 ug/l (dis)
Iron (Fe, sol)(ch)	1400 ug/l (Trec)
Lead (Pb)(ac/ch)	TVS <sup>2</sup>
Manganese (Mn, sol)(ch)	50 ug/l (dis)
Manganese (Mn, sol)(ch)	1000 ug/l (Trec)
Mercury (Hg)(ch)	0.01 ug/l (Trec)
Nickel (Ni)(ac/ch)	TVS <sup>2</sup>
Selenium (Se)(ch)	10 ug/l (Trec)
Silver (Ag)(ac)	TVS <sup>2</sup>
Silver (Ag)(ch)	TVS <sup>2</sup>
Zinc (Zn)(ac/ch)	TVS <sup>2</sup>

Notes

1. See Appendix B for special conditions pertaining to Dissolved Oxygen for this stream segment.
2. See Appendix A for these Numeric Standards.
3. See Appendix B for special conditions pertaining to Cyanide for this stream segment.

**VI. WATER QUALITY DATA**

A. Receiving Water: Arkansas River

B. WQCD Stream Segment Description - Lower Arkansas River No. 1

*Mainstem of the Arkansas River from a point immediately above the confluence with Fountain Creek to the Colorado/Kansas border.*

C. Adopted Stream Segment Classification - Lower Arkansas River No. 1

*Agriculture  
Domestic Water Supply  
Recreation--Class 2  
Aquatic Life, Warm Water--Class 2  
Use Protected*

**VII. SERVICE AREA POPULATION**

Table VII-26  
EXISTING AND PROJECTED POPULATIONS  
CF&I STEEL, L.P.

<u>1990</u>	<u>Current</u>	<u>1995</u>	<u>2000</u>	<u>2005</u>	<u>2010</u>
N/A	N/A	N/A	N/A	N/A	N/A

**VIII. CAPACITIES**

Table VII-27  
EXISTING AND PROJECTED CAPACITIES  
CF&I STEEL, L.P.

<u>Capacity</u>	<u>Design</u>	<u>Existing</u>	<u>Year at 80%</u>	<u>Year at 95%</u>
Flow (MGD)	57	57	N/A	N/A
Organic (lbs/day)	N/A	N/A	N/A	N/A

**IX. PROGRAM CHANGES:** None

**X. EFFLUENT LIMITS BEYOND SECONDARY TO MEET STREAM STANDARDS:** None

**XI. WASTELOAD ALLOCATIONS**

A Wasteload Allocation (WLA) Study was conducted by the Pueblo Area Council of Governments (PACOG) for the portion of the Arkansas River receiving wastewater from both CF&I and the City of Pueblo. The critical water quality constituent was un-ionized ammonia (NH<sub>3</sub>), which at elevated levels may be toxic to fish. PACOG recommended a specific wasteload allocation for this portion of the Arkansas River. CF&I and the WQCD have agreed to un-ionized ammonia (NH<sub>3</sub>) limitations based upon the Waste Load Allocation and the mixing zone studies.

The discharge must meet stringent stream standards and EPA technical standards for the steel industry. CF&I and the WQCD have agreed that permit limitations will apply at the final point of discharge to the Arkansas River from the second pond and that permit limitations will be based upon net levels when applicable. Net levels are defined as the difference between levels in concurrent samples taken at the influent and effluent sources. CF&I and the WQCD have also agreed to BOD limitations of the domestic sewage treatment plant effluent prior to mixing with the industrial water.

**XII. MAJOR CONSTRUCTION: N/A**

**XIII. ESTIMATED FIVE-YEAR CONSTRUCTION NEEDS: None**

**XIV. FINAL PLAN STATEMENT**

Continue to use Alternative 1: Utilization of Two Final Treatment Lagoons on Salt Creek, as outlined in the "Volume III, July 1977 Final Plan and Implementation Schedule" to serve as the short-term and long-term goals.

The CF&I implemented the alternative in 1980, which included the utilization of Salt Creek Channel and two final treatment lagoons in its industrial wastewater treatment system. The CF&I had used only one lagoon previously. The addition of the second lagoon reduced the amounts of ammonia and phenol discharge to the Arkansas River and acts as a buffer to protect the Arkansas River from accidental spills which may occur within the steel plant.

The plan, as implemented, imposes on the CF&I the responsibility for controlling the water quality being discharged by Salt Creek and also control any pollutant that would result from stormwater run-off or any other source that discharges into the Salt Creek. The CF&I is required to provide daily monitoring of all discharges from Salt Creek for important pollutant constituents.

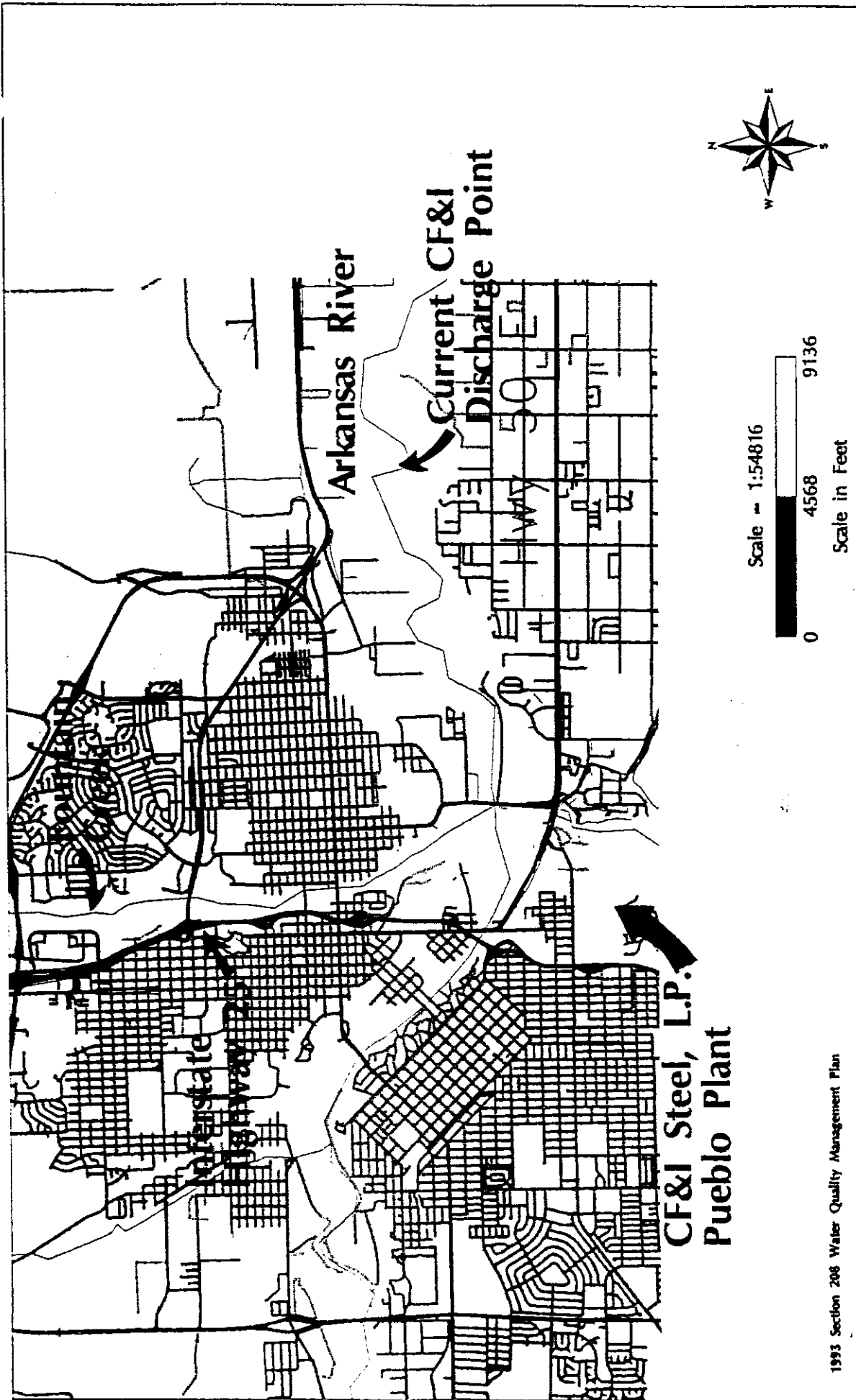
The above alternative was developed by the CF&I based on recommendations by Region VIII of the EPA in 1973.

**XV. DESCRIPTION AND STATUS**

Effluent guidelines for the iron and steel industry were finalized in the May 17, 1984, *Federal Register* (Volume 49, No. 97, pages 21024-21038, 40 CFR, Parts 403 and 420). Numeric limits were issued for best practicable technology (BPT); best conventional technology (BCT) for suspended solids, oil and grease, and BOD; and best available technology (BAT) for toxic substances and priority pollutants. CF&I is operating under the effluent limitations imposed by their current NPDES permit.

Figure VII-11 is a vicinity map of CF&I Steel Plant with current and pre-March, 1980, discharge points identified.





1993 Section 208 Water Quality Management Plan

**FIGURE VII-11 VICINITY MAP  
CF&I STEEL, L.P. FACILITIES**

**AVONDALE WATER AND  
SANITATION DISTRICT**

# AVONDALE WATER AND SANITATION DISTRICT

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I. MANAGEMENT AGENCY: Pueblo County

II. DISCHARGE PERMIT DATA

DATE OF UPDATE: 1993  
NPDES PERMIT NO. CO-0021075  
DATE PERMIT EXPIRES: February 29, 1996

III. OPERATING AGENCY

Avondale Water and Sanitation District. Facility: Avondale Wastewater Treatment Lagoon.

IV. DATE OF MANAGEMENT AGENCY AGREEMENT

1977 (as assumed from the Pueblo 208 Plan)

V. DESCRIPTION OF FACILITY

The District's Avondale facility consists of one, 10-acre, non-aerated lagoon, a 3.9-acre land application area around the pond, a surface aerator, and a chlorine disinfection system. Land application consists of a system of sprinklers to irrigate the 3.9 acres immediately surrounding the lagoon. When the system discharges, the effluent goes to the Green Arroyo as described below. There is a 6-inch Parshall flume on the inlet line. The treatment level is secondary. The District is making improvements to the Avondale facility which are described below.

The District's Fort Reynolds Wastewater Treatment Lagoons are non-discharging and consist of one stabilization pond (2.5 acres) and two rapid infiltration beds (absorption ponds, one acre each).

VI. WATER QUALITY DATA

A. Receiving Water: Land application or discharge to the Green Arroyo, which flows to the Collier Ditch and then to the Arkansas River.

B. WQCD Stream Segment Description - Lower Arkansas River No. 1

*Mainstem of the Arkansas River from a point immediately above the confluence with Fountain Creek to the Colorado/Kansas border.*

C. Adopted Stream Segment Classification - Lower Arkansas River No. 1

*Agriculture  
Domestic Water Supply  
Recreation--Class 2*

*Warm Water Aquatic Life--Class 2  
Use Protected*

Table VII-28  
 WATER QUALITY STANDARDS  
 AVONDALE WATER AND SANITATION DISTRICT

<u>Characteristic</u>	<u>Federal/State Standard</u>
<b>Physical and Biological</b>	
D.O.	5.0 mg/l <sup>1</sup>
Ph	6.5-9.0
Fecal Coliforms	2000/100 ml
<b>Inorganic</b>	
NH <sub>3</sub> (ac)	TVS <sup>2</sup>
NH <sub>3</sub> (ch)	0.1 mg/l
CL <sub>2</sub> (ac)	0.019 mg/l
CL <sub>2</sub> (ch)	0.011 mg/l
Cyanide (free)	0.005 mg/l <sup>3</sup>
S as H <sub>2</sub> S	0.002 mg/l
Boron	0.75 mg/l
Nitrite (NO <sub>2</sub> )	0.5 mg/l
Nitrate (NO <sub>3</sub> )	10 mg/l
Chloride (Cl)	250 mg/l
Sulfate (SO <sub>4</sub> )	1800 mg/l
<b>Metals</b>	
Arsenic (As)(ac)	50 ug/l (Trec)
Cadmium (Cd)(ac/ch)	TVS <sup>2</sup>
Cadmium (Cd)(ch)	TVS <sup>2</sup>
Chromium (tri)(CrIII)(ac)	50 ug/l (Trec)
Chromium (hex)(CrIV)(ac/ch)	TVS <sup>2</sup>
Copper (Cu)(ac/ch)	TVS <sup>2</sup>
Iron (Fe, sol)(ch)	300 ug/l (dis)
Iron (Fe, sol)(ch)	1400 ug/l (Trec)
Lead (Pb)(ac/ch)	TVS <sup>2</sup>
Manganese (Mn, sol)(ch)	50 ug/l (dis)
Manganese (Mn, sol)(ch)	1000 ug/l (Trec)
Mercury (Hg)(ch)	0.01 ug/l (Trec)
Nickel (Ni)(ac/ch)	TVS <sup>2</sup>
Selenium (Se)(ch)	10 ug/l (Trec)
Silver (Ag)(ac)	TVS <sup>2</sup>
Silver (Ag)(ch)	TVS <sup>2</sup>
Zinc (Zn)(ac/ch)	TVS <sup>2</sup>

Notes

1. See Appendix B for special conditions pertaining to Dissolved Oxygen for this stream segment.
2. See Appendix A for these Numeric Standards.
3. See Appendix B for special conditions pertaining to Cyanide for this stream segment.

**VII. SERVICE AREA POPULATION**

Table VII-29  
EXISTING AND PROJECTED POPULATIONS<sup>(1)</sup>  
AVONDALE WATER AND SANITATION DISTRICT

**DISTRICT POPULATION**

<u>1990</u>	<u>Current</u>	<u>1995</u>	<u>2000</u>	<u>2005</u>	<u>2010</u>
2,857	3,052	3,182	3,507	3,835	4,163

**USER POPULATION<sup>(2)</sup>**

<u>1990</u>	<u>Current</u>	<u>1995</u>	<u>2000</u>	<u>2005</u>	<u>2010</u>
1,278	1,365	1,423	1,568	1,714	1,862

**Notes**

1. Population projections are based on 1990 Census data, the *Preliminary Report, Avondale Wastewater Pond*, March, 1993, and the 1987 208 Plan Update.
2. Based on 279 taps (Fort Reynolds and the Avondale facility together), 3.8 persons/tap (*Preliminary Report, Avondale Wastewater Pond*).

**VIII. CAPACITIES**

Table VII-30  
EXISTING AND PROJECTED CAPACITIES  
AVONDALE WATER AND SANITATION DISTRICT

**Avondale Facility**

<u>Capacity</u>	<u>Design</u>	<u>Existing</u>	<u>Year at 80%</u>	<u>Year at 95%</u>
Flow (MGD)	0.11 <sup>(1)</sup>	0.087 <sup>(2)</sup>	1993 <sup>(3)</sup>	2000
Organic (lbs/day)	218 <sup>(4)</sup>	176 <sup>(5)</sup>	1995	2000

Table VII-30  
EXISTING AND PROJECTED CAPACITIES  
AVONDALE WATER AND SANITATION DISTRICT  
(Continued)

Ft. Reynolds Facility

<u>Capacity</u>	<u>Design</u>	<u>Existing</u>	<u>Year at 80%</u>	<u>Year at 95%</u>
Flow (MGD)	0.016 <sup>(6)</sup>	Unknown	Unknown	Unknown
Organic (lbs/day)	44.7 <sup>(6)</sup>	Unknown	Unknown	Unknown

Notes

1. Flow capacity is based upon the capacity analysis included in the rationale for the NPDES permit No. CO-0021075, dated February 5, 1991.
2. *Preliminary Report, Avondale Wastewater Pond*, March, 1993. Burnett Consulting Engineers, Frisco, Colorado.
3. The facility is currently operating at 84 percent of the design capacity for the present population per the *Preliminary Report, Avondale Wastewater Pond*, March, 1993. Burnett Consulting Engineers, Frisco, Colorado.
4. Based on 0.5 lb BOD<sub>5</sub>/day/1,000 sq. ft. of surface area as included in the rationale for the NPDES permit No. CO-0021075, dated February 5, 1991.
5. Based on 0.22 lbs/capita/day BOD, *Preliminary Report, Avondale Wastewater Pond*, March, 1993. Burnett Consulting Engineers, Frisco, Colorado.
6. NPDES Permit No. CO-0021075, Page 1a of 25.

IX. PROGRAM CHANGES: None

X. EFFLUENT LIMITS REQUIRED BEYOND SECONDARY  
TO MEET STREAM STANDARDS: None

XI. WASTELOAD ALLOCATIONS: None

XIII. ESTIMATED FIVE-YEAR CONSTRUCTION NEEDS

The treatment pond at the Avondale facility is undergoing expansion and upgrading at the this time. The improvements are necessary for the system to remain in compliance with discharge permit requirements. These improvements are described more fully below.

**XIV. FINAL PLAN STATEMENT:**

**Avondale Facility:** Provide an advanced treatment lagoon system with land application.

**Fort Reynolds Facility:** Maintain non-discharging lagoon system with infiltration beds.

**XV. DESCRIPTION AND STATUS**

The Avondale Water and Sanitation District contains two wastewater treatment facilities--the Avondale Wastewater Treatment Lagoon and the Fort Reynolds Treatment Lagoon. The Avondale facility is currently in "significant non-compliance" with its discharge permit. The District received notification of this status from the Colorado Department of Health (CDOH), Water Quality Control Division, in December 1993.

The Avondale Wastewater Treatment Lagoon is a 10-acre lagoon constructed in 1970, which is presently operating at approximately 90 percent of capacity. In 1980, the lagoon had reached 85 percent of capacity and had been discharging occasionally during 1979 and early 1980.

Since 1980, the district improved the facility by installing a system of sprinklers to irrigate 3.9 acres immediately around the lagoon and by constructing a berm around the outside perimeter of the irrigated property to contain any possible runoff. Two down gradient groundwater monitoring wells were also installed. Surface discharge from the lagoon is not considered likely under most conditions since these improvements. Occasionally, particularly during storm events, the water level in the lagoon may reach the top of the riprap, and surface discharge may be necessary to avoid damage to the banks of the lagoon. A substantial increase in treatment capacity will result from the anticipated acquisition of additional acreage for irrigation. This step is under discussion at present. Also, the installation of an aerator will improve the efficiency of the existing system. In May 1985, additional riprapping was added to the lagoon.

In 1992, the CDOH, Water Quality Control Division, conducted a performance review of the Avondale facility and produced a Summary Report in October 1992. The Report cited several problems in determining that the existing pond is a "type 2 facility," a marginal wastewater treatment facility with performance limiting factors. The report recommended the district retain a consulting engineer, prepare a "Composite Correction Program," and correct the existing problems leading to discharge violations, while also planning for future needs.

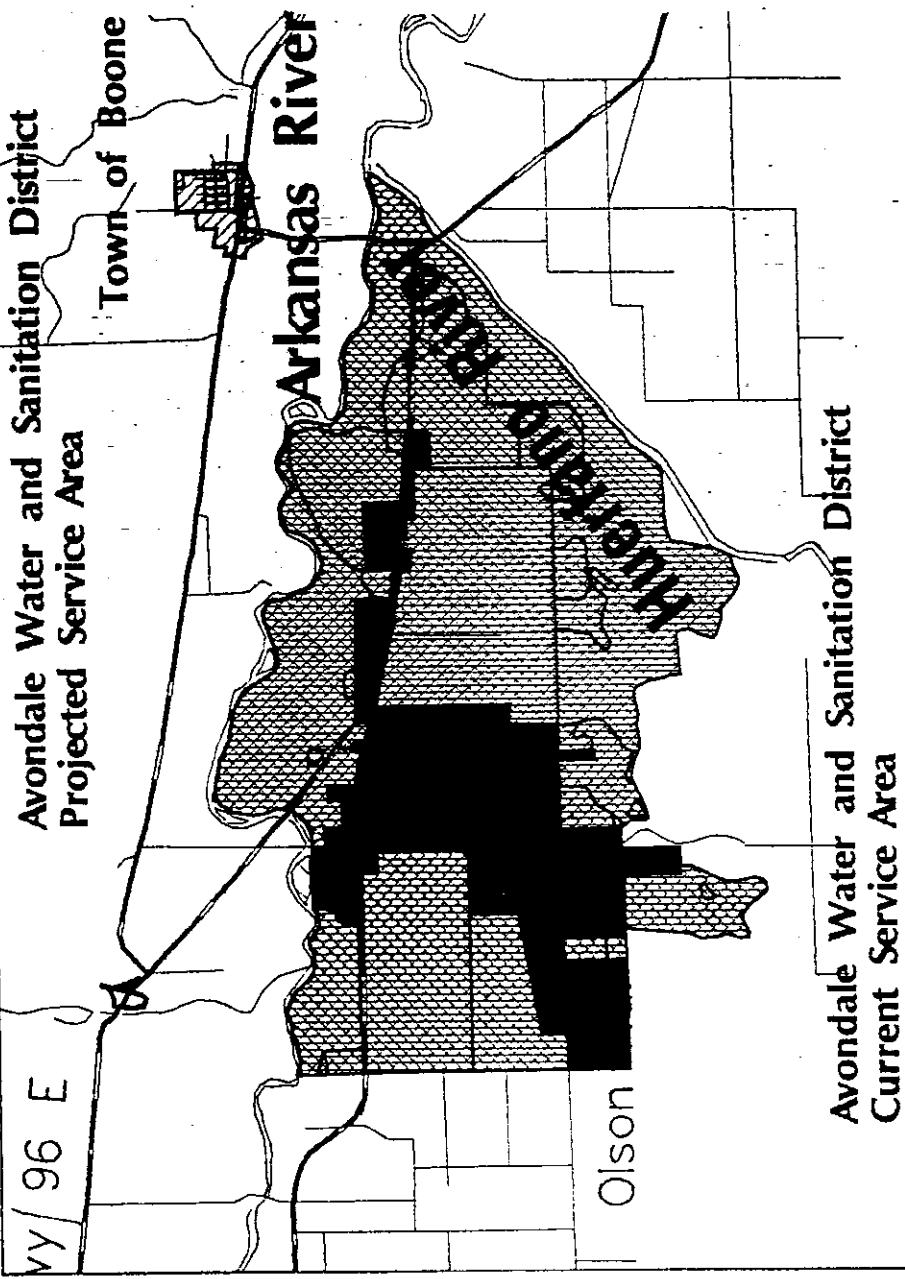
The district is currently in the process of making improvements to the system in response to the Summary Report and notification of "significant non-compliance." The improvements consist of constructing a small cell adjoining the existing pond and dividing the existing pond into two cells with an earthen berm. This will convert the single cell pond into a three-cell waste stabilization facility. The improvements will allow for a capacity of approximately 1,042 persons at the Avondale wastewater treatment plant.

The Fort Reynolds system provides service to the Fort Reynolds area only, and currently has 19 sewer taps. Based upon data from the NPDES permit No. CO-0021075 and the *Preliminary Report, Avondale Wastewater Pond*, March, 1993, the Fort Reynolds facility is at 29 percent capacity and can accommodate an additional 46 taps or approximately 144 additional persons. Five acres have been purchased for additional expansion in the future.




The remainder of residences within the Avondale Water and Sanitation District are served by predominantly on-site septic systems and as such are subject to regulations imposed by the Pueblo City/County Health Department.

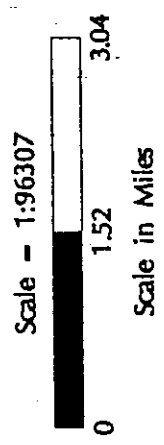
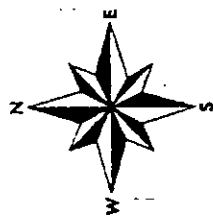
Figure VII-12 is a map of the Avondale Water and Sanitation District's current and projected boundaries, as proposed by the District's Board of Directors.





# LEGEND

-  Avondale Water & Sanitation District Current Service Area
-  Avondale Water and Sanitation District Projected Service Area
-  Town of Boone



1993 Section 206 Water Quality Management Plan

**FIGURE VII-12 SERVICE AREA BOUNDARIES  
AVONDALE WATER AND SANITATION DISTRICT**

**TOWN OF BOONE - SANITATION**

# TOWN OF BOONE - SANITATION

I. **MANAGEMENT AGENCY:** Pueblo County

II. **DISCHARGE PERMIT DATA**

DATE OF UPDATE: 1993

NPDES PERMIT NO. CO-0023477

DATE PERMIT EXPIRES: Inactive

III. **OPERATING AGENCY**

Town of Boone

IV. **DATE OF MANAGEMENT AGENCY AGREEMENT**

1977 (as established by the 1977 Pueblo 208 Plan)

V. **DESCRIPTION OF TREATMENT FACILITY**

This is a two-cell, non-aerated lagoon system (3.2 acre lagoon) which can be operated in series or parallel. The system was plugged in 1982 and is now a non-discharging system. Treatment level: Secondary.

VI. **WATER QUALITY DATA**

This is a non-discharging system; therefore, the water quality standards for the Arkansas River Basin are not applicable.

VII. **SERVICE AREA AND USER POPULATION**

Table VII-31  
EXISTING AND PROJECTED POPULATIONS<sup>(1)</sup>  
TOWN OF BOONE - SANITATION

<u>1990</u>	<u>Current</u>	<u>1995</u>	<u>2000</u>	<u>2005</u>	<u>2010</u>
319	351	512	568	622	675

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Notes

1. The existing population is based on information provided by Margaret Trejo, Town Clerk. Population projections for 1990-2010 were extrapolated from the 1987 208 Plan Update.

**VIII. CAPACITIES**

Table VII-32  
EXISTING AND PROJECTED CAPACITIES  
TOWN OF BOONE - SANITATION

<u>Capacity</u>	<u>Design</u>	<u>Existing</u>	<u>Year at 80%</u>	<u>Year at 95%</u>
Flow (MGD)	0.065	0.033	(1)	(1)
Organic (lbs/day)	111 <sup>(2)</sup>	75 <sup>(2)</sup>	1995 <sup>(3)</sup>	2005 <sup>(3)</sup>

Notes

1. The period when the Boone system will be at 80% and 95% capacity for flow (MGD) is beyond the year 2010 based on the given population projections.
2. Based on existing conditions and given population projections, improvements to the system will increase the design capacity, an as yet undetermined amount. (See XIII. ESTIMATED FIVE-YEAR CONSTRUCTION NEEDS)
3. Based on 100 gpcd and 0.17 lbs/day/person BOD, as recommended by State Health Department, Municipal Facilities personnel.

**IX. PROGRAM CHANGES:** None

**X. EFFLUENT LIMITS REQUIRED BEYOND SECONDARY TO MEET STREAM STANDARDS:** None

**XI. WASTELOAD ALLOCATIONS**

A wasteload allocation study has not been conducted.

**XII. MAJOR CONSTRUCTION:** N/A

**XIII. ESTIMATED FIVE-YEAR CONSTRUCTION NEEDS**

The lift station replacement will be determined by economic factors.

**XIV. FINAL PLAN STATEMENT**

Expand the existing facility as necessary.

**XV. DESCRIPTION AND STATUS**

The Boone Sanitation District paid off its indebtedness in 1983 and was subsequently dissolved. The Town of Boone then became the operating agency for the facility. Although the service area boundary has changed slightly to conform with the corporate limits of the Town of Boone, the actual service and user populations of the facility are generally unaffected. While a few homes on Railroad Street outside the corporate limits are served, the Town Council does not plan to serve additional properties outside the limits.

The Town of Boone currently holds an inactive NPDES Permit. A plug was placed on the discharge pipe in 1982; and the Colorado Department of Health determined in January, 1983, that the system did not require a discharge permit. However, should a change in operation result in a discharge or potential for discharge, the Colorado Department of Health must be notified; and the facility may be required to reactivate its NPDES Permit or be subject to other Colorado Department of Health regulations.

The lift station has had two new compressors installed; replacing ones that were installed in the system originally. Other improvements will be limited to replacing equipment as needed.

**LEGEND**

Town of Boone  
Service Area



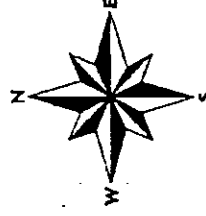
Avondale Water and  
Sanitation District



Town of Boone  
Service Area

Arkansas River

Avondale Water and Sanitation District



Scale - 1:40044



1993 Section 208 Water Quality Management Plan

**FIGURE VII-13 SERVICE AREA BOUNDARIES  
TOWN OF BOONE - SANITATION**

**TOWN OF RYE**

# TOWN OF RYE

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I. **MANAGEMENT AGENCY:** Pueblo County

II. **DISCHARGE PERMIT DATA**

DATE OF UPDATE: 1993

NPDES PERMIT NO. CO-0032034

DATE PERMIT EXPIRED: September 30, 1983

III. **OPERATING AGENCY**

Town of Rye

IV. **DATE OF MANAGEMENT AGENCY AGREEMENT**

1977 (as established by the 1977 Pueblo 208 Plan)

V. **DESCRIPTION OF TREATMENT FACILITY**

The Town's existing facility consists of a 1.4 acre, non-aerated, evaporative lagoon with land application of lagoon effluent via flood irrigation. No discharge is permitted since the Town of Rye has not renew its NPDES Permit.

VI. **WATER QUALITY DATA**

Presently, the treatment facility is a non-discharging system and water quality standards are not applicable. However, should the recommendations of the *201 WWTF Facilities Plan for Rye, Colorado*, December 6, 1993, be implemented, the Town's collection system would be treated by Colorado City. See the Colorado City Metropolitan District, Paragraph VI, on Page VII-78 for water quality data that would become applicable to the Town of Rye.

VII. **SERVICE AREA POPULATION**

Table VII-33  
EXISTING AND PROJECTED POPULATIONS<sup>(1)</sup>  
TOWN OF RYE

DISTRICT POPULATION					
<u>1990</u>	<u>Current</u>	<u>1995</u>	<u>2000</u>	<u>2005</u>	<u>2010</u>
168	170	174	178	182	186



Table VII-33  
EXISTING AND PROJECTED POPULATIONS<sup>(1)</sup>  
TOWN OF RYE  
(Continued)

USER POPULATION<sup>(2)</sup>

<u>1990</u>	<u>Current</u>	<u>1995</u>	<u>2000</u>	<u>2005</u>	<u>2010</u>
265	267	271	275	279	284

Notes:

1. Population projections are based on Census data and the *201 WWTF Facilities Plan for Rye, Colorado*, December 6, 1993.
2. The user population is based on information from the *201 WWTF Facilities Plan for Rye, Colorado*, December 6, 1993.

VIII. CAPACITIES

Table VII-34  
EXISTING AND PROJECTED CAPACITIES  
TOWN OF RYE

<u>Capacity</u>	<u>Design</u>	<u>Existing</u>	<u>Year at 80%</u>	<u>Year at 95%</u>
Flow (MGD)	0.028 <sup>(1)</sup>	0.021 <sup>(2)</sup>	1981 <sup>(3)</sup>	1985 <sup>(3)</sup>
Organic (lbs/day)	28	30	1981 <sup>(3)</sup>	1981 <sup>(3)</sup>

Notes

1. *Town of Rye, Colorado, Sewerage Work Predesign Engineering*, April 4, 1977, Gingerly Associates, Inc., Englewood, Colorado.
2. Based on the *201 WWTF Facilities Plan for Rye, Colorado*, December 6, 1993.
3. Permit capacity thresholds do not apply at this time because the existing system is non-discharging and if the system connects to Colorado City, the treatment facility will be eliminated.

IX. PROGRAM CHANGES: None

X. EFFLUENT LIMITS REQUIRED BEYOND SECONDARY  
TO MEET STREAM STANDARDS: None

**XI. WASTELOAD ALLOCATIONS**

A wasteload allocation study has not been conducted.

**XII. MAJOR CONSTRUCTION: N/A**

**XIII. ESTIMATED FIVE-YEAR CONSTRUCTION NEEDS**

The *201 WWTF Facilities Plan for Rye, Colorado* (201 Plan), prepared by URS Consultants in 1993 assessed five alternatives for the provision of wastewater treatment to the Town of Rye, which included financial analysis of each alternative considered. The alternatives analyzed were the following.

- No Action (maintain status quo conditions and operations)
- Facultative Lagoon Expansion with Land Application
- Extended Aeration Plant with Direct Discharge
- Aerated Lagoon with Direct Discharge
- Treatment at the Colorado City WWTF

The 201 Plan recommended implementation of the last alternative, Treatment at the Colorado City WWTF. This would be comprised of abandoning the existing lagoon, recovering the site, and extending an 8-inch gravity sewer line approximately two miles to the east of the Town facilities to connect with an existing 10-inch line at the westerly boundary of Colorado City.

**XIV. FINAL PLAN STATEMENT**

The Town of Rye is negotiating an agreement for connection to the Colorado City wastewater collection and treatment facilities with the intent to construct the necessary extension to Colorado City.

**XV. DESCRIPTION AND STATUS**

The original Rye wastewater system was constructed in 1938. A non-aerated lagoon was constructed in 1971 and improved in 1979. Land application of the lagoon's effluent occurred from 1972 through September 30, 1983. Rye did not renew its NPDES Permit in 1983. Subsequently, the Colorado Department of Health directed it to cease its land application and operate only the non-aerated, evaporative lagoon.

The Rye NPDES Permit required several improvements which were completed in 1979. The improvements included increasing the depth of the lagoon to provide a minimum two feet of free board and additional storage capacity and installation of a Parshall flume at the outlet of the lagoon (See *Engineering Evaluation Design Report*, by Dennis Maroney, P.E., for a listing of improvements recommended for the Rye System). The predesign report, *Town of Rye, Colorado, Sewage Works Predesign Engineering*, was compiled in 1977 by Gingerly Associates, Inc., of Englewood, Colorado.

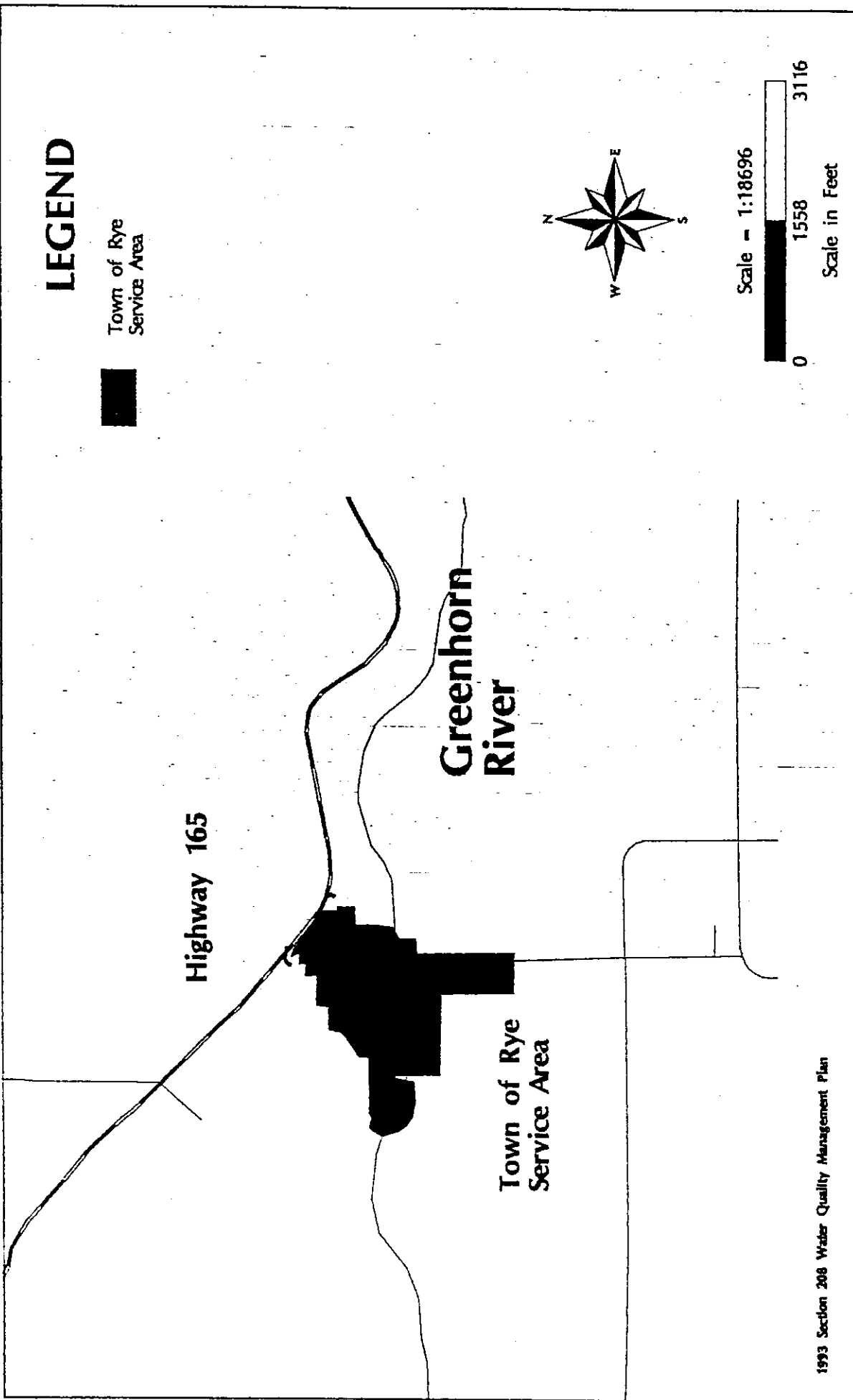
The 1977 Pueblo 208 Plan recommended regionalization of wastewater treatment facilities for Rye and Colorado City. A 10-inch sewer main has been extended to the Colorado City District's western boundary by the Colorado City Metropolitan District. This line is approximately two miles from the Rye treatment facility. The sewer main can be used to collect Rye's wastewater flows.

Currently, the Town of Rye's wastewater treatment facility has several problems including the following:

- the lagoon is hydraulically overloaded (i.e., less than 180 days minimum storage);
- the system lacks adequate storage for seasonal discharges (i.e., 230 days of storage required to prevent releases outside the estimated growing season of 135 days);
- the system is approaching the maximum allowable organic load;
- the lagoon has only one cell instead of the require three cells; and
- the facility lacks an influent flow measuring device.

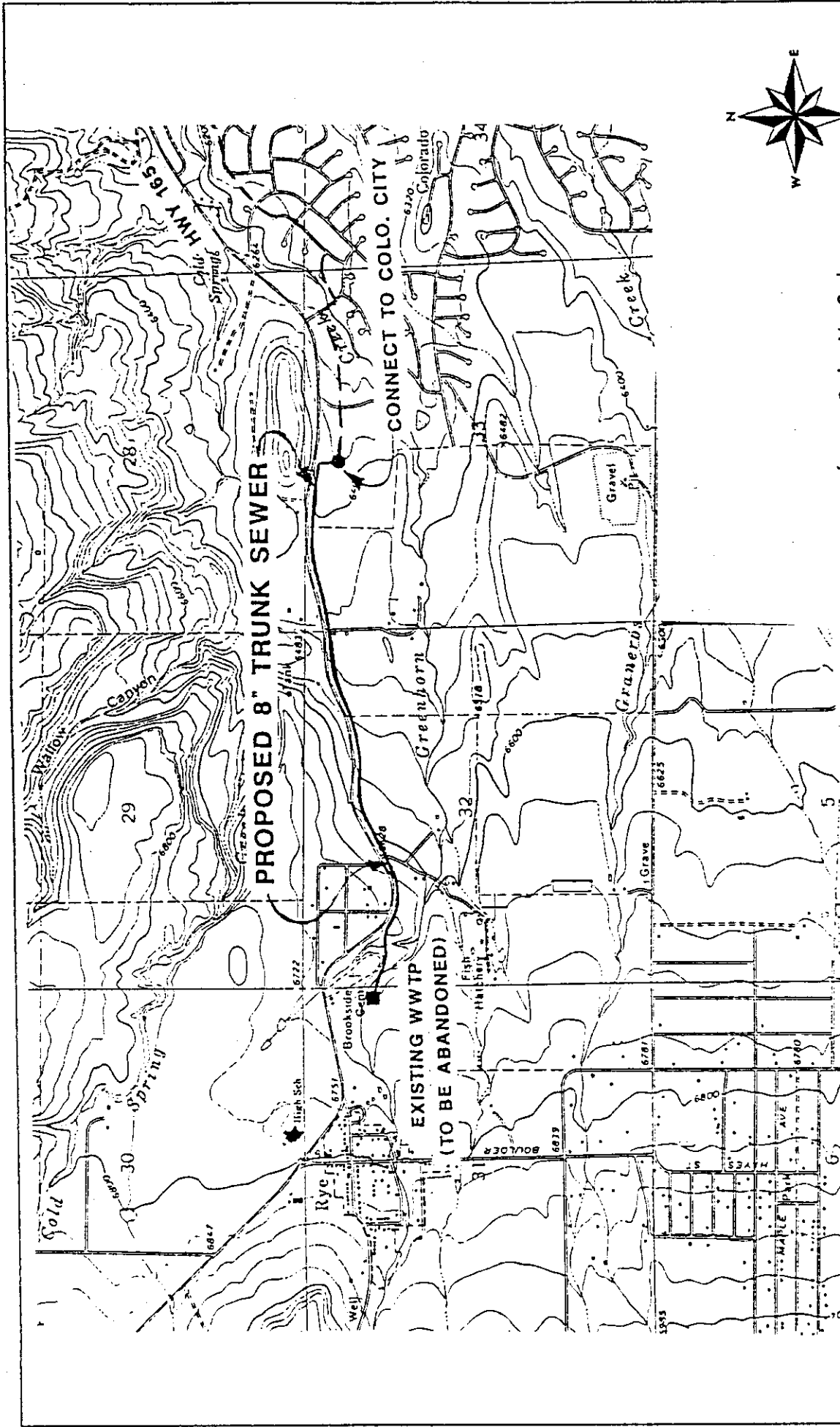
The 201 Plan was undertaken to analyze the Town's wastewater facilities and recommend alternatives to address the negative conditions of the facilities. Based upon cost and previous 208 Plan recommendations for regionalization of treatment, the 201 Plan recommended the abandonment of the existing lagoon and connection to the Colorado City wastewater system via an 8-inch main line extension from Rye to Colorado City. According to the 201 Plan, this action is to take place beginning in 1994.

Figure VII-14 is a map of the Town of Rye boundaries. Current service area boundaries and Year 2010 projected boundaries are identical.



1993 Section 208 Water Quality Management Plan

**FIGURE VII-14 SERVICE AREA BOUNDARIES  
TOWN OF RYE**



Scale: No Scale

1993 Section 208 Water Quality Management Plan

**FIGURE VII-15 PROPOSED 8-INCH SEWER LINE TOWN OF RYE**

**COLORADO CITY  
METROPOLITAN DISTRICT**

# COLORADO CITY METROPOLITAN DISTRICT

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I. MANAGEMENT AGENCY: Pueblo County

II. DISCHARGE PERMIT DATA

DATE OF UPDATE: 1993  
NPDES PERMIT NO. CO-0021121  
DATE PERMIT EXPIRES: August 31, 1994

III. OPERATING AGENCY

Colorado City Metropolitan District

IV. DATE OF MANAGEMENT AGENCY AGREEMENT

1977 (as established by the Pueblo 208 Plan)

V. DESCRIPTION OF TREATMENT FACILITY

This facility consists of a headworks structure, with two grit chambers and a nine-inch Parshall flume. Raw sewage is split into three aeration basins of 133,000 gallons each. After the basins are three clarifiers and two polishing ponds approximately one-half acre and one acre in size, respectively. The chlorine contact chamber is located on the final polishing pond. Treatment level: Secondary.

VI. WATER QUALITY DATA

A. Receiving Water: Greenhorn Creek

B. WQCD Stream Segment Description - Middle Arkansas River No. 12

*Mainstem of Greenhorn Creek from a point immediately below the Greenhorn Highline (Hayden Supply Ditch) to the confluence with the Saint Charles River.*

C. Adopted Stream Segment Classification - Middle Arkansas River No. 12

*Agriculture  
Water Supply  
Recreation--Class 2  
Aquatic Life, Warm Water--Class 2  
Use Protected*

Table VII-35  
 WATER QUALITY STANDARDS  
 COLORADO CITY METROPOLITAN DISTRICT

<u>Characteristic</u>	<u>Federal/State Standard</u>
<b>Physical and Biological</b>	
D.O.	5.0 mg/l <sup>1</sup>
Ph	6.5-9.0
Fecal Coliforms	2000/100ml
<b>Inorganic</b>	
NH <sub>3</sub> (ac)	TVS <sup>2</sup>
NH <sub>3</sub> (ch)	0.06 mg/l
CL <sub>2</sub> (ac)	0.019 mg/l
CL <sub>2</sub> (ch)	0.011 mg/l
Cyanide (free)	0.005 mg/l <sup>3</sup>
S as H <sub>2</sub> S	0.002 mg/l
Boron	0.75 mg/l
Nitrite (NO <sub>2</sub> )	0.5 mg/l
Nitrate (NO <sub>3</sub> )	10 mg/l
Chloride (Cl)	250 mg/l
Sulfate (SO <sub>4</sub> )	700 mg/l
<b>Metals</b>	
Arsenic (As)(ac)	50 ug/l (Trec)
Cadmium (Cd)(ac/ch)	TVS <sup>2</sup>
Chromium (tri)(CrIII)(ac)	50 ug/l (Trec)
Chromium (hex)(CrIV)(ac/ch)	TVS <sup>2</sup>
Copper (Cu)(ac/ch)	TVS <sup>2</sup>
Iron (Fe, sol)(ch)	300 ug/l (dis)
Iron (Fe, sol)(ch)	1000 ug/l (Trec)
Lead (Pb)(ac/ch)	TVS <sup>2</sup>
Manganese (Mn, sol)(ch)	50 ug/l (dis)
Manganese (Mn, sol)(ch)	1000 ug/l (Trec)
Mercury (Hg)(ch)	0.01 ug/l (Trec)
Nickel (Ni)(ac/ch)	TVS <sup>2</sup>
Selenium (Se)(ch)	10 ug/l (Trec)
Silver (Ag)(ac/ch)	TVS <sup>2</sup>
Zinc (Zn)(ac/ch)	TVS <sup>2</sup>

Notes

1. See Appendix B for special conditions pertaining to Dissolved Oxygen for this stream segment.
2. See Appendix A for these Numeric Standards.
3. See Appendix B for special conditions pertaining to Cyanide for this stream segment.



**VII. SERVICE AREA POPULATION**

Table VII-36  
 EXISTING AND PROJECTED POPULATIONS<sup>(1)</sup>  
 COLORADO CITY METROPOLITAN DISTRICT

**DISTRICT POPULATION**

<u>1990</u>	<u>Current</u>	<u>1995</u>	<u>2000</u>	<u>2005</u>	<u>2010</u>
979	1,509	1,600	1,974	2,349	2,724

**USER POPULATION<sup>(2)</sup>**

<u>1990</u>	<u>Current</u>	<u>1995</u>	<u>2000</u>	<u>2005</u>	<u>2010</u>
1,229	1,673	2,036	2,421	2,804	3,208

Notes:

1. Population projections are based on 1990 Census data and information provided by Paul Shreve, Utilities Manager, Colorado City Metropolitan District in August 1994. Projections reflect eventual service to all residents in the district's service area.
2. The user population includes figures for the Town of Rye due to the pending connection of the Rye wastewater system to the Colorado City system; therefore, the Colorado City Metropolitan District plant will become the regional treatment facility for the Greenhorn Valley.

**VIII. CAPACITIES**

Table VII-37  
 EXISTING AND PROJECTED CAPACITIES  
 COLORADO CITY METROPOLITAN DISTRICT

<u>Capacity</u>	<u>Design</u>	<u>Existing</u>	<u>Year at 80%</u>	<u>Year at 95%</u>
Flow (MGD)	0.40 <sup>(1)</sup>	0.324 <sup>(1)</sup>	(2)	(2)
Organic (lbs/day)	653 <sup>(1)</sup>	375 <sup>(1)</sup>	(2)	(2)

Notes:

1. Based on information provided by Paul Shreve, Utilities Manager, Colorado City Metropolitan District.
2. Based on user population, 80% capacity has already been reached see XIII. ESTIMATED FIVE-YEAR CONSTRUCTION NEEDS).

**IX. PROGRAM CHANGES**

When the Town of Rye connects to the District sewer line, the Colorado City Metropolitan District will have regional responsibility for treatment and discharge of wastewater as recommended in the 1977 208 Plan.

**X. EFFLUENT LIMITS REQUIRED BEYOND SECONDARY TO MEET STREAM STANDARDS: None.**

**XI. WASTELOAD ALLOCATIONS**

A wasteload allocation study has not been conducted.

**XII. MAJOR CONSTRUCTION: None**

**XIII. ESTIMATED FIVE-YEAR CONSTRUCTION NEEDS**

The treatment facilities have reached 80 percent of capacity and the District is in the early stages of studying alternatives for expansion of the system to meet the needs of projected growth including the proposed addition of the Town of Rye to the system. The District expects system improvements to be designed and constructed by mid-1996. See also, Town of Rye, Paragraph XIII on page VII-74, for information about construction related to the extension of service to Rye.

**XIV. FINAL PLAN STATEMENT**

The Colorado City collection system may be extended to accept waste from the existing Rye collection system. The Colorado City treatment plant is to serve as a treatment plant for the region.

**XV. DESCRIPTION AND STATUS**

Colorado City is the largest community in the Greenhorn Valley. This planned community made the transition from a Water and Sanitation District to a Metropolitan District in February, 1979. As a Water and Sanitation District, it was limited to those duties and responsibilities directly related to providing water and sewer services. As a Metropolitan District, it has many of the duties and powers of a city, including mosquito control, recreation, transportation and street improvements, as well as water and sanitation services.

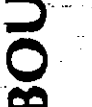
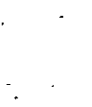
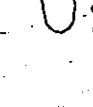
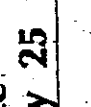
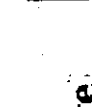
The sanitary sewer system of the Colorado City Metropolitan District is designed for a greater population than is currently served. Design capacity of the system is 470,000 gallons per day, which would serve approximately 4,700 people. An industrial park and 1,051 residents are currently being served (1,318 when Rye is included). The existing system is capable of serving the projected Colorado City user population of 1,979 through the Year 2010.

The District promotes development in a core service area within the boundaries of Colorado City. With the exception of about 41 septic tanks, the District now provides service to all residents within the District's boundaries. There are 503 residential taps in use at the present time.

The Pueblo 208 Plan recommended the regionalization of wastewater treatment facilities in the Greenhorn Valley to include Colorado City and the Town of Rye. A sewer main has been extended to the District's western boundary, approximately two miles from the Town of Rye. The main is designed to transmit wastewater from the Rye area. This is a step toward implementing the 208 Plan in the Greenhorn Valley. Negotiations with the Town of Rye for connecting to the District system are currently underway, with construction expected to begin in 1995.

Meadowcreek (aka Hollydot) is a developing residential subdivision totally surrounded by and located in the east central area of Colorado City and was annexed to the District in December, 1983. The annexation has added approximately seven (7) existing residential taps and 468 acres to the District. See Figure VII-16 for Colorado City Service Area Boundaries.

Colorado City Metropolitan District  
Projected Service Area



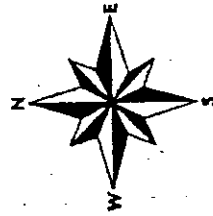
# LEGEND

Colorado City Metropolitan District Current Service Area

Colorado City Metropolitan District Projected Service Area

Interstate Highway 25

Colorado City Metropolitan District Current Service Area



Scale - 1:77933



Scale in Miles

1993 Section 208 Water Quality Management Plan

## FIGURE VII-16 SERVICE AREA BOUNDARIES COLORADO CITY METROPOLITAN DISTRICT

## **APPENDICES**

# APPENDIX A - NUMERIC STANDARDS

The following numeric standards are for waters of the Arkansas River Basin as noted in Water Quality Standards tables in the 1993 Update. The standards were taken from the *Classifications and Numeric Standards for Arkansas River Basin*, effective October 30, 1993, published by the Colorado Department of Health, Water Quality Control Commission.

## I. INTRODUCTION

The water quality tables included for many of the point source dischargers were developed based upon numeric standards for the Arkansas River. Various stream segments of the Arkansas River Basin are the discharge waters for wastewater system discussed in the 1993 Update.

The numeric standards for various parameters in the water quality tables contained in the 1993 Update were assigned by the Water Quality Control Commission (WCQC) after a careful analysis of the data presented on actual stream conditions and on actual and potential water uses.

Numeric standards are not assigned for all parameters listed in the table for each point source discharger. If additional numeric standards are found to be needed in the future, they will be assigned by the WCQC via proper hearing procedures.

## II. ABBREVIATIONS

The following abbreviations are used in the tables for each point source discharger.

ac	acute (1-day)
Ag	silver
Al	aluminum
As	arsenic
B	boron
Ba	barium
Be	beryllium
Cd	cadmium
ch	chronic (30-day)
Cl	chloride
Cl <sub>2</sub>	residual chlorine
CN	free cyanide

## ABBREVIATIONS (continued)

CrIII	trivalent chromium
CrVI	hexavalent chromium
Cu	copper
dis	dissolved
D.O.	dissolved oxygen
F	fluoride
F.Coli	fecal coliforms
Fe	iron
Hg	mercury
mg/l	milligrams per liter
ml	milliliters
Mn	manganese
NH <sub>3</sub>	un-ionized ammonia as N (nitrogen)
Ni	nickel
NO <sub>2</sub>	nitrite as N (nitrogen)
NO <sub>3</sub>	nitrate as N (nitrogen)
OW	outstanding waters
P	phosphorus
Pb	lead
S	sulfide as undissociated H <sub>2</sub> S (hydrogen sulfide)
Se	selenium
SO <sub>4</sub>	sulfate

## ABBREVIATIONS (continued)

sp	spawning
Tl	thallium
tr	trout
Trec	total recoverable
TVS	table value standard (see No. III below)
U	uranium
ug/l	micrograms per liter
UP	use-protected
Zn	zinc

## III. TABLE VALUE STANDARDS

In certain instances in the attached tables, the designation 'TVS' is used to indicate that, for a particular parameter, a 'table value standard' has been adopted. This designation refers to numerical criteria set forth in the Basic Standards and Methodologies for Surface Water. The criteria for which the TVS are applicable are on the following table.

Table VII-38  
TABLE VALUE STANDARDS  
(Concentrations in ug/l unless noted)

<u>Parameter</u> <sup>(1)</sup>	<u>Table Value Standards</u> <sup>(2)(3)</sup>
Ammonia Cold Water Acute	= 0.43/ft/FPH/2 <sup>(4)</sup> in mg/l
Warm Water Acute	= 0.62/FT/FPH/2 <sup>(4)</sup> in mg/l
Cadmium Acute	= $e^{(1.128[\ln(\text{hardness})] - 2.905)}$
Chronic	= $e^{(0.7852[\ln(\text{hardness})] - 3.490)}$
"(Trout)	= $e^{(1.128[\ln(\text{hardness})] - 3.828)}$



Table VII-38  
TABLE VALUE STANDARDS  
(Continued)

<u>Parameter</u> <sup>(1)</sup>	<u>Table Value Standards</u> <sup>(2)(3)</sup>
Acute Chromium III	= $e^{(0.819[\ln(\text{hardness})] + 3.688)}$
Chronic	= $e^{(0.819[\ln(\text{hardness})] + 1.561)}$
Acute Chromium VI	= 16
Chronic	= 11
Acute Copper	= $e^{(0.9422[\ln(\text{hardness})] - 1.4634)}$
Chronic	= $e^{(0.8545[\ln(\text{hardness})] - 1.465)}$
Acute Lead	= $e^{(1.6148[\ln(\text{hardness})] - 2.8736)}$
Chronic	= $e^{(1.417[\ln(\text{hardness})] - 5.167)}$
Acute Nickel	= $e^{(0.76[\ln(\text{hardness})] + 3.33)}$
Chronic	= $e^{(0.76[\ln(\text{hardness})] + 1.06)}$
Acute Selenium	= 135
Chronic	= 17
Acute Silver	= $e^{(1.72[\ln(\text{hardness})] - 7.21)}$
Chronic	= $e^{(1.72[\ln(\text{hardness})] - 9.06)}$
*(Trout)	= $e^{(1.72[\ln(\text{hardness})] - 10.51)}$

Table VII-38  
TABLE VALUE STANDARDS  
(Continued)

<u>Parameter</u> <sup>(1)</sup>	<u>Table Value Standards</u> <sup>(2)(3)</sup>
Uranium Acute	= $e^{(1.102[\ln(\text{hardness})] + 2.7088)}$
Uranium Chronic	= $e^{(1.102[\ln(\text{hardness})] + 2.2382)}$
Zinc Acute	= $e^{(0.8473[\ln(\text{hardness})] + 0.8604)}$
Zinc Chronic	= $e^{(0.8473[\ln(\text{hardness})] + 0.7614)}$

Notes:

- (1) Metals are stated as dissolved unless otherwise specified.
- (2) Hardness values to be used in equations are in mg/l as calcium carbonate. The hardness values used in calculating the appropriate metal standard should be based on the lower 95 per cent confidence limit of the mean hardness value at the periodic low flow criteria as determined from a regression analysis of site-specific data. Where insufficient site-specific data exists to define the mean hardness value at the periodic low flow criteria, representative regional data shall be used to perform the regression analysis. Where a regression analysis is not appropriate, a site-specific method should be used. In calculating a hardness value, regression analyses should not be extrapolated past the point that data exist.
- (3) Both acute and chronic numbers adopted as stream standards are levels not to be exceeded more than once every three years on the average.
- (4) Table abbreviations. The following are abbreviations and formulas used in the table.

$$FT = 10^{0.03(20-TCAP)}$$

TCAP less than or equal to I less than or equal to 30

$$FT = 10^{0.03(20-T)}$$

Q less or equal to I less than or equal to TCAP

TCAP = 20° C cold water aquatic life species present

TCAP = 25° C cold water aquatic life species absent

FPH = 1; 8 less than pH less than or equal to 9

$$FPH = \frac{1 + 10^{7.4-pH}}{1.25}; 6.5 \text{ less than or equal to } pH \text{ less than or equal to } 8$$

FPH means the acute pH adjustment factor; defined by the above formulas.

FT Means the acute temperature adjustment factor, defined by the above formulas.

T means temperature measured in degrees celsius.

TCAP means temperature CAP; the maximum temperature which affects the toxicity of ammonia to salmonid and non-salmonid fish groups.

NOTE: If the calculated acute value is less than the calculated chronic value, then the calculated chronic value shall be used as the acute standard.

## APPENDIX B - SPECIAL CONDITIONS

The following special conditions are for waters of the Arkansas River Basin as noted in Water Quality Standards tables in the 1993 Update. The special conditions were taken from the *Classifications and Numeric Standards for Arkansas River Basin*, effective October 30, 1993, published by the Colorado Department of Health, Water Quality Control Commission.

### I. BASIC STANDARDS

All waters of the Arkansas River Basin are subject to the following standard for temperature. (Discharges regulated by permits, which are within the permit limitations, shall not be subject to enforcement proceedings under this standard). Temperature shall maintain a normal pattern of diurnal and seasonal fluctuations with no abrupt changes and shall have no increase in temperature of a magnitude, rate, and duration deemed deleterious to the resident aquatic life. Generally, a maximum 3°C increase over a minimum of a four-hour period, lasting 13 hours maximum, is deemed acceptable for discharges fluctuating in volume or temperature. Where temperature increases cannot be maintained within this range using Best Management Practices (BMP), Best Available Technology Economically Achievable (BATEA), and Best Practical Waste Treatment Technology (BPWTT) control measures, the Commission may determine by a rulemaking hearing in accordance with the requirements of the applicable statutes and the basic regulations, whether or not a change in classification is warranted.

### II. URANIUM

- (a) All waters of the Arkansas River Basin, are subject to the following basic standard for uranium, unless otherwise specified by a water quality standard applicable to a particular segment. However, discharges of uranium regulated by permits which are within these permit limitations shall not be a basis for enforcement proceedings under this basic standard.
- (b) Uranium level in surface waters shall be maintained at the lowest practicable level.
- (c) In no case shall uranium levels in waters assigned a water supply classification be increased by any cause attributable to municipal, industrial, or agricultural discharges so as to exceed 40 pCi/l or naturally-occurring concentrations (as determined by the State of Colorado), whichever is greater.
- (d) In no case shall uranium levels in waters assigned a water supply classification be increased by a cause attributable to municipal, industrial, or agricultural discharges so as to exceed 40 pCi/l where naturally-occurring concentrations are less than 40 pCi/l.

### III. DISSOLVED OXYGEN STANDARD - MAINSTEM OF LOWER ARKANSAS RIVER

For the portion of the Mainstem of the Arkansas River extending from a point just upstream of the confluence with Fountain Creek to a point just upstream of the Colorado Canal headgate, (segment 1, page 13) and during the season between August 1st and October 31st, the DO standard shall be comprised of four (4) components as follows:

1. The DO 24-hour daily average shall not be less than 4.0 mg/l;
2. The DO shall not be less than 4.0 mg/l for a period longer than eight (8) consecutive hours;
3. The DO shall not be less than 5.0 mg/l for a period longer than fourteen (14) consecutive hours; and
4. The instantaneous standard shall not be less than 3.4 mg/l.

### IV. TOTAL CYANIDE STANDARD - MAINSTEM OF LOWER ARKANSAS RIVER

For that portion of the mainstem of the Arkansas River extending from a point just upstream of the confluence with Fountain Creek to a point just upstream of the Colorado Canal headgate, the standard for cyanide shall be 0.07 mg/l cyanide (total).

## **APPENDIX C - GLOSSARY**

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<b>Activated Sludge</b>	The suspended solids, primarily microorganisms, present in the aeration tank or pond of a wastewater treatment facility.
<b>Activated Sludge Process</b>	A form of secondary treatment of wastewater which use microorganisms suspended in aerated wastewater to degrade the organic material.
<b>Acute</b>	Exposure received over a period of 24 hours or less; a one-day standard for specified water pollutants.
<b>Anaerobic</b>	An organism that can live without oxygen or an environment devoid of gaseous or dissolved molecular oxygen.
<b>Anaerobic Decomposition</b>	The degradation of materials by anaerobic microorganisms underground or in oxygen-depleted water. The the results of such decomposition are normally compounds such as methane or hydrogen sulfide.
<b>Anaerobic Digester</b>	An airtight container in which anaerobic microorganisms decompose organic material. Typically used in wastewater treatment facilities to reduce the amount of sludge produced in primary and secondary treatment.
<b>Aeration</b>	A process used in wastewater treatment wherein oxygen is added to wastewater to prevent the level of dissolved oxygen from falling below that necessary for rapid degradation of organic material.
<b>Best Available Technology (BAT)</b>	The technological method required for pollution control of toxic or nonconventional pollutants, based on factors such as age and condition of facilities, process employed, costs of reduction, etc.
<b>Best Conventional Control Technology (BCT)</b>	The level of water pollution control technology required of dischargers for the treatment of conventional pollutants under the 1977 Clean Water Act.

**Best Management Practices (BMP)**

A program required by the 1977 Clean Water Act of facilities that manufacture, use, store, or discharge toxic or hazardous pollutants, which is intended to control the potential spill or release of those materials to surface waters.

**Best Practicable Control Technology (BPT)**

The level of effluent limitation technology required by the 1972 Clean Water Act for existing industrial plants as of July 1, 1997.

**Biochemical Oxygen Demand (BOD/BOD<sup>5</sup>)**

The use of, or demand for, oxygen dissolved in water during decomposition or metabolism of biodegradable organic compounds by microbes. The greater the amount of waste material added to the water, the greater the requirement for dissolved oxygen to convert the organic material to the mineral state. Since dissolved oxygen is necessary for organism native to a body of water, BOD is a measure of the ability of waste to cause damage in a receiving stream or lake. The concentration is measured following an incubation period of five days (hence BOD<sup>5</sup>), and is expressed in milligrams of oxygen used per liter of wastewater (mg/l). A concentration of 250 is the average for untreated municipal sewage, while that for an unpolluted stream is about 5.

**Carbonaceous Biochemical Oxygen Demand (CBOD)**

The incubation of a sample of wastewater for a short period to determine the BOD. The period of incubation is usually five days and is sufficient to detect only the microbial utilization of carbon compounds.

**Clarifier**

A device or tank in which wastewater is held to allow the settling of particulate matter as the process of clarification.

**Dissolved Oxygen (DO)**

The amount of molecular oxygen (O<sub>2</sub>) dissolved in water. DO is an important measure of the suitability of water for aquatic organisms. Expressed in milligrams of oxygen per liter of water (mg/l), a concentration of 8 or 9 would be found in streams not polluted by organic waste such as that found in domestic sewage. Waters with a DO of less than 4 are not suitable for many forms of animal life.

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Effluent	Wastewater that flows into a receiving stream by way from a domestic or industrial point source discharger.
Effluent Limitation	An amount or concentration of a pollutant that can be discharged into a receiving stream by a point source discharger, generally specified in the NPDES permit and/or stream basin water quality standards.
Fecal Coliform	A type of bacteria whose natural habitat is the colon of warm blooded mammals, such as humans. The presence of the bacteria in water, beverages or food is generally taken as an indication that it is contaminated with solid human waste.
Hydraulic Loading	The volume of wastewater applied to the surface of a filtering medium for a specified time period. Used for sand filter type units and normally expressed in gallons per day per square foot (gpd/ft <sup>2</sup> )
Lagoon	A pond used for the stabilization and decomposition of organic material in wastewater. Lagoons allow for settling and subsequent anaerobic mineralization of particulate material and aerobic decomposition of dissolved constituents.
Land Application	A method of disposal of treated wastewater, wherein the wastewater has been subjected to primary and secondary treatment and is sprayed over the ground to remove plant nutrients and promote the growth of vegetation (A type of tertiary treatment).
Load	The amount of thermal effluent released into a receiving stream.
Loading Capacity	The amount of chemical materials or thermal effluent that can be added to a stream without exceeding water quality standards established for the stream.
National Pollutant Discharge Elimination System (NPDES)	The program established by the Clean Water Act which requires all point sources discharging into "waters of the United States" to obtain a permit issued by the Environmental Protection Agency of authorized state agency.



NPDES Permit	A permit issued subsequent to the NPDES established by the Clean Water Act, which allows point source discharge of pollutants into receiving waters and specifies permissible levels and concentrations of pollutants and the level of cleanup technology required for the wastewater.
Organic Load	The amount of organic material added to a body of water that must be mineralized or degraded.
Point Source	An identifiable and confined point, such as a pipe or channel, where one or more water pollutants are discharged into a stream or other receiving body of water. Also, the facility from which the pollutants are discharged.
Polishing	The removal of low concentrations of dissolved, recalcitrant organic compounds from wastewater that has been subjected to primary and secondary treatment.
Potential Hydrogen (Ph)	A unit used to express the strength of an acid or basic solution. Values commonly range from 0 to 14, with less than 7.0 being acidic and greater than 7.0 being basic, and 7.0 considered neutral.
Primary Treatment (physical treatment)	The phase of wastewater treatment in which particulate materials are removed from domestic wastewater. Usually, this phase involves allowing the solid materials to settle out of the wastewater in a clarifier or settling tank.
Secondary Treatment (biological treatment)	A phase in the treatment of wastewater, usually carried out following the removal of particulate materials for domestic wastewater (the primary treatment). The secondary phase uses bacteria to destroy or mineralize dissolved or suspended organic materials not removed in the primary process. Secondary treatment units include trickling filters, aeration, and activated sludge.
Tertiary Treatment	Treatment methods for wastewater beyond conventional primary and secondary treatment used to remove inorganic nitrogen, phosphorus, or dissolved organic compounds. Tertiary treatment methods include chemical techniques such as the addition of lime to remove phosphorus and land application of sludge.

**Trickling Filter**

A wastewater treatment apparatus used to remove soluble or colloidal organic compounds. The filter normally consists of an open tank filled with small stones. Clarified wastewater is sprayed over the surface of the stone bed and allowed to trickle through. Microbial communities that coat the stones mineralize the organic compounds by aerobic metabolic processes as the water trickles downward.

**Total Dissolved Solids (TDS)**

A measure of the amount of material dissolved in water, primarily inorganic salts. Used as an important measure of drinking water, where a high content of inorganic material is present, the water usually has taste problems, hardness, and may be unsuitable for drinking.

**Wasteload Allocation**

A system to limit the total discharge of pollutant materials into a receiving stream. Each point source is allowed to release a specific percentage of the total amount of pollutants that can be assimilated by the stream.

# ERRATA SHEET

## SECTION 208 WATER QUALITY MANAGEMENT PLAN FOR PUEBLO COUNTY VOLUME VII - 1993 UPDATE

Page VII-10, Table VII-3: *For entire table, read*

Table VII-3  
WATER QUALITY STANDARDS  
PUEBLO WEST METROPOLITAN DISTRICT

<u>Characteristic</u>	<u>Federal/State Standard</u>
Physical and Biological	
D.O.	5.0 mg/l <sup>1</sup>
Ph	6.5-9.0
Fecal Coliforms	2000/100ml

Page VII-16, line 20: *for are, read have been scheduled*

Page VII-20, line 14: *for* This facility is non-discharging and consists of a two-cell primary lagoon, chlorination, discharge to second lagoon, and sand filter which was sealed to Colorado State Standards in 1983,

*read* This facility is non-discharging and consists of a two-cell primary lagoon, chlorination, discharge to second lagoon, and sand filter. This facility was sealed according to Colorado State Standards in 1983.