Sanitary / Storm Sewer Facilities Applications
January 2016

January 8, 2016
Item 5

TITLE: Sanitary/Storm Sewer Facilities Funding Application

EXPLANATION: The following application has been received by DENR for funding consideration at this meeting.

a. Pierre

COMPLETE APPLICATIONS: An application cover sheet and WRAP summary sheet with a financial analysis have been provided as part of the board packet, complete application is available online and can be accessed by typing the following address in your internet browser:

http://denr.sd.gov/bwnrapps/BWNRappssssf0116.pdf

If you would like a hard copy of the application, please contact Dave Ruhnke at (605) 773-4216.

WRAP Review Sheet
Sanitary/Storm Sewer Facilities Funding Application
Applicant: City of Pierre

Project Title:	WWTF Improvements - 2016
Funding Requested:	$2,767,000
Other Proposed Funding:	$0 - Local Cash
Total Project Cost:	$2,767,000
Project Description:	Upgrading the Autothermal Thermophilic Aerobic Digestion (ATAD) System with new mechanical equipment and concrete repair. Upgrading the aeration basin compressed air piping system by modifying the supply air piping and upgrading the blowers. The wastewater facility control system will be upgraded to accommodate these changes as well as other miscellaneous updates to enhance plant operations.
Alternatives Evaluated:	ATAD Rehabilitation Alternatives: 1. No Action Alternative – The current system equipment is difficult to maintain and replace because of the many foreign made parts. 2. Replace with Same Equipment Alternative – This alternative replaces the ATAD system equipment with the same equipment currently in place. This was rejected due to the difficulties with the foreign made parts. 3. Replace with New Generation Equipment Alternative – This alternative replaces the ATAD system with the upgraded American made equipment. This is the chosen alternative. Aeration Basin Air Piping Replacement Alternatives: 1. No Action Alternative – The current piping that provides air to the aeration basins is underground and has developed numerous leaks. The system is operational but not efficient. 2. Replace Piping in place with Underground Piping Alternative – This alternative was rejected due to the difficulties in monitoring and repairing leaks. Replace Piping with Above Ground Piping Alternative – This alternative was chosen because it resolves the maintenance issues. Control System Improvements Alternatives: 1. No Action Alternative – Parts of the current control system are not operational requiring manual review

and control of the system. This is inefficient and causes systems to be out of range for periods of time jeopardizing the treatment.

2. Control System Upgrade Alternative – This alternative was chosen so the system can be efficiently operated.

Implementation Schedule:	City of Pierre anticipates bidding the project in August 2016 with a project completion date of July 2017.
Service Population:	13,984
Current Domestic Rate:	$40.84 per 5,000 gallons usage
Proposed Domestic Rate at Project Completion:	$43.44 per 5,000 gallons usage

Interest Rate: 3% Term: 20 years Security: Wastewater Surcharge

DEBT SERVICE CAPACITY

Coverage at Maximum Loan Amount:	If all funding is provided as loan, Pierre would have to establish a surcharge of approximately $2.60. When added to current rate of $40.84/5,000 gallons residents would be paying $43.44/5,000 gallons.

25% Funding Subsidy:	$691,750 subsidy with a loan of $2,075,250.
Coverage at 25% Subsidy:	Based on a 25% subsidy and a loan of $2,075,250, Pierre would have to establish a surcharge of approximately @2.00 thereby paying a rate $42.84/5,000 gallons.

50% Funding Subsidy:	1,383,000 subsidy with a loan of $1,383,000.
Coverage at 50% Subsidy:	Based on a 50% subsidy and a loan of $1,383,000, Pierre would have to establish a surcharge of approximately $1.32 thereby paying a rate $42.16/5,000 gallons.

75% Funding Subsidy:	$2,075,250 subsidy with a loan of $691,750.
Coverage at 75% Subsidy:	Based on a 75% subsidy and a loan of $691,750, Pierre would have to establish a surcharge of approximately $.68 thereby paying a rate $41.52/5,000 gallons.

ENGINEERING REVIEW COMPLETED BY: ERIC MEINTSMA

FINANCIAL REVIEW COMPLETED BY: DAVID RUHNKE

SD Department of Environment & Natural Resources
Sanitary/Storm Sewer Facilities Funding
523 E Capitol
Pierre, SD 57501

September 30, 2015

To Whom it May Concern:

Enclosed please find the City of Pierre Application for Sanitary Sewer Facility Funding. Please notes the following related to the application:

- The application requires the City to provide the most recent audited financial statements, which would be 2013. These are rather large and can be found on the City's website at http://www.cityofpierre.org/140/Finance-Office.
- The application is signed by Brad Palmer, Utility Director. The City will consider a resolution on October 13th to designate the signatory and approve the project. A copy of the resolution and application signature pages will be submitted on October 14th.
- The required Facilities Plan & Cultural Assessment will be submitted by Banner Associates, Inc.

If you have any questions, please contact me at twila.hight@ci.pierre.sd.us or 773-3063.

Sincerely,

Twila Hight
Finance Officer

Finance Office
(605) 773-7407

222 E Dakota • PO Box 1253
Pierre, SD 57501-1253
www.pierre.sd.gov
Fax (605)773-7406

Public Works
(605) 773-7341

Sanitary/Storm Sewer Facilities Funding Application

Clean Water State Revolving Fund Program (CWSRF)
Consolidated Water Facilities Construction Program (CWFCP)

Applicant:	Proposed Funding Package	
City of Pierre, South Dakota		
Address:	Requested Funding	$2,767,000
222 East Dakota PO Box 1253 Pierre, SD 57501	Local Cash	
	Other:	
Subapplicant:	Other:	
DUNS Number: 070745583	Other:	
	TOTAL	$2,767,000

Project Title: Pierre WWTF Improvements - 2016

Description:

The improvements planned for this project include upgrade of the City's Autothermal Thermophilic Aerobic Digestion (ATAD) system, improvments to the aeration basin compressed air piping system, and upgrades to the wastewater treatment facility control system. The ATAD equipment upgrades will include primarily new mechanical equipment concrete repair. The compressed air system upgrades will include modifications to the supply air piping and upgrades to the blowers and controls for the process. Additional miscellaneous control system upgrades are also included.

The Applicant Certifies That:

I declare and affirm under the penalties of perjury that this application has been examined by me and, to the best of my knowledge and belief, is in all things true and correct.

Leon Schochenmaier, City Administrator — 10/20/2015

Name & Title of Authorized Signatory (Typed) — Signature — Date

Professional Consultants

Application Prepared By: Bradley Palmer

Contact Person: Bradley Palmer

Mailing Address: 222 E. Dakota Ave

City, State, and Zip: Pierre, SD 57501

Telephone Number: 605-773-3067 Fax: 605-773-7406

Email address: Brad.Palmer@ci.pierre.sd.us

Consulting Engineering Firm: Banner Associates, Inc.

Contact Person: Jim Housiaux, PE

Mailing Address: 409 22nd Avenue S. P.O. Box 298

City, State, and Zip: Brookings, South Dakota 57006

Telephone Number: 605-692-6342 Fax: 605-692-5714

Email address: jimh@bannerassociates.com

Legal Counsel's Firm: Riter, Rogers, Wattier & Northrup, LLP

Contact Person: Lindsey Riter-Rapp

Mailing Address: 319 S. Couteau

City, State, and Zip: Pierre, SD 57501

Telephone Number: 605-224-5825 Fax:

Email address: lindsey@riterlaw.com

Bond Counsel's Firm: Meierhenry Sargent LLP

Contact Person: Todd Meierhenry

Mailing Address: 315 S. Phillips Ave

City, State, and Zip: Sioux Falls, SD 57104

Telephone Number: 605-336-3075 Fax: 605-336-2593

Email address: todd@meierhenrylaw.com

Budget Sheet

Cost Classification	A CWSRF/ CWFCP	B	C	D	E	Total Funds
1. Administrative Expenses						
A. Personal Services						
B. Travel						
C. Legal & Bond Counsel	$48,000					$48,000
D. Other						
2. Land, Structure, Right-of-Way						
3. Engineering						
A. Bidding and Design Fees	$160,000					$160,000
B. Project Inspection Fees	$145,000					$145,000
C. Other						
4. Construction & Improvements	$689,000					$689,000
5. Equipment	$1,323,000					$1,323,000
6. Contractual Services						
7. Other						
8. Other						
9. Subtotal (Lines 1-8)	$2,365,000					$2,365,000
10. Contingencies	$402,000					$402,000
11. Total (Lines 9 and 10)	$2,767,000					$2,767,000
12. Total %	100.00%	0.00%	0.00%	0.00%	0.00%	100.00%

Proposed Method of Financing

	Secured Funds	Unsecured Funds	Date Unsecured Funds Anticipated
Local Cash(Identify Source)			
Other (Explain) Clean Water SRF		$2,767,000	
Other (Explain)			
Other (Explain)			
Total		$2,767,000	$2,767,000

Other Funds to be Borrowed

	Amount	Rate	Term	Annual Debt Service	Security or Collateral Pledged
Other					
Other					
Other					

Please attach copies of commitment letters that contain specific terms and conditions for each source of financing.

General Information

The month and day your fiscal year begins: January 1

Population Served Current: 13,984 2010 13,681 2000 13,883

Top three employers within 30 miles	Number of Employees	Type of Business
SD State Government	2140	State Government
Avera St. Mary's	485	Healthcare
Pierre School District	350	Education

Repayment Information

Interest rate you are applying for: 3% Term: 20

What security is being pledged toward the repayment of this loan?
(Political Subdivisions Only)

- ☐ 1. General Obligation Bond (Requires Bond Election)
- ☐ 2. Revenue Bond
- ☒ 3. Project Surcharge Revenue Bond
- ☐ 4. Sales Tax Revenue Bond

Documents That Must Be Submitted With The Application

Financial Documents

1. Most recent audited or unaudited financial statements to include specific accounting for the wastewater fund.
2. Current year's budget for the wastewater fund.
3. Amortization schedules for all existing debt secured by proposed revenue pledged.

Planning and Legal Documents

1. Current governing user charge ordinance or resolution and its effective date.
2. Resolution of authorized signatory for submission of the Sanitary/Storm Sewer Facilities Funding application and signing of payment requests. This resolution must also include the maximum amount requested and description of proposed project.
3. Documentation that the applicant has an active registration on the Federal System for Award Management (SAM) database.

   (https://www.sam.gov)
4. Facilities Plan.
5. Cultural Resources Effects Assessment Summary.

Items 6-8 apply to Non-profit Entities only

6. By-laws.
7. Articles of Incorporation.
8. Certificate of Good Standing from Secretary of State.

Wastewater Fund Debt Information

Year	2010					
Purpose	Plant improvements					
Security Pledged	General Wastewater Revenues					
Amount	$5,470,000					
Maturity Date (mmm/yyyy)	01/2021					
Debt Holder	Northland Securities, Inc					
Debt Coverage Requirement	110%					
Avg. Annual Required Payment	$608,000					
Outstanding Balance	$3,860,000					

Comments:

Average annual payments calculated as follows:
$5,470,000 / 9 principal payments = $607,778

Wastewater Fund Cash Flow Information

Negative cash should be in (Decrease) format	Prior Year	Prior Year	Current Year	Future Year	Future Year	Future Year
Fiscal Year	2013	2014	2015	2016	2017	2018
Operating Revenue						
Base Fees	$2,271,838	$2,269,424	$2,699,869	$2,807,864	$2,920,178	$3,036,985
Surcharge Fees	$369,024	$362,705				
Other (Explain)	$60,015	$41,657	$1,500		$1,500	$1,500
Operating Expenses						
Personal Services	($465,846)	($452,710)	($377,260)	($514,462)	($535,041)	($556,442)
Chemical, Material & Supplies	($355,978)	($432,610)	($366,000)	($391,500)	($403,245)	($415,342)
Electric & Other Utilities	($276,000)	($272,034)	($258,400)	($280,250)	($285,855)	($291,572)
Other (Explain)	($1,166,958)	($1,219,867)	($384,256)	($558,456)	($569,625)	($581,017)
Operating Net Cash	$436,095	$296,565	$1,315,453	$1,063,196	$1,127,912	$1,194,112
Nonoperating Cash Flow						
Interest Revenue	$2,247	$1,239	$500		$100	$100
Transfers In (Explain)						
Fixed Asset Purchases	($499,701)	($43,481)	($6,080,600)	($1,174,000)	($402,712)	($468,551)
Transfers Out (Explain)		($15,967)	($91,506)	($9,721)	0	0
Principal Debt Payments	($600,000)	($610,000)	($625,000)	($635,000)	($650,000)	($665,000)
Interest Debt Payments	($119,525)	($107,325)	($101,075)	($88,475)	($75,300)	($60,661)
Other (Explain)	$333,104	$649,976	$5,654,600	$844,000	0	0
Nonoperating Net Cash	($883,875)	($125,558)	($1,243,081)	($1,063,196)	($1,127,912)	($1,194,112)
Increase (Decrease) Cash	($447,780)	$171,007	$72,372	0	0	0
Beginning Cash Balance	$1,104,208	$656,428	$827,435	$899,807	$899,807	$899,807
Ending Cash Balance	$656,428	$827,435	$899,807	$899,807	$899,807	$899,807
Restricted Balance	$554,457	$554,457	$554,457	$554,457	$554,457	$554,457
Unrestricted Balance	$101,971	$272,978	$345,350	$345,350	$345,350	$345,350

Additional Comments (Explanations)

2013 Other Nonoperating Cash Flow includes accrual adjustments of $63,636, grants of $265,000 and rents of $4,468. 2014 Other Nonoperating Cash Flow includes accrual adjustments of $641,974 and grants of $8,002. 2015 Other Nonoperating Cash Flow includes bond proceeds of $5,654,600. 2016 Other Nonoperating Cash Flow includes bond proceeds of $844,000. Other Operating expenses include Depreciation and Admin expenses. Transfers Out are transfers to the General Fund.

Restricted Funds Breakdown:

Amount	Anticipated Expense	Method Used to Encumber
$554,457	0	Debt Service Reserve Fund

Wastewater Fees:

** Attach current and proposed rate ordinances or resolutions and rate schedules.

Municipal or Sanitary District - monthly rates at 5,000 gallons (670 cubic feet)

Other Community System - monthly rates at 7,000 gallons (935 cubic feet)

Check one: [X] Incorporated Municipality or Sanitary District

or

[ ] Other Community System

Monthly	Current Rate	Proposed Rate	# of Accounts	Average use Gallons/Cubic Feet
Domestic	$39.25	$40.84	4,110	530 Cubic Feet
Business	$39.25	$40.84	790	580 Cubic Feet
Other:				
Other: Apartments	$37.99	$39.34	1,600	

Are fees based on usage or flat rate? Usage

When is proposed fee scheduled to take effect? January 1, 2016

When did the current fee take effect? January 1, 2015

What was the fee prior to the current rate? $11.80 Customer Charge, $3.17 Consumption

Storm Sewer Projects Only: Does applicant have a separate storm water fee? yes

If yes, attach the current and proposed rate ordinances or resolutions and rate schedules.

Two Largest Customers	Type of Business	% of System Revenue
Dept. of Corrections	Corrections	1.69%
Ramkota	Hotel & Convention Center	1.11%

Property Tax Information

(Complete section only if General Obligation bond is pledged to repay your loan.)

Three year valuation trend:

Year	_____	_____	_____
Assessed Valuation	_____	_____	_____

Three year levies and collection trend:

Year	_____	_____	_____
Amount Levied	_____	_____	_____
Collected	_____	_____	_____

Five Largest Taxpayers	Description	Assessed Valuation
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Comments:

General Fund Debt Information

Year						
Purpose						
Security Pledged						
Amount						
Maturity Date (mmm/yyyy)						
Debt Holder						
Debt Coverage Requirement						
Avg. Annual Required Payment						
Outstanding Balance						

Comments:

Sales Tax Information

(Complete section only if sales tax is pledged to repay your loan.)

Sales tax revenue history for the most current fifteen months:

Month/Year	Amount Collected

Comments:

Sales Tax Debt Information

Year						
Purpose						
Security Pledged						
Amount						
Maturity Date (mmm/yyyy)						
Debt Holder						
Debt Coverage Requirement						
Avg. Annual Required Payment						
Outstanding Balance						

Comments:

Facilities Plan Checklist

Before submitting the application, please take a few moments to complete the following checklist. Addressing these items prior to submitting the application will expedite the review process.

Clean Water Facilities Plan document can be found at http://denr.sd.gov/dfta/wwf/cwsrf/sanstsewerfunding.aspx

Checklist of SRF Facilities Plan Requirements

Have the following items been addressed?

- Submission of a Facilities Plan to the department that addresses those items found in the Wastewater Facilities Plan document. ☐
- A public hearing held discussing the project and the use of an SRF loan to finance the project. ☐
- Minutes of the public hearing prepared and submitted to the department's engineer for inclusion into the final Facilities Plan. ☐
- The affidavit of publication of the public hearing received and submitted to the department's engineer for inclusion into the final Facilities Plan. ☐
- The four review agencies contacted and responses received for inclusion into the final Facilities Plan. ☐
- The Cultural Resources Effects Assessment Summary and supporting documentation, such as an archaeological survey or Historic Register database search. ☐

Certification of Point Source Needs Categories

Identify the loan amount associated with the needs categories described below. If the loan addresses needs in more than one category, please break down the total amount into estimated amounts for each category.

Category	Definition	Loan Amount
I	Secondary Treatment and Best Practicable Wastewater Treatment Technology. Costs for facilities to achieve secondary levels of treatment, regardless of the actual treatment levels required at the facility site. Incremental costs for treatment levels above secondary are to be reported in Category II. For purposes of the Survey, "best practicable wastewater treatment technology" and secondary treatment are considered synonymous. Identified alternative conveyance systems (e.g., small diameter gravity, pressure and vacuum sewers) are to be included in Category I.	$2,767,000
II	Advanced Treatment. Incremental costs above secondary treatment for facilities which require advanced levels of treatment. This requirement generally exists where water quality standards require removal of such pollutants as phosphorus, ammonia, nitrates, or organic and other substances. In addition, this requirement exists where removal requirements for conventional pollutants exceed 85 percent.	
III A	Infiltration/Inflow Correction. Costs for correction of sewer system infiltration/inflow (I/I) problems. Costs should also be reported for the preparation of preliminary I/I analysis or for a detailed sewer system evaluation survey.	
III B	Major Sewer System Rehabilitation. Replacement and/or major rehabilitation of existing sewer systems. Costs are reported if the corrective actions are necessary to the total integrity of the system. Major rehabilitation is considered to be extensive repair of existing sewer beyond the scope of normal maintenance programs (i.e., where sewers are collapsing or structurally unsound).	

Category	Definition	Loan Amount
IV A	New Collectors and Appurtenances. Costs of construction of new collector sewer systems and appurtenances designed to correct violations caused by raw discharges or seepage to waters from septic tanks, or to comply with Federal, State, or local actions.	
IV B	New Interceptors and Appurtenances. Costs for new interceptor sewers and pumping stations necessary for the bulk transmission of clean water.	
V	Correction of Combined Sewer Overflows. Costs for facilities, including conveyance, storage, and treatment, necessary to prevent and/or control periodic bypassing of untreated wastes from combined sewers to achieve water quality objectives and which are eligible for Federal funding. It does not include treatment and/or control of storm waters in separate storm and drainage systems.	
VI	New Construction or Rehabilitation of Storm Sewer Systems and Appurtenances. Costs of new construction or rehabilitation associated with the bulk transmission or detention of storm sewer flows. This category includes only runoff projects in communities with Phase I or Phase II storm water permits.	
	TOTAL:	$2,767,000

Leon Schochenmaier, City Administrator

Name & Title of Authorized Representative

Signature of Authorized Representative

10/20/2015

Date

Certification of Nonpoint Source Needs Categories

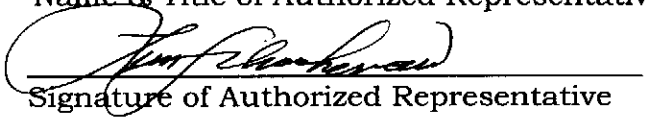
Identify the loan amount associated with the needs categories described below. If the loan addresses needs in more than one category, please break down the total amount into estimated amounts for each category.

Category	Definition	Loan Amount
VII A	NPS pollution - agricultural activities. Plowing, pesticide spraying, irrigation, fertilizing, planting, and harvesting. Example BMPs include conservation tillage, nutrient management, and irrigation water management.	_____
VII B	NPS pollution - animal production. Confined animal facilities and grazing. Example BMPs include animal waste storage, animal waste nutrient management, composting, and planned grazing.	_____
VII C	NPS pollution - forestry. Removal of streamside vegetation, road construction and use, timber harvesting, and mechanical preparation for the planting of trees. Example BMPs include pre-harvest planting, streamside buffers, road management, and revegetation of disturbed areas.	_____
VII D	NPS pollution - new or existing development in urban or rural setting. Erosion, sedimentation, and discharge of pollutants (e.g. inadequately treated wastewater, oil grease, road salts, and toxic chemicals) into water resources from construction sites, roads, bridges, parking lots, and buildings. Example BMPs include wet ponds, construction site erosion and sedimentation controls, sand filters, and detention basin retrofit. This category includes only runoff projects in communities without Phase I or Phase II storm water permits.	_____
VII E	NPS pollution - ground water protection. Wellhead and recharge protection areas. Activities attributed to specific causes are included in a later, more specific category.	_____
VII F	NPS pollution - boating and marinas. Poorly flushed waterways, boat maintenance activities, discharge of sewage from boats, and physical alteration of shoreline, wetlands, and aquatic habitat during operation or construction of a marina. Example BMPs include pump out systems and oil containment booms.	_____

Category	Definition	Loan Amount
VII G	NPS pollution - mining and quarrying activities. Example BMPs detention berms and seeding or revegetation.	
VII H	NPS pollution - abandoned, idle, and under used industrial sites. All pollution control activities at these sites regardless of activity. Example BMPs include ground water monitoring wells, in situ treatment of contaminated soils and ground water, capping to prevent storm water infiltration, and storage tank activities at brownfields.	
VII I	NPS pollution - tanks designed to hold chemicals, gasoline, or petroleum products. Tanks may be located either above or below ground. Example BMPs include spill containment, in situ treatment of contaminated soils and ground water, and upgrade, rehabilitation, or removal of petroleum/chemical storage tanks.	
VII J	NPS pollution - sanitary landfills. Example BMPs include leachate collection or on-site treatment, gas collections and control, and capping and closure.	
VII K	NPS pollution - channel modification, dams, streambank and shoreline erosion, and wetland or riparian area protection or restoration. Example BMPs include conservation easements, swales or filter strips, shore erosion control, wetland development and restoration, and bank and channel stabilization.	
VII L	NPS pollution - rehabilitation or replacement of individual or community sewerage disposal system. Construction of collector sewers to transport wastes to a cluster septic tank or other decentralized facilities. Collection sewers and expansion of existing or construction of new centralized treatment facilities that replace individual or community sewerage disposal system are included on Point Source Category table.	
	TOTAL:	

Leon Schochenmaier, City Administrator

Name & Title of Authorized Representative



Signature of Authorized Representative

10/20/2015

Date

Certification Regarding Debarment, Suspension, and Other Responsibility Matters

The prospective participant certifies to the best of its knowledge and belief that it and its principals:

(a) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any federal department or agency;

(b) Have not within a three year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State, or local) transaction or contract under a public transaction; violation of federal or state antitrust statutes or commission of embezzlement, theft, forger, bribery, falsification or destruction of records, making false statements, or receiving stolen property;

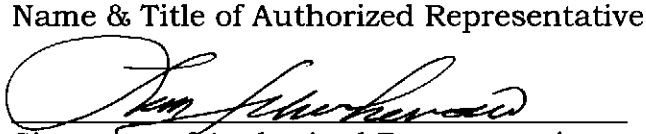
(c) Are not presently indicted for or otherwise criminally or civilly charged by a government entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph (b) of this certification; and

(d) Have not within a three year period preceding this application/proposal had one or more public transactions (Federal, State or local) terminated for cause or default.

I understand that a false statement on this certification may be grounds for rejection of this proposal or termination of the award. In addition, under 18 U.S.C. § 1001, a false statement may result in a fine of up to $10,000 or imprisonment for up to 5 years, or both.

Leon Schochenmaier, City Administrator

Name & Title of Authorized Representative



Signature of Authorized Representative

10/20/2015

Date

☐ I am unable to certify to the above statements. Attached is my explanation

RESOLUTION #2559

Authorizing Sanitary/Storm Sewer Facilities Funding
Signatory for Pierre Wastewater Plant Improvements

WHEREAS, the City of Pierre is proposing improvements to the Wastewater Treatment Plant located at 1100 S. Buchanan, Pierre, SD; and,

WHEREAS, the City of Pierre is eligible to and will be applying for the Sanitary/Storm Sewer Facilities Funding Loan from the Department of Environment and Natural Resources; and

WHEREAS, the City of Pierre needs to authorize a signatory to sign all forms required by the Sanitary/Storm Sewer Facilities Funding; and,

THEREFORE, BE IT RESOLVED THAT, the City of Pierre Commission duly authorizes the submission of the Sanitary/Storm Sewer Facilities Funding Application for the Wastewater Plant Improvements as described in the application; and,

THEREFORE, BE IT FURTHER RESOLVED THAT, the City Administrator will be authorized signatory for the City of Pierre for all grant related documents, including agreement forms, pay requests, and any other required forms.

Dated this 20th day of October, 2015.

Laurie R. Gill, Mayor

ATTEST:

Twila Hight, Finance Officer

Account	Account Name	2015 Budget	2016 Budget
64 - WASTEWATER FUND			
Revenue			
4.4325.53100	FEDERAL GRANTS	0.00	0.00
4.4325.53400	STATE GRANTS	0.00	0.00
4.4325.56050	INSURANCE PROCEEDS	0.00	0.00
4.4325.56100	INTEREST EARNED	(500.00)	0.00
4.4325.56110	FINANCE CHARGES	0.00	0.00
4.4325.58510	SEWER CHARGES	(2,339,869.00)	(2,807,863.76)
4.4325.58520	SEWER DEBT SERVICE SURCHARGE	(360,000.00)	0.00
4.4325.58530	SEWER CONNECTIONS	0.00	0.00
4.4325.58540	SEPTIC LIQUID WASTE	0.00	0.00
4.4325.58560	REIMBURSEMENTS	0.00	0.00
4.4325.58570	RENTALS	(1,500.00)	0.00
4.4325.58590	OTHER	0.00	0.00
4.4325.58890	CONTRIBUTIONS REVENUE	0.00	0.00
4.4325.59990	SURPLUS PROPERTY	0.00	0.00
4.4400.56050	INSURANCE PROCEEDS	0.00	0.00
4.4400.56060	TRANSFER FROM CAPITAL IMPROV	0.00	0.00
4.4400.56070	TRANSFER FROM SPECIAL TAX FUND	0.00	0.00
4.4400.56100	INTEREST EARNED	0.00	0.00
4.4400.56810	BOND PROCEEDS	(5,654,600.00)	(844,000.00)
		(8,356,469.00)	**(3,651,863.76)**
4325 - WASTEWATER			
Expenditure			
5.4325.61010	SALARIES	298,064.06	386,517.88
5.4325.61020	OASI	22,801.90	29,568.62
5.4325.61030	RETIREMENT	17,883.84	23,191.07
5.4325.61050	LIFE INSURANCE	321.30	449.82
5.4325.61060	HEALTH INSURANCE	36,426.14	72,192.12
5.4325.61080	DELTA DENTAL	1,762.38	2,542.15
5.4325.61100	PAID LEAVE	0.00	0.00
5.4325.62050	ADMINISTRATION EXPENSE	148,506.00	148,506.00
5.4325.62200	CONTRACTOR SERVICES	0.00	0.00
5.4325.62210	SERVICES & FEES	65,000.00	225,000.00
5.4325.62260	ENVIRONMENTAL FEES	13,000.00	15,000.00
5.4325.62310	PUBLISHING & PRINTING	1,000.00	1,000.00
5.4325.62500	TRAVEL AND TRAINING	5,000.00	15,000.00
5.4325.62600	NATURAL GAS	10,000.00	10,000.00
5.4325.62610	TELEPHONE	5,000.00	5,000.00
5.4325.62620	ELECTRICITY	230,000.00	250,000.00
5.4325.62640	FUEL OIL	8,250.00	8,250.00
5.4325.62670	PROPANE	5,150.00	7,000.00
5.4325.63010	ROLLING STOCK REPAIR	15,000.00	15,000.00
5.4325.63020	STRUCTURE REPAIR	50,000.00	50,000.00
5.4325.63030	EQUIPMENT REPAIR	60,000.00	60,000.00
5.4325.63040	RADIO REPAIR	1,000.00	1,000.00
5.4325.63150	TESTING AGREEMENTS	16,000.00	16,000.00
5.4325.63170	LIFT STATION REPAIR	40,000.00	50,000.00
5.4325.63370	SPRINKLER REPAIR	1,000.00	2,500.00

Account	Account Name	2015 Budget	2016 Budget
5.4325.63410	TESTING SUPPLIES & REPAIR	6,000.00	10,000.00
5.4325.63530	CLORINATOR REPAIR	2,000.00	2,000.00
5.4325.64010	SUPPLIES	9,000.00	10,000.00
5.4325.64080	CLOTHING	1,000.00	5,000.00
5.4325.64100	TRAINING CLASSES	3,000.00	15,000.00
5.4325.64130	CHEMICALS	115,000.00	100,000.00
5.4325.64140	MINOR TOOLS	2,000.00	5,000.00
5.4325.64150	GAS, OIL, PROPANE	13,000.00	13,000.00
5.4325.64160	TIRES	5,000.00	5,000.00
5.4325.64170	SHOP EXPENSE	5,000.00	10,000.00
5.4325.64230	SEED & FERTILIZER	1,000.00	1,000.00
5.4325.64290	SAFETY GLASSES	0.00	0.00
5.4325.64320	SLUDGE HANDLING	15,000.00	15,000.00
5.4325.64380	GARBAGE BAGS	1,000.00	1,000.00
5.4325.64490	SAFETY EQUIPMENT	5,000.00	5,000.00
5.4325.65100	MEMBERSHIPS	750.00	750.00
5.4325.65350	DEPRECIATION EXPENSE	0.00	0.00
5.4325.65550	BAD DEBT EXPENSE	0.00	0.00
5.4325.65650	TRASH HAULING	1,000.00	2,000.00
5.4325.65880	RIGHT OF WAY USAGE	150,000.00	150,000.00
5.4325.66310	PRINCIPAL	625,000.00	635,000.00
5.4325.66320	INTEREST	101,075.00	88,475.00
5.4325.66330	AGENT FEES	0.00	1,200.00
5.4325.66500	MINOR EQUIPMENT	1,500.00	2,000.00
5.4325.66530	COMPUTER HARDWARE	2,500.00	10,000.00
5.4325.66540	DE-CHLORINATION EQPT.	5,000.00	5,000.00
5.4325.66570	RADIO	1,000.00	1,000.00
5.4325.66900	PRIMARY EFFLUENT SAMPLER	15,000.00	0.00
5.4325.66910	PUMP	0.00	20,000.00
5.4325.67030	PICKUP	30,000.00	0.00
5.4325.67400	MACHINERY & EQUIPMENT	0.00	11,000.00
5.4325.67720	PUMP CONTROLS	200,000.00	200,000.00
5.4325.68540	SEWER LINE IMPROVEMENTS	550,000.00	0.00
5.4325.68640	MANHOLE IMPROVEMENTS	0.00	50,000.00
5.4325.68740	LIFT STATION IMPROVEMENTS	0.00	0.00
5.4325.68900	SEWER PLANT IMPROVEMENTS	5,254,600.00	844,000.00
5.4325.69010	LANDSCAPING	1,000.00	1,000.00
5.4325.69470	LIFT STATION PUMPS	20,000.00	30,000.00
		8,192,590.62	**3,642,142.66**
4999 - OTHER USES			
Expenditure			
5.4999.69900	OPERATING TRANSFER OUT	0.00	0.00
5.4999.69910	TRANSFER TO GENERAL FUND	91,506.00	9,721.00
5.4999.69930	TRANSFER TO AIRPORT	0.00	0.00
5.4999.69970	TRANSFER TO WATER	0.00	0.00
5.4999.69980	TRANSFER TO LANDFILL	0.00	0.00
		91,506.00	**9,721.00**
		(72,372.38)	**(0.10)**

City of Pierre, South Dakota

Tax Exempt Waste Water Revenue Refunding Bonds, Series 2010B

Debt Service Schedule

Date	Principal	Coupon	Interest	Total P+I	Fiscal Total
09/16/2010	-	-	-	-	-
01/01/2011	-	-	42,341.67	42,341.67	-
07/01/2011	-	-	63,512.50	63,512.50	105,854.17
01/01/2012	-	-	63,512.50	63,512.50	-
07/01/2012	-	-	63,512.50	63,512.50	127,025.00
01/01/2013	375,000.00	2.000%	63,512.50	438,512.50	-
07/01/2013	-	-	59,762.50	59,762.50	498,275.00
01/01/2014	610,000.00	2.000%	59,762.50	669,762.50	-
07/01/2014	-	-	53,662.50	53,662.50	723,425.00
01/01/2015	625,000.00	2.000%	53,662.50	678,662.50	-
07/01/2015	-	-	47,412.50	47,412.50	726,075.00
01/01/2016	635,000.00	2.000%	47,412.50	682,412.50	-
07/01/2016	-	-	41,062.50	41,062.50	723,475.00
01/01/2017	650,000.00	2.100%	41,062.50	691,062.50	-
07/01/2017	-	-	34,237.50	34,237.50	725,300.00
01/01/2018	665,000.00	2.350%	34,237.50	699,237.50	-
07/01/2018	-	-	26,423.75	26,423.75	725,661.25
01/01/2019	680,000.00	2.600%	26,423.75	706,423.75	-
07/01/2019	-	-	17,583.75	17,583.75	724,007.50
01/01/2020	335,000.00	2.750%	17,583.75	352,583.75	-
07/01/2020	-	-	12,977.50	12,977.50	365,561.25
01/01/2021	895,000.00	2.900%	12,977.50	907,977.50	-
07/01/2021	-	-	-	-	907,977.50
Total	**$5,470,000.00**	**-**	**$882,636.67**	**$6,352,636.67**	**-**

Dated	9/01/2010
Delivery Date	9/16/2010
First Coupon Date	1/01/2011
First available call date	1/01/2018
Call Price	100.0000000%
Accrued Interest from 09/01/2010 to 09/16/2010	5,292.71
Bond Year Dollars	$36,038.33
Average Life	6.588 Years
Average Coupon	2.4491606%
Net Interest Cost (NIC)	2.5039717%
True Interest Cost (TIC)	2.5012548%
Bond Yield for Arbitrage Purposes	2.3349520%
Net Interest Cost	2.3304250%
Weighted Average Maturity	6.569 Years

ORDINANCE NO. 1741

AN ORDINANCE AMENDING SECTIONS 4-2-301 OF ORDINANCE NO. 1265 IN REVISION OF ORDINANCES OF THE CITY OF PIERRE, SOUTH DAKOTA, AS AMENDED, RELATING TO SEWER SERVICE CHARGES AND RATES.

BE IT ORDAINED BY THE CITY OF PIERRE, SOUTH DAKOTA:

Section 1. That Section 4-2-301 as amended to read as follows:

Section 4-2-301. Sewer service - charges and rates.

A. Residential Rate: The owner or occupant of each single family dwelling or mobile home connected to the municipal waterworks and wastewater utility, for the use and availability of such wastewater service, shall pay the Customer Charge of thirteen dollars and twenty five cents ($13.25) per month. The occupant of each apartment connected to the municipal waterworks and wastewater utility, for the use and availability of such wastewater service, shall pay the Customer Charge of twelve dollars ($12.00) per month. Users will additionally be charged three dollars and eighty eight cents ($3.88) for each 100 cu. ft. based on the average water usage for the months of December through March. Average consumption on single-meter water/sewer systems will be measured and charged through the system's master meter. If no average is established the user shall pay the Customer Charge plus 500 cubic feet water consumption until such time as an average is established.

Commercial Rate: The owner or occupant of each commercial premise connected to the municipal waterworks and wastewater utility, for the use and availability for such wastewater service, shall pay the Customer Charge of thirteen dollars and twenty five cents ($13.25) per month. Users will additionally be charged three dollars and eighty eight cents ($3.88) per 100 cubic feet of water consumption.

This Ordinance and the rates herein shall be effective on all billings beginning January 1, 2015.

The following charges will expire December 31, 2015.

Residential and Commercial Customer Charge:	$0.39/month
Residential and Commercial Usage:	$0.11/100 cu. ft.

First Reading:	November 18, 2014
Second Reading and Adoption:	December 2, 2014
Publication:	December 10, 2014

Laurie R. Gill, Mayor

ATTEST:

Twila Hight, Finance Officer

CITY OF PIERRE UTILITY RATES

222 E. Dakota Ave., P.O. Box 1253, Pierre, South Dakota 57501

ELECTRICITY

EFFECTIVE FROM AND AFTER JANUARY 1, 2015
(Ordinance No. 1724)

RESIDENTIAL RATES: Available to any residential customer for domestic purposes only in a single, private residence.

Rate For all electric service metered after January 1, 2015.

Fixed and minimum charge per month - **$11.00**

All kWh: June – August @ **$0.093**/kWh
September – May
0 to 1,000 kWh @ **$0.085**/kWh
Over 1,000 kWh @ **$0.075**/kWh

COMMERCIAL RATES:

Small Commercial Customer--Any consumer not residential and whose consumption through any one **meter has not exceeded 10,000 kwh per month** usage for six months or more during any previous 12- month period shall be classified as a small commercial customer.

Rate For all electric service metered after January 1, 2015.

Fixed and minimum charge per month - **$20.50**

All kWh: June – August @ **$0.095**/kWh
September – May @ **$0.088**/kWh

Large Commercial Customer--Any consumer not residential and whose consumption through any one meter **has exceeded 10,000 kwh per month** for six months or more during any previous 12-month period shall be classified as a large commercial customer.

Rate For all electric service metered after January 1, 2015.

Fixed and minimum charge per month - **$38.00**

Demand Charge:

June – August @ **$16.25** per kW of monthly billing demand

September – May @ **$13.25** per kW of monthly billing demand

Energy Charge – All kWh @ **$0.038**/kWh

Minimum Monthly Charge – the demand charge, but not less than 50 percent of the maximum demand established during the current or preceding one year

Rural Class Rate: Will be charged to all customers residing outside the city limits of the City of Pierre.

Rate For all electric service metered after January 1, 2015.

Fixed and minimum charge per month - **$23.50**

All kWh: June – August @ **$0.107**/kWh
September – May @ **$0.099**/kWh

City Street Lighting Rate: Will be charged to the city for street lighting.

Rate Energy Charge **$0.109**/kWh (effective January 1, 2015)

Utility rates apply to all readings after January 1, 2015

WATER

EFFECTIVE FROM AND AFTER JANUARY 1, 2015
(Ordinance No. 1712)

Residential/Commercial Rate

Customer Charge (single family dwelling) of $7.90 per month regardless of water used.

Customer Charge (apartment) of **$2.00** per month regardless of water used.

Commercial Charge of **$8.25** per month regardless of water used.

Water usage (all customer classes): **$2.27** per 100 cubic feet.

Non-Resident Rate--All water sold or furnished to customers, for use outside the city limits, shall be charged as follows:

Customer Charge of **$14.50** per month regardless of water used.

Water Usage: **$4.00** per 100 cubic feet.

SEWER

EFFECTIVE FROM AND AFTER JANUARY 1, 2015
(Ordinance No. 1713)

RESIDENTIAL—Customer Charge(single family dwelling) of **$13.25** per month regardless of water usage for the month plus **$3.88** per 100 cu. ft. of water consumption based on the average water consumption for the months of December through March. Customer Charge(apartment) of **$12.00** per month .

COMMERCIAL—Customer Charge of **$13.25** per month regardless of water usage for the month plus **$3.88** per 100 cu. ft. of water consumption.

RECYCLING FEE--A recycling fee of **$0.59** and a yard waste fee of **$0.66**(for a total of $1.25) per month will be assessed to each premises connected to residential electric service.

STORM DRAINAGE FEES

EFFECTIVE FROM AND AFTER JANUARY 1, 2015
(Ordinance No. 1684)

SINGLE FAMILY: > 6,000 sq. ft.:	**$3.00** per month
SINGLE FAMILY: < 6,000 sq. ft. / Apt:	**$2.00** per month
APARTMENTS/ CONDOMINIUMS:	**$1.00** per month

COMMERCIAL RATE: Unit Financial Charge: $0.30/1,000 sq. ft. of parcel size.

For further information, call (605) 773-7407.

ORDINANCE NO 1749

AN ORDINANCE AMENDING SECTIONS 4-2-301 OF ORDINANCE NO. 1265 IN REVISION OF ORDINANCES OF THE CITY OF PIERRE, SOUTH DAKOTA, AS AMENDED, RELATING TO SEWER SERVICE CHARGES AND RATES.

BE IT ORDAINED BY THE CITY OF PIERRE, SOUTH DAKOTA:

Section 1. That Section 4-2-301 as amended to read as follows:

Section 4-2-301. Sewer service - charges and rates.

A. Residential Rate: The owner or occupant of each single family dwelling or mobile home connected to the municipal waterworks and wastewater utility, for the use and availability of such wastewater service, shall pay the Customer Charge of thirteen dollars and fifty cents ($13.50) per month. The occupant of each apartment connected to the municipal waterworks and wastewater utility, for the use and availability of such wastewater service, shall pay the Customer Charge of twelve dollars ($12.00) per month. Users will additionally be charged four dollars and eight cents ($4.08) for each 100 cu. ft. based on the average water usage for the months of December through March. Average consumption on single-meter water/sewer systems will be measured and charged through the system's master meter. If no average is established the user shall pay the Customer Charge plus 500 cubic feet water consumption until such time as an average is established.

Commercial Rate: The owner or occupant of each commercial premise connected to the municipal waterworks and wastewater utility, for the use and availability for such wastewater service, shall pay the Customer Charge of thirteen dollars and fifty cents ($13.50) per month. Users will additionally be charged four dollars and eight cents ($4.08) per 100 cubic feet of water consumption.

This Ordinance and the rates herein shall be effective on all billings beginning January 1, 2016.

The following charges will expire December 31, 2016:

Residential and Commercial Customer Charge:	$0.39/month
Residential and Commercial Usage:	$0.11/100 cu. ft.

First Reading:	September 15, 2015
Second Reading and Adoption:	September 29, 2015
Publication:	October 2, 2015

Laurie R. Gill, Mayor

ATTEST:

Twila Hight, Finance Officer

ACCOUNT NO#	===== ACCOUNT NAME ======	ANNUAL BUDGET
64 -5.4325.61010	SALARIES	298,064.06
64 -5.4325.61020	OASI	22,801.90
64 -5.4325.61030	RETIREMENT	17,883.84
64 -5.4325.61050	LIFE INSURANCE	321.30
64 -5.4325.61060	HEALTH INSURANCE	36,426.14
64 -5.4325.61080	DELTA DENTAL	1,762.38
64 -5.4325.61100	PAID LEAVE	0.00
64 -5.4325.62050	ADMINISTRATION EXPENSE	148,506.00
64 -5.4325.62200	CONTRACTOR SERVICES	0.00
64 -5.4325.62210	SERVICES & FEES	65,000.00
64 -5.4325.62260	ENVIRONMENTAL FEES	13,000.00
64 -5.4325.62310	PUBLISHING & PRINTING	1,000.00
64 -5.4325.62500	TRAVEL AND TRAINING	5,000.00
64 -5.4325.62600	NATURAL GAS	10,000.00
64 -5.4325.62610	TELEPHONE	5,000.00
64 -5.4325.62620	ELECTRICITY	230,000.00
64 -5.4325.62640	FUEL OIL	8,250.00
64 -5.4325.62670	PROPANE	5,150.00
64 -5.4325.63010	ROLLING STOCK REPAIR	15,000.00
64 -5.4325.63020	STRUCTURE REPAIR	50,000.00
64 -5.4325.63030	EQUIPMENT REPAIR	60,000.00
64 -5.4325.63040	RADIO REPAIR	1,000.00
64 -5.4325.63150	TESTING AGREEMENTS	16,000.00
64 -5.4325.63170	LIFT STATION REPAIR	40,000.00
64 -5.4325.63370	SPRINKLER REPAIR	1,000.00
64 -5.4325.63410	TESTING SUPPLIES & REPAIR	6,000.00
64 -5.4325.63530	CLORINATOR REPAIR	2,000.00
64 -5.4325.64010	SUPPLIES	9,000.00
64 -5.4325.64080	CLOTHING	1,000.00
64 -5.4325.64100	TRAINING CLASSES	3,000.00
64 -5.4325.64130	CHEMICALS	115,000.00
64 -5.4325.64140	MINOR TOOLS	2,000.00
64 -5.4325.64150	GAS, OIL, PROPANE	13,000.00
64 -5.4325.64160	TIRES	5,000.00
64 -5.4325.64170	SHOP EXPENSE	5,000.00
64 -5.4325.64230	SEED & FERTILIZER	1,000.00
64 -5.4325.64290	SAFETY GLASSES	0.00
64 -5.4325.64320	SLUDGE HANDLING	15,000.00
64 -5.4325.64380	GARBAGE BAGS	1,000.00
64 -5.4325.64490	SAFETY EQUIPMENT	5,000.00
64 -5.4325.65100	MEMBERSHIPS	750.00
64 -5.4325.65350	DEPRECIATION EXPENSE	0.00
64 -5.4325.65550	BAD DEBT EXPENSE	0.00
64 -5.4325.65650	TRASH HAULING	1,000.00
64 -5.4325.65880	RIGHT OF WAY USAGE	150,000.00
64 -5.4325.66310	PRINCIPAL	625,000.00
64 -5.4325.66320	INTEREST	101,075.00
64 -5.4325.66330	AGENT FEES	0.00
64 -5.4325.66500	MINOR EQUIPMENT	1,500.00
	PAGE TOTAL:	2,113,490.62

USER NAME PASSWORD

LOG IN

Forgot Username? Forgot Password?

Create an Account

Entity Dashboard

Entity Overview

Entity Record

Core Data

Assertions

Reps & Certs

POCs

Reports

Service Contract Report

BioPreferred Report

Exclusions

Active Exclusions

Inactive Exclusions

Excluded Family Members

RETURN TO SEARCH

PIERRE, CITY OF
DUNS: 070745583 CAGE Code: 3NBQ9
Status: Active

222 E DAKOTA AVE
PIERRE, SD, 57501-3158 ,
UNITED STATES

Expiration Date: 09/16/2016
Purpose of Registration: Federal Assistance Awards Only

Entity Overview

Entity Information

Name: PIERRE, CITY OF
Business Type: US Local Government
POC Name: Twila Hight
Registration Status: Active
Activation Date: 09/17/2015
Expiration Date: 09/16/2016

Exclusions

Active Exclusion Records? No

FACILITY PLAN

Pierre Wastewater Treatment Plant
Specific Equipment Replacement Facility Plan
(ATAD's, Aeration Basin Piping, Controls)

Pierre, SD

November 2015

Submitted by

Banner Associates, Inc.
www.bannerassociates.com

BAI 21693.00.00

BANNER
Engineering | Architecture | Surveying

Table of Contents - DRAFT

Tables and Figures

SECTION 1: INTRODUCTION, AUTHORIZATION, PURPOSE, AND REPORT ORGANIZATION

1.1. INTRODUCTION, AUTHORIZATION, AND PURPOSE

After the completion of the 2014 Wastewater Treatment Plant System Analysis by Banner Associates, the City of Pierre requested a proposal and agreement for the preparation of a Wastewater Facilities Plan which would address the items identified to be in need of immediate replacement. This Wastewater Facilities Plan is in response to deteriorated pieces of equipment at the Pierre Wastewater Treatment Plant and includes the Autothermal Thermophilic Aerobic Digestion process, leaking compressed air line to the aeration basins and control system modifications. The facilities evaluation will examine alternatives to effectively and reliably replace the equipment to continue to treat the current and projected future flows and loads.

The Wastewater System Facilities Plan will serve as a guide for preparation of capital improvements plans for the wastewater treatment plant for the next several years. The scope of this report will address the following:

- Review of the current Pierre Surface Water Discharge (SWD) and Biosolids Management Permits;
- Preparation of an Environmental Information Document;
- Evaluation of the present conditions and future needs;
- Evaluation and alternative selection for the ATAD equipment, compressed air pipeline serving the aeration basins, and control system modifications; and
- Preparation of a plan for improvements including cost estimates, implementation schedule, and probable impacts on sewer rates.

1.2. ORGANIZATION OF THE REPORT

This report is organized into a total of six sections. The topics covered in each of the sections are summarized as follows:

Section 1	Introduction, Authorization, Purpose, and Report Organization
Section 2	Permit Conditions and Requirements
Section 3	Environmental Information Document
Section 4	Evaluation of Present Conditions and Future Needs
Section 5	Wastewater Treatment Alternatives
Section 6	Recommendations and Capital Improvements Plan

1.3. ABBREVIATIONS

ARSD	Administrative Rules of South Dakota
ATAD	autothermal thermophilic aerobic digestion
BOD_5	Biochemical Oxygen Demand (5-day)
fps	feet per second
gpcd	gallons per capita per day
gpm	gallons per minute
I/I	infiltration and inflow
MGD	million gallons per day
NWI	National Wetlands Inventory
SDDENR	South Dakota Department of Environment & Natural Resources
SWD	surface water discharge
TSS	Total Suspended Solids
VAR	vector attraction reduction
WET	whole effluent toxicity
WWTP	wastewater treatment plant

END OF SECTION 1

SECTION 2: PERMIT CONDITIONS AND REQUIREMENTS

The City of Pierre possesses two permits that are reviewed in this section. They include a Surface Water Discharge (SWD) Permit issued by the State of South Dakota and a Biosolids Management Permit that provides authorization to landfill dispose sludge generated at the Pierre wastewater treatment plant (WWTP).

2.1 SURFACE WATER DISCHARGE PERMIT

The City of Pierre currently possesses a Surface Water Discharge (SWD) Permit from the South Dakota Department of Environmental and Natural Resources (SDDENR) permit number SD0020176. The current discharge permit became effective July 01, 2007 and is in effect until a new one is generated by the SDDENR. This permit was scheduled to expire on December 31, 2011 but was administratively extended by the SDDENR. The current SWD permit authorizes the discharge of wastewater effluent from the Pierre WWTP to Lake Sharpe of the Missouri River (Outfall 001). The current SDDENR SWD permit and associated Statement of Basis for the City of Pierre are presented in Appendix A.

2.1.1 Effluent limits: The City's current permit allows discharges of treated WWTP effluent via pipeline to Lake Sharpe of the Missouri River. The permit requires that the City's WWTP operations personnel perform routine monitoring to verify compliance with various parameters regulated under the permit. The wastewater quality parameters regulated by the permit include biochemical oxygen demand (BOD_5), total suspended solids (TSS), oil and grease, fecal coliforms, total coliforms, total residual chlorine, pH, and acute whole effluent toxicity (WET). The specific permit limits in effect at this time are presented in Table 2-1: Effluent Limitations at the Pierre WWTP.

Table 2-1: Effluent Limitations at the Pierre WWTP

Effluent Characteristic	Effluent Limit		
	30-Day Average [1]	7-Day Average	Daily Maximum
BOD_5, mg/L	30	45	N/A
Total Suspended Solids, mg/L	30	45	N/A
E. coli, no./100 mL [2] (May - September 30)	126	N/A	235
Total Coliforms, no./100mL [3]	5,000	N/A	20,000
Oil and Grease, mg/L	N/A	N/A	1.0
Total Residual Chlorine, mg/L (Applicable only if effluent is chlorinated)	N/A	N/A	0.019
Peracetic Acid (PAA), mg/L	N/A	N/A	1.0
The pH of the discharge shall not be less than 6.6 nor greater than 8.3 in any sample.			
There shall be no Acute Whole Effluent Toxicity in the discharge, as measured by the WET test.			
Percentage Removal Requirements (TSS and BOD_5 Limit): In addition to the concentration limit on TSS and BOD_5 indicated above, the arithmetic mean of the TSS and BOD_5 concentration for effluent samples collected in a period of thirty (30) consecutive days shall not exceed fifteen (15) percent of the arithmetic mean of the concentration for influent samples collected at approximately the same times during the same period (85 percent removal).			

[1] See Definitions

[2] Escherichia coli organisms from May 1 to September 30 shall not exceed a concentration of 126 per 100 milliliters as a geometric mean based on a minimum of five samples obtained during separate 24-hour periods for any 30-day period. They shall not exceed 235 per 100 milliliters in any one sample from May 1 to September 30.

[3] Total Coliform organisms shall not be exceed a MPN of MF of 5,000 per 100 milliliters as a geometric mean based on a minimum of five samples obtained during separate 24-hour periods for any 30-day period. They shall not exceed 20,000 per 100 milliliters in any one sample.

2.1.2 Self-Monitoring Requirements: In addition to the parameters regulated in Table 2-1, the City of Pierre's SWD permit also requires the monitoring and reporting of rate of discharge, influent BOD_5, influent TSS, ammonia-nitrogen, dissolved oxygen, temperature, molybdenum, and the parameters listed in the Administrative Rules of South Dakota (ARSD), Section 74:52:02:42. All

wastewater characteristics that must be monitored and reported under the SWD permit are listed in Table 2-2, as well as their required testing frequency, reporting values, and sample type. These characteristics must be monitored for all discharges, unauthorized releases, and sanitary sewer overflows.

Table 2-2: SWD Permit Self-Monitoring Requirements at the Pierre WWTP

Effluent Characteristic	Frequency	Reporting Values [1]	Sample Type [1]
Rate of Discharge, MGD	Continuous	Daily Maximum; 30-day Average	Instantaneous
pH, Standard Units	Daily	Daily Minimum; Daily Maximum	Instantaneous [2]
Oil and Grease, mg/L [3]	Daily	Presence or absence of sheen; Daily Maximum	Visual/Grab
BOD_5, mg/L	Three Times/Week	Max. 7-day Average; 30-day Average	24-hour Composite
BOD_5, mg/L (Influent) [4]	Three Times/Week	30-day Average	24-hour Composite
Total Suspended Solids, mg/L	Three Times/Week	Max. 7-day Average; 30-day Average	24-hour Composite
Total Suspended Solids, mg/L (Influent) [4]	Three Times/Week	30-day Average	24-hour Composite
Fecal Coliform, no./100 mL (May 1 - September 30)	Three Times/Week [5]	Daily Maximum; 30-day Geometric Mean	Grab
Total Coliform, no./100 mL	Three Times/Week [5]	Daily Maximum; 30-day Geometric Mean	Grab
Ammonia-Nitrogen, mg/L (as N) [6]	Weekly	Daily Maximum; 30-day Average	Grab
Total Residual Chlorine, mg/L (Required only if effluent is chlorinated)	Daily	Daily Maximum [7]	Grab
Dissolved Oxygen, mg/L	Weekly	Daily Minimum	Grab
Water Temperature, °C	Weekly	Daily Maximum; 30-day Average	Instantaneous [8]
Percent Removal (TSS and BOD_5)	Monthly	30-day Average	Calculated
Acute Whole Effluent Toxicity	Quarterly [9]	Pass/Fail	Grab
Parameters listed in ARSD, Section 74:52:02:42 and Molybdenum	Annually	Actual Results	As Required [10]

[1] See Definitions

[2] pH is to be taken within 15 minutes of sample collection with a pH meter. The pH meter must be capable of simultaneous calibration to two points on the pH scale that bracket the expected pH and are approximately three standard units apart. The pH meter must read to 0.01 standard units and be equipped with temperature compensation adjustment.

[3] Oil and grease shall be visually monitored during discharge. In the event that an oil sheen or floating oil is observed during discharge, grab samples shall be taken immediately, analyzed and reported.

[4] The percent removal between the influent and effluent values for this parameter shall also be reported.

[5] For total coliforms, if a minimum of five samples are collected in a 30-day period, all of the samples collected are to be used in determining the geometric mean. Samples are to be collected at the same time as BOD_5, TSS, etc. Additional samples are to be collected during any other separate 24-hour periods. If less than five samples are taken during any 30-day period, the maximum limit still applies. *This sampling protocol for fecal coliforms, only applies if the discharge occurs between May 1 and September 30.*

[6] The pH and temperature of the effluent shall be determined when ammonia samples are collected.

[7] EPA considers the analytical detection limit for total residual chlorine to be 0.05 mg/L. If the effluent value is less than the analytical detection limit, "0" shall be used for reporting and averaging purposes.

[8] The water temperature of the effluent shall be taken as a field measurement at the time of sampling. Measurement shall be made with a mercury-filled, or dial type thermometer, or a thermistor. Readings shall be reported to the nearest whole degree Celsius.

[9] The permittee shall obtain and analyze a valid whole effluent toxicity sample at least once during each calendar quarter.

[10] See Section 2.1 for sampling requirements.

The SWD permit outlines the testing procedure required for the whole effluent toxicity (WET) test for acute toxicity. The City of Pierre is required to conduct this test at least once per calendar quarter, with samples collected on a two day

progression (i.e., if the first quarterly sample is collected on a Wednesday, during the next quarter sampling shall be on a Friday, etc.). The WET test for acute toxicity shall follow the procedure from the latest revision of "Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms," Fifth Edition, October 2002, EPA-821-R-02-012, and the "Region VIII EPA NPDES Acute Test Conditions – Static Renewal Whole Effluent Toxicity Test." If conflicts arise, the Region VIII document should be used. The City needs to conduct an acute 96-hour static toxicity test using *Pimephales promelas* (fathead minnows) and an acute 48-hour static toxicity test using *Ceriodaphnia dubia* (daphia). The WWTP effluent is considered to be toxic if 50 percent or more mortality is observed at any effluent concentration for either species. If more than 10 percent mortality occurs in the control group, the test needs to be repeated until satisfactory survival is achieved in the control group. See Section 1.5 of the City of Pierre's SWD permit for a detailed discussion on the procedures to be followed if toxicity occurs during a WET test.

2.2 BIOSOLIDS MANAGEMENT PERMIT

The City of Pierre currently possesses a Biosolids Management permit from the SDDENR, permit number SDL020176. The permit became effective April 01, 2013 and is in effect until March 31, 2018. The current Biosolids Management permit authorizes the landiflling of biosolids from the Pierre WWTP (Outfall 201). The current SDDENR Biosolids Management permit and associated Statement of Basis for the City of Pierre are presented in Appendix B.

2.2.1 Biosolids Limits: Biosolids produced at the City of Pierre's WWTP are digested in an autothermal thermophilic aerobic digestion (ATAD) system, dewatered with a belt filter press, and finally disposed of at the City's municipal landfill. All

biosolids produced and disposed of at an appropriate permitted landfill shall meet the following requirements:

2.2.1.1 Chemical: Biosolids are required to pass the paint filter and Toxicity Characterization Leaching Procedure (TCLP) tests as well as any other tests required by the landfill.

2.2.1.2 Vector Attraction Reduction (VAR): The potential for attracting vectors, such as mosquitoes, must be reduced by the City of Pierre. To do this, the biosolids that are disposed of at a landfill need to be covered by soil or other material at the end of each operating day.

2.2.2 Self-Monitoring Requirements: In addition to the chemical and VAR requirements listed in Section 2.2.1, the City of Pierre's Biosolids Management permit also requires the monitoring and reporting of total solids and the total amount of biosolids disposed of in landfills. All biosolids characteristics that must be monitored and reported under the Biosolids Management permit are listed in Table 2-3, as well as their required testing frequency, reporting values, and sample type.

Table 2-3: Biosolids Self-Monitoring Requirements at the Pierre WWTP

Parameter	Frequency	Reporting Values	Sample Type
Total Solids, percentage (%)	Prior to disposal at the landfill	Percent Solids	Grab or composite
Paint Filter Test [1]	Annually or prior to disposal at landfill	Pass or Fail	Grab
Toxicity Characterization Leaching Procedure (TCLP) [1]	Once every 5 years	Pass or Fail	Grab
Total amount of biosolids disposed of at landfill, dry metric	Annually	Actual Value	Calculate

tons			

[1] Biosolids disposed of at an appropriate permitted landfill must be tested for compliance with the Part 258 regulations. This includes a Paint Filter Test using the method specified in EPA SW-846 Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, Method 9095 and a Toxicity Characterization Leaching Procedure (TCLP) using Method 1311. The permittee shall also contact the landfill for additional testing requirements that the permitted landfill may have.

END OF SECTION 2

SECTION 3: ENVIRONMENTAL INFORMATION DOCUMENT

3.1 PROJECT AREA ENVIRONMENT

3.1.1 General Description of Project Area: The Pierre Wastewater Treatment Plant is located on the southeast side of the City of Pierre near Lake Sharpe of the Missouri River in the northwest quarter of Section 10, Township 110 North, Range 79 West, in Hughes County, South Dakota. The topography of the Pierre area ranges from rolling hills in the immediate vicinity of the river to relatively flat in areas at a distance of a mile or more from the river. The proposed treatment plant improvements associated with this Report will replace existing equipment that was found to be in poor condition during the 2014 Wastewater Treatment Plant System Analysis completed by Banner Associates, Inc. Expansion to increase the capacity of the treatment plant is not considered at this time since the current loadings are below the design capacity of the treatment plant as discussed in Subsection 4.2 of this report.

The existing WWTP includes screening, raw wastewater pumping, comminutors, grit removal, primary clarification, a trickling filter, activated sludge, final clarification, chlorine disinfection, sulfur dioxide dechlorination, aerobic digestion, and a belt filter press for dewatering of the biosolids before disposal. More details of the treatment processes can be found in Section 4 of this report. Effluent from the Pierre WWTP is continually discharged into the portion of the Missouri River known as Lake Sharpe. This discharge is authorized by the City's Surface Water Discharge (SWD) permit. The City of Pierre also possesses a Biosolids Management Permit which authorizes the disposal of treated biosolids. Both the SWD permit and the Biosolids Management permit are discussed in Section 2 of this report.

3.1.2 Historical, Cultural, and Archeological: The City of Pierre is located in the central region of South Dakota on the east bank of the Missouri River downstream of the Oahe Dam. Pierre is the Capitol of South Dakota and the county seat of Hughes County.

The City's transportation facilities include bus lines, the Rapid City, Pierre and Eastern (RCPE) Railroad, U.S. Highway No. 14 and No. 83, and S.D Highway No. 34. Airline service at the Pierre Regional Airport is provided by Great Lakes Airlines and multiple small commuter airlines.

The City of Pierre has established a strong economic base of agricultural trade, agricultural related industry, tourism, and retail business. Significant industrial, commercial and institutional establishments in the City of Pierre include the following:

- State Government
- Tourism, especially that related to hunting, fishing, and other outdoor recreation opportunities abundant in the area.
- Regional center for medical care services
- Regional center for shopping and commercial business
- Conventions

The development of the project will not adversely affect any sites listed in the register of National Historic Places. According to information available from the U.S. National Park Service, there are 28 registered historic places within the immediate vicinity of Pierre. The closest registered historic place to the existing WWTP is approximately 0.8 miles. Verification of historic sites may be requested from the South Dakota State Office of Cultural Preservation.

The land in the study area was originally rich in wild game and fur bearing animals. Prior to settlement, the area was frequented by nomadic Indians, fur trappers and traders. An archaeological review or inspection of the site will not be completed prior to initiation of construction since the proposed improvements will replace existing equipment only. No previously undisturbed soils will need to be disturbed during the construction phase of this project.

3.1.3 Floodplains, Wetlands, and Aquifers

3.1.3.1 Floodplains: The original wastewater treatment equipment that is proposed to be replaced was constructed above the 100 year flood elevation. The U.S. Army Corps of Engineers' "Flood Hazard Report - Missouri River" dated May, 1988 shows that the 100 year flood elevation for Lake Sharpe near La Framboise Island is approximately 1427.5. The "ice-affected" 100 year flood elevation is reported to be approximately 1428.5. These elevations are based on the datum used by the Corps of Engineers. The Pierre WWTP elevations are based on the City of Pierre elevation datum which is 2.56 ft. higher than the Corps of Engineer's datum. This means the 100 year "ice-affected" flood elevation at the wastewater treatment facility is 1431.06 on City of Pierre datum. Since this project involves replacing the internal primary clarifier and grit removal components, the elevations of the existing concrete tank structures will not be changed in any way. The water surface elevations within the treatment process are high enough to permit unobstructed discharge during high water conditions.

3.1.3.2 Wetlands: It is anticipated that construction of the proposed wastewater treatment plant improvements will not impact any area considered as

natural wetlands, as defined by the National Wetlands Inventory (NWI). All construction activity will take place within the extents of the existing facility.

3.1.3.3 Aquifers: The existing wastewater treatment plant is located over the Missouri River outwash aquifer. The aquifer is a shallow groundwater source for the City of Pierre as well as a number of irrigation systems in the area. The soil materials in the aquifer consist of fine-grained to coarse-grained glacial deposits of outwash. The aquifer thickness varies from less than 10 feet to more than 65 feet. The overburden soils consist of fine grained topsoil and lean clay materials. The aquifer is recharged primarily by movement of water from the Missouri River into the sand and gravel deposits.

3.1.4 Agricultural Lands: The proposed construction area will not affect agricultural lands. The land to be used for the proposed improvements is within the extents of the original wastewater treatment plant. The project will not have long term adverse impacts on agricultural land.

3.1.5 Wild and Scenic Rivers: The reach of the Missouri River near the existing treatment plant is controlled downstream by the Big Bend Dam at Fort Thompson and upstream by the Oahe Dam. The Missouri River at Pierre is a part of the mainstem reservoir system and is not a free flowing river. The area is heavily used as a recreational area for fishing, hunting, camping, boating, and other outdoor recreational activities. The construction of the improvements at the wastewater treatment plant is not expected to cause any permanent changes to the recreational use of the resources. The wastewater treatment

plant is screened from view from the river by trees standing between the treatment facility and the Missouri River.

3.1.6 Fish and Wildlife Resources: Fish and wildlife are abundant in the Pierre area and the tourism related to the fish and wildlife resources are a significant factor in the local economy. The impoundment of the Missouri River and the public lands in the area provide many opportunities for fishing, hunting, and other related activities.

3.1.6.1 Fish: Fish populations in the Missouri River impoundments are an important resource for the area and state. The species of fish found in the Missouri River impoundments and tributary creeks include walleye, lake trout, northern pike, perch, minnows, pan fish, sturgeon, paddlefish, catfish, bullheads, and assorted rough fish. The Missouri River is used for fishing throughout the year.

3.1.6.2 Wildlife

3.1.6.2.1 Aquatic and Semiaquatic Species: Hughes County and the study area lie within the central flyway of the north central United States which serves as a major migratory route for waterfowl. Commercial waterfowl hunting is widespread in the area and is an important source of income for numerous individuals in the Pierre area. The flyway is also known to be used by the whooping crane, an endangered species. The construction and operation of the WWTP improvements is not expected to have an impact on the migratory patterns of the waterfowl.

3.1.6.2.2 **Terrestrial Species:** Most species of wildlife which occur in eastern South Dakota are found in the proposed project area. Big game species are hunted with both gun and bow and include turkey, white-tailed deer, and mule deer. Furbearers in the area include fox, coyote, weasels, skunks, badgers, raccoons, squirrels, rabbits, and other wildlife during all seasons with moderate trapping taking place during the prime season.

Many bird species have been recorded by local bird clubs both during migration and also during nesting season. The pheasant population fluctuates but is generally above average compared to the rest of the state. They are heavily hunted each fall. Occasional coveys of partridge are also found.

3.1.6.3 **Endangered Species:** According to the U.S. Fish and Wildlife Service, endangered species known to occur within Hughes County include the whooping crane, bald, eagle, piping plover, least tern, and pallid sturgeon. The construction activities may limit the use of the trees by birds in the immediate vicinity of the construction site while construction activities are underway. No long term change to the area or impact on endangered species is expected as a result of the project.

3.1.7 **Air Quality:** The proposed project area and Hughes County in general have no major air quality problems. Local air quality problems occur due to odors from different sources such as wastewater treatment facilities, livestock feeding operations, manure pits, and numerous other sources. Dust storms also occur on occasion; particularly in dry years when inadequate soil cover has been

allowed to remain on the land surface. The proposed project is not expected to have any long term adverse impact on air quality on the area. The treatment plant improvements will not alter the present conditions regarding odors. There will be short-term impacts during construction due to fugitive dust and heavy equipment operation.

3.1.8 Water Quality and Quantity

3.1.8.1 Surface Water: The major surface water body near the existing WWTP and proposed improvements is the Lake Sharpe impoundment of the Missouri River. According to the 2014 South Dakota Integrated Report for Surface Water Quality Assessment, the beneficial use categories of Lake Sharpe of the Missouri River are as follows:

- (1) Domestic water supply
- (2) Coldwater permanent fish life propagation waters
- (7) Immersion recreation waters
- (8) Limited-contact recreation waters
- (9) Fish and wildlife propagation, recreation, and stock watering waters
- (10) Irrigation waters
- (11) Commerce and industry waters

The water quality requirements for the designated beneficial use categories are summarized in Table 3-1. The most restrictive beneficial use category is applied when determining water quality requirements for a discharge from a wastewater treatment facility.

Table 3-1: Beneficial Use Categories

Parameter	(1) Domestic Water Supply	(2) Coldwater Permanent Fish Life Propagation	(7) Immersion Contact Recreation	(8) Limited-Contact Recreation	(9) Fish & Wildlife Propagation, Stock Watering	(10) Irrigation	(11) Commerce and Industry
TDS, mg/L	1000				2,500		2,000
NO_3, mg/L as N	10.0				50		
pH, units	6.5 to 9.0	6.5 to 9.0			6.0 to 9.5		6.0 to 9.5
Coliform, total (per 100 mL)	5,000 (mean); 20,000 (single sample)						
Coliform, fecal (per 100 mL)			200 (mean); 400 (single sample)	1,000 (mean); 2,000 (single sample)			
Escherichia coli (per 100 mL)			126 (mean); 235 (single sample)	630 (mean); 1,178 (single sample)			
Barium, mg/L	1.0						
Chloride, mg/L	250	100					
Fluoride, mg/L	4.0						
Sulfate, mg/L	500						
Total Chlorine Res., mg/L		0.019 (acute) 0.011(chronic)			0.019 (acute) 0.011 (chronic)		
Nitrogen, Total Ammonia, mg/L as N		Equation-based standard					
Dissolved Oxygen, mg/L		≥6.0	≥5.0	≥5.0			
Undissoc. H_2S, mg/L		0.002					
TSS, mg/L		30					
Temp., °F		65					
Alkalinity, mg/L as $CaCO_3$					750		
Conductivity, mmhos/cm					4,000	2,500	
Sodium Adsorption Ratio						10	
Total Petrolium Hydrocarbons	≤ 1.0				≤ 10		
Oil and Grease					≤ 10		

3.1.9 Recreational Facilities: The Pierre wastewater treatment plant is located immediately adjacent to the softball complex used by the recreational leagues in the City of Pierre. Since this project will not consist of an expansion but rather an upgrade of select existing equipment, it is not anticipated that this project will interfere with the use of the softball complex.

3.2 PROJECT PURPOSE AND NEED

The proposed improvements will replace existing equipment at the Pierre WWTP that has reached the end of its useful life. The existing equipment proposed to be replaced is in bad condition and has the potential to fail which would cause multiple operational difficulties and potential problems with meeting the City of Pierre's SWD permit. The existing wastewater treatment plant is described in Section 4 of this report. The alternatives for upgrading the treatment plant are described in Section 5.

The proposed improvements will provide a treatment system with the reliability needed to handle the present and future flows and loads while meeting the requirements of the SWD permit as discussed in Subsection 2.1. The need for the project is demonstrated by the poor condition of the primary clarifier mechanisms and drives, grit removal equipment, and the leak that exists in the compressed air pipe between the blower building and the air lift pump station.

3.3 PROJECT IMPACT

3.3.1 Direct and Indirect Impacts on Environment: Previous portions of this section have addressed the impact of the proposed project on water quality, fish and wildlife, historical and archaeological sites and air quality. The remainder of this

section addresses other impacts of the proposed project and mitigation measures that may be necessary to limit adverse impacts.

3.3.1.1 Land Resources: Construction of the proposed improvements will require removal of existing primary clarifier and grit removal equipment, rehabilitation of the existing concrete tanks, and installation of new primary clarifier and grit removal equipment. Excavation and stock piling of excavated materials and site grading work may also be required, depending on whether or not the new air piping from the blower building to the air lift station is installed above or below ground. Potential adverse environmental impacts during construction include short term localized erosion and airborne dust from the construction site through wind action and heavy equipment use. Erosion and sediment control practices include both temporary measures such as temporary fencing, erosion control barriers, and seeding and grading of properly sloped drainage ways.

3.3.1.2 Air Resources: Air quality may be degraded by increased particulate levels during excavation and construction work associated with the proposed improvements. Temporary increases in construction equipment emissions are not expected to be significant to the general impacted area. Measures that can be taken during construction to control excessive airborne dust are listed below.

- Watering and/or the use of dust retardants before and during construction,
- Stabilizing temporary and permanent access roads to prevent erosion,

- Proper placement and compaction of stockpiled soil and excavated material to reduce particulates,
- Regrading, resurfacing, and/or reseeding dust-prone areas and disturbed terrain immediately, and
- Limiting construction activities during periods of high winds.

3.3.1.3 Wildlife Resources: The proposed project will result in construction activities within the extents of the existing WWTP. Wildlife will be deterred from occupying the area immediately adjacent to the site due to construction activities. No long term effects on wildlife are expected as a result of this project. It is doubtful that there will be a threat to any endangered species of animals or plants.

3.3.1.4 Cultural Resources: The construction and operation of the wastewater treatment plant improvements is not expected to have any significant adverse short or long-term impact on cultural resources of the area. All work covered in this project will take place within existing structures or within previously excavated trenches. In the event that archaeological or historic resources are unearthed during construction excavation, the immediate stoppage of work is dictated by a required condition in the contract specifications.

Construction should bring a slight economic boost to the area through the hiring of local labor, retail trade by construction employees, and purchase of miscellaneous building supplies and fuel.

3.3.2 Impact on the Environment with no Improvement Action Taken: If no action is taken to improve the existing wastewater treatment facility components

outlined in this report, there is a potential for the components to fail. The primary clarifier mechanisms and drives as well as the grit removal equipment should be replaced with new equipment to increase reliability. The leaking compressed air pipeline that supplies the air lift pump station should be replaced to save energy and maintenance costs with regard to the blowers. No action will result in continued and prolonged wasting of energy from the leaking compressed air pipe. No action will also increase the possibility of the grit removal and primary clarifier systems failing. If the grit removal system fails, it would result in damaged pumps and increased maintenance costs downstream of the grit chamber. If the primary clarifier mechanisms were to fail, the biological treatment systems could potentially be overloaded with solids and organics which could result in SWD permit violations. In summary, the WWTP should be upgraded to provide a long term safe means of handling wastewater.

END OF SECTION 3

SECTION 4: EVALUATION OF PRESENT CONDITIONS AND FUTURE NEEDS

4.1 PROJECT NEED AND PLANNING AREA IDENTIFICATION

Select improvements to the Pierre WWTP are necessary to ensure continued good performance of the treatment plant. In the 2014 Wastewater Treatment Plant System Analysis, multiple treatment components were identified to be in poor condition and were recommended for immediate replacement. The project improvement area is defined as the area within the city limits of the City of Pierre. This section will determine the present flows and loads and analyze the capacity and effectiveness of the existing WWTP treatment components to treat the present and future flows and loadings.

4.2 EXISTING FACILITIES DESCRIPTION

4.2.1 Existing Wastewater Treatment Plant: The Pierre Wastewater Treatment Plant is located on the southeast side of the City of Pierre near Lake Sharpe of the Missouri River. Wastewater is conveyed to the treatment plant through nine (9) lift stations located in and around the City of Pierre. The wastewater treatment plant provides both primary and secondary treatment of the influent wastewater.

The pretreatment facility consists of screening, pumping, comminution, grit removal, and flow measurement. Primary treatment is provided by two (2) primary clarifiers with provisions for a third future primary clarifier. The primary clarifier mechanisms will be replaced as part of an on-going project. Primary effluent is pumped to secondary or biological treatment processes.

The biological treatment processes available at the Pierre WWTF include (1) trickling filter unit followed by a complete mix activated sludge system. An air lift pump station is provided between the trickling filter and complete mix activated sludge basins in order to raise the hydraulic grade line to the necessary

level for the activated sludge and final clarification units. At this time the trickling filter has been bypassed. This bypass was completed primarily to assist with deficiencies in the activated sludge process. The trickling filter remains available to put back into service if needed. Air is provided to the aeration basins from a blower building housing a series of blowers forcing compressed air through a piping system to an air distribution system in each aeration basin tank. Secondary clarification is achieved with two (2) final clarifiers with provisions for a third future final clarifier. Return activated sludge (RAS) is recycled to the air lift pump station and waste activated sludge (WAS) is thickened using a dissolved air flotation (DAF) unit.

The Pierre WWTF maintains the ability to provide wastewater effluent is disinfected subsequent to secondary clarification using chlorine injection. If chlorine is utilized for disinfection, sulfur dioxide is used to neutralize any residual chlorine. At this time, the facility is using paracetic acid (PAA) for disinfection in accordance with a pilot study approved by the South Dakota Department of Environment and Natural Resources. The facility does have a disinfection contact tank available that has been used with both chlorine and PAA disinfection. At this time, the contact tank is being bypassed to minimize issues with iron oxidation and precipitation in the contact tank due to PAA disinfection. Finally, disinfected effluent from the plant flows by gravity to Lake Sharpe of the Missouri River. Figure 4.1 shows the location of the existing WWTP.

Figure 4-1: Wastewater Treatment Plant Location

4.2.2 Existing Wastewater Flows and Loads: The City of Pierre keeps and maintains flow and loading records for the WWTP. Flow at the Pierre WWTP is measured at two different locations with parshall flumes. The influent parshall flume has a 9-inch throat width and is located immediately downstream of the grit removal process. The effluent parshall flume has a throat width of 18 inches and is located downstream of the final clarifiers. Both flumes use ultrasonic level detectors to monitor height of water in the flumes and calculate corresponding flow rate. The operations personnel track daily flow volumes and the peak flow records. For a complete list of the wastewater parameters that must be tracked and reported under the City's SWD permit, see Section 2.1 of this report.

Daily flow records and routine solids and organic loading data for the year 2014 through September 2015 were used to determine the existing loads to the facility. This data was used to calculate the existing loads to the facility are provided in Appendix C. Data from range was chosen for these calculations because of the adverse impacts the 2011 flood had on the data from 2011 through 2013. Although the flood had receded in 2011, the cleaning of sewers throughout the city in 2012 and 2013 resulted in unusually high solids and organics content in the raw wastewater. Using the data from 2011 through 2014 would give an unrealistic representation of the quality of the wastewater and result in WWTP components being designed for conditions that are unlikely to occur again in the future. Based on the data presented in Appendix C, the results of the analysis of the influent records are presented in Table 4-1.

Table 4-1: Present Conditions of Influent Flows and Loadings

Condition	Flow, MGD	BOD_5, mg/L	BOD_5, lb/d	TSS, mg/L	TSS, lb/d
Average Day	1.53	292	3,330	351	3,992
Peak Month	1.89	453	5,128	761	7,942
Peak Day	2.51	1104	10,772	1,565	15,945

According to the US Census Bureau, the estimated population for the time frame represented by the records shown in Table 4-1 is 13,984. This population yields an average daily flow rate of 108 gallons per capita per day (gpcd). If the average daily flow rate is greater than 125 gpcd, the cost of correction of inflow/infiltration (I/I) must be considered when developing treatment alternatives. Since the current average daily flow rate is less than 125 gpcd, inflow and infiltration mitigation is not discussed in this report.

the discharge-transfer-feed cycle is carried out every day. Once the sludge is digested, it is pumped to the Post-ATAD storage tanks to cool. Once the sludge has cooled, it is dewatered using a belt filter press. Off-gas from the ATAD system is routed through a water/chemical scrubber system. Figures 4.2 through 4.4 show a variety pictures in and around the ATAD process.

Figure 4.1: Aerial View of ATAD Complex

Figure 4.3: ATAD Complex and interior equipment and piping

Figure 4.4: ATAD Spiral Aerator Arrangement

As designed and constructed, the previous description of the ATAD process was all initially available. Through the years, the existing process has experienced difficulties keeping all of the equipment for all three ATADs and the pre ATAD fully operable. The experience of the City of Pierre is similar to other first generation ATAD systems constructed at this time in the area (primarily in Minnesota). The City of Pierre, through ownership of this process, has noted higher than expected failure of mechanical equipment with the ATADs. This process was foreign made and virtually all of the mechanical equipment is also foreign made. The City has regularly experienced difficulties with both the cost and the extensive delays in obtaining replacement parts. As a result, operable equipment from one ATAD has been utilized (moved) to another ATAD to keep a fully functioning system available for treatment of the biosolids. The City of Pierre has been able maintain compliance with biosolids treatment and solids handling in general throughout the time this process has been in place.

4.3.2 Aeration Basin Air Piping: underground air pipeline between the blower building and the aeration basins supplies compressed air from the aeration basin blowers to the air distribution system in each aeration basin. The aeration basins are a complete mix activated sludge system and serves as Pierre's secondary wastewater treatment process. The complete mix activated sludge system for the City of Pierre consists of two (2) aeration basins and two (2) final clarification units. The aeration and final clarification unit processes work hand in hand in the activated sludge process. In the aeration basin, active microorganisms feed on the organic matter present in the wastewater. The microorganisms need oxygen to survive, and this is supplied through the aeration system. Once the wastewater has been in the aeration basins for a certain detention time (hydraulic retention time, or HRT), the wastewater is routed to the final clarifiers

where the microorganisms that were feeding on the organic matter present in the wastewater will settle. The supernatant from the clarifiers is the treated wastewater and will proceed to downstream processes. The settled mixture of microorganisms and organics will be either returned to the activated sludge unit (return activated sludge, or RAS) or wasted to the dissolved air flotation sludge thickener (waste activated sludge, or WAS). The return activated sludge contains microorganisms that will be returned to the aeration basin, thus the returned microorganisms will be allowed a longer detention time (solids retention time, or SRT) in the aeration basin. The difference between the hydraulic retention time and the solids retention time is that the HRT is the amount of time the wastewater liquid is in contact with the microorganisms and the SRT is the amount of time that the microorganisms are in the aeration basin. The aeration system consists of three multistage centrifugal blowers located in the Blower Building. The air is distributed to the two aeration basins by two 12 inch diameter header pipes located below the ground surface. The City of Pierre has verified that this piping, similar to the piping for the air lift station, is leaking. The location of the Aeration Basins, Blower Building, and pipe route are resented in Figure 4.5. A picture of the interior of the blower building showing the air header pipe and drops through floor are presented in Figure 4.6.

Figure 4.5: Aeration Basins/Blower Building/Air Feed Pipes

Figure 4.6: Blower Building Header Pipe

4.3.3 Control System Improvements: The original control system for the blowers providing air to the aeration system included providing a dissolved oxygen (DO)

meter located in each basin. The DO meter would provide information on the DO concentration on a continuous basis and transmit a signal for control of air flow and for display at the Blower Building RTU, located in the Blower Building. The aeration basins had an override provision that prevents the aeration rate from being reduced to a point where either mixing is inadequate or the centrifugal blowers are in danger of entering a surge condition. Much of the existing control equipment is no longer operable. DO probes have been recently replaced, however, they currently provide information only and are not utilized to control air flow. Blowers are essentially run manually. As a result it is difficult for operators to match air flow to loading conditions. It is common to observe high DO concentrations in the morning after night time flows have been low and then high DO concentrations in the late afternoon as the aeration basins have taken on the higher daily loadings.

4.4 SUMMARY

The components listed in this section for replacement have been identified through monitoring of the wastewater treatment facility. The City of Pierre, through a previous planning document, has already initiated the replacement of the primary clarifier mechanisms and drives, grit removal and grit washing equipment, underground compressed air pipeline between the blower building and air lift pump station. Design of these improvements in nearing completion and is expected to bid early next year. Along with the components that are currently recommended for replacement, the previous report also identified multiple components that should be considered for replacement or repair in the near future. These components include the screening equipment and dewatering screw, the concrete issues with the post ATAD tanks, and the settlement issues of the Lab/Screening/Pump building. These items will continue to be closely monitored for any abrupt detrimental change in condition and should be

included within a subsequent planning document. The City of Pierre is planning to initiate an overall facility planning document to address the long term wastewater treatment issues for the facility.

END OF SECTION 4

SECTION 5: WASTEWATER TREATMENT ALTERNATIVES

5.1 GENERAL REQUIREMENTS AND CONDITIONS

The purpose of this section of the report is to review alternatives to provide reliable treatment to meet existing and future planned hydraulic and organic loading conditions. Section 4 of this report includes a discussion of the existing wastewater treatment plant and loading conditions as well as an estimate of the future anticipated loading conditions.

5.1.1 Site Conditions: The proposed site for the improvements lies within the extents of the existing wastewater treatment plant. The existing WWTP is located on the southeast side of Pierre in the northwest quarter of Section 10, Township 110 North, Range 79 West, in Hughes County, South Dakota. As mentioned in Section 4 of this report, three (3) items were identified for immediate replacement in the 2014 Wastewater Treatment Plant System Analysis: primary clarifier mechanisms and drives, grit removal and grit classifier equipment, and the compressed air pipeline between the blower building and air lift pump station. Those items have been addressed in a previous planning document and are under design. The City of Pierre continues to address many of the initial issues brought up in the previous reports. They have made improvements for settlement issues around the laboratory, they have purchased new instrumentation for the aeration basins, and they have continued to look for other issues around the facility. The items included in this facility plan address those additional items. Continued frustration with finding a reliable and cost effective means to keep the ATAD system fully functional is the main driving force for this document. The air piping item and the control system item are included as they should be completed and are expected to remain in the long term use of the facility

5.2 DESCRIPTION OF ALTERNATIVES

The alternatives considered for the equipment replacement are as follows.

ATAD Rehabilitation Alternatives:

- Replacement with Same Process
- Replacement with Alternative Process
- "No Action" Alternative

Aeration Basin Air Piping Alternatives:

- Compressed Air Pipeline Replacement Alternative 1: Below Ground Pipe
- Compressed Air Pipeline Replacement Alternative 2: Above Ground Pipe
- "No Action" Alternative

Control System Improvements:

- Schedule of Improvements
- "No Action" Alternative

5.3 EVALUATION OF ALTERNATIVES

5.3.1 ATAD Rehabilitation Alternatives

5.3.1.1 ATAD Rehabilitation Alternative 1: Similar Equipment

The existing ATAD process is essentially part of the first generation ATAD's. As discussed in Section 4 of this report, the process provides digestion of the solids generated at the Pierre WWTF in an Autothermal Thermophilic Aerobic Digestion system. The experience of the City of Pierre is similar to other first generation ATAD systems constructed at this time in the area (primarily in Minnesota). The City of Pierre, through ownership of this process, has noted higher than expected failure of mechanical equipment with the ATADs. This process was foreign made and virtually all of the

mechanical equipment is also foreign made. The City has regularly experienced difficulties with both the cost and the extensive delays in obtaining replacement parts. As a result, operable equipment from one ATAD has been utilized (moved) to another ATAD to keep a fully functioning system available for treatment of the biosolids. The City of Pierre has been able maintain compliance with biosolids treatment and solids handling in general throughout the time this process has been in place.

The City of Pierre does like the ATAD concept for treatment of the biosolids. The first generation system has much of the moving parts, high speed spiral aerators and foam cutters, etc. located inside the tanks. As a result, the city has experienced on-going difficulties with keeping the equipment operational. Frequent failure of the equipment combined with difficulty in obtaining replacement parts has resulted in the city requesting that this process no longer be considered.

5.3.1.2 ATAD Rehabilitation Alternative 2: Alternate ATAD Process

An alternate to the existing ATAD process is another ATAD process manufactured by Thermal Process Systems. This process, the ThermAer bosolids reduction system is the second generation in ATAD technology. As such, the overall concept of the ATAD process stays the same in terms of the needs of the system with respect to air, mixing, foam cutting, etc. The ThermAer process will utilize an end suction centrifugal pump located in the pump room of the existing support building to draw liquid from the digester and return it back to digester through a jet mix arrangement. A positive displacement blower is used to supply air, through the jet mix assembly in the tank, to the process. Foam cutting is provided by

separating a portion of the flow from the mixing pump to spray system at the top of the tank to control the foam. The primary treatment for the ThermAer process can be completed in one existing ATAD tank. This is true for the existing ATAD as well (Pierre has been able to meet the biosolids treatment needs utilizing one ATAD).

Figure 5.1: Typical Mixing Pumps

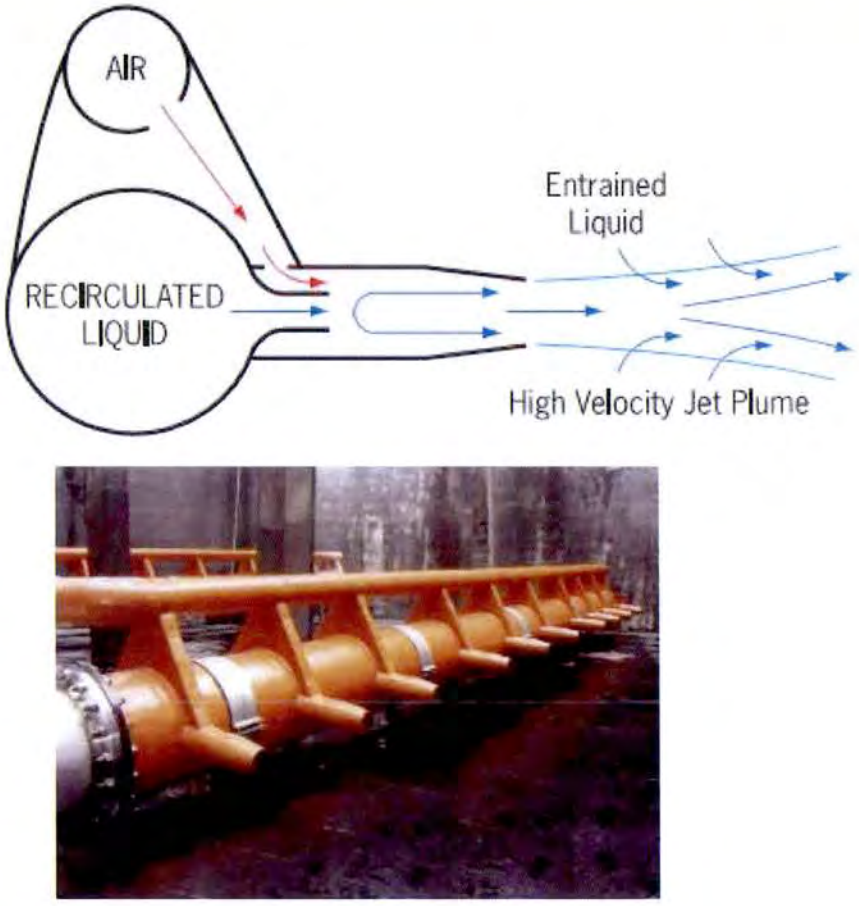


Figure 5.2: Air/Jet Mix Nozzle System

Figure 5.3: Typical PD Blower Arrangement

This second generation equipment will work inside the existing ATAD tanks. An existing ATAD tank will be fitted with a concrete dividing wall and can be operated as a two cell ATAD process. The ability for this type of retrofit to work in the existing tanks means that construction of new tankage for the alternate ATAD process will not be required.

A second tank will be utilized for the Storage Nitrification Denitrification Reactor (SNDR). The SNDR is used to provide optimum temperature, pH, alkalinity and aeration conditions for nitrification and denitrification of digested biosolids. The SNDR will improve the dewaterability and cake quality of the treated ATAD sludge. Supernatant from the digester returned to the head of the plant will be lower in nitrogen as well. Literature on the SNDR process indicates: Reduction in soluble COD, ammonium , and VFAs in the SNDER significantly reduces the chemical demand for dewatering operations; nitrification and denitrification in the SNDR greatly reduce the ammonium concentration in the recycle streams; CO2 released during the digestion generates carbonate and bi-carbonatae alkalinity which is then available for nitrification; the contral strategy is based on ORP, temperature and pH; and automation includes automatic waste, feed, aeration, nitrification and denitrification allowing operation with minimal operator assistance.

The basis of the cost estimate provide below also includes a biofilter type odor control system. The odor control system includes the fans, air distribution plenum, inorganic and organic media, cover and instrumentation for the system.

5.3.1.3 "No Action" Alternative

If no action were taken on the ATAD system, it is likely that the performance of the biosolids digestion process will be compromised at some point in the future. A well-functioning sludge digestion system is an important part of the overall treatment process because it prepares the biosolids for ultimate disposal as required by the City's permit.

5.3.1.4 Probable Costs

The replacement of the existing ATAD process with the ThermAer process with new components including the new equipment discussed above, structure additions, concrete repair and other ancillary work is estimated to be $1,770,000. No additional costs were estimated for the replacement of the existing ATAD process.

5.3.2 Aeration Basin Air Piping Alternatives

5.3.2.1 Aeration Basin Air Piping Alternative 1: Underground Piping

This alternative would involve excavation to remove and replace the existing compressed air pipe that serves the air lift pump station from the blower building. The new pipe would be constructed of 10-inch mechanical joint ductile iron pipe with heat resistant gaskets. Advantages of this option include a lower price and the below ground pipe will not obstruct travel in the area.

5.3.2.2 Aeration Basin Air Piping Alternative 2: Above Ground Replacement

This alternative would involve abandoning the existing underground portion of the compressed air pipe that serves the aeration basins from the blower building and installing a new pipeline above ground. This new pipeline would be constructed of 12-inch unlined ductile pipe and fittings and installed at an elevation to match the existing air headers running along the walkway between the two aeration basins. Horizontal alignment of pipe will be directly above the existing underground alignment. Advantages of this alternative over the below ground alternative would be that leaks in the piping would be easier to detect and that any leak found would be easier to repair.

5.3.2.3 "No Action" Alternative

If no action were taken on the compressed air pipe between the blower building and aeration basins, air would continue to leak from the pipe and energy would continue to be wasted in the form of electricity used to power the air lift blowers. It will also make it difficult to know how much air is actually getting to the aeration process. If the existing compressed air pipe were to completely collapse, air could no longer be supplied to the aeration basins which would disrupt the treatment of wastewater and can result in under treated wastewater and possible permit violations.

5.3.2.4 Probable Costs

The replacement of the underground air piping with similar underground construction has an opinion of probable cost of $75,000. The replacement of the same airline with an above ground air piping system has a similar opinion of probable cost near $75,000.

5.3.3 Control System Alternatives:

5.3.3.1 Provide Schedule of Improvements

This alternative will include a number of improvements for upgrading the controls operating equipment for the activated sludge process. The work includes the addition of variable frequency drives (VFD) for the aeration system blowers, integration of new DO probes to control the aeration process, and new operator interface modules at various locations throughout the WWTF. The new improvements will allow the operating staff regain and improve control of the aeration system as well as the air lift system at the facility. Air can be supplied on an "as needed" by the system to match the loading conditions at the aeration basins. There will be an additional benefit of lower energy consumption by raising and lowering the energy needed for blower operation to match the demand.

5.3.3.2 "No Action" Alternative

If no action were taken on the controls the facility operators will not be able to operate the facility at optimum performance. The aeration basins will continue to run at high DO levels during lower loads (potentially wasting energy) and may not be providing sufficient air under higher loading conditions. Under more severe conditions, providing insufficient air can lead to process upset and/or permit violations. The control system improvements will serve to optimize the performance of the facility.

5.3.3.3 Probable Costs

The replacement of the underground air piping with similar underground construction has an opinion of probable cost of $150,000. The

replacement of the same airline with an above ground air piping system has an opinion of probable cost near $150,000.

5.4 SUMMARY AND RECOMMENDATIONS

Based on on-going monitoring of the wastewater treatment facility, operations staff has noted new items that are deficient and in need of improvement. These items include the ATAD process, controls related to the operation of the aeration basins and other operator interface controls, and the compressed air pipe between the blower building and aeration basins. This section described two (2) possible alternatives other than "No Action" for each of the items, except controls, in need of replacement which would ensure the reliable operation of the ATAD biosolids digestion process, aeration basin control, and the compressed air feed pipe to the air lift pump station.

Banner Associates recommends Alternative 2 for the ATAD process modifications. The original ATAD process can be greatly improved by moving to the second generation ATAD system. All major equipment is moved out of the active digestion tank and should significantly decrease the issues with equipment failures due exposure in the treatment vessel. The second generation ATAD process is able to be retrofitted into the existing tanks available for the existing process. The improvements with this process will have additional impacts due expected improvements of treated sludge quality sent to the belt filter press for final dewatering before disposal. It will also have the ability to improve the water quality of the water that is routed back through the head of the plant for treatment.

Banner Associates recommends Alternative 2 for the compressed air piping replacement. The above ground compressed air pipe is recommended because of the advantages listed for having an exposed pipe to verify if future leaking takes place and it will be easier to repair future issues as they occur. The cost will be similar to the below

grade repair. Unlike the pipe replacement recommended for compressed air line to the air lift pump station, this area does not experience the need for truck traffic over (or under) the air pipe. A properly installed above ground pipeline will have a long service life and will be easier to maintain of problems occur in the future. The known leak in the present underground compressed air pipe is resulting in higher than necessary operation and maintenance costs for the air lift blowers.

Banner Associates recommends Alternative 1 for control system upgrade. The work includes the addition of variable frequency drives (VFD) for the aeration system blowers, integration of new DO probes to control the aeration process, and new operator interface modules at various locations throughout the WWTF. The new improvements will allow the operating staff regain and improve control of the aeration system as well as the air lift system at the facility. Air can be supplied on an "as needed" by the system to match the loading conditions at the aeration basins. There will be an additional benefit of lower energy consumption by raising and lowering the energy needed for blower operation to match the demand.

In addition to the three (3) components discussed in this report, it is further recommended that the City of Pierre consider preparation of an overall master facility plan to consider all aspects of the wastewater treatment facility. This planning document will also be useful in identifying phases for improvements. This will allow the facility to consider both short term and long term improvements that may be necessary through the next twenty years.

END OF SECTION 5

SECTION 6: RECOMMENDATIONS AND CAPITAL IMPROVEMENT PLAN

6.1 GENERAL

Alternatives were presented and investigated in Section 5 of this report. Selection of the recommended alternatives was based on the current condition of the equipment in question and costs associated with replacing the equipment.

6.2 DESCRIPTION OF SELECTED IMPROVEMENTS

6.2.1 ATAD Process Improvements: Of the alternatives for the ATAD system rehabilitation, Banner Associates recommends Alternative 2: ThermAer ATAD process. The ThermAer bosolids reduction system is the second generation in ATAD technology. As such, the overall concept of the ATAD process stays the same in terms of the needs of the system with respect to air, mixing, foam cutting, etc. The ThermAer process will utilize an end suction centrifugal pump located in the pump room of the existing support building to draw liquid from the digester and return it back to digester through a jet mix arrangement. A positive displacement blower is used to supply air, through the jet mix assembly in the tank, to the process. Foam cutting is provided by separating a portion of the flow from the mixing pump to spray system at the top of the tank to control the foam. The primary treatment for the ThermAer process can be completed in one existing ATAD tank. This is true for the existing ATAD as well (Pierre has been able to meet the biosolids treatment needs utilizing one ATAD).

This second generation equipment will work inside the existing ATAD tanks. An existing ATAD tank will be fitted with a concrete dividing wall and can be operated as a two cell ATAD process. The ability for this type of retrofit to work in the existing tanks means that construction of new tankage for the alternate ATAD process will not be required.

A second tank will be utilized for the Storage Nitrification Denitrification Reactor (SNDR). The SNDR is used to provide optimum temperature, pH, alkalinity and aeration conditions for nitrification and denitrification of digested biosolids. The SNDR will improve the dewaterability and cake quality of the treated ATAD sludge. Supernatant from the digester returned to the head of the plant will be lower in nitrogen as well. Literature on the SNDR process indicates: Reduction in soluble COD, ammonium , and VFAs in the SNDER significantly reduces the chemical demand for dewatering operations; nitrification and denitrification in the SNDR greatly reduce the ammonium concentration in the recycle streams; CO2 released during the digestion generates carbonate and bi-carbonatae alkalinity which is then available for nitrification; the contral strategy is based on ORP, temperature and pH; and automation includes automatic waste, feed, aeration, nitrification and denitrification allowing operation with minimal operator assistance.

The original ATAD process can be greatly improved by moving to the second generation ATAD system. All major equipment is moved out of the active digestion tank and should significantly decrease the issues with equipment failures due exposure in the treatment vessel. The second generation ATAD process is able to be retrofitted into the existing tanks available for the existing process. The improvements with this process will have additional impacts due expected improvements of treated sludge quality sent to the belt filter press for final dewatering before disposal. It will also have the ability to improve the water quality of the water that is routed back through the head of the plant.

6.2.2 **Air Piping Replacement:** From the alternatives to rehabilitate the primary clarifiers, Banner Associates recommends Alternative 2: above ground air pipe replacement. The above ground compressed air pipe is recommended because

of the advantages listed for having an exposed pipe to verify if future leaking takes place and it will be easier to repair future issues as they occur. The cost will be similar to the below grade repair. Unlike the pipe replacement recommended for compressed air line to the air lift pump station, this area does not experience the need for truck traffic over (or under) the air pipe. A properly installed above ground pipeline will have a long service life and will be easier to maintain of problems occur in the future. The known leak in the present underground compressed air pipe is resulting in higher than necessary operation and maintenance costs for the air lift blowers.

6.2.3 **Control System Improvements:** Banner Associates recommends providing the control system improvements identified in Section 5. The work includes the addition of variable frequency drives (VFD) for the aeration system blowers, integration of new DO probes to control the aeration process, and new operator interface modules at various locations throughout the WWTF. The new improvements will allow the operating staff regain and improve control of the aeration system as well as the air lift system at the facility. Air can be supplied on an "as needed" by the system to match the loading conditions at the aeration basins. There will be an additional benefit of lower energy consumption by raising and lowering the energy needed for blower operation to match the demand.

6.3 SUMMARY AND ESTIMATE OF PROBALBE COSTS

Costs associated with the recommended improvements summarized above are included in Table 6-1.

Table 6-1: Opinion of Total Project Cost

DESCRIPTION OF WORK AND MATERIALS		COST
ATAD Improvments	$	1,770,000
Air Pipeline Replacement (Blower Building to Air Lift Station)	$	75,000
Air Pipeline Replacement (Blower Building to Aeration Basins)	$	150,000
Sub-Total:	$	1,995,000
Contingencies (20% Construction Costs, 2015)	$	399,000
Opinion of Probable Construction Costs (2015 Construction)	$	2,394,000
Engineering, Surveying, and Construction Services	$	325,000
Administration and Legal	$	48,000
Opinion of Total Project Costs (2015)	**$**	**2,767,000**

*Note: Opinion of Total Project Costs projected to 2015 construction year (assuming 4% Inflation/year)

6.4 MONETARY IMPACT EVALUATION

6.4.1 Operation and Maintenance Costs: The recommended alternatives will result in minor changes to the anticipated operation and maintenance costs for this facility. The improvements indicate that water quality should result in reduced power consumption and reduced chemical feed for dewatering solids. This is not yet verified so, at this time, no credit is taken for these reductions. The improvements represent replacement of existing equipment and will have similar operation and maintenance needs as the previous equipment when it was installed.

6.4.2 User Rate Impact Evaluation: The City of Pierre recently completed a comprehensive Wastewater Rate Study conducted by Missouri River Energy Services. This study considers many factors outside the scope of this facility planning document. While the study takes into account this project it also considers prior recommendations to hire additional staff at the wastewater treatment plant as well additional improvements to the collection system and a more defined reserve account. For short term recommendations, the Missouri River Energy Services study recommends an 18% user fee increase for 2015 and 4% increases each year from 2016 through 2018. These rate increases also account for potential future modifications of the rate structure based on retirement of old debt while considering potential new debt. This report is available upon request of the City of Pierre.

As to this planning document, the opinion of probable project cost is $2,767,000. The City of Pierre would be eligible to seek project funding through the State of South Dakota's State Revolving Grant and Loan Funds, funding through local resources, and other options. Current rates for loans from the State Revolving Loan fund include 3% for 11 to 20 years. Based on a 20 year loan at 3 percent financing (and including a requirement to charge 110 percent of the annual debt retirement cost) the anticipated annual debt retirement for this project would be approximately $204,600 per year. Pierre currently has 6,540 sewer user connections. Assuming the each user connection participates equally in debt retirement and the debt retirement is put into the base fee portion the user fee, the anticipated monthly impact to the user fee is $2.61 per account for this project.

6.5 IMPLEMENTATION PLAN AND SCHEDULE

A common implementation schedule for the recommended improvements is presented in Table 6-2. This schedule recognizes the City's desire for an aggressive schedule to design, bid and construct the project. It should be noted that several of the tasks listed in the schedule are sequential in nature. Failure to maintain the deadline dates for any task may result in delay of later task completion dates.

Table 6-2: Implementation Schedule

Task	Recommended Dates
Acceptance of the Wastewater Facility Plan	January, 2015
State Water Plan Application	Previously Done
Notice To Proceed On Design	February, 2016
Placement on the State Water Plan	Previously Done
Prepare Funding Applications	January, 20165
Submit Plans and Specifications for Review	June, 2016
DENR Approval for Funding Package	July, 2016
Open Bids for Improvements	August, 2016
Start Construction of Improvements	September, 2016
Substantial Completion of Improvements	June, 2017
Final Completion of Improvements	July, 2017
Complete One Year Warranty Period	July, 2018

END OF SECTION 6

APPENDIX A

SDDENR SWD PERMIT AND STATEMENT OF BASIS

APPENDIX B

SDDENR BIOSOLIDS MANAGEMENT PERMIT AND STATEMENT OF BASIS