



Jeremiah W. (Jay) Nixon, Governor • Sara Parker Pauley, Director

DEPARTMENT OF NATURAL RESOURCES

www.dnr.mo.gov

July 16, 2015

The Honorable James Orr, Mayor
City of Monett
217 5th Street
Monett, MO 65708

RE: C295452-02 City of Monett, MO – Wastewater Treatment Improvements, Monett
Wastewater Treatment Facility, MO-0021440, Construction Permit No. CP0001743

Dear Mayor Orr:

The Department of Natural Resources' Water Protection Program has reviewed and approved the plans and specifications submitted by Allgeier, Martin & Associates, Inc. for the city of Monett, MO. Please find enclosed Construction Permit No. CP0001743 and one set of approved specifications. One set of approved plans has been sent under separate cover by Mr. Joe Blume of my staff. You must maintain these with your official project file for a minimum of four years following completion of the project.

This permit will terminate 12 months from the date of issuance. In accordance with 10 CSR 20-6.010(4)(G), the department may grant an extension only one time. If you believe that an extension is necessary, you must submit a request and a justification in writing for the extension at least 30 days prior to the permit expiration date.

Nothing in this permit removes any obligations to comply with county or other local ordinances or restrictions.

If you were adversely affected by this decision, you may appeal to have the matter heard by the Administrative Hearing Commission. To appeal, you must file a petition with the Administrative Hearing Commission within 30 days after the date this decision was mailed or the date it was delivered, whichever date was earlier. If any such petition is sent by registered mail or certified mail, it will be deemed filed on the date it is mailed. If it is sent by any method other than registered mail or certified mail, it will be deemed filed on the date it is received by the Administrative Hearing Commission.

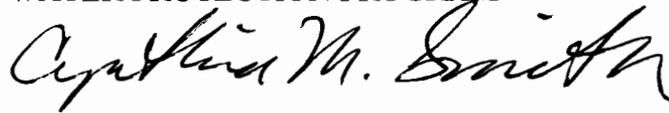
The Honorable James Orr, Mayor
July 16, 2015
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If you have any questions concerning this matter, please contact Mr. Joe Blume, of the Water Protection Program, at (573) 751-5937 or Missouri Department of Natural Resources, Water Protection Program, P.O. Box 176, Jefferson City, MO 65102-0176.

Thank you for your efforts to help ensure clean water in Missouri.

Sincerely,

WATER PROTECTION PROGRAM



Cynthia Smith, P.E., Clean Water SRF Engineering Unit
Financial Assistance Center

CMS:jbc

Enclosures

c: Mr. Dean Willis, P.E., Allgeier, Martin, and Associates
Southwest Regional Office
Mr. Peter Burch, Water Protection Program, Compliance and Enforcement Section
Mr. Joe Blume, Water Protection Program, Financial Assistance Center
Mr. Terry Nelson, Water Protection Program, Financial Assistance Center

STATE OF MISSOURI
DEPARTMENT OF NATURAL RESOURCES

MISSOURI CLEAN WATER COMMISSION



CONSTRUCTION PERMIT

The Missouri Department of Natural Resources hereby issues a permit to:

City of Monett
217 5th Street
Monett, MO 65708

for the construction of (described facilities):

See attached.

Permit Conditions:

See attached.

Construction of such proposed facilities shall be in accordance with the provisions of the Missouri Clean Water Law, Chapter 644, RSMo, and regulation promulgated thereunder, or this permit may be revoked by the Department of Natural Resources.

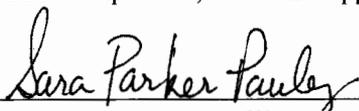
As the department does not examine structural features of design or the efficiency of mechanical equipment, the issuance of this permit does not include approval of these features.

A representative of the department may inspect the work covered by this permit during construction. Issuance of a permit to operate by the department will be contingent on the work substantially adhering to the approved plans and specifications.

This permit applies only to the construction of water pollution control components; it does not apply to other environmentally regulated areas.

July 16, 2015
Effective Date

July 15, 2016
Expiration Date


Sara Parker Pauley, Director, Department of Natural Resources


Director, Water Protection Program

CONSTRUCTION PERMIT

WASTEWATER TREATMENT FACILITY:

The project consists of replacing the existing standby generator that is outdated with a new one to improve the reliability of the facility to operate during a power outage, replacing the two existing tertiary filter system with two cloth filter systems, or four disk filter systems, depending on the bids with both new systems being able to treat a peak flow of 12 million gallons per day with the largest unit out of service, and replacement of the No. 3 screw pump with a new screw pump.

The project also includes the construction and installation of all necessary appurtenances to make a complete and usable wastewater treatment facility. The project will also include general site work appropriate to the scope and purpose of the project.

PERMIT CONDITIONS:

The permittee is authorized to construct subject to the following conditions:

1. All construction shall be in accordance with the plans and specifications submitted by Allgeier, Martin, and Associates, Inc. on May 11, 2015 and signed and sealed by Mr. Dean Willis, P.E. on March 19, 2015 and approved by the department on July 16, 2015.
2. Regulation 10 CSR 20-4.040(19)(B)1 requires that projects be publicly advertised, allowing sufficient time for bids to be prepared and submitted. Projects should be advertised at least 30 days prior to bid opening.
3. The department must be contacted in writing prior to making any changes to the approved plans and specifications that would directly or indirectly have an impact on the capacity, flow, system layout, or reliability of the proposed wastewater treatment facilities or any design parameter that is addressed by 10 CSR 20-8, in accordance with 10 CSR 20-8.110(8).
4. As per 10 CSR 20-4.040, all changes in contract price or time within the approved scope of work must be by change order in accordance with Section 20 of this rule.
5. This construction permit does not authorize discharge.
6. State and Federal Law does not permit bypassing of raw wastewater, therefore steps must be taken to ensure that raw wastewater does not discharge during construction. If a sanitary sewer overflow or bypass occurs, report the appropriate information to the department's Southwest Regional Office per 10 CSR 20-7.015(9)(E)2.

7. Protection of drinking water supplies shall be in accordance with 10 CSR 20-8.120(10). "There shall be no physical connections between a public or private potable water supply system and a sewer, or appurtenance thereto which would permit the passage of any wastewater or polluted water into the potable supply. No water pipe shall pass through or come in contact with any part of a sewer manhole."
- A. Sewers in relation to water works structures shall meet the requirements of 10 CSR 23-3.010 with respect to minimum distances from public water supply wells or other water supply sources and structures.
 - B. Sewer mains shall be laid at least ten feet horizontally from any existing or proposed water main. The distances shall be measured edge-to-edge. In cases where it is not practical to maintain a ten foot separation, the department may allow a deviation on a case-by-case basis, if supported by data from the design engineer. Such a deviation may allow installation of the sewer closer to a water main, provided that the water main is in a separate trench or on an undisturbed earth shelf located on either side of the sewer and at an elevation so the bottom of the water main is at least 18 inches above the top of the sewer. If it is impossible to obtain proper horizontal and vertical separation as described above for sewers, the sewer must be constructed of slip-on or mechanical joint pipe or continuously encased and be pressure tested to 150 pounds per square inch to assure water tightness.
 - C. Manholes should be located at least ten feet horizontally from any existing or proposed water main.
 - D. Sewers crossing water mains shall be laid to provide a minimum vertical distance of 18 inches between the outside of the water main and the outside of the sewer. This shall be the case where the water main is either above or below the sewer. The crossing shall be arranged so that the sewer joints will be equidistant and as far as possible from the water main joints. Where a water main crosses under a sewer, adequate structural support shall be provided for the sewer to maintain line and grade. When it is impossible to obtain proper vertical separation as stipulated above, one of the following methods must be specified:
 - 1) The sewer shall be designed and constructed equal to the water pipe and shall be pressure tested to assure water tightness prior to backfilling; or
 - 2) Either the water main or sewer line may be continuously encased or enclosed in a watertight carrier pipe which extends ten feet on both sides of the crossing, measured perpendicular to the water main. The carrier pipe shall be of materials approved by the department for use in water main construction.

8. In addition to the requirements for a construction permit, 10 CSR 20-6.200 requires land disturbance activities of one acre or more to obtain a Missouri State Operating Permit to discharge stormwater. The permit requires Best Management Practices sufficient to control runoff and sedimentation to protect waters of the state. Land disturbance permits may only be obtained by means of the department's ePermitting system available online at www.dnr.mo.gov/env/wpp/epermit/help.htm.

See www.dnr.mo.gov/env/wpp/stormwater/sw-land-disturb-permits.htm for more information.

9. A United States (U.S.) Army Corps of Engineers (COE) permit (404) and a Water Quality Certification (401) issued by the department or permit waiver may be required for the activities described in this permit. This permit is not valid until these requirements are satisfied. If construction activity will disturb any land below the ordinary high water mark of Jurisdictional Waters of the U.S. then a 404/401 will be required. Since the COE makes determinations on what is jurisdictional, you must contact the COE to determine permitting requirements. You may call the department's Water Protection Program at (573) 751-1300 for more information.

See www.dnr.mo.gov/env/wpp/401/ for more information.

10. Upon completion of construction:
 - A. The city of Monett will become the continuing authority for operation, maintenance, and modernization of these facilities;
 - B. Submit the enclosed form Statement of Work Completed to the department in accordance with 10 CSR 20-6.010(5)(D); and
 - C. Submit an electronic copy of the as built.

CP-AP 20874

CP0001743

Folder Tracking C14592

MAR 23 2015



MISSOURI DEPARTMENT OF NATURAL RESOURCES
WATER PROTECTION PROGRAM
APPLICATION FOR CONSTRUCTION PERMIT -
WASTEWATER TREATMENT FACILITY

FOR DEPARTMENT USE ONLY	
APP NO.	CP NO.
FEE RECEIVED \$3000.00	CHECK NO. 969914
DATE RECEIVED 3/23/15	SB

APPLICATION OVERVIEW

The Application for Construction Permit – Wastewater Treatment Facility form has been developed in a modular format and consists of Part A and B. All applicants must complete Part A. Part B should be completed for applicants who currently land-apply wastewater or propose land application for wastewater treatment. Please read the accompanying instructions before completing this form. Submittal of an incomplete application may result in the application being returned.

PART A – BASIC INFORMATION

1.0 APPLICATION INFORMATION (Note – If any of the questions in this section are answered NO, this application may be considered incomplete and returned.)

- 1.1 Is this a Federal/State funded project? YES N/A Funding Agency: SRF Project #: C295452-02
 - 1.2 Has the Missouri Department of Natural Resources approved the proposed project's antidegradation review?
 YES Date of Approval: 01/14
 - 1.3 Has the department approved the proposed project's facility plan*?
 YES Date of Approval: 01/14 NO N/A (If Not Applicable, complete No. 1.4.)
 - 1.4 [Complete only if answered Not Applicable on No. 1.3.] Is a copy of the engineering report* for wastewater treatment facilities with a design flow less than 22,500 gpd included with this application?
 YES NO
 - 1.5 Is a copy of the appropriate plans* and specifications* included with this application?
 YES Denote which form is submitted: Hard copy Electronic copy (See instructions.) NO
 - 1.6 Is a summary of design* included with this application? YES NO
 - 1.7 Has the appropriate operating permit application (A, B, or B2) been submitted to the department?
 YES Date of submittal: _____
 Enclosed is the appropriate operating permit application submittal. Denote which form: A B B2
 N/A Please explain: No changes to MSOP.
 - 1.8 Is the facility currently under enforcement with the department or the Environmental Protection Agency? YES NO
 - 1.9 Is the appropriate fee included with this application? YES NO (See instructions for appropriate fee.)
- * Must be affixed with a Missouri registered professional engineer's seal, signature and date.

2.0 PROJECT INFORMATION

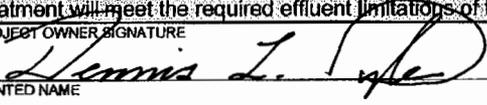
2.1 NAME OF PROJECT
WWTP Improvements Project C295452-02 for Monett, MO

2.2 PROJECT DESCRIPTION
Improvements for plant reliability including replacement of existing screw pump, generator, and tertiary filter equipment.

2.3 SLUDGE HANDLING, USE AND DISPOSAL DESCRIPTION
No changes planned for sludge handling.

2.4 DESIGN INFORMATION
A. Current population: 8864; Design population: 74,000
B. Actual Flow: 3,180,000 gpd; Design Average Flow: 6,000,000 gpd;
Actual Peak Daily Flow: 12,000,000 gpd; Design Maximum Daily Flow: 12,000,000 gpd; Design Wet Weather Event: 12,000,000

2.5 ADDITIONAL INFORMATION
A. Is a topographic map attached? YES NO
B. Is a process flow diagram attached? YES NO

3.0 WASTEWATER TREATMENT FACILITY				
NAME Monett Wastewater Treatment Plant		TELEPHONE NUMBER WITH AREA CODE 417-235-7455		E-MAIL ADDRESS dave@cityofmonett.com
ADDRESS (PHYSICAL) 0.25 mi NE of S Eisenhower & Hwy 60	CITY Monett	STATE MO	ZIP CODE 65708	COUNTY Barry
Wastewater Treatment Facility: Mo- 0021440 (Outfall 1 Of)				
3.1 Legal Description: <u>NW 1/4, SE 1/4, SE 1/4, Sec. 36, T 26, R 28</u> (Use additional pages if construction of more than one outfall is proposed.)				
3.2 UTM Coordinates Easting (X): <u>416243</u> Northing (Y): <u>4086034</u> For Universal Transverse Mercator (UTM), Zone 15 North referenced to North American Datum 1983 (NAD83)				
3.3 Name of receiving streams: <u>Clear Creek</u>				
4.0 PROJECT OWNER				
NAME City of Monett		TELEPHONE NUMBER WITH AREA CODE (417) 235-4611		E-MAIL ADDRESS skipschaller@cityofmonett.com
ADDRESS 217 5th Street	CITY Monett	STATE MO	ZIP CODE 65708	
5.0 CONTINUING AUTHORITY: Permanent organization that will serve as the continuing authority for the operation, maintenance and modernization of the wastewater collection system.				
NAME Same as Owner		TELEPHONE NUMBER WITH AREA CODE		E-MAIL ADDRESS
ADDRESS	CITY	STATE	ZIP CODE	
5.1 A letter from the continuing authority, if different than the owner, is included with this application. <input type="checkbox"/> YES <input type="checkbox"/> NO <input checked="" type="checkbox"/> N/A				
5.2 COMPLETE THE FOLLOWING IF THE CONTINUING AUTHORITY IS A MISSOURI PUBLIC SERVICE COMMISSION REGULATED ENTITY.				
A. Is a copy of the certificate of convenience and necessity included with this application? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO				
5.3 COMPLETE THE FOLLOWING IF THE CONTINUING AUTHORITY IS A PROPERTY OWNERS ASSOCIATION.				
A. Is a copy of the as-filed restrictions and covenants included with this application? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO				
B. Is a copy of the as-filed warranty deed, quitclaim deed or other legal instrument which transfers ownership of the land for the wastewater treatment facility to the association included with this application? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO				
C. Is a copy of the as-filed legal instrument (typically the plat) that provides the association with valid easements for all sewers included with this application? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO				
D. Is a copy of the Missouri Secretary of State's nonprofit corporation certificate included with this application? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO				
6.0 ENGINEER				
ENGINEER NAME / COMPANY NAME Dean A. Willis Allgeier, Martin and Associates, Inc.		TELEPHONE NUMBER WITH AREA CODE (417) 680-7200		E-MAIL ADDRESS dean.willis@amce.com
ADDRESS 7231 East 24th Street	CITY Joplin	STATE MO	ZIP CODE 64804-3485	
7.0 PROJECT OWNER: I hereby certify that I am familiar with the information contained in this application and to the best of my knowledge and belief such information is true, complete, and accurate, and if granted this permit, I agree to abide by the Missouri Clean Water Law and all rules, regulations, orders, and decisions, subject to any legitimate appeal available to applicant under Missouri Clean Water Law. I also understand the issuance of the construction permit does not guarantee the proposed wastewater treatment will meet the required effluent limitations of the issued Missouri State Operating Permit for this facility.				
PROJECT OWNER SIGNATURE 				
PRINTED NAME Dennis Pyle			DATE 3-19-2015	
TITLE OR CORPORATE POSITION City Administrator		TELEPHONE NUMBER WITH AREA CODE (417) 235-3355		E-MAIL ADDRESS dpyle@cityofmonett.com
Mail completed copy to: MISSOURI DEPARTMENT OF NATURAL RESOURCES WATER PROTECTION PROGRAM P.O. BOX 176 JEFFERSON CITY, MO 65102-0176				
END OF PART A.				
REFER TO THE APPLICATION OVERVIEW TO DETERMINE WHETHER PART B NEEDS TO BE COMPLETE.				

PART B – LAND APPLICATION ONLY

(Submit only if the proposed construction project includes land application of wastewater.)

8.0 FACILITY INFORMATION

8.1 Type of wastewater to be irrigated: Domestic State/National Park Seasonal business
 Municipal Municipal with a pretreatment program or significant industrial users
 Other (explain) _____

8.2 Months when the business or enterprise will operate or generate wastewater:
 12 months per year Part of the year (list months): _____

8.3 This system is designed for:
 No-discharge.
 Partial irrigation when feasible and discharge rest of time.
 Irrigation during recreational season, April – October, and discharge during November – March.
 Other (explain) _____.

9.0 STORAGE BASINS

9.1 Number of storage basins: 0 (Use additional pages if greater than three basins.)

9.2 Type of basins: Steel Concrete Fiberglass Earthen Earthen with membrane liner

9.3 Storage basin dimensions at inside top of berm (feet). Report freeboard as feet from top of berm to emergency spillway or overflow pipe.

Basin #1: Length _____ Width _____ Depth _____ Freeboard _____ Depth _____ Safety _____ % Slope _____
Basin #2: Length _____ Width _____ Depth _____ Freeboard _____ Depth _____ Safety _____ % Slope _____
Basin #3: Length _____ Width _____ Depth _____ Freeboard _____ Depth _____ Safety _____ % Slope _____

9.4 Storage Basin operating levels (report as feet below emergency overflow level).
Basin #1: Maximum operating water level _____ ft Minimum operating water level _____ ft
Basin #2: Maximum operating water level _____ ft Minimum operating water level _____ ft
Basin #3: Maximum operating water level _____ ft Minimum operating water level _____ ft

9.5 Design depth of sludge in storage basins.
Basin #1: _____ ft Basin #2: _____ ft Basin #3: _____ ft

9.6 Existing sludge depth, if the basins are currently in operation.
Basin #1: _____ ft Basin #2: _____ ft Basin #3: _____ ft

9.7 Total design sludge storage: _____ dry tons and _____ cubic feet

10.0 LAND APPLICATION SYSTEM

10.1 Number of irrigation sites 1 Total Acres 75 Maximum % field slopes 10
Location: _____ ¼, _____ ¼, _____ ¼, 6 Sec. 25 T 27 R Barrv County 75 Acres
Location: _____ ¼, _____ ¼, _____ ¼, _____ Sec. _____ T _____ R _____ County _____ Acres
Location: _____ ¼, _____ ¼, _____ ¼, _____ Sec. _____ T _____ R _____ County _____ Acres
(Use additional pages if greater than three irrigation sites.)

10.2 Type of vegetation: Grass hay Pasture Timber Row crops
 Other (describe) Golf course.

10.3 Wastewater flow (dry weather) gallons per day: Average annual 3.18 mgd Seasonal NA Off-season NA

10.4 Land application rate (design flow including 1-in-10 year storm water flows):
Design: _____ inches/year _____ inches/hour 0.25 inches/day _____ inches/week
Actual: _____ inches/year _____ inches/hour 0.08 inches/day _____ inches/week

10.5 Total irrigation per year (gallons): Design: NA gal Actual: 20 M gal

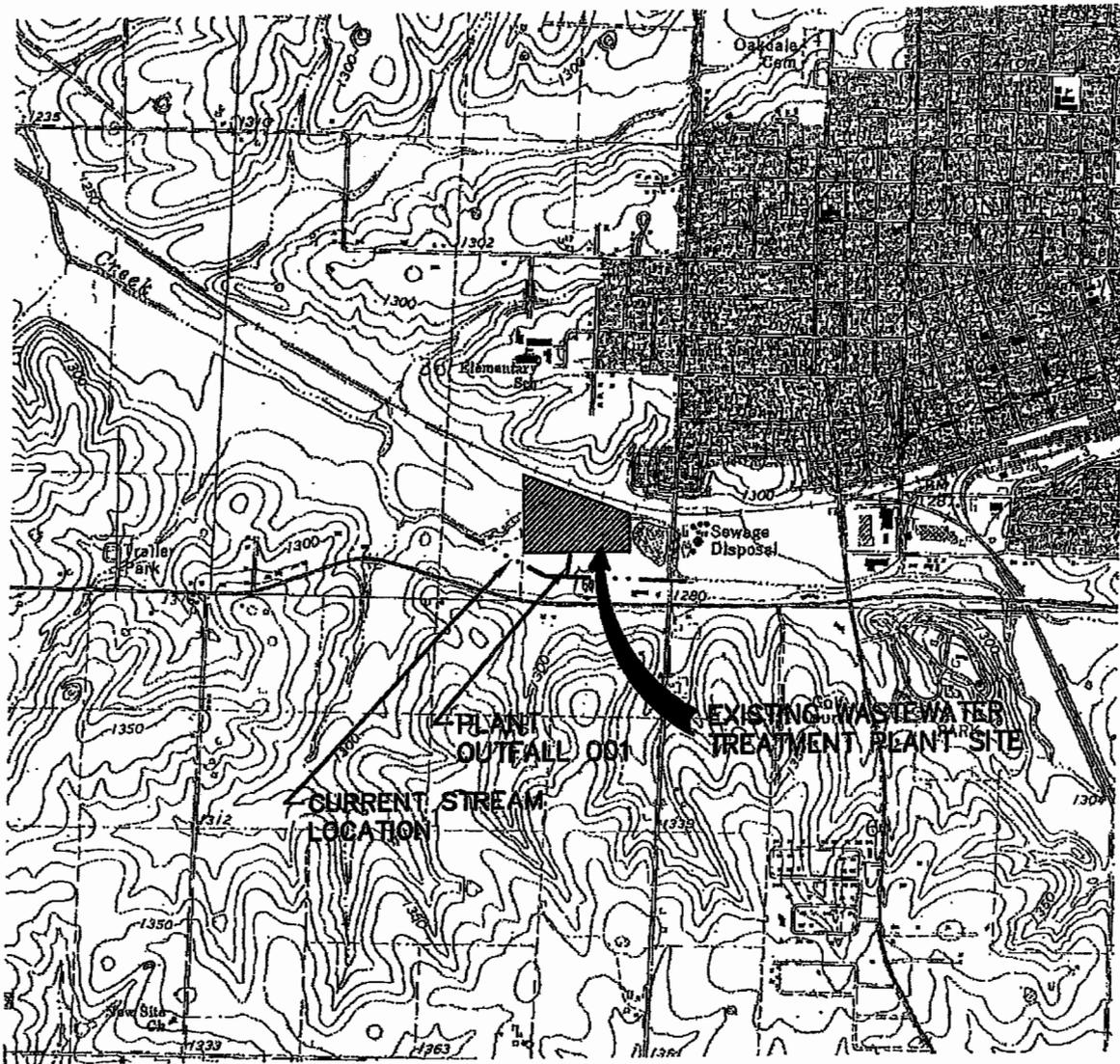
10.6 Actual months used for irrigation (check all that apply):
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec

10.7 Land application rate is based on:
 Hydraulic Loading Other (describe) Golf course irrigation needs.
 Nutrient Management Plan (N&P) If N&P is selected, is the plan included? YES NO



LOCATION MAP

1" = 2000'-0"

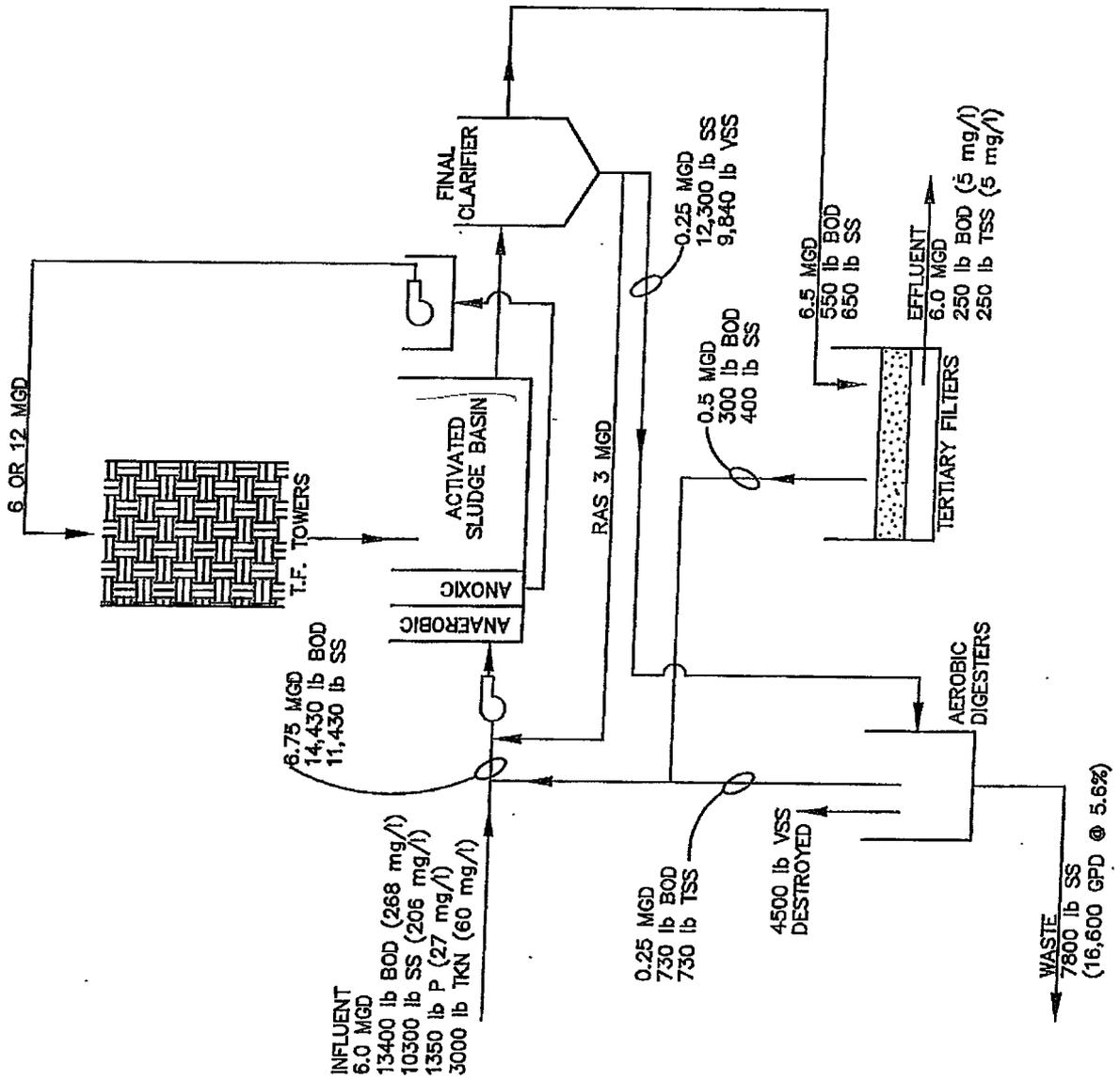


**OUTFALL SITE PLAN
MONETT, MO.**



ALLGEIER, MARTIN and ASSOCIATES, INC.

CONSULTING ENGINEERS and SURVEYORS
7231 EAST 24th STREET JOPLIN, MISSOURI 64804 (417) 680-7200



PROCESS FLOW DIAGRAM
W/ PLANT LOADINGS

DESIGN MEMORANDUM
WASTEWATER TREATMENT PLANT IMPROVEMENTS
PROJECT C295452-02
MONETT, MISSOURI

DESIGN LOADINGS

Average Daily Design Flow =	6.0 mgd
Maximum Flow Through WWTP =	12.0 mgd
Average Design BOD =	13,400 lb/d
Average Design TSS =	10,300 lb/d

ANTICIPATED MONTHLY AVERAGE PERMIT LIMITS

Ammonia as N	
(Apr. 1 - Sept. 30)	1.4 mg/l
(Oct. 1 - Mar. 31)	2.1 mg/l
BOD(5)	10 mg/l
TSS	15 mg/l
pH	6.5 – 9.0 S.U.
E. Coli	126 Colonies/100 ml
Copper, T.R.	12.9 ug/l
Cadmium, T.R.	0.40 ug/l
Cyanide	4.1 ug/l
Selenium, T.R.	4.1 ug/l

FACILITIES DESIGN

General

The improvements proposed for the Monett WWTP will not impact the design capacity of the facility, but will instead address issues with the reliability of several plant components. The scope of the improvements is limited by budget considerations. The three components that are being upgraded as a part of this project include one of the raw sewage screw pumps at the plant headworks, the standby electric generator that serves the original east end of the WWTP site, and the tertiary filters that precede effluent disinfection.

Raw Sewage Screw Pump

Screw Pump No. 3 at the plant headworks has been in service for 24 years, and appears capable of failure at any time. The 6 mgd pump capacity is needed to insure a firm capacity of 12 mgd through the three screw pumps. Replacement of the screw pump is planned with a similar unit of like capacity.

Standby Power

In order to insure that the plant remains operational during power outages, a new 400 kilowatt standby power generator is planned to replace the existing unit that is now 37 years old. The generator serves the east end of the existing facility, including the headworks building, the laboratory/office building, and the digester building.

Tertiary Filters

The existing tertiary filters are of a traveling bridge design with sand media, designed for a maximum flow rate of 6 mgd each at a flux rate of 4.7 gpm/sf. The filters are preceded by a splitter structure that automatically diverts any flow in excess of filter capacity around the filters, where it is blended with the filtered water. The filters and splitter box received regulatory approval when installed 23 years ago, but more recently MDNR has expressed concern over

the potential diversion of water around the filters at plant flows of less than 12 mgd, and has asked that additional filtering capacity be added to provide a firm capacity of 12 mgd. In addition to MDNR's concerns with filter redundancy, the City has recently encountered problems with plugging of the filter underdrain plates that has reduced filtering capacity. Efforts to reestablish design flowrates for the existing filters are ongoing. Clearly, renovation of the existing filters via replacement of the existing equipment is needed to resolve issues with filter capacity. A recent evaluation of filter costs has determined that the most viable long-term option for renovating the existing filters is to replace the existing filters with either two 12 mgd AquaDiamond type units, or three 6 mgd disk type filter units.

The replacement of two of the filters with new, higher capacity, more reliable equipment does not result in any changes to the overall design capacity of the Monett WWTP. The improvements are intended to restore capacity to the filter portion of the plant, while also significantly improving the efficiency of the filtration by minimizing the amount of recycled backwash waste that is generated. Improvements are contained within the existing filter building, and include flow control modifications that allow delivery of the higher flows to the new filters.

AquaDiamond Filter Design: Aqua-Aerobic Systems, Inc. manufactures a filter that is of a cloth media design, with each unit consisting of eight 40 ft. long diamond shaped filter plenums having a combined minimum effective submerged filtering area of 1280 sq.ft. per filter. This filtering area does not include areas impacted by structural supports. Each filter is designed by the manufacturer to treat an average flow rate of 6.0 MGD and a peak flow rate of 12 MGD, yielding flux rates of 3.26 gpm/sq.ft. and 6.5 gpm/sq.ft. respectively. With both units in service, the filters will provide a maximum hydraulic capacity of 24 mgd, and a flux rate of 3.26 gpm/sf at 12 mgd.

The fiber pile filter fabric used with the AquaDiamond type filters is the same material used on Aqua-Aerobic disk filters. The material has proven its effectiveness and durability in over a thousand installations over the last twenty years. There are a number of the disk type filters with the fiber pile fabric that have been approved and are in use in the State of Missouri.

The AquaDiamond filters are backwashed by a pump that creates a vacuum on the fabric, pulling filtered water back through the fabric and at the same time scouring the surface by the movement of the backwash shoe. The backwash volume and pressure are designed to assure maintenance of the fabric cleanliness and flow capacity. The bridge-mounted backwash pump draws 450 gpm through four backwash shoes at a time. The rate of return of backwash water to the treatment plant will average less than 3% of the filter throughput. As is standard with this filter and the traveling bridge filter it replaces, each filter is equipped with a single backwash pump. Adequate spare parts will be retained to insure timely attention to the pumps when maintenance is required.

Disk Filter Design: Several manufacturers offer disk type membrane filters for tertiary wastewater filtration. Kruger and Evoqua manufacture units that can be installed within the existing filter basins following the removal of all existing equipment from the basins. Two 6 mgd filters can be fit into a single concrete basin following the installation of an intermediate concrete partition wall and other modifications to the filters. The Kruger and Evoqua disk filters utilize a number of circular filter disks with polyester fabric rotating through the water. These filters provide a minimum net effective filtration area per filter of 822 sf, which equates to a flux rate of 5 gpm/sf at 6 mgd.

The polyester membrane used with the disk filters has proven its effectiveness and durability in a number of installations in Missouri and elsewhere. The membrane is backwashed with a series of high pressure spray nozzles specifically designed to clean the membrane without damage. The backwash pumping capacity is dictated by the manufacturer. The rate of return of backwash water to the treatment plant will average less than 3% of the filter throughput.

It is planned to install two filter units in one basin, and a single filter unit in the second basin. The three filters will provide a firm capacity of 12 mgd and a maximum capacity with all units in service of 18 mgd, and a flux rate of 3.3 gpm/sf at 12 mgd.

INSTRUCTIONS FOR COMPLETING APPLICATION FOR CONSTRUCTION PERMIT – WASTEWATER TREATMENT FACILITIES

All blanks must be filled in when the application is submitted to the Missouri Department of Natural Resources. This includes the **required signature**.

Note: Use the form Application for Construction Permit – Sewer Extension, MO 780-1632, if only collection system component(s) are to be constructed. This form is available at dnr.mo.gov/forms/780-1632-f.pdf.

A land disturbance permit is required if construction will result in the disturbance of one or more acres of land. A land disturbance permit is available through the department's ePermitting system at dnr.mo.gov/env/wpp/epermit/help.htm. A permit fee in accordance with 10 CSR 20-6.011(2)(F)1. is required.

After receiving a complete application, the Department enters the application information into the Missouri Clean Water Information System. You may search for the status of a construction permit online at dnr.mo.gov/mocwis_public/applicationInprocessSearch.do.

Part A – Basic Application Information

- 1.0 If any of the questions in this section are answered no, this application may be considered incomplete and returned to the applicant.
- 1.1 Check the appropriate box. If the project is funded with federal or state monies, supply the funding agency name and project number.
- 1.2 Check the appropriate box. Provide the date of department approval for the antidegradation report. Include a copy of the approved *Water Quality and Antidegradation Review* with this application. Not every construction project may require an antidegradation review. For more information, guidance documents and forms concerning antidegradation visit dnr.mo.gov/env/wpp/permits/antideg-implementation.htm.
- 1.3 Check the appropriate box and provide the date of department approval. Per 10 CSR 20-8.110(3)(C), facility plans must be approved by the department prior to the submittal of plans and specifications and a construction permit application. "Facility plans must be completed for projects involving wastewater treatment facility projects and projects receiving funding through the grant and loan programs under 10 CSR 20-4" in accordance with 10 CSR 20-8.110(4)(A)4. The department has developed a fact sheet to aid in the development of an approvable facility plan. This document is available online at dnr.mo.gov/pubs/pub2416.htm.
- 1.4 Complete only if No. 1.3 is answered Not Applicable. Check the appropriate box. For wastewater treatment facilities with a design flow under 22,500 gallons per day, or gpd, an engineering report may be required by the department in accordance with 10 CSR 20-6.010(4)(D)1 and 10 CSR 20-8.020(3). The department will require an engineering report for any new wastewater treatment facilities and for any major modifications to an existing wastewater treatment facility.
- 1.5 Check the appropriate box. Provide a copy of the appropriate plans and specifications for department review when applying for a construction permit per 10 CSR 20-8.110(3)(C), 10 CSR 20-8.020(5) and 10 CSR 20-8.020(6). A Missouri registered professional engineering seal, signature and date is required on each sheet of the plans and the cover of the technical specifications.

The department will accept plans and specifications in electronic form on a CD and in the Adobe[®] PDF searchable format. If the plans are scanned, set the resolution to a minimum of 200 dpi at 17 by 22 inches.

Note: Additional sets of plans and specifications may be required by the department for final approval and issuance of the construction permit. See 10 CSR 20-8.110(6)(A)1.
- 1.6 Check the appropriate box. A summary of design shall accompany the plans and specifications when applying for a construction permit per 10 CSR 20-8.110(5) and 10 CSR 20-8.020(7). The department has developed a fact sheet to aid in the development of an acceptable summary of design. This document is available online at dnr.mo.gov/pubs/pub2417.htm. For wastewater treatment facilities with a design flow under 22,500 gpd, a summary of design may not be required by the department.
- 1.7 Check the appropriate box. Include the applicable operating permit application.
 - Form A is available online at dnr.mo.gov/forms/780-1479-f.pdf.
 - Form B is available online at dnr.mo.gov/forms/780-1512-f.pdf.
 - Form B2 is available online at dnr.mo.gov/forms/780-1805-f.pdf.
 - Form E is available online at dnr.mo.gov/forms/780-0795-f.pdf.

1.8 Check the appropriate box. More information about the Compliance and Enforcement Water Protection Program is available online at dnr.mo.gov/env/wpp/enf/index.html.

1.9 Check the appropriate box. Include the fee with your application.

\$1,000 for a wastewater treatment facility with a design flow of less than 500,000 gpd per 10 CSR 20-6.011(2)(K)1.

→ **\$3,000** for a wastewater treatment facility with a design flow of 500,000 gpd or greater per 10 CSR 20-6.011(2)(K)2.

Add \$200 for modifications to a Publicly Owned Treatment Works (POTW) operating permit accompanied by the appropriate operating permit form per 10 CSR 20-6.011(2)(H), if applicable.

Add \$100 for modifications of name changes, address changes, or other non-substantive changes for a general permit accompanied by the appropriate general permit form per 10 CSR 20-6.011(2)(H)1., if applicable.

Add 25% Annual Operating Fee for modifications to a Non-POTW operating permit accompanied by the appropriate operating permit form per 10 CSR 20-6.011(2)(H)2., if applicable.

Add Annual Operating Fee for issuing a new Non-POTW operating permit accompanied by the appropriate operating permit form, if applicable.

Note: Incomplete permit applications or related engineering documents will be returned by the department if they are not completed in the time frame established by the department in a comment letter to the project owner. Permit fees for returned applications shall be forfeited. See 10 CSR 20-6.010(4)(E). Permit fees for applications being processed by the department that are withdrawn by the applicant shall be forfeited. See 10 CSR 20-6.011(5)(B).

2.1 Provide the name of the proposed construction project.

2.2 Briefly describe the construction project by providing the number and capacity of each new unit.

2.3 Briefly describe the method of sludge handling, use and disposal at the treatment facility.

2.4 Provide the project design information and when required in the units specified.

A. Provide the current population and the design population to be served by the wastewater treatment facility.

B. Provide the estimated design flow information in accordance with 10 CSR 20-8.110(4)(C)4.A.

Design average flow – The design average flow is the average of the daily volumes to be received for a continuous 12 month period expressed as a volume per unit time. However, the design average flow for facilities having critical seasonal high hydraulic loading periods (e.g., recreational areas, campuses and industrial facilities) shall be based on the daily average flow during the seasonal period. (Expected daily average flow the facility is designed to treat.)

Design maximum daily flow – The design maximum daily flow is the largest volume of flow to be received during a continuous 24-hour period expressed as a volume per unit time. (Flow during the peak wet weather event the facility is designed to treat.)

Design Wet Weather Event –The wet weather event chosen for the design.

2.5 Provide the additional project information.

A. Attach a topographic map of the area extending at least one mile beyond the facility property boundaries. This map must show the outline of the facility and the following information. A topographic map is available online at dnr.mo.gov/internetmapviewer or from the Department of Natural Resources' Missouri Geological Survey in Rolla, Mo., at 573-368-2125. (Submittals of more than one map may be necessary to show the entire area.)

1. The area surrounding the wastewater treatment facility, including all unit processes.

2. The major pipes or other structures through which wastewater enters the treatment facility and the pipes or other structures through which treated wastewater is discharged from the treatment facility. Include outfalls from bypass piping, if applicable.

3. The actual point of discharge.

4. Wells, springs, other surface water bodies and drinking water wells that are: 1) within ¼ mile of the property boundaries of the treatment facility and 2) listed in public record or otherwise known to the applicant.

5. Any areas where biosolids produced by the treatment facility are treated, stored, or disposed.

6. If the treatment facility receives waste classified as hazardous under the Resource Conservation and Recovery Act, or RCRA, by truck, rail, or special pipe, show on the map where hazardous waste enters the treatment works and where it is treated, stored or disposed.

7. Outline any wastewater land application sites.

- B. Provide a process flow diagram with the influent and effluent design average flow and peak flow capabilities. Also, depict all of the treatment facility components and the corresponding hydraulic capacities of each component. In addition, include all recycle flows in the diagram. If land application is used, depict all irrigation equipment and application sites.
- 3.0 Complete the Wastewater Treatment Facility information. Include the Missouri State Operation Permit number, outfall number, physical location, and other appropriate contact information.
- 3.1 Provide the project legal description. The department's mapping system is available online at dnr.mo.gov/internetmapviewer.
- 3.2 A Global Positioning System, or GPS, is a satellite-based navigation system. The department prefers that a GPS receiver is used and the displayed coordinates submitted. If access to a GPS receiver is not available, use a mapping system to approximate the coordinates.
- 3.3 Provide the name of the receiving stream(s) to which the discharge is directed and any subsequent tributary until a continuous flowing stream is reached.
- 4.0 Complete Project Owner information. Include the legal name, address, phone number with area code and email address.
- 5.0 Complete Continuing Authority contact information. If same as the Project Owner, write "Same as above". Include the permanent organization that will serve as the continuing authority for the operation, maintenance and modernization of the wastewater collection system. See 10 CSR 20-6.010(3) for the regulatory requirement regarding continuing authority.
- 5.1 Check the appropriate box. Include a letter signed by the continuing authority (if not same as the project owner) stating they will "accept, operate and maintain" the wastewater treatment facility after successful construction. If the continuing authority will not accept and agree to operate and maintain the wastewater treatment facility, this application will be considered incomplete.
- 5.2 Complete if the continuing authority is a Missouri Public Service Commission, or PSC, regulated entity. See 10 CSR 20-6.010(3)(B)3 for more information. This information is not necessary for existing wastewater treatment facilities currently permitted with a PSC entity as owner and continuing authority.
- 5.3 Complete if the continuing authority is a property owners association. See 10 CSR 20-6.010(3) (B)5 for more information. This information is not necessary for existing wastewater treatment facilities currently permitted with the property owners association as owner and continuing authority.
- 6.0 Complete Engineer contact information.
- 7.0 All applications must be signed as follows in accordance with 10 CSR 20-6.010(2)(B) and the signatures must be original:
- A. For a corporation, by an officer having responsibility for the overall operation of the regulated facility or activity or for environmental matters.
 - B. For a partnership or sole proprietorship, by a general partner or the proprietor.
 - C. For a municipal, state, federal or other public facility, by either a principal executive officer or by an individual having overall responsibility for environmental matters at the facility.

Part B – Land Application

Complete Part B only if the proposed construction project includes land application of wastewater from a treatment facility.

- 8.0 Provide the applicable Facility Information land application information. Check the appropriate boxes.
- 9.0 Provide the applicable Storage Basins information. Check the appropriate boxes.
- Freeboard – The depth from the top of the berm to the emergency spillway. Minimum depth is one foot.
 - Safety Volume – The depth to contain the 25-year, 24-hour storm event. Minimum depth is one foot.
 - Maximum Operating Water Level – The water level at the bottom of the safety volume. Minimum depth is two feet below the top of the berm.
 - Minimum Operating Water Level – The water level above the bottom of the lagoon basin for seal protection. Minimum depth is two feet and may be greater when additional treatment volume is included.
 - Total Depth is from the top of the berm to the bottom of the lagoon basin including freeboard.
- 10.0 Provide the applicable Land Application System information. Check the appropriate boxes.

10.7 Check the appropriate box. If the land application rate is based on a Nutrient Management Plan, or N and P, include the plan with this application for department review.

Mail the completed form and applicable fee to the department.

If there are any questions concerning this form, please contact the Department of Natural Resources, Water Protection Program at 800-361-4827 or 573-751-1300 or visit dnr.mo.gov/env/wpp.