VALUATION REPORT

City of Lawson, Missouri
Water Delivery and Wastewater Systems

Prepared for:

Ms. Takisha Walker
Manager Business Development – Proposal & Integration
Missouri American Water Company
727 Craig Road
St. Louis, Missouri 63141

Prepared by:

Edward W. Dinan, CRE, MAI
Dinan Real Estate Advisors, Inc.
2023 South Big Bend Boulevard
St. Louis, Missouri 63117

Joseph E. Batis, MAI, R/W-AC
Edward J. Batis & Associates, Inc.
313 N. Chicago Street
Joliet, Illinois 60432

Chris Stallings, MAI, CCIM, MRICS
Butler Burgher Group
4615 Southwest Freeway, Suite 810
Houston, Texas 77027

DINAN REAL ESTATE ADVISORS, INC.	EDWARD J. BATIS & ASSOCIATES, INC.	BUTLER BURGHER GROUP
2023 South Big Bend Boulevard	313 N. Chicago Street	4615 Southwest Freeway, Suite 810
St. Louis, Missouri 63117	Joliet, Illinois 60432	Houston, Texas 77027

July 7, 2017

Ms. Takisha Walker
Manager Business Development – Proposal & Integration
Missouri American Water Company
727 Craig Road
St. Louis, Missouri 63141

Re: ***City of Lawson, Missouri***
Water Delivery and Wastewater Systems Appraisal

Dear Ms. Walker:

In accordance with your request, we have made a physical inspection on June 7, 2017 of the facilities and real estate that comprise the City Lawson delivery and wastewater systems, located in Lawson, Missouri.[1]

The water delivery and wastewater systems (referred to herein as "the subject property") are owned by the City of Lawson, Missouri, and are located in Clay and Ray Counties, Missouri. The community system has a total of 1,874 customers, of which 970 are water customers and 904 are wastewater customers.

The purpose of the appraisal report was to arrive at an opinion of market value of the subject water and wastewater systems as private systems (the intended use) as of the date of our inspection of the subject property.

This Appraisal Report is prepared in conformance with Standards Rule 2-2(a) of the 2016-2017 Edition of the *Uniform Standards of Professional Appraisal Practice* (USPAP). In addition to being prepared in compliance with USPAP, this appraisal has been prepared in accordance with the *Code of Ethics* and *Standards of Professional Practice* of the Appraisal Institute.

---

[1] *Throughout the attached appraisal report, any reference to the appraisers' "inspection", "subject property inspection", "inspection of the subject property", "inspection of the subject water and wastewater systems", etc., refers to the appraisers' customary task of viewing the subject property for purposes of observing the condition, layout, design, and utility of the real property (land and building), as is typical in the appraisal professional and in the framework of completing the appraisal process. The reference to the term "inspection" in the context of the appraisers' work should not be interpreted to suggest the appraisers have any expertise and/or qualifications in the assessment of the condition and functionality of any mechanical and non-mechanical components of the subject property water delivery and wastewater systems. The appraisers refer the client and intended users of the attached appraisal report to the engineer's report for an assessment of the water and wastewater systems' infrastructure components. The three professional real estate appraisers co-signing the attached appraisal report are not qualified to independently detect and assess the condition and functionality of the water and wastewater systems' infrastructure components. However, the three professional real estate appraisers co-signing the attached appraisal report assume that the water and wastewater delivery systems' components (including the plant, pumps, and all related facilities) are in proper working order and have been maintained adequately to meet all pertinent codes and regulatory requirements.*

In completing our analysis of the subject property water system, we relied on a report prepared by Flinn Engineering, dated July 7, 2017. The Flinn Engineering report is attached to this appraisal report.

Based upon our analysis of the subject property system and taking into consideration the independent report prepared by Flinn Engineering, dated July 7, 2017, it is our opinion the market value of the City of Lawson water and wastewater systems was $4,000,000 (Four Million Dollars) as of June 7, 2017.

This appraisal report is prepared subject to the Special Assumptions and Limiting Conditions found on Pages 10 - 13. The Special Assumptions and Limiting Conditions address several significant issues that impact the analysis and conclusions presented in the attached report, including:

- Information provided by the client
- Location of all mains for water delivery and wastewater collection systems assumed to be in public rights of way
- Identification of the parcels owned in fee
- The Flinn Engineering Report
- The term “Inspection”
- Presumed permanent easements for lift stations, pump station site, and water tower site
- Customer counts
- Purchase of water
- Environmental issues
- Soils and subsoils

Each of the three appraisers co-signing this report (Mr. Dinan, Mr. Batis, and Mr. Stallings) participated in the assignment by collecting and analyzing relevant data, and forming the opinions and final conclusions. All three appraisers were present for the physical inspection of the subject property systems on June 7, 2017.

While each of the appraisers performed different tasks, and were responsible for different parts of this assignment, the three appraisers consulted throughout the assignment with each other, the client, and representatives from the City of Lawson.

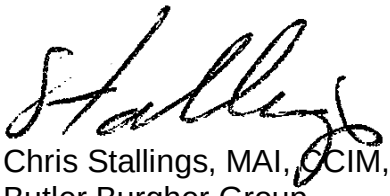
We certify that we personally have no undisclosed interest, either present or contemplated, in the real estate described herein as the subject property; furthermore, neither the procurement of this appraisal assignment nor the negotiated compensation was contingent upon a predetermined conclusion of value, a value estimate which advocates the client's position, or the occurrence of any subsequent event.

On behalf of Dinan Real Estate Advisors, Inc., Edward J. Batis & Associates, Inc., and Butler Burgher Group, we appreciate the opportunity to prepare this appraisal report for Missouri American Water Company. Please feel free to contact the undersigned should you have any questions regarding the assignment.

Sincerely,

Edward W. Dinan, CRE, MAI
Dinan Real Estate Advisors, Inc.
State Certified General Real Estate Appraiser RA001300

Joseph E. Batis, MAI, R/W-AC
Edward J. Batis & Associate4s, Inc.
General Certification Lic. #553.000493 (IL; Expires 09/17)
General Certification Lic. #2016044083 (MO; Expires 06/18)



Chris Stallings, MAI, CCIM, MRICS
Butler Burgher Group
Temporary State Certified General #2017015497 (MO; Expires 11/17/17)

TABLE OF CONTENTS

Summary of Salient Facts

Property Type:	City of Lawson Water Delivery and Wastewater Systems, Lawson, Missouri
Facilities:	A water distribution and wastewater system. The water delivery system serves 970 customers and the wastewater system serves 904 customers. The subject property includes three parcels of land owned in fee and a permanent easement interest in 9 additional tracts. The permanent easements pertain to properties that are utilized for lift stations, a water tower, and a pump station. Please refer to the attached report prepared by Flinn Engineering for a list of the infrastructure, system assets, and facilities.
Date of Inspection:	June 7, 2017
Date of Value:	June 7, 2017
Date of Report:	July 7, 2017
Type of Value:	Market Value
Property Rights:	Fee Simple Estate
Value Conclusions:	
Cost Approach:	$ 3,800,000
Sales Comparison Approach:	$ 4,000,000
Final Opinion of Market Value:	**$ 4,000,000**

Final Opinion of Value of $4,000,000 is allocated as follows:

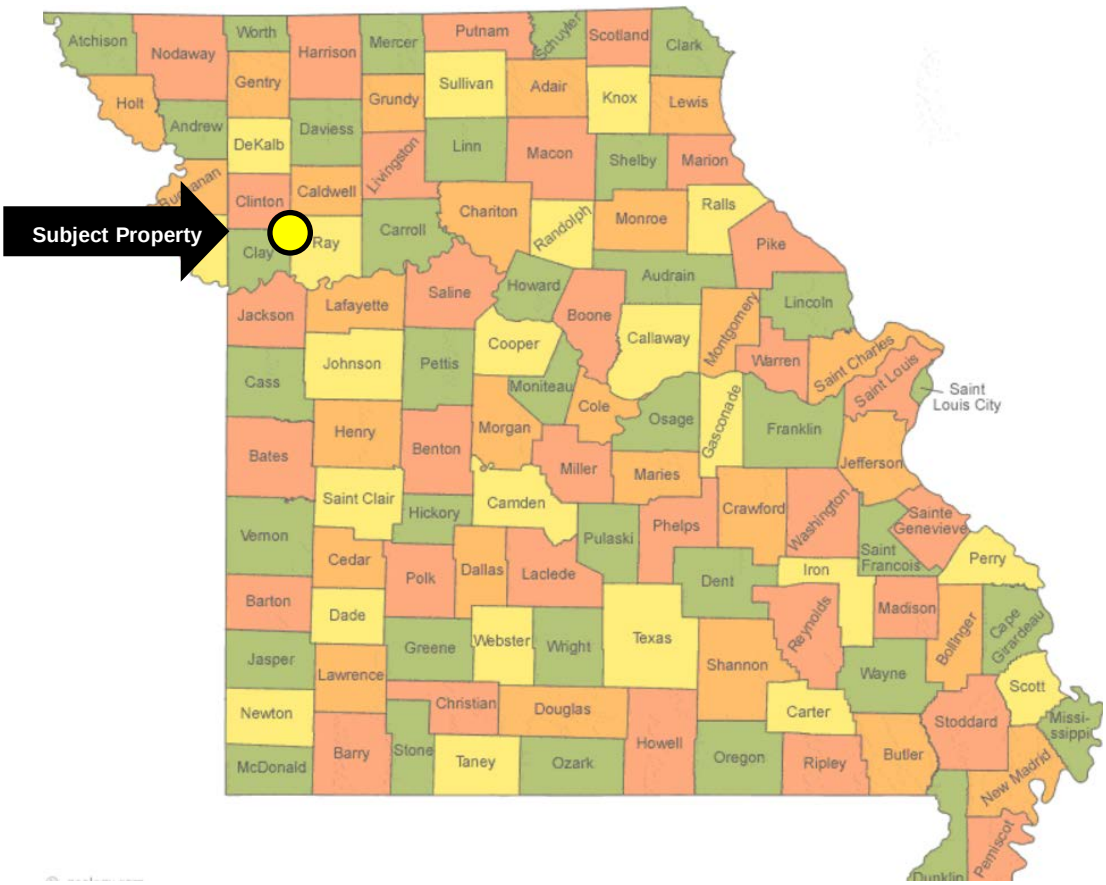
Market Value of Water Delivery System: $2,630,000

Market Value of Wastewater Collection System: $1,370,000

Identification of the Subject Property

The real estate identified herein as the subject property consists of a combination of water and wastewater infrastructure and related components that are owned and operated by the City of Lawson (Lawson, Missouri).

The water delivery system serves 970 customers and the wastewater system serves 904 customers. The subject property assets include three parcels of land owned in fee, facilities and buildings, and water and wastewater systems. The location of the subject property water and wastewater systems places them in Ray and Clay Counties, located in the far western part of Missouri.



Property Rights Appraised

The property rights appraised for the subject property parcels include the Fee Simple Estate of the properties which is defined as:

> *Absolute ownership unencumbered by any other interest or estate, subject only to the limitations imposed by the governmental powers of taxation, eminent domain, police power, and escheat.*[2]

A fee simple estate implies absolute ownership unencumbered by any other interest or estate.

Legal Description

No legal descriptions have been provided for this assignment. The real property included in this valuation assignment includes three parcels of land owned in fee plus permanent easements that are assumed to exist and encumber various tracts of privately owned property that are part of the water and wastewater systems.

Please refer to the Special Assumptions and Limiting Conditions for an explanation regarding the appraisal assignment assumptions relative to the presumed permanent easements. With respect to the three parcels owned in fee, the three parcels have been identified based upon information provided by officials from the City of Lawson.

[2] *The Appraisal of Real Estate,* 14th Edition, (Chicago, Illinois: Appraisal Institute, 2013), p. 5.

Definition of Market Value

The purpose of this appraisal assignment is to arrive at an opinion of market value for the property identified herein as the subject property. The market value opinion is of the subject property system as a private water company system (its intended use).

Market Value is defined as:

The most probable price, as of a specified date, in cash, or in terms equivalent to cash, or in other precisely revealed terms, for which the specified property rights should sell after reasonable exposure in a competitive market under all conditions requisite to a fair sale, with the buyer and seller each acting prudently, knowledgeably, and for self-interest, and assuming that neither is under undue duress.[3]

Implicit in this definition is the consummation of a sale as of a specified date and the passing of title from seller to buyer under conditions whereby:

1. *Buyer and seller are typically motivated;*

2. *Both parties are well informed or well advised, and acting in what they consider their best interest;*

3. *A reasonable time is allowed for exposure in the open market;*

4. *Payment is made in terms of cash in U.S. dollars or in terms of financial arrangements comparable thereto; and*

5. *The price represents the normal consideration for the property sold unaffected by special or creative financing or sales concessions granted by anyone associated with the sale.*

Effective Dates

Date of physical inspection of the property:	June 7, 2017
Effective date of value:	June 7, 2017
Date of report:	July 7, 2017

All three appraisers inspected the subject property on June 7, 2017. The appraisers were accompanied by officials from the City of Lawson.

[3] *The Appraisal of Real Estate,* 14th Edition, (Chicago, Illinois: Appraisal Institute, 2013), p. 59

Exposure Time and Marketing Time

The estimated marketing time of a property implicitly assumes the property would be marketed in a manner typical in the market for that particular type of property, including utilization of the normal channels of exposure; also, implicit is the assumption that the asking price would be reasonably close to the market value of the property; and, the sale terms would conform to the market value definition included herein.

Based upon the conditions which prevailed in the local market effective June 7, 2017, we have concluded a reasonable market time for the subject property system as a whole is 12 to 24 months and the exposure time for the subject property is also estimated to be from 12 to 24 months.

Intended Use and Intended User of the Appraisal

The intended use of this appraisal report is to assist the client (Missouri American Water Company) and the City of Lawson with the acquisition of the City of Lawson water and wastewater systems by the client. The intended users of this appraisal report include the client (for acquisition purposes), the City of Lawson (for asset disposition), and any regulatory agency with jurisdiction over the transfer of the water delivery and wastewater collection system assets from the City of Lawson to Missouri American Water Company.

History of the Subject Property

Pursuant to Standards Rule 1-5 of USPAP, we are required to consider and analyze any current Agreement of Sale, option, or listing of the property being appraised. We are also required to consider and analyze any sales of the subject property that have occurred within the last three years.

To the best of our knowledge, and based upon discussions with the client and the officials from the City of Lawson, the subject property has not been the subject of any sales, listings, offerings or contracts during the last three years. The client provided a copy of a Letter of Intent dated April 21, 2017, and signed by Missouri American Water Company and the City of Lawson. However, at the request of the client, the terms of the Letter of Intent are not being disclosed in this appraisal report.

Scope of Work

The client requested an opinion of Market Value for the City of Lawson Water and Wastewater Systems, located in the City of Lawson, Ray and Clay Counties, Missouri. The systems are reportedly owned and operated by the City of Lawson. In addition to receiving and reviewing numerous pertinent documents from the client pertaining to the subject property water and wastewater systems, we inspected the subject property, met with officials from the City of Lawson, and collected market data for this assignment.

Proper and accepted appraisal methodology in the subject matter is (1) governed by Missouri legislation[4], and (2) guided by the binding requirements of the Uniform Standards of Professional Appraisal Practice (USPAP).[5]

Explicit in the SCOPE OF WORK RULE section of the current (2016-2017) edition of USPAP is the requirement of the real estate appraiser to include research and analysis necessary to develop credible assignment results. The standard for acceptability of Scope of Work is, in part, what an appraiser's peers' actions would be in performing the same or similar assignment.[6]

In accordance with USPAP, consideration was given to the market standards in the appraisal profession established in other market areas by qualified appraisers performing similar assignments. In our opinion, the applicable professional standards of valuation of utility systems generally in Missouri -- and specifically in the case of the valuation of the Lawson systems -- are similar to those established and utilized in other market areas, including Illinois.

Illinois has similar legislation in place regulating the procedures for acquisitions of public utility systems by investor-owned companies. Although not identical, the procedures and framework for valuation are very similar.[7]

---

[4] The Missouri legislation mandates the inclusion and participation of three independent professional real estate appraisers, all of which shall be licensed in the State of Missouri. Missouri Revised Statutes, Chapter 393, Section 393.321.1 (August 28, 2016).

[5] USPAP is developed, interpreted, and amended by The Appraisal Standards Board (ASB) of The Appraisal Foundation. State and federal regulatory authorities enforce the content of the current or applicable edition of USPAP. All state licensed/certified professional real estate appraisers must adhere to USPAP.

[6] USPAP, 2016-2017 Edition, Page 15.

[7] On August 9, 2013, P.A. 98-0213, codified as 220 ILCS 5/9-210.5, went into effect in Illinois. That Section of the Public Utilities Act ("Act") provides an alternate procedure that a large public utility may choose in establishing the ratemaking rate base of a water or sewer utility that the large public utility is acquiring. Among other things, Section 9-210.5 requires that if the utility company elects the procedures of that Section of the Act, three appraisals shall be performed, the appraisers must be selected by the Illinois Commerce Commission, and each appraiser must be State certified general real estate appraiser under the Illinois Real Estate Licensing Act of 2002.

Scope of Work
(Continued)

The Illinois legislation has been in place for a few years. In Illinois, there have been several conveyances of utility systems from the public sector to investor-owned companies that were subject to the recently-enacted legislation governing such transactions.

The standards for valuation in Illinois have been established by the market and are consistently followed by the professional appraisers who engage in valuation assignments of public utility systems pursuant to the applicable governing legislation. The industry-accepted framework for the valuation of utility system assets includes the application of the Cost Approach and the application of the Sales Comparison Approach, and the omission of the Income Capitalization Approach.

The Income Capitalization Approach is not relied on in the typical appraisals of the utility systems due to the generally limited information available from the market necessary for the credible and reliable application of the Income Capitalization Approach. For instance, a proper application of the Income Capitalization Approach would require substantial detail from competing/alternate utility systems in the market, including, but not limited to, income levels from all sources (historic and future expectations), operating expense details, and market-derived capitalization rates used to convert projected net operating income into present value.

One of the factors impacting the challenges of obtaining necessary income and expense data from other systems pertains to the fact that most of the municipal-owned utility systems include public water and sanitary sewer, and often the management and budget operations for the two systems are not separated. Therefore, we have not applied the Income Capitalization Approach in the valuation of the subject property system. The omission of the Income Capitalization Approach does not result in a misleading analysis or conclusion of value. The omission of the Income Capitalization Approach is in compliance with USPAP, and is consistent with the actions of peers for similar assignments.

We applied the Cost Approach in arriving at an opinion of value for the system. The Cost Approach to Value included an analysis and valuation of the parcels in fee, the permanent easements necessary for the water delivery and wastewater systems, the contributory value of the buildings and improvements situated on the fee parcels, and the infrastructure and components that comprise the Lawson water delivery and wastewater systems.

Scope of Work
(Continued)

We then reviewed limited market data pertaining to sales of other utility systems in order to apply the Sales Comparison Approach. In our selection of market data, we included transactional data pertaining to utility systems located in Illinois. The market data available for utility systems acquired in Missouri is very limited, with Missouri American Water Company being the primary entity acquiring systems. Therefore, it is reasonable and acceptable to expand the search for comparable market data to areas outside the borders of Missouri.

We selected the Illinois market due to the following factors: proximity, availability of relatively current market data, similarity of legislative rules governing the valuation process, and the existence of a competitive market environment with multiple buyers influencing the balance of supply and demand.

Also required by Missouri statute pertaining to the valuation is the inclusion of a professional engineer's report addressing the depreciated cost estimates for the components and infrastructure relating to the water delivery and wastewater system. For purposes of this appraisal report, we are relying, in part, on a report prepared by Flinn Engineering, dated July 7, 2017, in which Flinn Engineering arrives at an opinion of the depreciation cost new of the infrastructure components of the City of Lawson water and wastewater systems.

We reviewed the Flinn Engineering report, consulted with its author, and reviewed the data Flinn relied on in forming their opinions. Furthermore, we reviewed other engineering data and reports pertaining to the subject system as well as several other water and sewer systems. Based upon our reviews and independent research, we find the report prepared by Flinn Engineering to be thorough, prepared in compliance with industry standards, and credible. Therefore, we have relied on the opinions rendered in the Flinn Engineering report.

The Flinn Engineering report does not give any value consideration to the land rights (fee or permanent easements) being acquired by Missouri American Water Company as part of its acquisition of the City of Lawson water and wastewater systems. Therefore, we arrived at an independent opinion of the market value of the easements and fee parcels being acquired as part of the purchase of the subject property water and wastewater systems by Missouri American Water Company.

Finally, we prepared this appraisal report in compliance with the applicable standards as set forth in the 2016-2017 Edition of USPAP.

Special Assumptions and Limiting Conditions

In addition to the Statement of Assumptions and Limiting Conditions found attached hereto, this appraisal report is prepared specifically to the following Special and Limiting Conditions.

INFORMATION PROVIDED BY THE CLIENT

We have been provided information for this assignment by the client (Missouri American Water Company) and from officials from the City of Lawson. The information is assumed to be correct, accurate, and complete. This includes, but is not limited to, all information pertaining to the subject property systems (financial, physical, legal) as well as all information pertaining to other systems acquired by American Water.

We reserve the right to revise all opinions and conclusions presented herein upon receiving or becoming aware of any information that is inconsistent with and/or contradicts the information provided by the client and the City of Lawson.

LOCATION OF ALL MAINS FOR WATER DELIVERY AND WASTEWATER SYSTEMS ASSUMED TO BE IN PUBLIC RIGHTS OF WAY

We have not been provided any information or documentation from City of Lawson officials regarding the issue of whether there are any recorded permanent easements encumbering private property associated with the mains that are part of the water delivery and wastewater collection systems. This appraisal assumes that all of the mains are located within public rights of way.

We reserve the right to revise all opinions and conclusions presented herein upon receiving or becoming aware of any information that is inconsistent with and/or contradicts the assumption outlined above.

IDENTIFICATION OF THE PARCELS OWNED IN FEE

Part of this analysis includes the valuation of three parcels owned in fee. Surveys of the three parcels had not been performed at the time of this report; therefore, the parcels are described herein based upon information from public sources as well as information provided by officials from the City of Lawson.

We reserve the right to revise all opinions and conclusions presented herein upon receiving or becoming aware of any information that is inconsistent with and/or contradicts the land sizes/characteristics as reported herein for the three parcels owned by the City of Lawson in fee.

Special Assumptions and Limiting Conditions
(Continued)

THE FLINN ENGINEERING REPORT

The Flinn Engineering report referenced in the Scope of Work section of this report is assumed to be accurate, complete, and prepared in compliance with applicable industry standards.

We reserve the right to revise all opinions and conclusions presented herein upon receiving or becoming aware of any information that is inconsistent with and/or contradicts the information, analysis, opinions, and conclusions presented in the Flinn report. We also reserve the right to revise all opinions and conclusions presented herein upon receiving more detailed and complete information regarding the age and condition of the existing water and sewer mains.

THE TERM “INSPECTION”

Throughout this appraisal report, any reference to the appraisers' "inspection", "subject property inspection", "inspection of the subject property", "inspection of the subject water and sewer systems", etc., refers to the appraisers' customary task of viewing the subject property for purposes of observing the condition, layout, design, and utility of the real property (land and building), as is typical in the appraisal professional and in the framework of completing the appraisal process.

The reference to the term "inspection" in the context of the appraisers' work should not be interpreted to suggest the appraisers have any expertise and/or qualifications in the assessment of the condition and functionality of any mechanical and non-mechanical components of the subject water delivery and wastewater systems.

The appraisers refer the client and intended/authorized users of this appraisal report to the Flinn Engineering report for an assessment of the water and wastewater systems’ infrastructure components. The three professional real estate appraisers co-signing this appraisal report are not qualified to independently detect and assess the condition and functionality of the water and wastewater systems’ infrastructure components. However, the three professional real estate appraisers co-signing the attached appraisal report assume that the water delivery and wastewater systems’ components (including the plant, pumps, and all related facilities) are in proper working order and have been maintained adequately to meet all pertinent codes and regulatory requirements.

Special Assumptions and Limiting Conditions
(Continued)

PRESUMED PERMANENT EASEMENTS FOR
LIFT STATIONS, PUMP STATION SITE, AND WATER TOWER SITE

Part of this analysis includes the valuation of lift station facilities, pump station facilities, and water tower facilities that are located on nine parcels of private property (see table below). As of the date of this appraisal, we have not received any documentation regarding the existence of permanent easements that reportedly convey to the City of Lawson limited real property rights, including the right to operate, maintain, inspect, repair and replace the components of the respective lift stations, pump station, and water tower.

Copies of the permanent easements for the lift stations were not available for this appraisal assignment, nor were surveys or drawings delineating the areas reportedly encumbered by permanent easements for the benefit of the City of Lawson water delivery and wastewater collection systems.

This appraisal assumes the City of Lawson has permanent and legal means of access to the lift stations, pump station, and water tower, as well as the property rights necessary for the continued use and maintenance/repair/replacement of the facilities as necessary for its water delivery and wastewater operations.

For purposes of this valuation assignment, we have estimated a value contribution for the permanent easements that are presumed to be in effect for the facilities at the nine locations identified in the table below. Based upon a review of the nine locations, a review of the land values researched for the Lawson market area, and a review of permanent easements for water and wastewater systems for other utility projects, it is our opinion the contributory value of the property rights that are assumed to be associated with the nine locations below for the benefit of the City of Lawson is $100,000 (One Hundred Thousand Dollars).

SUMMARY OF PARCELS PRESUMED TO HAVE PERMANENT EASEMENTS

PROPERTY IDENTIFICATION	COUNTY	OWNER
NORTH 69 HWY LIFT STATION	CLAY	GOPPERT FINANCIAL BANK
SOUTH 69 HWY LIFT STATION	CLAY	BURGE, SHEARER
NORTH WEST TERRACE LIFT STATION	RAY	CROSBY
POWDERHORN LIFT STATION	RAY	KOHLER
MUSKET LIFT STATION	RAY	DOLT
RAUM LIFT STATION	RAY	WILLIAMS
SCHWARTZ LIFT STATION	RAY	PENNEY
WATER TOWER WEST OF GOLF COURSE	CLAY	PETERSON
ITALIAN WAY PUMP STATION	CLAY	AIPC MISSOURI LLC

Special Assumptions and Limiting Conditions
(Continued)

CUSTOMER COUNTS

According to officials from the City of Lawson, the subject property water delivery system serves 970 customers and the subject property wastewater system serves 904 customers. This appraisal assumes the customer counts provided by Lawson officials are accurate.

PURCHASE OF WATER

The City of Lawson reportedly has an agreement to purchase water to supply its residents and customers. We have not been provided details of the purchase agreement. This appraisal assumes the City of Lawson's ability and rights to continue purchasing the water required for its service will not be interrupted or discontinued.

ENVIRONMENTAL ISSUES

This report has not taken into consideration the possibility of the existence of any environmental hazards or substances, including but not limited to asbestos, PCB transformers, or other toxic, hazardous, or contaminated substances and/or underground storage tanks (hazardous material), or the cost of encapsulation or removal thereof. Should the client have concern over the existence of such substances or any other hazardous items on the subject properties, the appraisers consider it imperative for the client to retain the services of a qualified, independent engineer or contractor to determine the existence and extent of any hazardous materials, as well as the cost associated with any required or desirable treatment or removal thereof. Under such circumstances, the valuation stated herein would be void.

SOILS AND SUBSOILS

This appraisal report gives no consideration to the potential impact on the subject property regarding any archeological findings; in addition, the cost of preparing any archeological studies/reports for the subject property is not incorporated into this valuation. It is assumed for purposes of this appraisal that there are no hidden or unapparent conditions of the property or subsoils that render the subject property more or less valuable. No responsibility is assumed for such conditions or for arranging for engineering studies that may be required to discover them. It is also assumed that there is full compliance with all applicable federal, state, and local environmental regulations and laws unless noncompliance is stated, defined, and considered in the appraisal report.

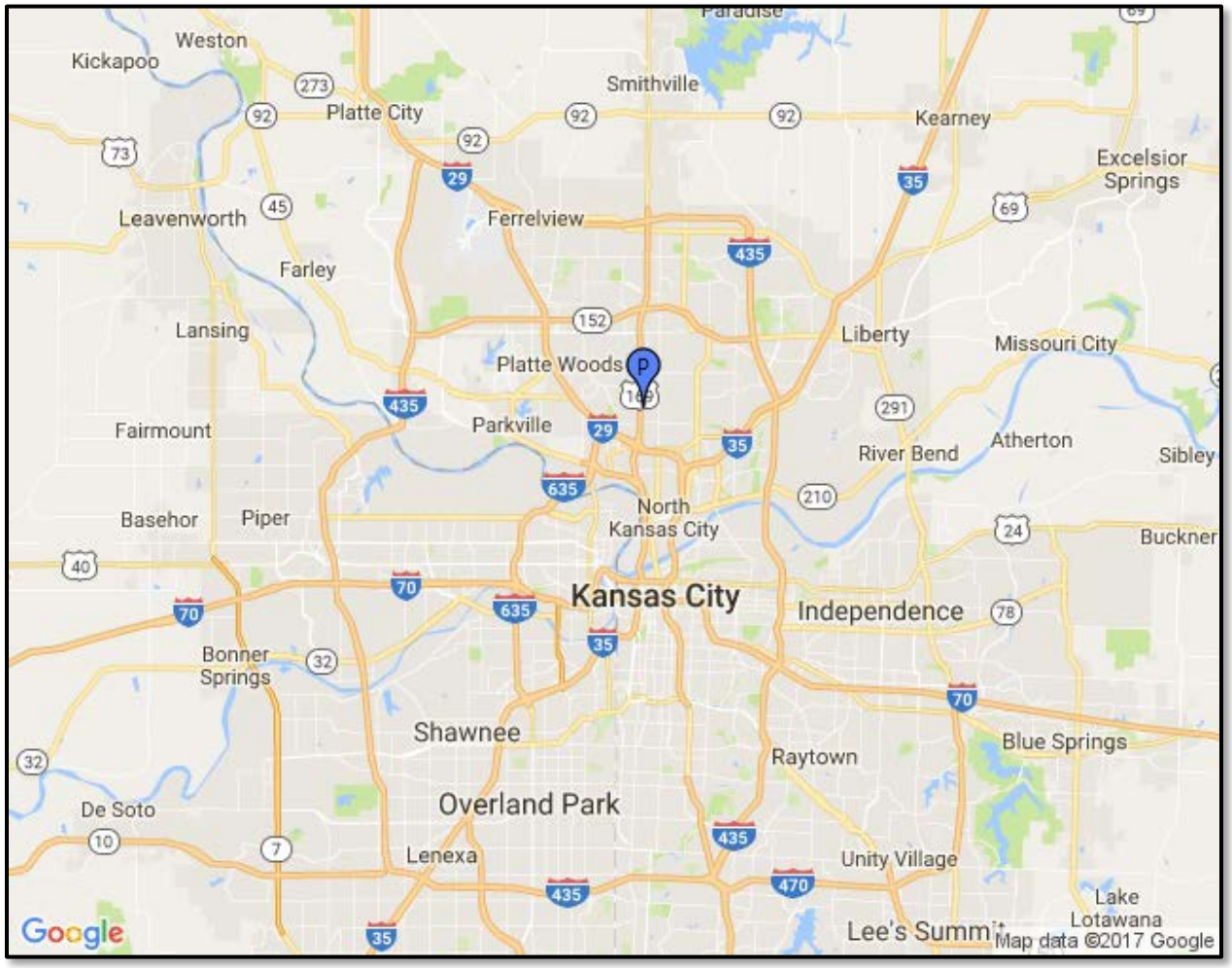
Regional Analysis

Area Overview

The short- and long-term value of real estate is influenced by a variety of factors and forces that interact within a given region. Regional analysis serves to identify those forces that affect property value, and the role they play within the region. The four primary forces that influence real property value include environmental characteristics, governmental forces, social factors, and economic trends. These forces determine the supply and demand for real property, which, in turn, affect market value.

The subject is located within the city limits of Lawson, Missouri in the northern portion of the Kansas City metropolitan statistical area (MSA).

REGIONAL MAP



Regional Analysis
(Continued)

Economic & Demographic Profile

The following profile of the Kansas City MSA was provided by Economy.com, a leading provider of economic, financial, and industry information. A full detailed report can be found as an addendum to this report.

Economy.com's core assets of proprietary editorial and research content as well as economic and financial databases are a source of information on national and regional economies, industries, financial markets, and demographics. The company is staffed with economists, data specialists, programmers, and online producers who create a proprietary database.

Economy.com's approach to the analysis of the U.S. economy consists of building large-scale, simultaneous-equation econometric models, which they simulate and adjust with local market information, creating a model of the U.S. macroeconomy that is both top-down and bottom-up. As a result, those variables that are national in nature are modeled nationally while those that are regional in nature are modeled regionally. Thus, interest rates, prices, and business investment are modeled as national variables; key sectors such as labor markets (employment, labor force), demographics (population, households, and migration), and construction activity (housing starts and sales) are modeled regionally and then aggregated to national totals. This approach allows local information to influence the macroeconomic outlook. Therefore, changes in fiscal policy at the national level (changes in tax rates, for example) are translated into their corresponding effects on state economies. At the same time, the growth patterns of large states, such as California, New York, and Texas, play a major role in shaping the national outlook.

In addition on a regional basis, the modeling system is explicitly linked to other states through migration flows and unemployment rates. Economy.com's model structure also takes into account migration between states.

Critical Observations

The following bullet points summarize some of our general observations relating to the subject's region.

- Location – The Kansas City MSA is located across both the Kansas and Missouri state lines, with both states sharing equally in the geographic area. Interstates 35 and 70 bisect Kansas City east/west and north/south, respectively, making the area easily accessible.

Regional Analysis
(Continued)

- Economy – Kansas City's economy is heavily reliant upon manufacturing and the telecommunications industry. Sprint presently employs only about half of the 14,000 employees that it had in early 2008, and job losses at Sprint are continuing since the company's subscriber base remains flat. Nevertheless, employers associated with the healthcare industry represent 5 of the largest 10 employers in the metropolitan area, which is a good source of stability that has experienced growth in the recent past. Furthermore, the manufacturing sector was recently bolstered by news from Ford that additional product lines will secure more local jobs in the automotive industry. General Motors and Ford represent the largest manufacturing entities in Kansas City and employ over 7,300 persons in the area.

- Google has selected Kansas City as the site from which its fiber-optic internet backbone will originate—a technological advantage that no other metropolitan area can boast. Thus, new business is likely to incubate in the very near term. The excess housing inventory will likely evaporate in the near term, but new construction will not likely begin to make a difference until next year.

- Population – Population growth in the MSA is forecasted to grow at a nominal average annual rate of 1.0% over the next four years.

- Income – Personal income levels are projected to increase at an annual compounded rate of near 1.1% per year over the next four years. Per capita income of the MSA is slightly above that of the statewide and national levels.

- Strengths –Kansas City has a diversified economy and large government sector that brings stability to the local economy. The jobless rate remains manageable near 8.5%. The area also has excellent interstate accessibility, both locally and nationally.

- Weaknesses – Weaknesses within the MSA are primarily linked to rising interest rates and increased overall household debt, as well as stagnant population growth. The reliance upon the telecom sector will continue to be a weakness for the local economy.

Employment

According to the Bureau of Labor Statistics, the unemployment rate in Clay County has been lower than the national average in the recent past. As of March 2017, Clay County reported an unemployment rate of 4.2%, which is up from 4.0% in March 2016. The state of Missouri posted an average of 4.2% for March 2017. Clay County is located in what is known as the "Northland", which is only a part of Kansas City. The proceeding table shows civilian employment by industry for Kansas City and Clay County.

Regional Analysis
(Continued)

EMPLOYMENT BY INDUSTRY (2015)		
Industry	Kansas City	Clay County
Architect/Engineer	1.5%	1.5%
Arts/Entertainment/Sports	2.3%	1.4%
Building Grounds Maintenance	4.2%	3.0%
Business/Financial Operations	5.4%	4.7%
Community/Social Services	1.9%	1.5%
Computer/Mathematical	3.1%	3.8%
Construction/Extraction	3.4%	3.9%
Education/Training/Library	5.6%	6.0%
Farming/Fishing/Forestry	0.2%	0.1%
Food Prep/Serving	6.3%	5.3%
Health Practitioner/Technician	6.2%	6.2%
Healthcare Support	2.7%	1.9%
Maintenance Repair	2.5%	3.6%
Legal	1.5%	1.2%
Life/Physical/Social Science	0.8%	0.6%
Management	9.6%	10.2%
Office/Admin. Support	14.9%	14.9%
Production	5.5%	6.5%
Protective Services	2.3%	2.8%
Sales/Related	10.3%	10.6%
Personal Care/Service	3.2%	3.4%
Transportation/Moving	6.7%	7.0%

The primary employment sectors for Kansas City and Clay County are office and administrative support, management, and sales and related services. Following is a table of the largest employers in Kansas City, provided by Kansas City Business Journal. However, the majority of the largest employers are not located in Clay County, rather are located to the south in Jackson County.

LARGEST EMPLOYERS - Kansas City, Missouri		
Employer	Service/Product	No.
Cerner Corporation	Health Care Supplier	9,300
City of Kansas City	Government	4,600
Children's Mercy Hospitals & Clinics	Health Care Facility	6,500
AT&T	Telecommunications	3,800
Hallmark Cards, Inc.	Manufacturing/Headquarters	4,800
H&R Block	Financial	1,100
HCA MidAmerica	Health Services	8,000
Honeywell	Technology	2,600
KCP&L	Utility Company	6,100
Black & Veatch	Engineering	3,200
DST Systems, Inc.	Technology	4,400
State of Missouri	Government	5,900
Truman Medical Centers	Health Care Facility	4,300
UMB Financial	Financial	2,000

Regional Analysis
(Continued)

The following table shows the travel time to work for employees in the respective market areas.

TRAVEL TIME TO WORK (2015)		
	Kansas City	Clay County
Less than 15 minutes	25.6%	24.2%
15 to 29 minutes	44.8%	41.4%
30 - 44 minutes	17.6%	20.3%
45 to 59 minutes	3.8%	6.4%
60+ minutes	2.6%	2.8%
Average Travel Time (in Minutes)	24.0	25.0

According to ESRI demographic services, the majority of employees in Kansas City and Clay County drive less than 30 minutes to get to work. Due to the interstate and highway system through Kansas City, residents can work nearly anywhere in the city and maintain a reasonable commute time. The "Northland" has very few significant employers, and most residents of Clay County drive south to Jackson County for employment.

Demographic Characteristics and Population

The subject property is located within the city limits of Lawson, Missouri. The demographic information shows population within the city limits of Kansas City and Clay County. Kansas City is located within three counties: Clay, Platte, and Jackson.

	Kansas City	AAGR	Clay County	AAGR
2000 Population	441,042	—	184,016	—
2010 Population	459,787	0.4%	221,939	1.9%
2017 Population	478,527	0.6%	239,565	1.1%
2021 Population	491,119	0.5%	250,152	0.9%

AAGR = compounded average annual growth rate

As shown in the preceding table, the population of Kansas City has increased since 2000. The estimations and projections per the demographic service for 2017 and 2021 present continued growth. The breakdown of each age group in the community of Kansas City is shown in the following table.

Regional Analysis
(Continued)

AGE STRATA: Kansas City				
Age	2010	Percent	2017	Percent
0 - 4	34,527	7.2%	32,886	6.9%
5 - 9	30,868	6.5%	32,887	6.9%
10 - 14	28,612	6.0%	31,318	6.5%
15 - 17	17,116	3.6%	17,828	3.7%
18 - 20	17,861	3.7%	17,500	3.7%
21 - 24	27,913	5.8%	23,278	4.9%
25 - 34	75,288	15.7%	75,508	15.8%
35 - 44	60,923	12.7%	65,993	13.8%
45 - 54	65,074	13.6%	59,904	12.5%
55 - 64	50,864	10.6%	58,723	12.3%
65 - 74	26,710	5.6%	37,200	7.8%
75 - 84	17,001	3.6%	17,635	3.7%
85+	7,030	1.5%	7,867	1.6%

The population between ages 65 to 74 have increased at the highest rate since 2010, whereas the 45 to 54 year old age segment has decreased at the highest rate.

Household Growth

The primary source of demand for new multifamily housing is the formation of new households from population growth. The following tables show the household growth, average family size, and percentage of renters for Kansas City and Clay County.

HOUSEHOLD COMPOSITION: Kansas City				
	2000	2010	2017	2021
No. Households	183,625	192,370	201,803	207,944
Average Household Size	2.40	2.39	2.37	2.36
Percentage Renters	—	43.8%	43.8%	—

HOUSEHOLD COMPOSITION: Clay County				
	2000	2010	2017	2021
No. Households	72,559	87,217	93,911	97,979
Average Household Size	2.55	2.54	2.55	2.55
Percentage Renters	—	29.2%	29.2%	—

According to 2000 and 2010 Census data, the number of households in Kansas City has increased. For the projected data for 2010 to 2017, the number of households is estimated to have increased by 4.9% in Kansas City, or 0.7% per year. The projection for 2021 shows a continued upward growth in households.

Conclusion

In light of the social and economic attributes of the Kansas City metropolitan area, we are cautiously optimistic about the short-term outlook. Long-term, the region should remain stable.

Market Area Analysis

A market area is "the defined geographic area in which the subject property competes for the attentions of market participants; the term broadly defines an area containing diverse land uses." Market areas are defined by a combination of factors including physical features, the demographic and socioeconomic characteristics of the residents or tenants, the condition of the improvements, and land use trends.

Market area analysis focuses on the identification of a market area's boundaries and the social, economic, governmental and environmental influences that affect the value of real property within those boundaries. In conducting a market area analysis, the competitive supply and demand for the subject property is more directly addressed.

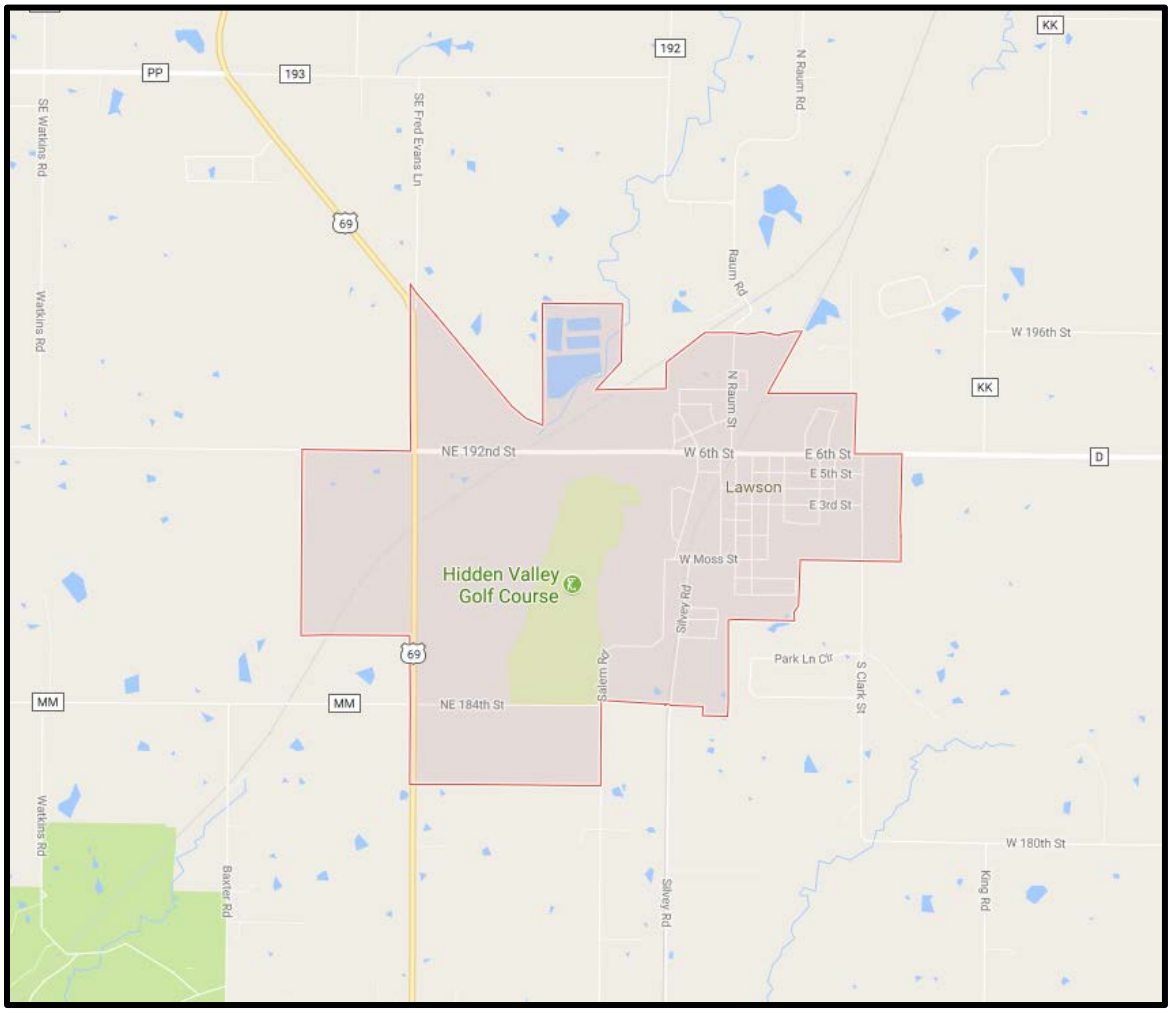
The purpose of a market area analysis is to provide a bridge between the study of general influences on all property values and the analysis of a particular subject. Market area boundaries are identified by determining the area in which the four forces that affect value (social, economic, governmental and environmental) operate in the same way they affect the subject property.

Figure 1 - Market Map

Market Area Analysis
(Continued)

General Description

The market area is considered to be the City of Lawson, for the purposes of this analysis, the market area boundaries are considered the extraterritorial jurisdiction of Lawson as illustrated within the following map:



Market Area Map Outline

Access

Access to the market area from surrounding areas is considered to be average and is provided by U.S. Route 69. This arterial is a north–south highway to a cross-country route. The highway's southern terminus is in Port Arthur, Texas at an intersection with State Highway 87. Its northern terminus is in Albert Lea, Minnesota at Minnesota State Highway 13.

Market Area Analysis
(Continued)

Within Missouri, US 69 merges with I-635 and then almost immediately exits and merges with SH-9, heading east. A half-mile later, US 69 exits off from SH-9 and heads north. After winding through the suburbs of Kansas City, US 69 merges with I-35 for a second time. US 69 stays merged with I-35 for 7 miles before it exits. After exiting the highway, US 69 immediately merges with SH-33 and heads northeast. At the B Hwy, SH-33 heads NNE and US 69 continues heading northeast. US 69 stays somewhat parallel to I-35 as it heads through Missouri, sometimes passing under it. West of Altamont, US 69 merges with SH-6. The highways turn north and a short while later SH-6 splits from US 69 and heads west, while US 69 continues heading north. Southwest of Bethany, US 69 merges with US 136 and heads east into Bethany. In downtown Bethany, US 136 heads east, while US 69 heads north. Still paralleling I-35, US 69 passes into Iowa from Missouri 22 miles later.

In addition to the primary roadways discussed above, the subject neighborhood is served by local/rural roadways within the city.

Supportive Facilities - Education/Services

The Lawson R-XIV School District services the education facilities located within the market area. Lawson High School is the primary high school, while elementary education is provided by Southwest Elementary. Middle School education is provided by Lawson middle School.

Hospitals and medical centers serving the area include: Ray County Memorial in Richmond, MO, Liberty Hospital in Liberty, MO and Cameron Regional Medical Center in Cameron, MO.

Utilities

The market area is adequately serviced by public utilities.

UTILITIES / SERVICES	
Electricity	AmerenUE
Water/Sewer	City of Lawson
Gas	Missouri Gas Electric
Telephone	Numerous Providers
Police/Fire/Refuse	City and County Services
Education	Lawson R-XIV School District

Market Area Analysis
(Continued)

Land Use

The market area is currently about 50% developed with the following uses:

MARKET AREA COMPOSITION	
PROPERTY USE	***% OF MARKET AREA***
SINGLE FAMILY	*30%*
MULTIFAMILY	*5%*
RETAIL	*5%*
OFFICE	*5%*
INDUSTRIAL	*5%*
VACANT LAND	*50%*

The market area is approximately 50% developed with a mixture of small commercial and residential uses. Land use patterns follow traditional development trends in rural areas. The more intense commercial and retail uses are located along major traffic carriers and at major intersections while the residential uses are located away from the major thoroughfares in the interior sections. This is primarily a middle to low income area within a rural area within the state.

Life Stage & Trends

The market area is considered to be average. Its reputation as a rural area is evident by the population in the area and little recent commercial development. Most multifamily and commercial improvements in the area are in average condition, and the overall appearance of the market area properties is average.

Like most of the rural areas in the state, the market area has experienced little growth over the past year, which has been attributable to the widespread economic instability and the population migrating to larger metropolitan areas seeking employment. The economy within the market area has subsequently slowed, and it appears that the market area will follow this trend for the short term as the national economy slowly emerges from the recession.

Market Area Analysis
(Continued)

Economic/Demographic Data

Population characteristics and income levels were obtained for 1, 3 and 5-mile radii around the subject's location. The market area has experienced a slight population decline in the 1 mile radii; however, has experienced a slight population increase in the 3 and 5 mile radii's over the past decade. The same trend is projected to continue over the upcoming five years. A summary of the information is presented in the table below.

COMPARATIVE DEMOGRAPHIC ANALYSIS FOR PRIMARY TRADE AREA			
Description	1 Mile Radius Totals	3 Mile Radius Totals	5 Mile Radius Totals
Population			
2022 Projection	2,430	3,553	7,061
2017 Estimate	2,448	3,578	7,102
2010 Census	2,499	3,657	7,265
2000 Census	2,338	3,460	6,946
2017 Est. Median Age	36.20	38.50	41.40
2017 Est. Average Age	37.20	38.70	40.40
Households			
2022 Projection	853	1,269	2,597
2017 Estimate	859	1,277	2,610
2010 Census	878	1,304	2,662
2000 Census	805	1,201	2,449
2017 Est. Average Household Size	2.81	2.76	2.69
2017 Est. Households by Household Income			
Income Less than $15,000	6.7%	6.1%	6.6%
Income $15,000 - $24,999	11.5%	10.0%	7.9%
Income $25,000 - $34,999	7.7%	7.8%	8.6%
Income $35,000 - $49,999	11.0%	12.1%	13.2%
Income $50,000 - $74,999	16.1%	18.2%	20.3%
Income $75,000 - $99,999	16.3%	16.4%	17.1%
Income $100,000 - $124,999	11.9%	11.8%	11.5%
Income $125,000 - $149,999	6.3%	6.2%	6.1%
Income $150,000 - $199,999	6.6%	6.3%	5.4%
Income $200,000 - $249,999	3.4%	2.8%	2.0%
Income $250,000 - $499,999	2.2%	1.8%	1.2%
Income $500,000 and more	0.4%	0.3%	0.2%
2017 Est. Average Household Income	$85,470	$83,210	$78,539
2017 Est. Tenure of Occupied Housing Units			
Owner Occupied	75.77%	79.48%	83.09%
Renter Occupied	24.23%	20.52%	16.91%
2017 Est. Median All Owner-Occupied Housing Value	$143,592	$158,813	$167,295
Source: 2017 Claritas, Inc.			

Market Area Analysis
(Continued)

Conclusion

The market is a considered to be a smaller city located in the County and State. For the employed population 16 years and older, the leading industries in the market area are manufacturing, followed by construction, transportation and warehousing, retail trades and administrative support services. A number of civic organizations are active in programs to serve the market area. After analyzing the various factors affecting the surrounding areas, it appears that trends will remain relatively unchanged for the foreseeable future. Obviously, future trends in growth and development for the market will be influenced by the national economic recovery.

Description of the Subject Property

The subject property includes the assets that comprise the infrastructure, facilities, and real property rights associated with the water delivery system and wastewater collection system of the City of Lawson.

With respect to the real property rights, the real estate includes the following:

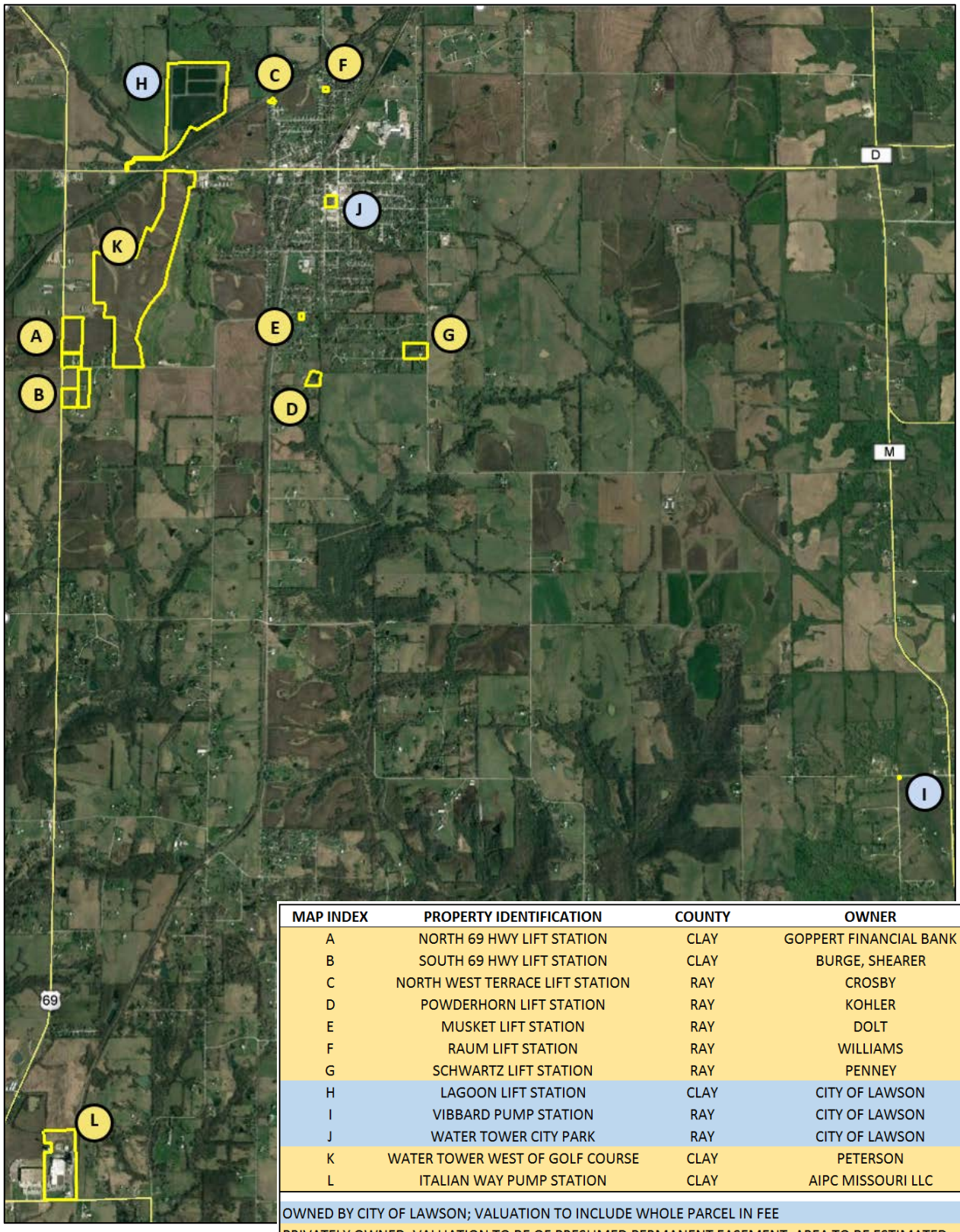
- Three parcels of land owned in fee by the City of Lawson.
- Property rights, though not fee ownership, at nine locations in or near the City of Lawson for facilities and/or infrastructure associated with the water delivery and wastewater collection systems of the City of Lawson.[8]

The 12 parcels of land are summarized in the table below and are referred to herein as Parcels A through L, respectively. The map on the following page depicts the location of the 12 parcels, followed by exhibits pertaining to the 12 parcels.

MAP INDEX	PROPERTY IDENTIFICATION	COUNTY	OWNER
A	NORTH 69 HWY LIFT STATION	CLAY	GOPPERT FINANCIAL BANK
B	SOUTH 69 HWY LIFT STATION	CLAY	BURGE, SHEARER
C	NORTH WEST TERRACE LIFT STATION	RAY	CROSBY
D	POWDERHORN LIFT STATION	RAY	KOHLER
E	MUSKET LIFT STATION	RAY	DOLT
F	RAUM LIFT STATION	RAY	WILLIAMS
G	SCHWARTZ LIFT STATION	RAY	PENNEY
H	LAGOON LIFT STATION	CLAY	CITY OF LAWSON
I	VIBBARD PUMP STATION	RAY	CITY OF LAWSON
J	WATER TOWER CITY PARK	RAY	CITY OF LAWSON
K	WATER TOWER WEST OF GOLF COURSE	CLAY	PETERSON
L	ITALIAN WAY PUMP STATION	CLAY	AIPC MISSOURI LLC
OWNED BY CITY OF LAWSON; VALUATION TO INCLUDE WHOLE PARCEL IN FEE			
PRIVATELY OWNED; VALUATION TO BE OF PRESUMED PERMANENT EASEMENT; AREA TO BE ESTIMATED			

[8] Copies of permanent easements for the nine locations identified herein were not available for this appraisal assignment, nor were surveys or drawings delineating the areas encumbered by permanent easements for the benefit of the City of Lawson for its water delivery and wastewater collection systems. This appraisal assumes the City of Lawson has permanent and legal means of access to the lift stations, pump station, and water tower, as well as the property rights necessary for the continued use and maintenance/repair/replacement of the facilities as necessary for its water delivery and wastewater operations.

Description of the Subject Property
(Continued)

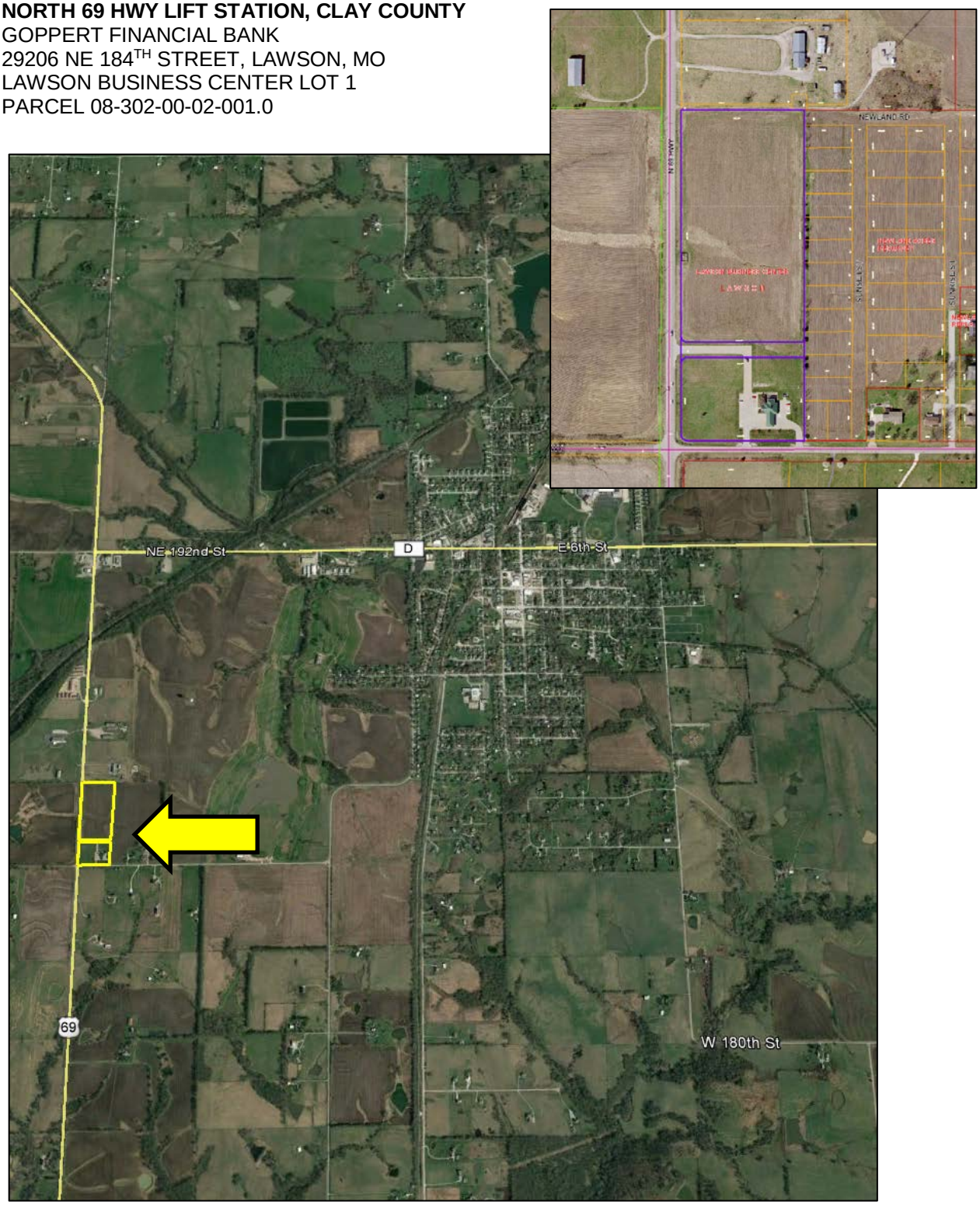


MAP INDEX	PROPERTY IDENTIFICATION	COUNTY	OWNER
A	NORTH 69 HWY LIFT STATION	CLAY	GOPPERT FINANCIAL BANK
B	SOUTH 69 HWY LIFT STATION	CLAY	BURGE, SHEARER
C	NORTH WEST TERRACE LIFT STATION	RAY	CROSBY
D	POWDERHORN LIFT STATION	RAY	KOHLER
E	MUSKET LIFT STATION	RAY	DOLT
F	RAUM LIFT STATION	RAY	WILLIAMS
G	SCHWARTZ LIFT STATION	RAY	PENNEY
H	LAGOON LIFT STATION	CLAY	CITY OF LAWSON
I	VIBBARD PUMP STATION	RAY	CITY OF LAWSON
J	WATER TOWER CITY PARK	RAY	CITY OF LAWSON
K	WATER TOWER WEST OF GOLF COURSE	CLAY	PETERSON
L	ITALIAN WAY PUMP STATION	CLAY	AIPC MISSOURI LLC

OWNED BY CITY OF LAWSON; VALUATION TO INCLUDE WHOLE PARCEL IN FEE
PRIVATELY OWNED; VALUATION TO BE OF PRESUMED PERMANENT EASEMENT; AREA TO BE ESTIMATED

Description of the Subject Property
(Continued)

PARCEL A
NORTH 69 HWY LIFT STATION, CLAY COUNTY
GOPPERT FINANCIAL BANK
29206 NE 184TH STREET, LAWSON, MO
LAWSON BUSINESS CENTER LOT 1
PARCEL 08-302-00-02-001.0

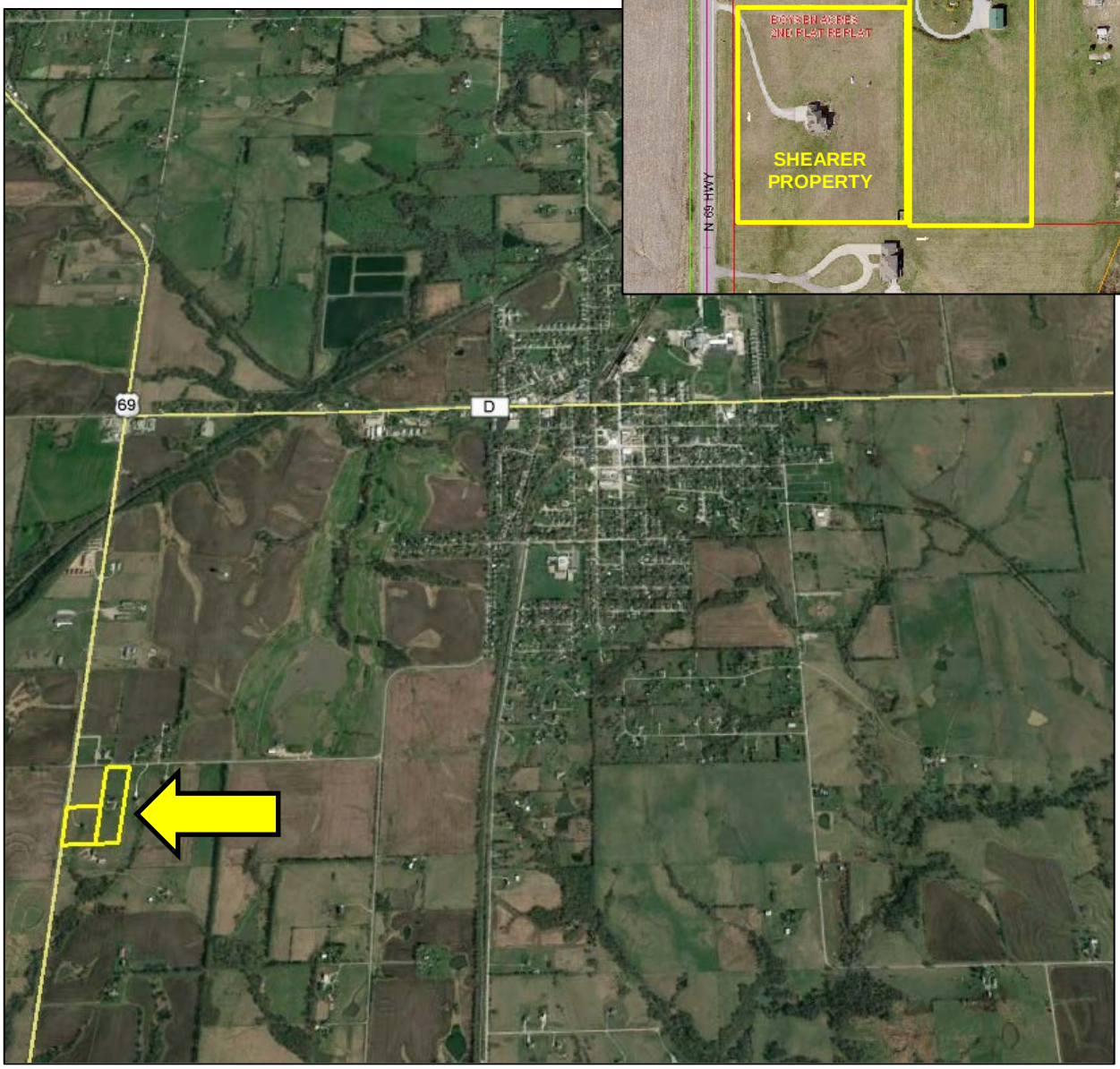


Description of the Subject Property
(Continued)

PARCEL B
SOUTH 69 HWY LIFT STATION, CLAY COUNTY

GARY AND JULIE BURGE
PARCEL 08304000200703

ROBERT SHEARER
PARCEL 08304000200701



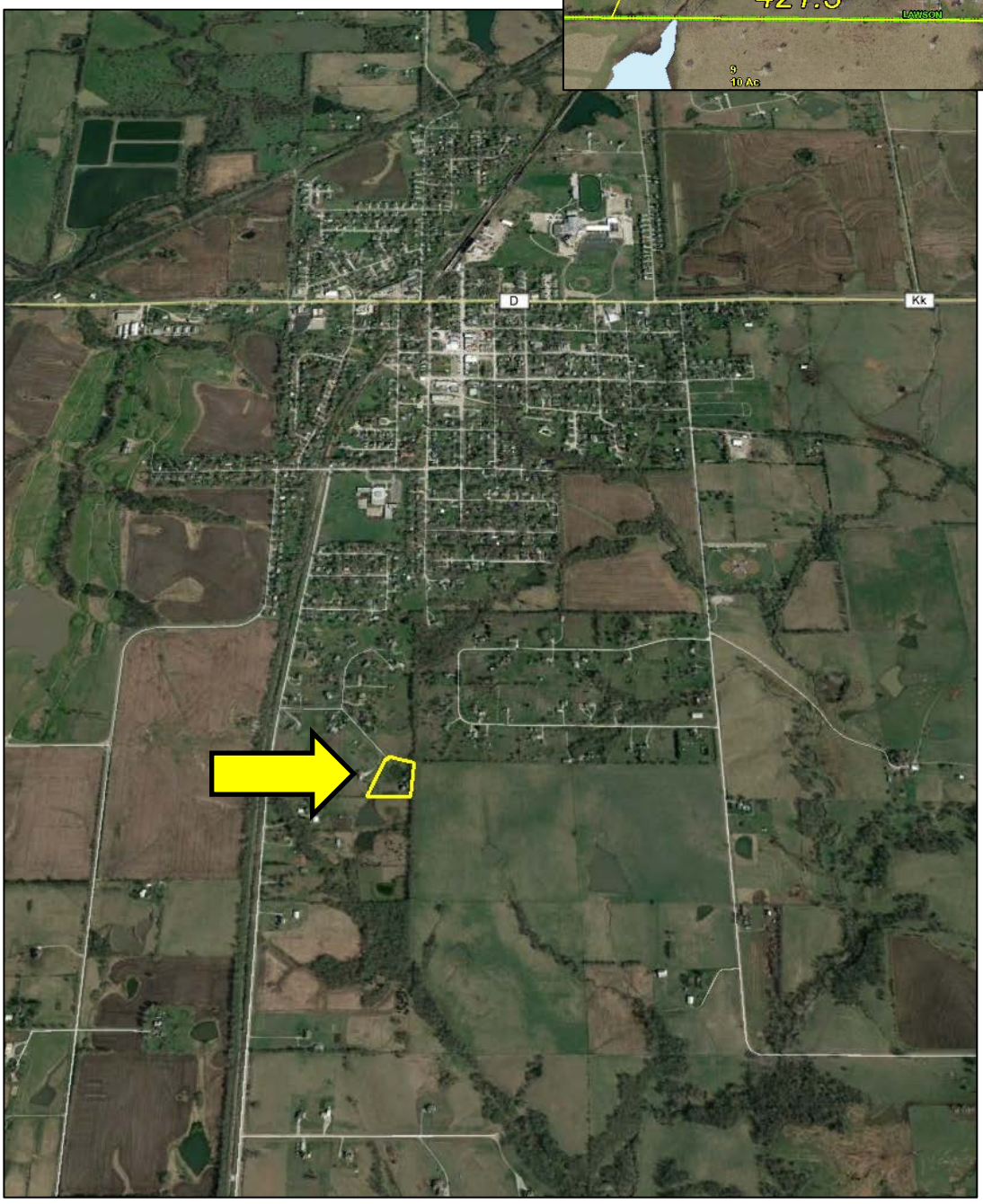
Description of the Subject Property
(Continued)

PARCEL C
NORTH WEST TERRACE LIFT STATION
RAY COUNTY
MATHEW AND DONNA CROSBY
504 N. WEST TERRACE, LAWSON, MO
LOT 17, NORTH RIDGE SUBDIVISION, PHASE ONE
PARCEL 04-09-31-03-008-001.027
1.027 ACRES

- According to Ray County records, owner is William Zegers

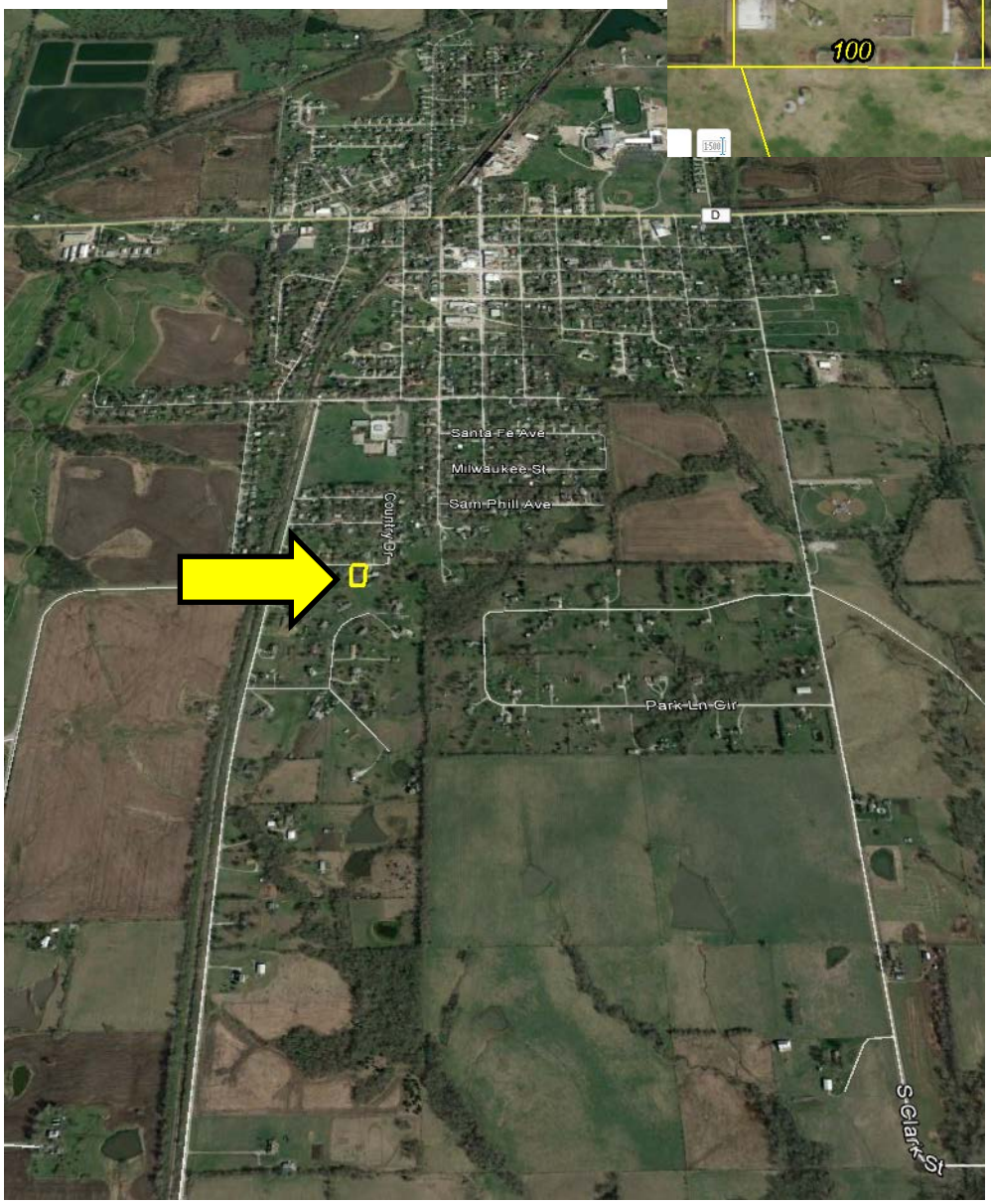
Description of the Subject Property
(Continued)

PARCEL D
OWDERHORN LIFT STATION, RAY COUNTY
CARLTON KOHLER
607 POWDERHORN DRIVE, LAWSON, MO
LOT 10, TRAILS END SUBDIVISION
PARCEL 05-03-07-00-000-007.001
2.8 ACRES



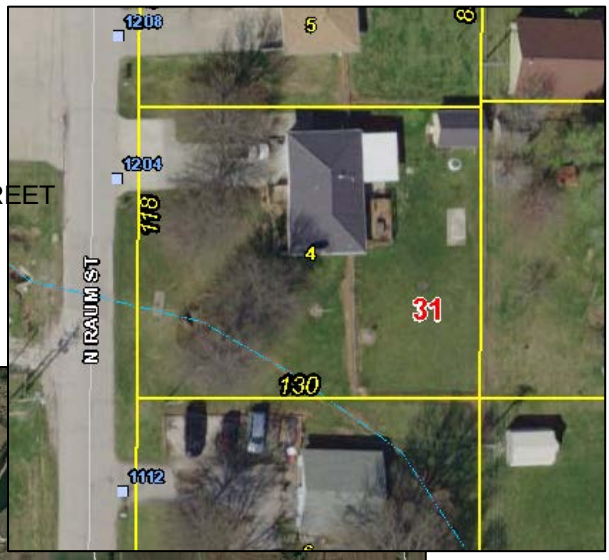
Description of the Subject Property
(Continued)

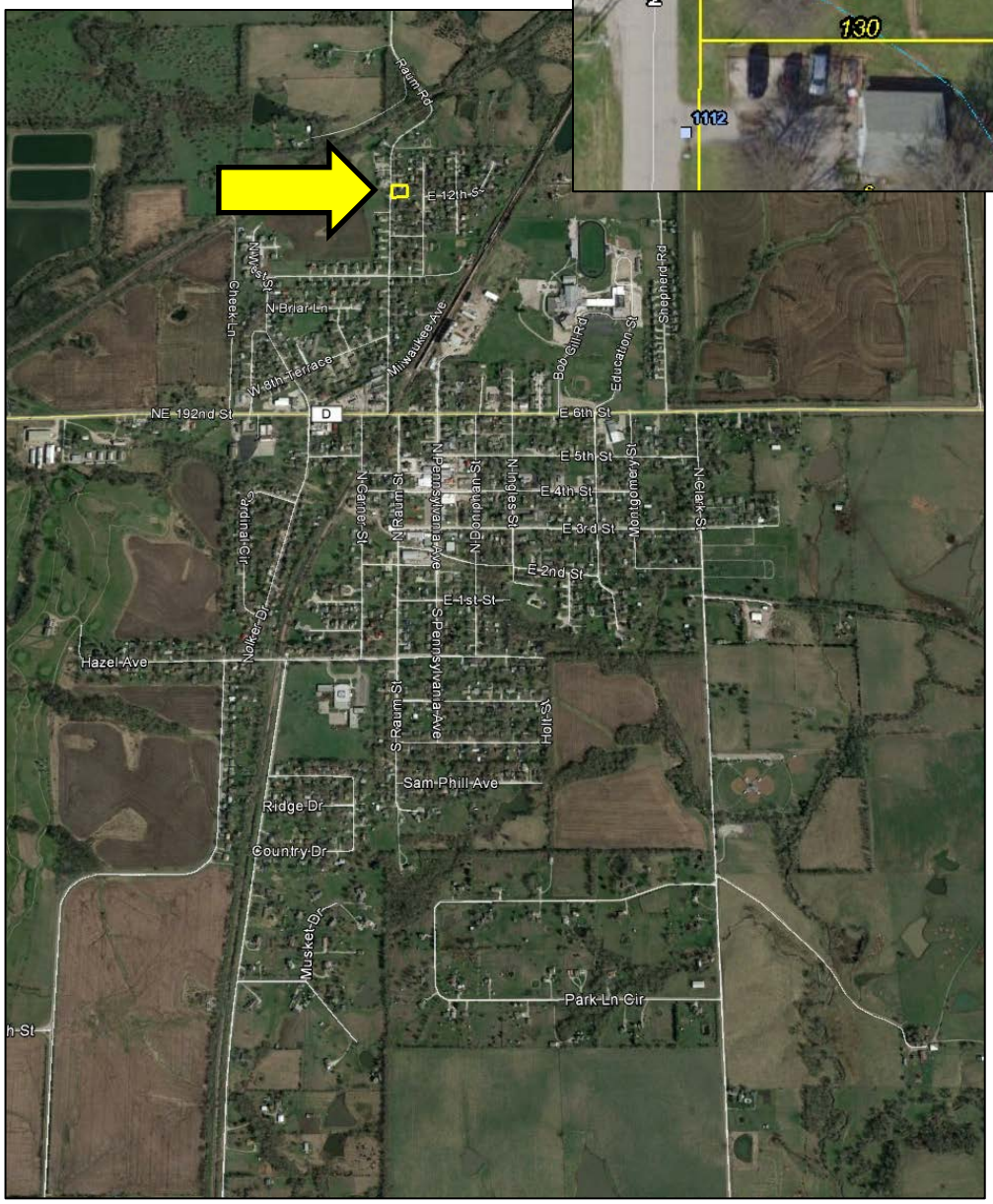
PARCEL E
MUSKET LIFT STATION, RAY COUNTY
LLYOD AND BELINDA DOLT
411 COUNTRY DRIVE, LAWSON, MO
E ½ OF LOT 12, COUNTRY ESTATES SUBDIVISION
PARCEL 05-03-06-03-002-050.000
0.366 ACRES



Description of the Subject Property
(Continued)

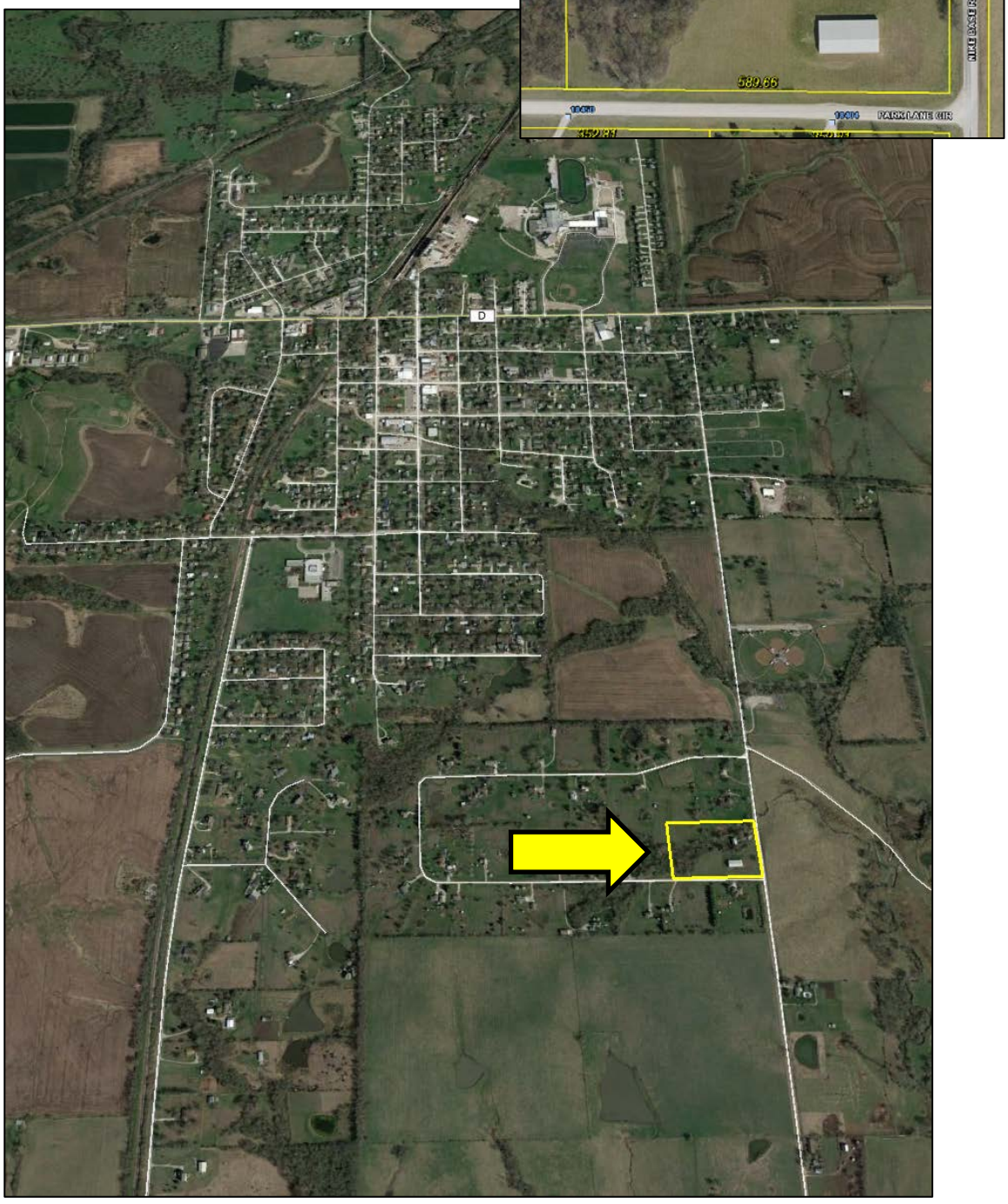
PARCEL F
RAUM LIFT STATION, RAY COUNTY
LANCE WILLIAMS
1204 N. RAUM STREET, LAWSON, MO
SOUTH 93' OF LOT 7 BLOCK 3 IN LAWSON
JEFFERSON HEIGHTS, AND N ½ OF VACATED 12TH STREET
PARCEL 04-09-31-03-003-004.000
0.352 ACRES





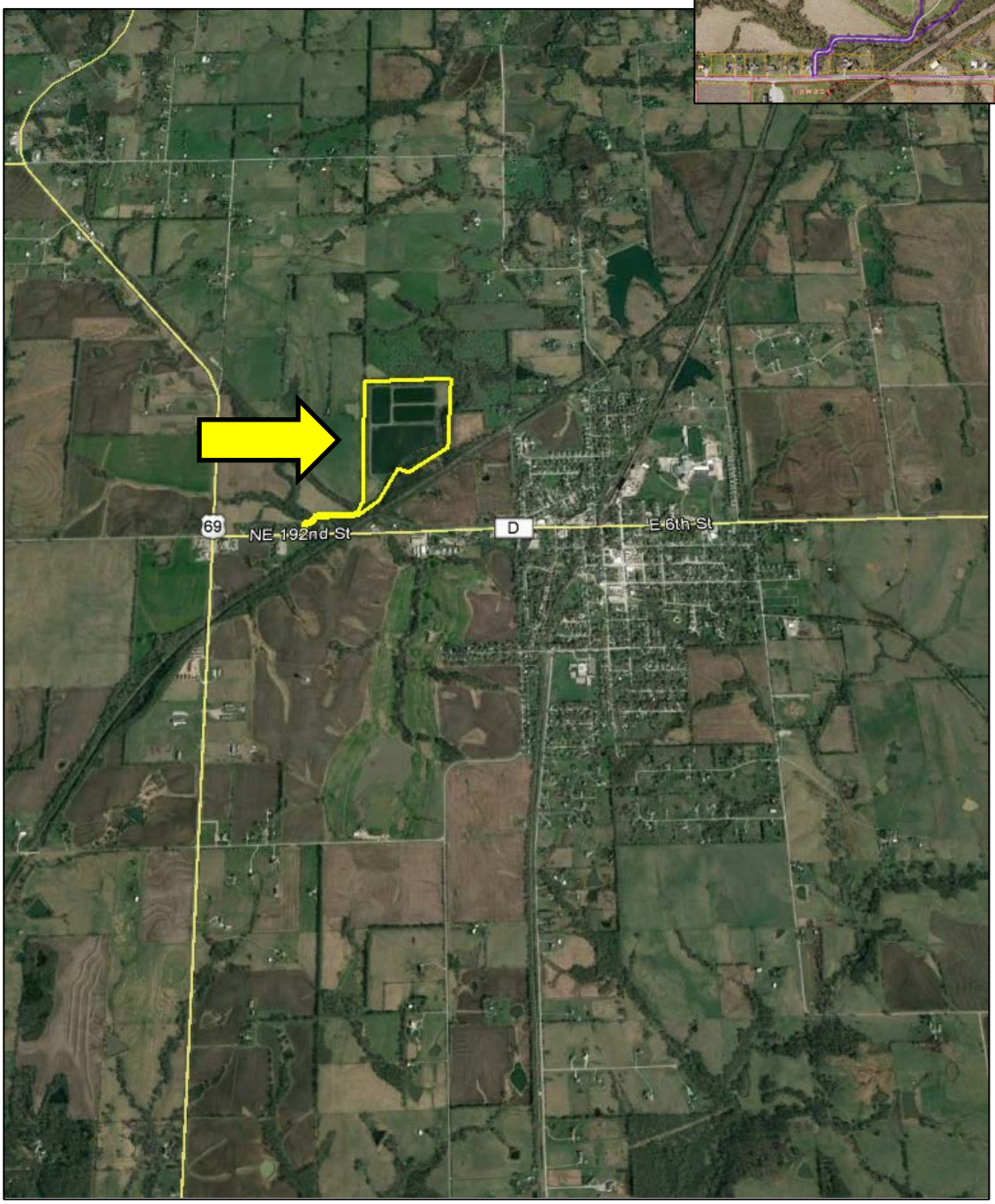
Description of the Subject Property
(Continued)

PARCEL G
SCHWARTZ LIFT STATION, RAY COUNTY
JAMES AND CLAUDINE PENNEY
18468 NIKE BASE ROAD, LAWSON, MO
LOTS 12 AND 13 IN PARK LANE ESTATES
PARCEL 05-03-06-00-000-011.000
5.8 ACRES



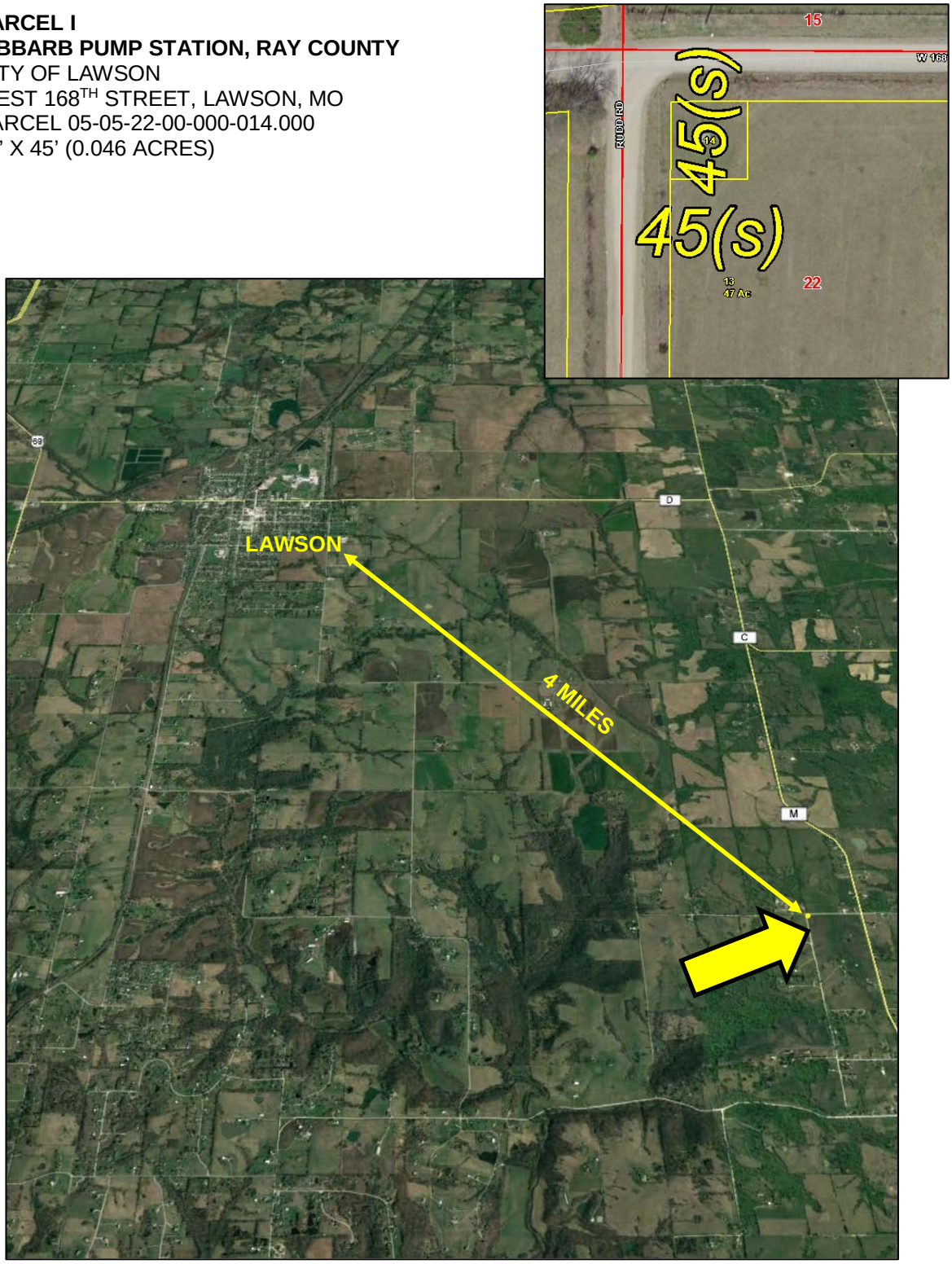
Description of the Subject Property
(Continued)

PARCEL H
LAGOON LIFT STATION, CLAY COUNTY
CITY OF LAWSON
PARCEL 04904000102100
72.8 ACRES



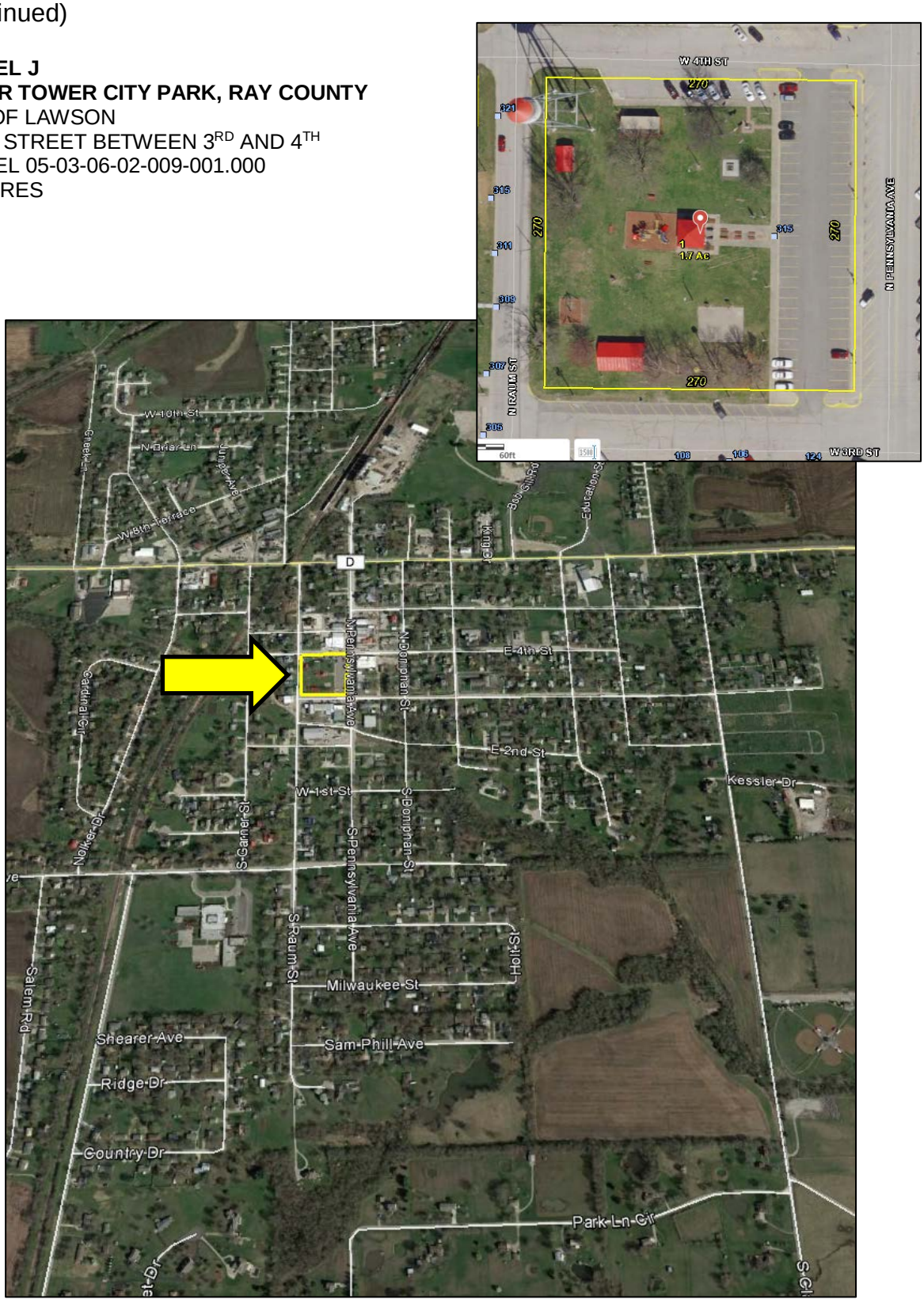
Description of the Subject Property
(Continued)

PARCEL I
VIBBARB PUMP STATION, RAY COUNTY
CITY OF LAWSON
WEST 168TH STREET, LAWSON, MO
PARCEL 05-05-22-00-000-014.000
45' X 45' (0.046 ACRES)



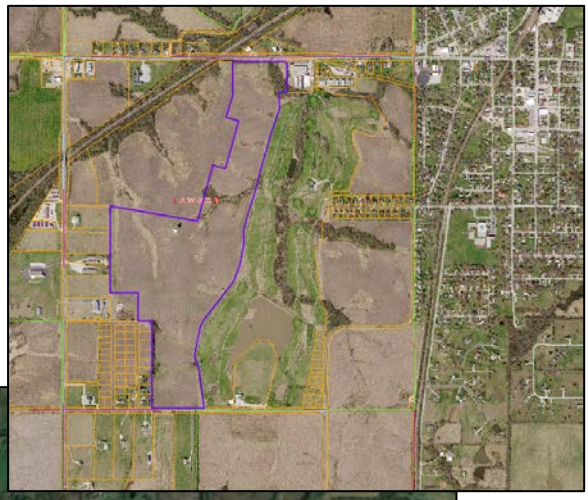
Description of the Subject Property
(Continued)

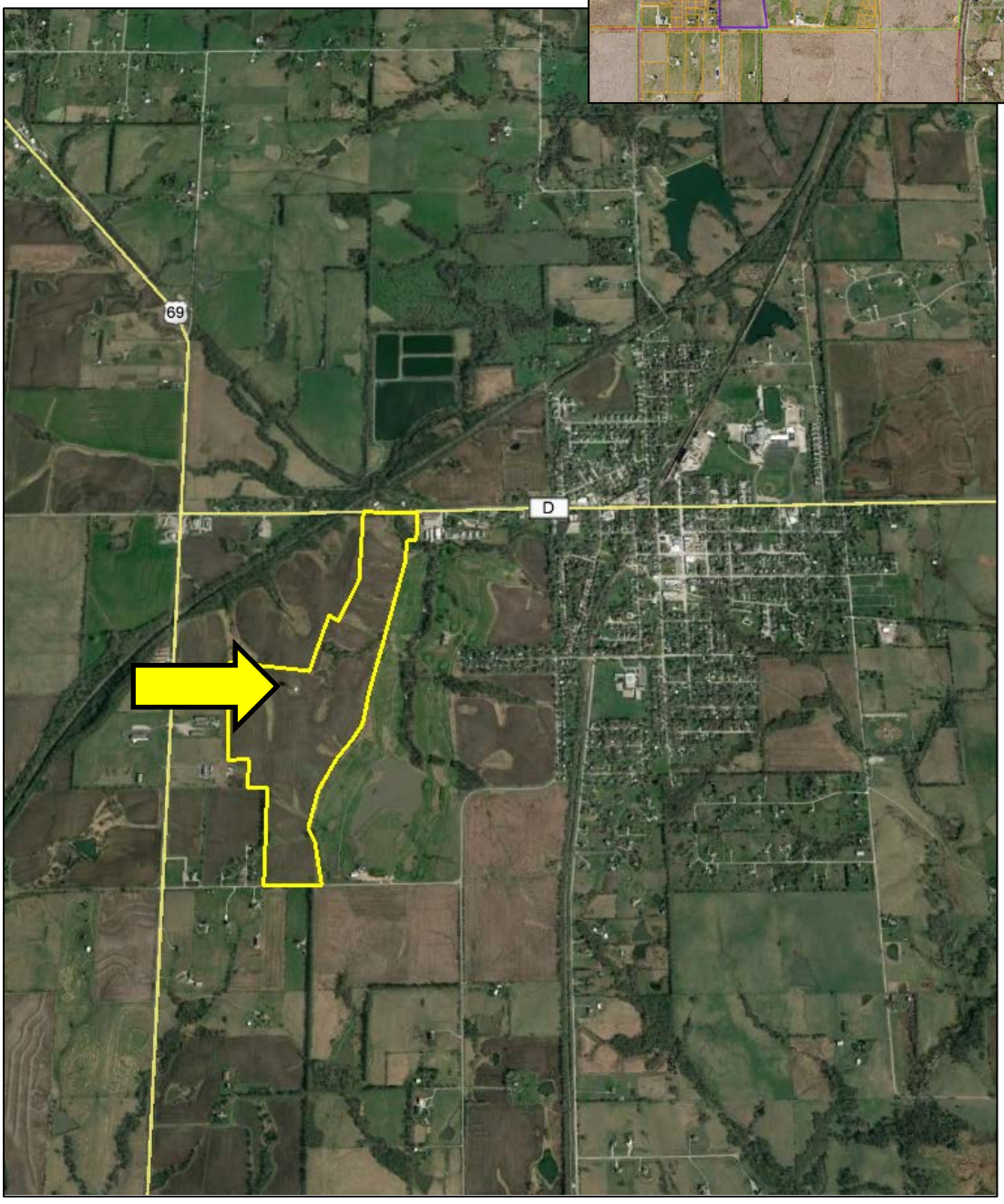
PARCEL J
WATER TOWER CITY PARK, RAY COUNTY
CITY OF LAWSON
RAUM STREET BETWEEN 3RD AND 4TH
PARCEL 05-03-06-02-009-001.000
1.7 ACRES



Description of the Subject Property
(Continued)

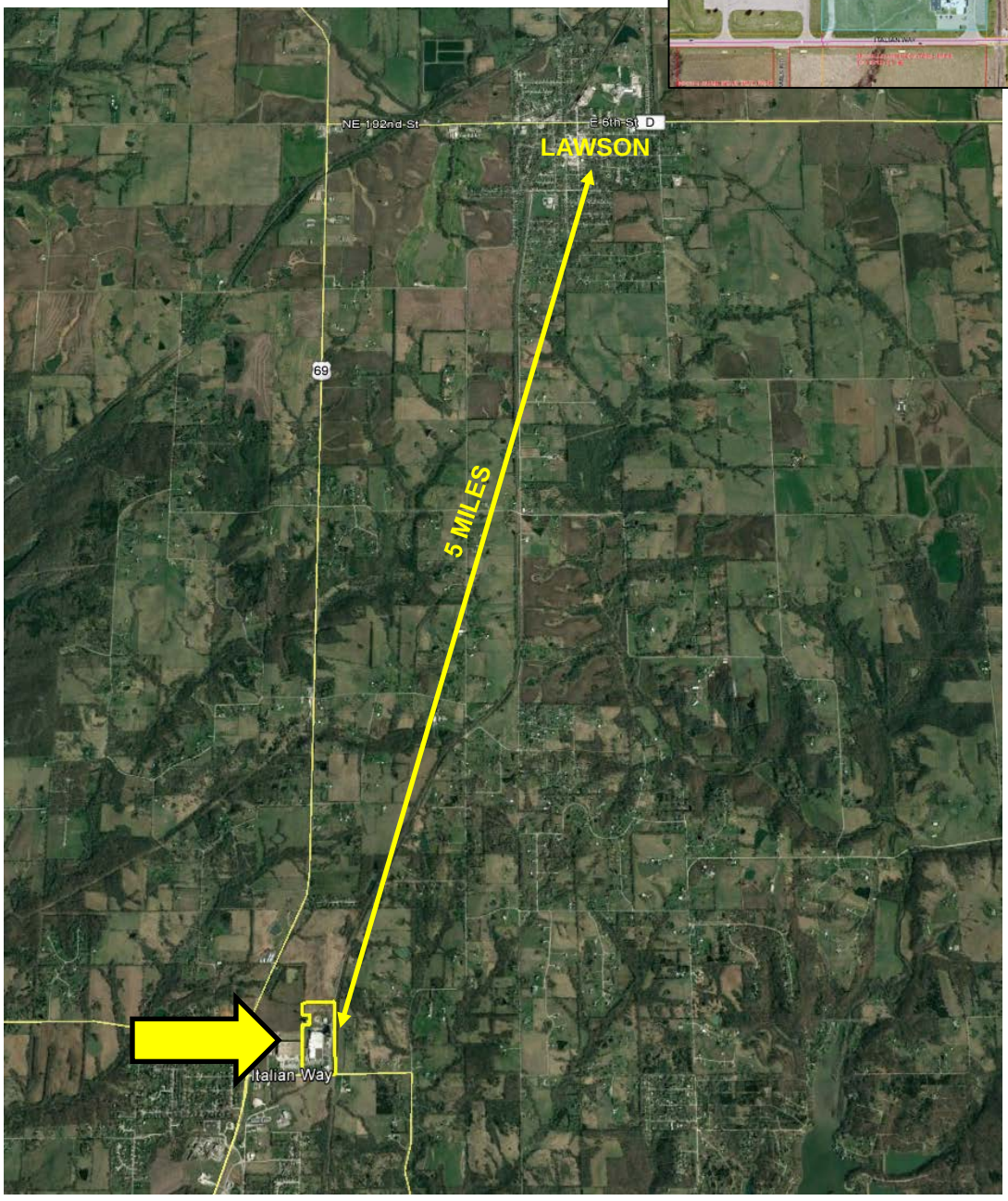
PARCEL K
WATER TOWER WEST OF GOLF COURSE
CLAY COUNTY
TIMOTHY AND CHRISTINE PETERSON
MCCALLEY FARM PLAT #1 LOT 2
PARCEL 08302000101406





Description of the Subject Property
(Continued)

PARCEL L
ITALIAN WAY PUMP STATION, RAY COUNTY
1000 ITALIAN WAY, EXCELSIOR SPRINGS, MO
AIPC MISSOURI, LLC
08-902-00-03-022.00



Description of the Subject Property
(Continued)

Description of the Building Improvements

The subject building improvements are limited and consist of a metal warehouse type building and four lagoons. The following paragraphs outline the real estate associated with each system.

Water System

The water system in the City of Lawson was built in 1956. According to the Missouri Department of Natural Resources, the water system is operated at Level 2 and reportedly serves a population of 2,473 and has 958 connections. The water source is 100 percent purchased ground water from Excelsior Springs.

The water system reportedly had a capacity of 0.20 million gallons daily with an average consumption of 0.182 million gallons daily. The finished water storage capacity is 0.35 million gallons. There is an approximate 10 foot by 25 foot, or 250 square foot, metal building located in Excelsior Springs that houses a pump. This building has a poured concrete floor and foundation with metal panel walls and roof. The building is approximately 20 years old.

There are two water towers associated with the water. The first water tower is referred to as the Highway 69/Golf Course Water Tower that was reportedly constructed in the 1990s. The tower has a storage capacity of 300,000 gallons. It has a common street address of 18857 US 69 Highway 69 in Lawson, Missouri. The Parcel Identification Number is 08302000101406. The water tower is located on a utility easement that is 10' by 30'. The brief legal description is Lot 2 of the McCalley Farm Plat #1 as recorded in Clay County, Missouri. The fee simple interest is held by Timothy and Christine Peterson. The water runs from a booster pump from the Excelsior Springs Water Tower via a 12-inch main. The water tower is subject to a maintenance contract.

The second water tower is referred to as the Downtown Water Tower that was reportedly constructed in the 1940s or 1950s. The tower has a storage capacity of 50,000 gallons. It has a common street address of Raum Street in Lawson, Missouri. The Parcel Identification Number is 05-03-06-02-009-001.000. The water tower is owned in fee by the City of Lawson. The brief legal description is All That Block designated as Public Square of the Town of Lawson as recorded in Ray County, Missouri. Approximately two years ago, a mixer was installed in the tank and the exterior was repainted.

Description of the Subject Property
(Continued)

Sewer System

The sewer treatment facility is located off NE 102nd Street, also known as Highway D, and east of Highway 69, in Clay County, Missouri. The Parcel Identification Number is 04904000102100. This is a four-cell lagoon system with the sludge retain in the lagoon. The stabilization lagoon is 17.8 acres, there is a 5.23-acre secondary cell, and two, five-acre finishing cells. The system was designed to accommodate a population of 3,625 with a flow capacity of 300,000 gallons per day. According to the MDNR, the average daily capacity is 247,000 gallons per day. There is controlled discharge of 2,000,000 gallons per day with sludge production of 54.4 dry tons per year. The site area is approximately 73 acres. The legal description is the Northwest ¼ of the Northeast ¼, and the Southeast ¼ of Section 36, Township 54 North, Range 30 West in Clay County, Missouri.

The property is accessed via an asphalt paved road that is gated. It should be noted that in 2020, the MDNR will require upgrades to the system to meet the requirements of their permit. There is a lift station and 24-inch gravity line from the stabilization lagoon.

According to information from Lawson's current permit (MO-0091031) and the Missouri Department of Natural Resources affordability study, the regulations regarding the sewer system operations will be changing in 2020. The water will be required to be disinfected prior to discharge. In addition, a different chemical will need to be added to offset the disinfectant that was added before it can be released into a stream. This will require either a new system to be built or significant changes will need to be made to the existing facility. The chemical added is to control the ammonia levels and nutrient levels. Also, an in-cell aeration system will be needed to help remove the sludge the 1st and 2nd cells. Cost at this time are not known.

In March of 2017, the water was out of compliance according to MDNR. The chlorine that is added to the water to disinfect it will start to break down unless the water is moving which is why looping is important. The water company is doing two looping projects in 2017, both on the south end of the distribution system.

Description of the Subject Property
(Continued)

Water Tower West of Golf Course Looking North

Italian Way Duplex Pumping Station Building Looking Northeast

Description of the Subject Property
(Continued)

Interior View of the Italian Way Pump Station Building Easternmost Room

Interior View of the Italian Way Pump Station Building Westernmost Room

Description of the Subject Property
(Continued)

A View of the North U.S. Highway 69 Lift Station Looking East

A View of the Lagoon Lift Station Looking East

Description of the Subject Property
(Continued)

A View of the Southern Lagoon Looking Northeast

A View of the Northwestern Lagoon Looking Northwest

Description of the Subject Property
(Continued)

A View of the Northeastern Lagoons Looking Northeast

A View of the North West Terrace Lift Station Looking Northwest

Description of the Subject Property
(Continued)

A View of the Raum Lift Station Looking Northwest

The Lift Station Located on the Schwarz Property Looking South

Description of the Subject Property
(Continued)

A View of the Vibbard Pump Station Looking Southeast

A View of the Powderhorn Drive Lift Station Looking Southwest

Description of the Subject Property
(Continued)

A View of the Musket Drive Lift Station Looking Northeast

A View of the Lawson City Park Water Tower Looking Southeast

Highest and Best Use Analysis

The beginning point in the valuation of any real estate is the determination of the property's highest and best use. Highest and Best Use is defined in the 14th Edition of *The Appraisal of Real Estate* as follows:

> *The reasonably probable and legal use of vacant land or an improved property that is physically possible, appropriately supported, and financially feasible and that results in the highest value.*

The 14th Edition states that there are four implicit steps as part of the analysis that are applied in the following order: (1) Legally Permissible, (2) Physically Possible, (3) Financially Feasible, and (4) Maximally Productive.

The subject property includes land (owned in fee and presumed permanent easements), buildings, and infrastructure/facilities associated with the City of Lawson water delivery and wastewater systems.

After considering the components of the subject property systems as a whole, and taking into account the analysis and report prepared by Flinn Engineering, it is our opinion the highest and best use of the subject property as of June 7, 2017, is its present use as a water delivery and wastewater system. Furthermore, it is our opinion the market value of the land, as vacant, is also for its present use as part of a utility infrastructure system.

Appraisal Process

In arriving at opinions of value for the two subject properties, we have followed an orderly set of steps that has led us to a final conclusion of market value. This procedure is known as the "Appraisal Process" and is summarized in the exhibit below.

The Valuation Process
Identification of the Problem
Identify client and intended users Identify the intended use Identify the purpose of the assignment Identify the effective date of the opinion Identify the relevant characteristics of the property Assignment conditions
Scope of Work Determination
Data Collection and Property Description
Market Area Data Subject Property Data Comparable Property Data
Data Analysis
Market Analysis Highest and Best Use Analysis
Land Value Opinion
Application of the Approaches to Value
Sales Comparison Approach Income Capitalization Approach Cost Approach
Reconciliation of Value Indications and Final Opinion of Value
Report of Defined Value

Appraisal Process
(Continued)

Normally included within the steps of this process are the three classic approaches to a value estimate: the Cost Approach, the Sales Comparison Approach and the Income Capitalization Approach. Each of these approaches tends to independently serve as a guide to the valuation of the property with varying degrees of validity.

The Cost Approach gives recognition to the fact that buyers have available to them the alternative of constructing a new building when contemplating the purchase of an existing building. Thus, the cost to reproduce the property is utilized as a measure of value.

However, most properties experience varying degrees of accrued depreciation which result from physical depreciation, functional obsolescence and external obsolescence. Any of these three types of depreciation (or a combination thereof) from which the property suffers must be deducted from the estimated cost new of the improvements. The difficulty, then, in applying the Cost Approach is the ability of the appraiser to accurately extract or estimate the amount of depreciation the property being appraised suffers.

The Sales Comparison Approach is based upon the theory that the value of a property is determined by the actions of buyers and sellers in the market for comparable types of property. Recognizing no two properties are identical and that properties sell at different times under different market conditions, the application of the Sales Comparison Approach requires the appraiser to consider any differences between a respective sale and the subject property which may affect value. After the relevant differences are adjusted for, an indicated range of value results.

The theory of the Sales Comparison Approach also realizes that buyers and sellers often have motivations that are unknown to the appraiser and difficult to quantify in the adjustment process. Therefore, while this approach has certain strengths and foundation, it must be carefully applied in order to lead the appraiser to a realistic opinion of value.

And lastly, the Income Capitalization Approach is typically given very much consideration in the appraisal process for income-producing properties. The Income Capitalization Approach gives recognition to the subject property's capabilities of producing an income and that investors in the real estate market will pay a specific amount of cash, or its equivalency, to receive that income, as well as the rights of ownership of the property at the end of the income period.

Appraisal Process
(Continued)

The Income Capitalization Approach is applied based upon market-extracted information, most notably the income and expenses that prevail in the market for the type of property being appraised. After an appropriate estimate of income is arrived at, the income is converted to an estimate of value via a capitalization rate. The capitalization rate is also either extracted from the market or may be derived based upon a built-up method.

After the appraiser independently applies each approach to value, the three resultant value estimates are reconciled into an overall estimate of value. In the reconciliation process, the appraiser analyzes each approach with respect to its applicability to the property being appraised. Also considered in the reconciliation process is the strength and weakness of each approach with regards to supporting market data.

Regarding the valuation of the subject property, we have applied the Cost Approach and the Sales Comparison Approach. The Income Capitalization Approach was not applied due to the unavailability of the significant amount of market data pertaining to income and expenses that would be necessary to arrive at a credible conclusion.

Following this section is a more detailed explanation of the Cost Approach and the Sales Comparison Approach.

Cost Approach

The Cost Approach to Value is a technique in the appraisal process which recognizes that a prudent purchaser/investor of real estate may consider constructing a new building as an alternative to buying an existing property.

Although it holds true that a prudent purchaser would not pay more for a building than the cost of buying the land and constructing a new building which would offer similar utility, the estimated cost new of the property must be adjusted for items of depreciation which the property being appraised has suffered. Only then will the Cost Approach yield an indication of value which can be correlated with the other two approaches to arrive at the Market Value of the property.

The beginning point of the typical Cost Approach is to arrive at an estimate of the land value as vacant. The land value is arrived at by applying the Direct Comparison Approach utilizing vacant land sales from the market.

The next step is to estimate the cost new of the building. There are two primary types of cost: the Reproduction Cost and the Replacement Cost.

Reproduction Cost is defined as:

> *The cost of construction, at current prices, of an exact duplicate, or replica, using the same materials, construction standards, design, layout, and quality of workmanship, and embodying all of the deficiencies, superadequacies, and obsolescence of the subject building*. [9]

Replacement Cost is defined as:

> *The cost of construction, at current prices, of a building having utility equivalent to the building being appraised but built with modern materials and according to current standards, design, and layout*. [10]

If a property suffers any functional obsolescence, it is necessary to utilize the Reproduction Cost estimate. The measure of loss of value from the functional inadequacy (or superadequacy) would then be deducted as an item of depreciation.

---

[9] *The Dictionary of Real Estate Appraisal*, Second Edition, (Chicago, Illinois: American Institute of Real Estate Appraisers, 1989), p. 254.

[10] Ibid.

Cost Approach
(Continued)

After the cost of the property is estimated, all items of depreciation are measured and deducted from the cost to arrive at an estimate of the depreciated cost new of the improvements. The land value as vacant is then added to arrive at a total estimate of the property via the Cost Approach.

Thus, to accurately estimate the value of the property, the appraiser must:

1). Estimate the value of the land as vacant;
2). Estimate the cost new of the building;
3). Estimate the amount of all items of depreciation, if any;
4). Deduct the depreciation estimate from the cost new estimate; and
5). Add the estimated land value to the depreciated value of the improvements.

The starting point in the application of the Cost Approach is to arrive at an estimate of the subject property land as vacant. The land value is estimated based upon the Direct Sales Comparison theory which basically states that no one will pay more for a parcel of land than the cost of acquiring an equally suitable parcel. Therefore, the value of the site is arrived at by measuring the actions of buyers and sellers in the market for comparable parcels of land.

With regard to the fee values of the three subject property parcels owned in fee (Parcels H, I, and J) and the contributory value of the easements presumed to be in place for Parcels A, B, C, D, E, F, G, K, and L, we have undertaken a study of market sales of vacant land.

The land sales are presented in three categories: Commercial, Residential, and Agricultural. The following is a summary of the market data relied on for this analysis.

Comparable Land Sales Summary - Commercial Land

Sale No.	Name/ Location	Date of Sale	Land Size (Acres)	SP/SF ($)
1	South Street - Richmond, MO	Jan-17	3.50	2.62
2	7600 N. Oak Trafficway - Gladstone, MO	Jan-16	6.06	3.50
3	Lariat Heights Commercial Lots - Lathrop, MO	Sep-15	3.28	0.74
4	2603 NE 57th Terrace - Gladstone, MO	Mar-14	1.67	4.40
5	Antioch Road and NE 56th Terrace - Gladstone, MO	Jul-11	0.85	1.35
6	Italian Way - Excelsior Springs, MO	Listing	5.77	0.55
7	N Jesse James Rd & Tracy Avenue - Excelsior Springs, MO	Listing	4.10	1.65
8	1224-1230 N. Jesse James Road - Excelsior Springs, MO	Listing	13.60	1.77
9	Jesse James road - Excelsior Springs, MO	Listing	1.26	2.17
10	W. Innovation Drive - Kearney, MO	Listing	2.00	2.35
Subject	Tract J and Tract L			
Minimum		Jul-11	0.85	0.55
Maximum		Jan-17	13.60	4.40
Mean		Nov-14	4.21	2.11
Median		Sep-15	3.39	1.97

Cost Approach
(Continued)

Comparable Land Sales Summary - Residential Land				
Sale No.	Name/ Location	Date of Sale	Land Size (Acres)	SP/ACRE ($)
1	16600 NE 144th Street - Kearney, MO	Apr-17	149.05	8,101
2	Oak Street - Excelsior Springs, MO	Apr-17	21.00	3,571
3	17900 Baxter Road - Lawson, MO	Dec-16	37.50	6,342
4	21209 NE 188th Street - Holt, MO	Jul-16	131.00	3,282
5	3166 Clay Road - Greenway, MO	Jul-16	20.00	6,950
6	18710 Nation Road - Holt, MO	Jun-14	40.00	6,765
7	Oak Street - Excelsior Springs, MO	Apr-13	6.78	5,900
8	McCleary Road at Vintage Drive - Excelsior Springs, MO	Apr-12	29.38	11,490
9	Bales Circle, Lot 14 A - Lawson, MO	Listing	5.38	10,335
10	30898 W. 147th Street - Lawson, MO	Listing	5.52	13,587
11	29618 D Highway - Lawson, MO	Listing	0.90	24,444
Subject	Tract C, Tract E, and Tract F			
Minimum		Apr-12	0.90	3,282
Maximum		Apr-17	149.05	24,444
Mean		Aug-15	40.59	9,161
Median		Jul-16	21.00	6,950

Comparable Land Sales Summary - Agricultural Land				
Sale No.	Name/ Location	Date of Sale	Land Size (Acres)	SP/ACRE ($)
1	16600 NE 144th Street - Kearney, MO	Apr-17	149.05	8,101
2	Oak Street - Excelsior Springs, MO	Apr-17	21.00	3,571
3	17900 Baxter Road - Lawson, MO	Dec-16	37.50	6,342
4	21209 NE 188th Street - Holt, MO	Jul-16	131.00	3,282
5	3166 Clay Road - Greenway, MO	Jul-16	20.00	6,950
6	18710 Nation Road - Holt, MO	Jun-14	40.00	6,765
7	Oak Street - Excelsior Springs, MO	Apr-13	6.78	5,900
8	McCleary Road at Vintage Drive - Excelsior Springs, MO	Apr-12	29.38	11,490
6	Nike Base Road - Lawson, MO	Listing	38.50	6,500
7	Highway 69 - Lawson, MO	Listing	78.50	5,414
8	7731 SE Watkins Road - Lawson, MO	Listing	11.15	6,000
9	174th and Baxter Road - Lawson, MO	Listing	37.00	6,500
10	Wilderness Camp Road - Lawson, MO	Listing	7.52	4,588
11	Wilderness Camp Road - Lawson, MO	Listing	17.00	3,529
Subject	Tract A, Tract B, Tract D, Tract G, Tract H, Tract I, and Tract K			
Minimum		Apr-12	6.78	3,282
Maximum		Apr-17	149.05	11,490
Mean		Aug-15	44.60	6,067
Median		Jul-16	33.19	6,171

Cost Approach
(Continued)

VALUATION OF THE THREE FEE PARCELS

Based upon this market data, we have arrived at an opinion of market value of the three subject property parcels owned in fee (Parcels H, I, and J).

With respect to Parcel H (Lagoon Lift Station site), we relied on the Agricultural land market data. The subject property tract contains 72.8 acres. The unit value applicable to Parcel H based upon available market data and subject property information is $3,500 per acre, resulting in a value indication rounded to $255,000.

With respect to Parcel I (Vibbard Pump Station site), we relied on the Agricultural land market data. The subject property tract contains 0.046 acres. The unit value applicable to Parcel I based upon available market data and subject property information is $12,000 per acre, resulting in a value indication rounded to $1,000.

With respect to Parcel J (Water Tower City Park site), we relied on the Commercial land market data. The subject property tract contains 1.7 acres. The unit value applicable to Parcel I based upon available market data and subject property information is $2.00 per square foot, resulting in a value indication rounded to $148,000.

VALUATION OF THE PRESUMED PERMANENT EASEMENT RIGHTS FOR THE NINE ADDITIONAL PROPERTIES

The next step is to determine the contributory value of the permanent easements that are presumed to be in place for the nine parcels identified herein as Parcels A, B, C, D, E, F, G, K, and L.

As of the date of this appraisal, we have not received any documentation regarding the existence of permanent easements that reportedly convey to the City of Lawson limited real property rights, including the right to operate, maintain, inspect, repair and replace the components of the respective lift stations, pump station, and water tower.

Copies of the permanent easements for the lift stations were not available for this appraisal assignment, nor were surveys or drawings delineating the areas reportedly encumbered by permanent easements for the benefit of the City of Lawson water delivery and wastewater collection systems.

This appraisal assumes the City of Lawson has permanent and legal means of access to the lift stations, pump station, and water tower, as well as the property rights necessary for the continued use and maintenance/repair/replacement of the facilities as necessary for its water delivery and wastewater operations.

Cost Approach
(Continued)

For purposes of this valuation assignment, we have estimated a value contribution for the permanent easements that are presumed to be in effect for the facilities at the nine locations.

Based upon a review of the nine locations, a review of the land values researched for the Lawson market area that are presented herein, and a review of permanent easements for water and wastewater systems for other utility projects, it is our opinion the contributory value of the permanent easements presumed to be in place and encumbering the nine parcels for the benefit of the City of Lawson is $100,000 (One Hundred Thousand Dollars).

CONSIDERATION OF THE ASSSETS IDENTIFIED IN THE FLINN ENGINEERING REPORT

The final step in the Cost Approach is to add the depreciated value of the assets, including the facilities and buildings. With respect to the system facilities and buildings, we have consulted with Flinn Engineering, an engineering firm that is very familiar with water company construction costs, depreciation and valuations. A copy of the Flinn report is attached to this appraisal report.

The Flinn report includes a detailed inventory of the assets that are part of this analysis, and concludes an opinion of depreciated book value calculated to be $2,742,046. However, the asset list provided to Flinn for its report does not indicate whether all construction and installation costs are included. Based upon our experience with construction estimates and costs for other projects, it is reasonable to adjust the value indicated in the Flinn report by a factor of 20%. The adjustment is rounded to $550,000.

Based upon our analysis of the real property rights, combined with the Flinn analysis, the total value by the Replacement Cost New Less Depreciation is summarized below.

Market Value of the Threee Parcels Owned in Fee	
Parcel H (Lagoon Lift Station Site)	$255,000
Parcel I (Vibbard Pump Station Site)	$1,000
Parcel J (Water Tower City Park Site)	$148,000
Contributory Value of Permanent Easements for Nine Locations	
(Parcels A, B, C, D,E, F, G, K, and L)	$100,000
Depreciated Asset Value per Flinn Engineering Report	$2,742,046
Adjustment for Installation/Construction	$550,000
Total	$3,796,046
Rounded Value Indication:	**$3,800,000**

Sales Comparison Approach

The Sales Comparison Approach is an approach to value which measures the actions and activity of buyers and sellers in the market and relates those actions to the property being appraised. Also referred to as the Market Approach, the underlying premise of this approach to value is that no prudent purchaser will pay more for a property than the cost of acquiring an equally suitable parcel. The fundamental concept of the Sales Comparison Approach is the Principle of Substitution, which is defined as:

> *A valuation principle that states that a prudent purchaser would pay no more for real property than the cost of acquiring an equally desirable substitute on the open market. The Principle of Substitution presumes that the purchaser will consider the alternatives available and will act rationally or prudently on the basis of the information about those alternatives, and that reasonable time is available for the decision. Substitution may assume the form of the purchase of an existing property, with the same utility, or of acquiring an investment which will produce an income stream of the same size with the same risk as that involved in the property in question.*

Research of the area, state and national real estate market was completed in order to find sales of water distribution systems that included comparable features to the subject property. There have been several sale properties selected from all available sale transactions for analysis in this approach. The sales data was provided through information from the Missouri Public Service Commission, Illinois Commerce Commission, Aqua America Inc., American Water Company, Utilities Inc., Hartman Consultants LLC and Sundstrom & Mundlin LLP.

The sales were considered to be the most comparable to the subject property in terms of arms-length sales transactions, location of the system, capital improvements supporting the water system and number of water customer accounts in the entire system. All information of the sale transactions and properties was confirmed by the previously mentioned party or parties to the transaction.

As explained in the Scope of Work section of this report, we included transactional data pertaining to utility systems located in Illinois in addition to the market data from Missouri. However, the market data available for utility systems acquired in Missouri is very limited, with Missouri American Water Company being the primary entity acquiring systems. Therefore, it is reasonable and acceptable to expand the search for comparable market data to areas outside the borders of Missouri.

Sales Comparison Approach
(Continued)

We selected the Illinois market due to the following factors: proximity, availability of relatively current market data, similarity of legislative rules governing the valuation process, and the existence of a competitive market environment with multiple buyers influencing the balance of supply and demand. The following is a summary of the market data given the most weight in our analysis.

Sales Comparison Approach
(Continued)

Sale One

Village of Wardsville Utility System (Water and Sewer)
Wardsville, Cole County, Missouri
Sold May, 2017 (Asset Purchase Agreement Signed December 8, 2016)
Price: $2,750,000
$795,428 for Water System with 480 Customers ($1,657 per customer)
$1,954,575 for Sewer System with 407 Customers ($4,802 per customer)
Seller: Village of Wardsville
Buyer: Missouri American Water
(Case #WA-2017-0181)

According to a press release on April 11, 2017, from the Board of Trustees of the Village of Wardsville, Wardsville has three sewage treatment plants (Deer Haven, Churchview, and Northwest), none of which reportedly are able to meet the Missouri Department of Natural Resources and the EPA requirements regarding limitations of the amount of ammonia that can be discharged from sewage treatment plants. After a study by an engineering firm, it was determined that the three options to meet the EPA limits ranged from $4 million to $12 million.

According to Missouri American Water, the expected capital investment after the sale includes $305,000 for the water system and $395,000 for the sewer system, all of which is projected to be invested over a five-year period.

Wardsville's water system (MO3010831) produces an average of 90,000 gpd. Water system assets include two (2) wells, 150,000-gallon elevated tank, 250,000-gallon ground storage tank, 300 gpm booster pump, 63 hydrants, 146 valves and over 15 miles of distribution main ranging in size from 2" to 8" in diameter.

The wastewater system includes the following treatment facilities:

Churchview WWTP (NPDES MO-0109118) is a packaged extended aeration system with a design flow of 30,000 gpd and actual flow of 15,000 gpd. It services 102 connections.

Deerhaven WWTP (NPDES MO-119326) is a packaged extended aeration system with a design flow of 21,368 gpd and actual flow of 17,000 gpd. It serves 81 connections.

Northwest WWTF (NPDES MO-0129658) is an aerated lagoon system with design flow of 151,000 gpd and actual flow of 44,000 gpd. It serves 212 connections.

The collection system includes five (5) pump stations, 38 brick manholes , 238 concrete manholes, approximately 9 miles of gravity sewers and 1.7 miles of force main.

Sales Comparison Approach
(Continued)

Sale Two

Lake Region Water and Sewer Company (Water and Sewer)
Camden County and Miller County, Missouri
Pending Sale (Asset Purchase Agreement Signed December, 2016)
Price: $6,084,000
Total Customers: 1,586 ($3,834 per customer)
677 Water Customers, 909 Sewer Customers
Seller: Lake Region Water and Sewer Company
Buyer: Camden County Public Water District
(Case #WM-2017-0181)

Operating in the Lake of the Ozarks area, Lake Region Water & Sewer Company ("Lake Region") was originally granted a Certificate of Convenience and Necessity (CCN) to provide water and sewer service in the 1970s. After various name changes, sales, and the granting of an additional CCN, Lake Region now serves approximately 677 water customers in the Shawnee Bend area and 909 sewer customers in the Shawnee Bend and Horseshoe Bend area.

On December 28, 2016, Lake Region filed a Joint Application with the Camden County Public Water Supply District Number 4 seeking authority to sale, transfer, and assign Lake Region's water and sewer assets to the District. Staff contends that under the terms of the Purchase Agreement, the District is paying an acquisition premium of approximately $3.7 million.

The Missouri Public Service Commission Staff recommended in February, 2017, that the Commission does not approve the transfer of the assets. According to Staff, were the purchaser of Lake Region's assets a Commission-regulated entity, they would not be allowed to recover the acquisition premium cost in a customer rate increase. However, since the Commission does not regulate the District, Staff fears that the District may choose to recover the acquisition premium costs through a customer rate increase.

The Commission does not share Staff's concern. The Commission does not regulate the District, nor does it have jurisdiction over the District's board of directors or the future rates set by that board. On April 27, 2017, the Commission approved the transfer.

Sales Comparison Approach
(Continued)

Sale Three

Emerald Pointe Utility Company (Water and Sewer)
Taney County, Illinois
Sold March, 2014
Price: $1,800,000
Total Customers: 760 ($2,368 per customer)
380 Water Customers, 380 Sewer Customers
Seller: Emerald Pointe Utility Company
Buyer: Missouri American Water

The water system consists of one well with a pumping capacity of approximately 450,000 gallons per day. Storage is provided by an 18,500-gallon standpipe. Water mains consist of 69,000 feet of 8" PVC piping.

Sewage is pumped to the City of Hollister where it is treated. There are over 15,000 feet of 6" and 8" PVC force mains and 15,000 feet of 4", 8" and 16" gravity lines. The system currently has 4 lift stations.

Sales Comparison Approach
(Continued)

Sale Four

Sundale Utilities (Water and Sewer)
Washington, Tazewell County, Illinois
Pending Sale (Asset Purchase Agreement Signed January 9, 2017)
Price: $2,000,000
$1,500,000 for Water System with 552 Customers ($2,717 per customer)
$500,000 for Sewer System with 1,406 Customers ($356 per customer)
Seller: Sundale Utilities, Inc.
Buyer: Illinois American Water
(Case #17-0113)

This sale included the transfer of a water system and three sewer systems. The water system is Washington Estates (552 customers), and the sewer systems are Washington Estates (552 customers), Sundale Hills (713 customers), and Highland Hills (141 customers). The sale included 10 parcels of land owned in fee by Sundale Utilities which included office building, sewage treatment parcels, lagoons, lift stations, and water treatment facility.

In addition, permanent easements encumbering private property included approximately 5.17 acres for the water delivery system and 9.47 acres for the wastewater collection system. The water system's primary assets include two wells, a water treatment plant, a 75,000-gallon elevated water tower, and a 150 kw generator.

The wells were drilled in 1970 and 1985 and are 350' deep. A new well was drilled in 1995 and replaced the 1970 well. The wells are rated at 460 gallons-per-minute. The elevated tank was placed in service in 1960. The sewer systems reportedly were in fair to poor condition and required substantial capital investment.

According to testimony by an official from Illinois American Water at an Illinois Commerce Commission hearing, the buyer intends on investing $900,000 in the water system and $1,700,000 in the sewer systems, all within the first five years.

Sales Comparison Approach
(Continued)

Sale Five

Ozark Shores Water Company (Water)
Camden County, Missouri
Sold July, 2015 (Asset Purchase Agreement Signed March 5, 2015)
Price: $5,252,781
Total of 1,869 Customers ($2,810 per customer)
Seller: Ozark Shores Water Company
Buyer: Public Water Supply District of Camden County
(Case #WM-2015-0231)

The Staff recommended the Commission deny the application. (STAFF RECOMMENDATION TO DENY TRANSFER OF ASSETS AND REQUEST FOR LOCAL PUBLIC HEARING; May 5, 2015). During the approval process before the Missouri Public Service Commission, the Staff had concerns regarding the sale that pertained to the purchase price exceeding the value of Oak Shore's net rate base by more than $2.6 million, the possibility of rate increases due to the acquisition premium, and the history of an overly-close relationship between Ozark Shores and the buyer. (SUGGESTIONS IN SUPPORT OF STAFF'S MOTION FOR EVIDENTIARY HEARING; May 29, 2015). On July 3, 2015, the Commission rejected the Staff's recommendations and granted the application. (ORDER GRANTING APPLICATION; July 3, 2015).

Included in the sale were 12 parcels of land that were reported to have a total market value of $448,580.

Sales Comparison Approach
(Continued)

Sale Six

City of Farmington Water System (Water)
Farmington, Fulton County, Illinois
Pending Sale (Asset Purchase Agreement Signed April, 2017)
Price: $3,750,000
Water System with 1,063 Customers ($3,528 per customer)
Seller: City of Farmington
Buyer: Illinois American Water

This sale includes a water delivery system that includes two wells. One was drilled in 1918 and is 1,710' deep. It has a capacity of 350 gallons-per-minute, and was improved with a new submersible pump in 1997. The second well was drilled in 1955 and is 1,743' deep. It has a capacity of 385 gallons-per-minute, and had a new pump installed in 2006. The water treatment plant includes the treatment process, two clearwells, and two high-service pumps. The two clearwells (underground storage tanks) each have a capacity of 125,000 gallons. The system also includes two elevated water storage tanks constructed in 1992 and 1997, respectively. Each has a capacity of 156,000 gallons.

Sales Comparison Approach
(Continued)

Sale Seven

Forest Homes Maple Park (Water)
Cottage Hills, Madison County, Illinois
Pending Sale (Asset Purchase Agreement Signed November 03, 2016)
Price: $900,000
Water System with 525 Customers ($1,714 per customer)
Seller: Forest Homes Maple Park District
Buyer: Illinois American Water
(Case 16-0581)

The Forest Homes Maple Park system includes one elevated storage tank, one storage tank control system, approximately 9 miles of pipeline, telemetry equipment, and various hydrants, valves, service connections, and other appurtenances. The system became operational in 1959. The water distribution system used wells until 1983 when the district started purchasing water from Illinois American Water. Per information from the water district, there are 525 customer connections, of which approximately 495 were installed in 1994 and 30 were installed in 2004. The elevated water tank has a capacity of 75,000 gallons and is approximately 57 years old. Located on the site with the water tower is the storage tank control structure, an office building, and storage buildings. The water distribution system includes 47,272 lineal feet of pipeline. The mains range from 13 to 58 years old. Most the mains are 6" with the balance being 4". Included in the sale were two small lots owned in fee, permanent easements across two parcels, and mains located in public roads and rights of way. According to an assessment completed by an engineer familiar with the system, there was approximately $250,000 worth of deficiencies and deferred maintenance items that required immediate attention.

Sales Comparison Approach
(Continued)

Sale Eight

CONFIDENTIAL (Water and Sewer)
Eastern part of Missouri
BEING NEGOTIATED (Letter of Intent Signed 2017)
Price: Approximately $10,000,000 to $11,000,000
(Analysis uses $10,000,000 for purposes of comparing unit values)
$7,000,000 for Water System with approximately 2,500 Customers ($2,800 +/- per customer)
$3,000,000 for Sewer System with approximately 2,500 Customers ($1,200 +/- per customer)
Seller: CONFIDENTIAL
Buyer: Missouri American Water

In addition to the seven market transactions identified herein, our analysis takes into account the current negotiations between Missouri American Water, buyer, and a community located in the eastern half of Missouri, seller.

At the present time, there is not a signed contract or purchase agreement. The parties are in negotiations pertaining to a water distribution system serving approximately 2,500 customers and a wastewater collection system serving approximately 2,500 customers. The negotiations include a price in the range of approximately $10 million to $11 million. Although we are not authorized to disclose any further details regarding the water and wastewater systems and the state of the negotiations, we have analyzed this information and given it appropriate consideration in our analysis of the Lawson systems.

For purposes of establishing a unit value (price per customer) for comparison with the subject property, we have utilized a hypothetical sale price of $10,000,000. Our analysis recognizes the possibility that the sale price may vary slightly from the reported range. The information we reviewed pertaining to negotiations for this system includes an appraisal report, engineer's assessment report, detailed asset lists, financial documents, customer service records, and the letter of intent.

Sales Comparison Approach
(Continued)

TRANSACTION	SYSTEM NAME SYSTEM LOCATION BUYER	SYSTEM TYPE	SALE PRICE (DATE OF SALE) TOTAL CUSTOMERS PRICE PER CUSTOMER	NUMBER OF WATER CUSTOMERS PRICE ALLOCATED TO WATER SYSTEM WATER PRICE PER WATER CUSTOMER	NUMBER OF SEWER CUSTOMERS PRICE ALLOCATED TO SEWER SYSTEM SEWER PRICE PER SEWER CUSTOMER
1	**Village of Wardsville Utility System** Wardsville, Cole County, Missouri Missouri American Water	WATER AND SEWER	$2,750,000 (May, 2017) 887 $3,100	480 $795,428 $1,657	407 $1,954,572 $4,802
2	**Lake Region Water & Sewer Company** Camden County and Miller County, Missouri Camden County Public Water District	WATER AND SEWER	$6,084,000 (Pending) 1,586 $3,834	677 n/a n/a	909 n/a n/a
3	**Emerald Pointe Utility Company** Taney County, Missouri Missouri American Water	WATER AND SEWER	$1,800,000 (March, 2014) 760 $2,368	380 n/a n/a	380 n/a n/a
4	**Sundale Utility Water and Sewer Systems** Washington, Tazewell County, Illinois Illinois American Water	WATER AND SEWER	$2,000,000 (Pending) 1,952 $1,025	552 $1,500,000 $2,717	1,406 $500,000 $356
5	**Ozark Shores Water Company** Camden County, Missouri Public Water Supply District of Camden County	WATER	$5,252,781 (July, 2015) 1,869 $2,810	1,869 $5,252,781 $2,810	0 n/a n/a
6	**City of Farmington Water System** Farmington, Fulton County, Illinois Illinois American Water	WATER	$3,750,000 (Pending) 1,063 $3,528	1,063 $3,750,000 $3,528	0 n/a n/a
7	**Forest Homes Maple Park Water System** Cottage Hills, Madison County, Illinois Illinois American Water	WATER	$900,000 (Pending) 525 $1,714	525 $900,000 $1,714	0 n/a n/a
8	**UNDISCLOSED/CONFIDENTIAL** Eastern Part of Missouri Missouri American Water	WATER AND SEWER	$10,000,000 +/- (Being Negotiated) 5000 +/- $2,000 +/-	2500 +/- $7,000,000 $2,800 +/-	2,500 +/- $3,000,000 $1,200 +/-

Of the eight examples of market data, three are closed sales, four are pending sales that are under contract, and one is a transaction that is still being negotiated.

The Wardsville and Sundale transactions are reliable for indicating prices for the whole system (water and sewer). However, both transactions have value allocations between water and sewer that, respectively, vary substantially; and, therefore are given the least weight in our analysis of the subject property water and sewer systems' individual values.

In the Wardsville allocation, the sewer system contribution was substantially higher than the water contribution. In the Sundale acquisition, the water contribution was substantially higher than the sewer contribution as the Sundale sewer system was in fair to poor condition.

Using unit prices that result from allocations are generally less reliable than sales of individual systems. And, in cases such as Wardsville and Sundale – where one component of the system has an allocation substantially higher than the other component – it is important to use the allocations with caution as internal bookkeeping purposes may have been a factor in the diverse allocations.

Sales Comparison Approach
(Continued)

We were able to determine a unit value (price per water customer) for six of the eight transactions. The table below summarizes the six transactions for which a price per water customer was calculated.

WATER SYSTEM MARKET DATA

Sales of Water System or Sales with Allocation for Water System

Water System	Date of Sale	Water Customers	Price/Water Customer
Wardsville, Missouri	May, 2017	480	$1,657
Sundale, Illinois	Pending	552	$2,717
Ozark Shores, Missouri	July, 2015	1,869	$2,810
Farmington, Illinois	Pending	1,063	$3,528
Forrest Homes, Illinois	Pending	525	$1,714
Undisclosed, Missouri	Being Negotiated	2,500	$2,800

STATISTICS FOR ALL SIX TRANSACTIONS	
LOW	$1,657
HIGH	$3,528
AVERAGE	$2,538
MEDIAN	$2,759

The three transactions that result from a water system sale (as opposed to an allocation of price between water and sewer) are highlighted in yellow in the table below.

WATER SYSTEM MARKET DATA

Sales of Water System or Sales with Allocation for Water System

Water System	Date of Sale	Water Customers	Price/Water Customer
Wardsville, Missouri	May, 2017	480	$1,657
Sundale, Illinois	Pending	552	$2,717
Ozark Shores, Missouri	**July, 2015**	**1,869**	**$2,810**
Farmington, Illinois	**Pending**	**1,063**	**$3,528**
Forrest Homes, Illinois	**Pending**	**525**	**$1,714**
Undisclosed, Missouri	Being Negotiated	2,500	$2,800

STATISTICS FOR WATER-ONLY TRANSACTIONS	
LOW	$1,714
HIGH	$3,528
AVERAGE	$2,538
MEDIAN	$2,810

Based upon these transactions, we have concluded a unit value of $2,700 per water customer for the subject property water system, which indicates a value of $2,619,000 for the subject property water system.

We were able to determine a unit value (price per sewer customer) for three of the eight transactions. The table below summarizes the three transactions for which a price per sewer customer was calculated. In all three cases, the unit values are developed based upon an allocation of a sale price that included a water and sewer system.

Sales Comparison Approach
(Continued)

SEWER SYSTEM MARKET DATA			
Based upon Allocation of System Price between Water and Sewer			
Sewer System	**Date of Sale**	**Sewer Customers**	**Price/Sewer Customer**
Wardsville, Missouri	May, 2017	407	$4,802
Sundale, Illinois	Pending	1,406	$356
Undisclosed, Missouri	Being Negotiated	2,500	$1,200
		LOW	**$356**
		HIGH	**$4,802**
		AVERAGE	**$2,119**
		MEDIAN	**$1,200**

As noted earlier, the unit prices indicated by the Wardsville and Sundale transactions are concluded to be the least reliable. Therefore, we have placed most weight on the undisclosed transaction. Even though the transfer of the undisclosed system is still being negotiated, we are of opinion the price range to which the parties have agreed is a reliable range of value for comparison purposes. Giving most consideration to the undisclosed transaction with a slight upwards adjustment based upon the influence of the allocated prices of Wardsville and Sundale results in a unit value conclusion of $1,500 per sewer customer for the subject property sewer system. The unit value conclusion of $1,500 indicates a value of $1,356,000 for the subject property sewer system.

The combined value opinion of the two systems is rounded to $4,000,000. Based upon the subject property system having a total of 1,874 customers (970 water customers, 904 sewer customers), the overall price per customer is approximately $2,135.

Our market data included five examples of data that included both water and sewer systems. A review of the market data pertaining to utility systems that included water and sewer shows the subject property's unit value ($2,134 per customer) is within the range indicated by the market data (see table below).

WATER AND SEWER SYSTEMS (COMBINED) MARKET DATA			
Sales of Water and Sewer Systems			
Water System	**Date of Sale**	**Total Customers**	**Price/Total Customer**
Wardsville, Missouri	May, 2017	887	$3,100
Lake Region, Missouri	Pending	1,586	$3,834
Emerald Pointe, Missouri	March, 2014	760	$2,368
Sundale, Illinois	Pending	1,958	$1,021
Undisclosed, Missouri	Being Negotiated	5,000	$2,000
		LOW	**$1,021**
		HIGH	**$3,834**
		AVERAGE	**$2,465**
		MEDIAN	**$2,368**

Based upon this analysis, it is our opinion the market value of the subject property systems (water and sewer) as a whole is supported at $4,000,000 (Four Million Dollars) based upon the Sales Comparison Approach.

Final Reconciliation

The purpose of this appraisal report was to arrive at an estimate of market value for the City of Lawson water delivery and wastewater systems based upon conditions evident in the market as of June 7, 2017. The market value opinion pertains to the subject property as a private water and wastewater system (its intended use). We inspected the subject property, reviewed numerous reports and documents provided by the client and the City of Lawson, conducted research regarding land values and easement valuation, and reviewed a report prepared by Flinn Engineering.

Our analysis of the Lawson water delivery and wastewater systems included the application of the Cost Approach and the Sales Comparison Approach. As explained in the report, the Income Approach is not customarily relied on for the valuation of water delivery and wastewater systems acquired by investor-owned entities.

The Sales Comparison Approach included an analysis of transactions from Missouri and transactions from Illinois. As explained in this report, the Illinois market is more representative of a competitive market with balance the supply and demand forces. The market approach resulted in an opinion of $4,000,000.

The Cost Approach included the analysis and valuation of the system by its components: land (fee owned parcels and permanent easements), buildings/improvements, and facilities/infrastructure associated with the water delivery and wastewater systems. The Cost Approach resulted in a conclusion of value of $3,800,000.

The Market Value of a non-profit municipal water system is much lower than a private system with profit income potential. And, the sales reflect the prices of only municipal systems. The intended use is as a private system, and the property should be appraised consistent with anticipated use. In order to appraise the property as a private system, investment incentive (increased income) must be considered. The application of the Sales Comparison Approach and Cost Approach take into account private ownership incentive/benefit.

We have placed most weight on the Sales Comparison Approach. Therefore, it is our opinion the market value of the subject property system as of June 7, 2017, as a private system was:

$4,000,000
FOUR MILLION DOLLARS

The opinion of market value is based upon the subject property system as a whole, as if owned in fee simple title, free and clear of all liens and encumbrances.

The value opinion of $4,000,000 is allocated as follows: $2,630,000 for the water delivery system and $1,370,000 for the wastewater collection system.

Statement of Certification – Edward Dinan

I certify that, to the best of my knowledge and belief:

-- the statements of fact contained in this report are true and correct.
-- the reported analyses, opinions, and conclusions are limited only by the reported assumptions and limiting conditions and are my personal, impartial, and unbiased professional analyses, opinions, and conclusions.
-- I have no present or prospective interest in the property that is the subject of this report and no personal interest with respect to the parties involved.
-- I have not completed a real estate appraisal of the property that is the subject of this report within the three-year period immediately preceding acceptance of this assignment.
-- I have no bias with respect to the property that is the subject of this report or to the parties involved with this assignment.
-- my engagement in this assignment was not contingent upon developing or reporting predetermined results.
-- my compensation for completing this assignment is not contingent upon the developing or reporting of a predetermined value or direction in value that favors the cause of the client, the amount of the value opinion, the attainment of a stipulated result, or the occurrence of a subsequent event directly related to the intended use of this appraisal.
-- my analyses, opinions, and conclusions were developed, and this report has been prepared, in conformity with the *Uniform Standards of Professional Appraisal Practice* and in conformity with the requirements of the *Code of Professional Ethics* and the *Standards of Professional Appraisal Practice* of the Appraisal Institute.
-- I have made a personal inspection of the property that is the subject of this report.
-- no one other than Chris Stallings and Joseph E. Batis provided significant real property professional assistance to the person signing this certification.

As of the date of this report, Edward Dinan has completed the requirements of the continuing education program of the Appraisal Institute.

Furthermore, I certify that the use of this report is subject to the requirements of the Appraisal Institute relating to review by its duly authorized representatives.

July 7, 2017

Edward W. Dinan, CRE, MAI
Dinan Real Estate Advisors, Inc.

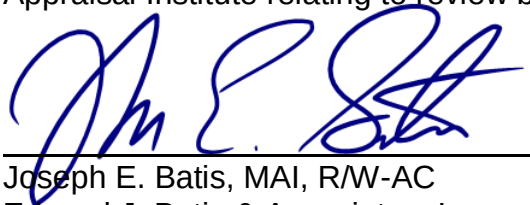
Statement of Certification – Joseph E. Batis

I certify that, to the best of my knowledge and belief:

-- the statements of fact contained in this report are true and correct.
-- the reported analyses, opinions, and conclusions are limited only by the reported assumptions and limiting conditions and are my personal, impartial, and unbiased professional analyses, opinions, and conclusions.
-- I have no present or prospective interest in the property that is the subject of this report and no personal interest with respect to the parties involved.
-- I have not completed a real estate appraisal of the property that is the subject of this report within the three-year period immediately preceding acceptance of this assignment.
-- I have no bias with respect to the property that is the subject of this report or to the parties involved with this assignment.
-- my engagement in this assignment was not contingent upon developing or reporting predetermined results.
-- my compensation for completing this assignment is not contingent upon the developing or reporting of a predetermined value or direction in value that favors the cause of the client, the amount of the value opinion, the attainment of a stipulated result, or the occurrence of a subsequent event directly related to the intended use of this appraisal.
-- my analyses, opinions, and conclusions were developed, and this report has been prepared, in conformity with the *Uniform Standards of Professional Appraisal Practice* and in conformity with the requirements of the *Code of Professional Ethics* and the *Standards of Professional Appraisal Practice* of the Appraisal Institute.
-- I have made a personal inspection of the property that is the subject of this report.
-- no one other than Edward W. Dinan and Chris Stallings provided significant real property professional assistance to the person signing this certification.

As of the date of this report, Joseph E. Batis has completed the requirements of the continuing education program of the Appraisal Institute.

Furthermore, I certify that the use of this report is subject to the requirements of the Appraisal Institute relating to review by its duly authorized representatives.



July 7, 2017

Joseph E. Batis, MAI, R/W-AC
Edward J. Batis & Associates, Inc.

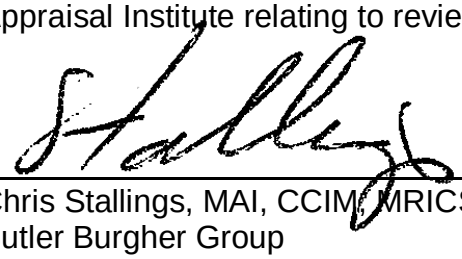
Statement of Certification – Chris Stallings

I certify that, to the best of my knowledge and belief:

- -- the statements of fact contained in this report are true and correct.
- -- the reported analyses, opinions, and conclusions are limited only by the reported assumptions and limiting conditions and are my personal, impartial, and unbiased professional analyses, opinions, and conclusions.
- -- I have no present or prospective interest in the property that is the subject of this report and no personal interest with respect to the parties involved.
- -- I have not completed a real estate appraisal of the property that is the subject of this report within the three-year period immediately preceding acceptance of this assignment.
- -- I have no bias with respect to the property that is the subject of this report or to the parties involved with this assignment.
- -- my engagement in this assignment was not contingent upon developing or reporting predetermined results.
- -- my compensation for completing this assignment is not contingent upon the developing or reporting of a predetermined value or direction in value that favors the cause of the client, the amount of the value opinion, the attainment of a stipulated result, or the occurrence of a subsequent event directly related to the intended use of this appraisal.
- -- my analyses, opinions, and conclusions were developed, and this report has been prepared, in conformity with the *Uniform Standards of Professional Appraisal Practice* and in conformity with the requirements of the *Code of Professional Ethics* and the *Standards of Professional Appraisal Practice* of the Appraisal Institute.
- -- I have made a personal inspection of the property that is the subject of this report.
- -- no one other than Edward W. Dinan and Joseph Batis provided significant real property professional assistance to the person signing this certification.

As of the date of this report, Chris Stallings has completed the requirements of the continuing education program of the Appraisal Institute.

Furthermore, I certify that the use of this report is subject to the requirements of the Appraisal Institute relating to review by its duly authorized representatives.



July 7, 2017

Chris Stallings, MAI, CCIM, MRICS
Butler Burgher Group

ADDENDA

Statement of Assumptions and Limiting Conditions

Qualifications of the Appraisers

Flinn Engineering Report

STATEMENT OF ASSUMPTION AND LIMITING CONDITIONS

The value herein estimated and/or other opinions presented are predicated on the following:

1. No responsibility is assumed for matters of a legal nature concerning the appraised property -- especially those affecting title. It is considered that the title is marketable for purposes of this report. The legal description as used herein is assumed to be correct.

2. The improvement is considered to be within the lot lines (unless otherwise stated); and, except as herein noted, is presumed to be in accordance with local zoning and building ordinances. Any plots, diagrams, and drawings found herein are to facilitate and aid the reader in picturing the subject property and are not meant to be used as references in matters of survey.

3. The appraiser assumes that there are no hidden or unapparent conditions of the property, subsoil or structure which would render it more or less valuable than otherwise comparable properties. The appraiser assumes no responsibility for such conditions or for engineering which might be required to discover such things.

4. Any description herein of the physical condition of improvements including, but not limited to, the heating, plumbing, and electrical systems, is based on visual inspection only, with no demonstration performed, and they are thus assumed to be in normal working condition. No liability is assumed for same, nor for the soundness of structural members for which no engineering tests were made.

5. The appraiser shall not be required to give testimony or appear in court by reason of this appraisal with reference to the property herein described unless prior arrangements have been made.

6. The distribution of total valuation in this report between land and improvements applies only under the existing program of utilization under the conditions stated. This appraisal and the allocations of land and building values should not be used as a reference for any other purpose and are invalid if used so.

7. That this report is to be used in its entirety and only for the purpose for which it was rendered.

8. Information, estimates, and opinions furnished to us and considered in this report were obtained from sources considered reliable and believed to be true and correct; however, no responsibility for guaranteed accuracy can be assumed by the appraiser.

9. The property is appraised as though under responsible ownership and competent management.

10. The report rendered herein is based upon the premise that the property is free and clear of all encumbrances, all mortgage indebtedness, special assessments, and liens--unless specifically set forth in the description of property rights appraised.

11. No part of this report is to be reproduced or published without the consent of its author.

12. The appraisal covers only the property described herein. Neither the figures therein, nor any analysis thereof, nor any unit values thereof derived, are to be construed as applicable to any other property, however similar it may be.

13. Neither all, nor any part, of the contents of this report, or copy thereof, shall be used for any purpose by any but the client without the previous written consent of the appraiser and/or the client; nor shall it be conveyed by any including the client to the public through advertising, public relations, news, sales, or other media, without the written consent and approval of the author--particularly as to value conclusions, the identity of the appraiser or a firm with which he is connected, or any reference to any professional society or institute or any initialed designations conferred upon the appraiser, as stated in his qualifications attached hereto.

14. Any cash flow calculations included in this report are developed from but one of a few alternatives of a possible series and are presented in that context only. Specific tax counsel should be sought from a C.P.A., or attorney, for confirmation that this data is the best alternative. This is advised since a change in value allocation, method or rate of depreciation or financing will have consequences in the taxable income.

15. This appraisal has been made in accordance with the Code of Ethics of the Appraisal Institute.

16. This report has not taken into consideration the possibility of the existence of asbestos, PCB transformers, or other toxic, hazardous or contaminated substances, and/or underground storage tanks (hazardous materials), or the cost of encapsulation or removal thereof. Should client have concern over the existence of such substances on the property, the appraiser considers it imperative for the client to retain the services of a qualified, independent engineer or contractor to determine the existence and extent of any hazardous materials, as well as the cost associated with any required or desirable treatment or removal thereof. The valuation stated herein would therefore be void, and would require further analysis to arrive at a market estimate of value.

DINAN REAL ESTATE ADVISORS, INC.

EDWARD W. DINAN, MAI, CRE®
PRESIDENT

ACADEMIC

Rockhurst College, Kansas City, Missouri, A.B., 1972
American Institute of Real Estate Appraisers
- Course 1A, Memphis State University - May 1975
- Course 1B, Tulane University - July 1975
- Course II, University of Georgia - February 1976
- Course VI, Chicago Education Center - March 1977

Appraisal Institute
- Standards of Professional Practice, Parts A and B
- Seminars include: Cash Equivalency, Subdivision Analysis, Rates Ratios and Reasonableness, Feasibility, Valuation of Leasehold Interests, Americans with Disability Act Review, Condemnation Process and Appraisal, Condemnation Appraising: Advanced Topics and Applications, Standards of Professional Practice, Parts A and B, Corridors And Rights-Of-Way II Symposium Valuation and Policy

Harvard Law School, Program of Instruction for Lawyers
- Advanced Negotiation: Deal Design and Implementation

University of Houston
- Dispute Resolution Institute

EXPERIENCE

Professional experience includes market and financial feasibility studies, highest and best use analyses, transient housing and convention market surveys, analysis of redevelopment potential of existing communities, lease analysis and consultation, as well as the appraisal and evaluation of many types of properties including:

Airports
Apartments (high rise, garden, townhouse)
Banks
Casinos
Cemeteries
Condemnation Appraisals
Condominiums/Co-op/Timeshare
Duck Clubs
Farms
Golf Courses/Country Clubs
Hotels and Motels
Industrial Plants and Warehouses
Mobile Home Parks
Office Buildings
Planned Communities
Quarries/Mines
Railroad Properties
Resorts
Restaurants
Sales and Service Buildings
Schools (private, parochial, secondary, higher education)
Shopping Centers (regional, community, neighborhood)
Single Family Residential
Special Use Properties
Subdivisions
Surgical Centers
Theaters
Urban Renewal (acquisition, reuse)
Vacant Land (commercial, industrial, residential, rural, agricultural)
Vessels

2023 South Big Bend Boulevard · Saint Louis, Missouri 63117 · 314-647-9900 · Fax 314-647-9922
email: edinan@dinanreal.com

In addition, Mr. Dinan has been approved as a fee appraiser for the U.S. Department of Justice, Missouri Department of Natural Resources, Missouri Department of Highways and Transportation, Illinois Department of Transportation, Probate Court of St. Louis City, as well as FNMA, FDIC, RTC, HUD, SBA, OTS, along with numerous other governmental agencies and is qualified in court as an expert witness. Mr. Dinan has also served as a hearing officer for the St. Louis County Board of Equalization.

Prior to forming Dinan Real Estate Advisors, Inc., Mr. Dinan was employed by the Turley Martin Company as Vice President of their Consulting and Appraising Division. Mr. Dinan has also participated as a guest lecturer on real estate appraising at Washington University, as well as several seminars sponsored jointly by the University of Missouri - St. Louis and the Home Builders Association of Greater St. Louis, Counselors of Real Estate®, and Law Seminars International. In addition, Mr. Dinan is approved as an instructor for the Missouri Real Estate Commission's Continuing Education Program, and has been a lectured speaker for the Bar Association of Metropolitan St. Louis. Mr. Dinan has also delivered seminars on appraisal reviews to loan officers at several financial institutions in the St. Louis area.

GEOGRAPHICAL AREAS OF EXPERIENCE

Territory covered is primarily Metropolitan St. Louis, but also includes professional experience in the following 27 states: Arizona, Arkansas, California, Colorado, Connecticut, Georgia, Illinois, Indiana, Kansas, Kentucky, Louisiana, Massachusetts, Michigan, Mississippi, Missouri, Nebraska, New York, Ohio, Oklahoma, Pennsylvania, South Carolina, South Dakota, Tennessee, Texas, Virginia, Wisconsin and Wyoming.

PROFESSIONAL AFFILIATION

Mr. Dinan has held virtually every position as an officer and has served on the Board of Directors for the local chapter of the Appraisal Institute. In 1990, Mr. Dinan served as President of the former American Institute of Real Estate Appraisers and coordinated its unification with the local Society Chapter. Mr. Dinan also served as a Regional Representative for Region II of the Appraisal Institute. Mr. Dinan currently serves on the Board of Directors and is a National Liaison Membership Chair for the Counselors of Real Estate® as well as serving on the Advisory Board of Great Southern Bank. In addition, Mr. Dinan has the following affiliations:

Counselor of Real Estate® - 1996
- 2010 National Chairman - Dispute Resolution
- 2011 National Liaison Vice Chair
- 2011 National Co-Chair - Litigation Support
- 2012-2017 Board of Directors
- 2013 Recipient of the Chairs Award presented by The Counselors of Real Estate
- 2013 -2014 National Liaison Membership Chair

Appraisal Institute MAI Designation, Certificate Number 6103 -1980
St. Louis Association of Realtors
Royal Institution of Chartered Surveyors - 2006

St. Louis County Library Foundation Board of Directors - 2012-Present
The Marianist Retreat and Conference Center Board of Directors - 2012-Present
Real Estate Broker-Officer - 1999022989 - State of Missouri
Licensed Real Estate Managing Broker - 471.014130 - State of Illinois
Certified General Real Estate Appraiser - RA001300 - State of Missouri
Certified General Real Estate Appraiser - 553.001032 - State of Illinois

QUALIFICATIONS OF
JOSEPH E. BATIS, MAI, R/W-AC

EMPLOYMENT

President of EDWARD J. BATIS & ASSOCIATES, INC., functioning as a Consultant and Appraiser. EDWARD J. BATIS & ASSOCIATES, INC., is organized to perform a comprehensive service in real estate valuation and counseling.

SEMINAR DEVELOPMENT

Mr. Batis is the developer and exclusive instructor for two seminars: *Understanding Easements - What Is Being Acquired?* and *Developments and Easements - Can They Co-Exist?* The seminars were promoted by the Appraisal Institute and had their initial offering in 2004 for state certified and designated appraisers in Ohio, Indiana, Kentucky and West Virginia.

PROJECT MANAGEMENT AND COORDINATION

Mr. Batis has been retained by clients to manage and coordinate valuation activities for large-scale acquisition projects. The scope of Mr. Batis' role has included the screening, interviewing and retaining of experts, training and consultation, reviews of work product, and assistance in the preparation of witnesses for trial testimony. Mr. Batis has been responsible for multiple projects including easement acquisitions extending several hundred miles and involving several thousand parcels of real estate.

EXPERIENCE

Since 1983, Mr. Batis has actively engaged in the practice of real estate analysis, valuation counseling and allied fields. Scope of experience covers varied real estate valuation problems. Mr. Batis specializes in the valuation and analysis of agricultural, industrial and commercial properties.

Mr. Batis has extensive experience in the valuation of partial interests in property. He has been retained by energy and utility companies to provide opinions of just compensation for permanent and temporary easements for underground pipelines. Included in the scope of Mr. Batis' services has been an analysis of damages and benefits to remainder properties as a result of an easement. In addition, Mr. Batis has been involved in the valuation of real estate pertaining to various highway projects which required an analysis of easements and analysis of damages to remainder properties.

Mr. Batis has been involved extensively with the valuation of agricultural properties throughout Illinois during the last 10 years. Mr. Batis has provided appraisal and consulting services, expert testimony and litigation support for Quantum Pipeline Company, Natural Gas Pipeline Company of America, NICOR, Kinder Morgan, Northern Border Pipeline Company, Alliance Pipeline L.C., Vector Pipeline Company, Guardian Pipeline, LLC, Enbridge Energy Company, Inc., Enterprise Pipeline, and Explorer Pipeline.

Mr. Batis has extensive experience in providing valuation and consulting services to private utility companies in regards to their acquisition of public water and sanitary sewer infrastructure systems.

Mr. Batis has testified as an expert witness in numerous litigation matters, including eminent domain proceedings, zoning matters, and ad valorem matters. Mr. Batis has been appointed by the Circuit Court on several occasions to serve as a Commissioner regarding disputes over property values. Mr. Batis has been qualified as an expert witness in Circuit Court and Federal Court.

QUALIFICATIONS OF

JOSEPH E. BATIS, MAI, R/W-AC

(Continued)

AFFILIATIONS

- MAI Member 10299, Appraisal Institute, Since 1994.
- State Certified General Real Estate Appraiser - State of Illinois
- State Certified General Real Estate Appraiser – State of Missouri
- Member of the International Right of Way Association (R/W-AC, Member #7482)
- Approved Instructor for the Appraisal Institute
- Approved Instructor by State of Illinois for Real Estate Continuing Education Courses

EDUCATION

- Joliet Catholic High School - Graduated 1980.
- Joliet Junior College - 1980-1982.
- College of Saint Francis, Joliet, Illinois - Graduated 1985, Bachelor of Business Administration, Management Major.

REPRESENTATIVE ASSIGNMENTS

Market valuation appraisals on a broad range of property to serve many functions: sale, loan underwriting, tax and investment decisions, partial interest acquisition, etc. Mr. Batis has also completed Highest and Best Use Studies and Damage/Benefit Studies - either related or unrelated to value decisions in the same categories.

CLIENTS

Clients served include school districts, governmental agencies, utility companies, energy companies, banks, savings and loans, mortgage companies, insurance companies, business corporations, attorneys and individuals.

QUALIFICATIONS OF

JOSEPH E. BATIS, MAI, R/W-AC

(Continued)

COURSES AND SEMINARS ATTENDED

Appraisal Institute

- ***2014-2015 National USPAP Update Course,*** July 22, 2015, Columbus, OH
- ***Business Practice and Ethics,*** March 3, 2015, Online Seminar
- ***General Appraiser Market Analysis and Highest & Best Use,*** January 20-24, 2014, Chicago, IL
- ***National Uniform Standards of Professional Appraisal Practice,*** June 28, 2012, Chicago, IL
- ***General Appraiser Income Approach, Part I,*** October 17-20, 2011, Chicago, IL
- ***National Uniform Standards of Professional Appraisal Practice,*** September 12, 2011, Chicago, IL
- ***Condemnation Appraising,*** Principles and Applications, August 23-25, 2011, Chicago, IL
- ***Using Your HP12C Calculator,*** October 20, 2009, Online Seminar
- ***Business Practices and Ethics,*** October 14, 2009, Online Seminar
- ***National Uniform Standards of Professional Appraisal Practice,*** September 22, 2009, Online Seminar
- ***Eminent Domain and Condemnation,*** September 22, 2009, Online Seminar
- ***Appraising Environmentally Contaminated Properties,*** March 2, 2007, Portland, ME
- ***National Uniform Standards of Professional Appraisal Practice,*** September 6, 2005, Chicago, IL
- ***Business Practices and Ethics,*** February 15, 2005 – February 22, 2005, Online Seminar
- ***Scope of Work: Expanding Your Range of Services,*** February15, 2005 – February 22, 2005, Online Seminar
- ***Apartment Appraisal,*** December 2, 2004 - December 3, 2004, Rockford, IL
- ***Standards and Ethics for Professionals,*** September 4, 2003, Ft. Worth, TX
- ***Appraisal Procedures,*** October 14, 2002 – October 19, 2002, Shoreline, WA
- ***Appraisal Procedures – Qualifying Instructors,*** February 28, 2002 – March 3, 2002, Atlanta, GA
- ***Standards of Professional Practice***, Part C, May 11, 1999 - May 12, 1999, Westmont, IL
- ***Condemnation Appraising: Basic Principles and Applications***, May 5, 1999 - May 6, 1999, Irvine, CA
- ***Eminent Domain and Condemnation Appraising***, October 6, 1997, Memphis, TN
- ***Affordable Housing Valuation,*** September 22, 1997, Willowbrook, IL
- ***The Internet and Appraising***, September 8, 1997, Westmont, IL
- ***Industrial Valuation***, August 7, 1997, Chicago, IL
- ***Litigation Skills for the Appraiser***, October 4, 1996, Detroit, MI
- ***The Challenge of Technology***, October 12, 1995, Chicago, IL
- ***Illinois Ad Valorem Taxation Procedures***, September 21, 1995, Westmont, IL
- ***Fair Lending and the Appraiser***, August 31, 1995, Westmont, IL
- ***Experience Training Program***, November 30, 1994
- ***Understanding Limited Appraisals and Appraisal Reporting Options - General***, July 13, 1994, Chicago, IL
- ***Subdivision Analysis***, June 17, 1994, Green Bay, WI

International Right of Way Association

- ***Ethics and the Right of Way Profession,*** September, 2016, online course
- ***The Appraisal of Partial Acquisitions***, February, 2003, Orlando, FL
- ***Condemnation Matters from the Property Owners Perspective,*** November 8, 2001, Willowbrook, IL
- ***Easement Valuation***, June 8, 2001, San Jose, CA
- ***Ethics and the Right of Way Profession***, March 2, 2001, Jackson, MS

McKissock Data Systems

- ***Uniform Standards of Professional Appraisal Practice***, September 20, 2001, Springfield, IL
- ***The Appraiser as Expert Witness***, September 19, 2001, Springfield, IL
- ***Fair Lending for Appraisers***, August 28, 2001, Itasca, IL
- ***Current Issues in Appraising***, August 28, 2001, Itasca, IL
- ***Information Technology and the Appraiser***, August 25, 2001, Itasca, IL

National Highway Institute

- ***Eminent Domain Training for Attorneys and Appraisers,*** April 9 - April 11, 2002, Springfield, IL

American Society of Farm Managers and Rural Appraisers

- ***Land Value Conference,*** March 14, 2013, Bloomington, IL
- ***Cost Approach Applications,*** March 13, 2013, Bloomington, IL

Christopher J. Stallings, MAI, CCIM, MRICS
Managing Director
Work: 713.395.5274
Cell: 281.731.0698
cstallings@bbgres.com

PROFILE

Chris is a Director at BBG and has extensive experience in commercial real estate valuation. Based on 25+ years of experience Chris has significant expertise with multi-family valuation, feasibility, and market studies of conventional and affordable properties, condominiums, hotels, single and multi-tenant office buildings, industrial, retail, mixed-use developments, subdivisions, master planned communities, golf courses, marinas, senior housing and healthcare and a wide variety of special purpose property types. Other valuation specialties include going concerns, FF&E and property tax appeal representation. Chris is qualified as an expert witness and has testified in numerous courts regarding real estate valuation matters

Chris was a Managing Director at Grubb & Ellis Landauer Valuation Advisory Services, LLC. Prior to becoming associated with Grubb & Ellis Landauer, Mr. Stallings was an Associate Director with Integra, Houston; he was Director and Regional Manager for the Commercial Appraisal Group with CB Richard Ellis in Houston and San Francisco and served as a Manager for Standard and Poor's Corporate Value Consulting.

PROFESSIONAL AFFILIATIONS

Appraisal Institute, Member (MAI), No. 7422
Certified Commercial Investment Member No. 7871
Royal International Charter of Surveyors (MRICS #1262784)
Texas Real Estate Broker No. 0351782
Texas Property Tax Consultant No. 10481

General Certified Appraiser:

State of Texas (License # TX-1320312-G)
State of Louisiana (License # G2122)
State of Alabama (License #G01100)
State of New York (License #46000050880)
State of Oklahoma (License #13137CGA)
State of Maryland (License #32484)
State of Colorado (License #CG200000627)
State of New Jersey (License #42RG000253900)
State of Mississippi (License # GA-837)
State of Washington (License #1102207)
State of New Mexico (License #03388)
State of Arkansas (License #CG1478)
State of Kansas (License #G-3023)
State of Vermont (License #080.0117681)

EDUCATION

Bachelor of Science -Texas A&M University
Master of Science, Land Economics and Real Estate – Texas A&M University

PROFESSIONAL ORGANIZATIONS

The Counselors of Real Estate (CRE)
Society of Texas Real Estate Professionals
Member: International Council of Shopping Centers (ICSC)
Member: Building Operation Managers Association (BOMA)
Director: Houston Chapter – Appraisal Institute and Region VIII Appraisal Institute
Public Relations Committee Chair – Appraisal Institute Region VIII
Board of Directors – Foundation Appraisers Coalition of Texas (FACT)
Advisory: Leadership Development & Advisory (LDAC) – Appraisal Institute
Member: Eagle Scout Association – BSA Sam Houston Area Council

Flinn Engineering, LLC
11216 Neumann Lane
Highland, Illinois 62249
618-550-8427
ksimpson@flinnengineering.com

July 13, 2017

Mr. Joseph E. Batis, MAI, R/W-AC
Edward J. Batis & Associates
313 N. Chicago Street
Joliet, IL 60432

Re: Engineering Report
Water and Wastewater System Appraisal
Lawson, Missouri

Dear Mr. Batis:

Flinn Engineering, LLC is pleased to present the following information regarding the water and wastewater systems owned by the City of Lawson, Missouri (City) as part of the appraisal process you are completing for Missouri American Water. The purpose of this Engineering Report is to provide a high-level review of the condition of the system and a review of the assets and costs listed in the asset list. The City provided a depreciation schedule which was used to determine the date the assets were placed in service and the estimated book value of the assets. The values in the depreciation schedule were also used to inflate the values of each asset to 2017 costs and then depreciated based on the age of the asset. The depreciation schedule with the added columns for inflation to 2017 dollars and depreciation based on 2017 dollars and age of each asset is included in **Attachment A**.

The high-level review of the condition of the system is based on the data provided by the City and photos that were taken by others during a site visit. Flinn Engineering did not visit the site.

The City purchases water from Excelsior Springs, Missouri. The water system includes two (2) storage tanks, a pump station, and the water distribution system. The wastewater system includes a lagoon treatment plant, eight (8) lift stations, and the sewer collection system.

Water Pump Station

The Italian Way pump station is located in Excelsior Springs near the water storage tank. The pump station includes two (2) pumps and is equipped to inject chlorine. The chlorine system is not currently in use. Based on photos, the pump station appears to be a pre-fabricated pump station and appears to be in good condition. The pumps and piping appear to be clean and well-maintained. The chlorine room appears to have some corrosion on the piping and floor which could be attributed to chlorine fumes.

Water Storage Tanks

The water system includes two (2) elevated storage tanks. The Highway 69/Golf Course Tank has a storage capacity of 300,000 gallons. According to the depreciation schedule, the tank was placed in service in 1991. The other tank is the Downtown Tank and has a storage capacity of 50,000 gallons. The Downtown Tank was placed in service in 1954 and is completely

depreciated. Although water storage tanks are depreciated over a 40-year period, they can typically remain in service well beyond the depreciation period when they are well-maintained. The Highway 69/Golf Course Tank is part of a maintenance contract and the Downtown Tank was repainted in 2015. Based on photos and the reported routine maintenance, the Downtown Tank appears to be in good condition and the Highway 69/Golf Course Tank appears to be in excellent condition.

Water Distribution System

The water distribution system was not observed for condition. It is assumed that a majority of the water main was installed in the 1950's when the system began operation and would be fully depreciated. The depreciation schedule includes significant investment for water line extensions in 2003 and 2007, as well as distribution system improvements associated with the Highway 69/Golf Course Tank in 1991. Based on the condition of the assets that were observed, it is assumed that the water distribution system is also well-maintained and is assumed to be in good condition.

Wastewater Treatment Plant

The wastewater treatment plant is a four-cell lagoon system. The depreciation schedule includes a land purchase for a lagoon in 1977. It is assumed that this purchase was for an expansion of the treatment plant and that the original plant dates back to the 1950's when the system began operation. The treatment plan is fully depreciated; however, it appears to be in good condition, well-maintained, and could remain in service well beyond the depreciation period. According to the Missouri Department of Natural Resources Operating Permit (**Attachment B**), the design flowrate is 300,000 gallons per day and the actual flowrate is 247,000 gallons per day. This leaves only about 18% of the design capacity available for future growth.

Sewer Lift Stations

The wastewater system includes eight (8) sewer lift stations: North 69 Highway Lift Station, South 69 Highway Lift Station, North West Terrace Lift Station, Powderhorn Lift Station, Musket Lift Station, Raum Lift Station, Schwarz Lift Station, and Lagoon Lift Station. The below ground equipment was not observed at the lift stations. The above ground equipment includes the access hatches, electrical equipment, and control equipment. The above ground equipment appears to be well-maintained and in good condition.

Sewer Collection System

The sewer collection system was inspected in 2017 by Ace Pipe Cleaning, Inc. The report indicated only 2 sections that required immediate attention and only one section that was in poor condition. Most of the sections that were inspected were rated as good to excellent condition. **Table 1** summarizes the length of sewer by material and size.

Table 1 – Sewer Collection System by Material and Size

Material	8-inch	12-inch	15-inch	18-inch	24-inch	Total
Polyvinyl Chloride (PVC)	15,490'					15,490'
Vitrified Clay Pipe (VCP)	1,945'	351'	440'	63'	530'	3,329'
Cast Iron				164'		164'
Unknown			156'			156'
Total	17,435'	351'	596'	227'	530'	**19,139'**

Estimated Book Value

Table 2 shows a summary of the book value of the system. The figures are from the depreciation schedule with several items that do not appear to be water or wastewater assets deleted from the total. The items that were not included in the grand total are shown with a ~~strikethrough~~ font in **Attachment A.** The book value of the assets is assumed to include the material and labor required to place the asset in service.

Table 2 - Summary of Book Value

System	Original Book Cost	Depreciated Book Value	Condition
City of Lawson Water and Wastewater	$4,180,470.01	$2,054,390.34	Good

The average annual inflation rate was downloaded from the US Department of Labor – Bureau of Labor Statistics (**Attachment C**). The original book value of each line in the depreciation schedule was inflated to 2017 using the average annual inflation rate. The 2017 cost was depreciated based on the depreciation periods listed in the depreciation schedule. **Table 3** summarizes the 2017 inflated cost and the depreciated value based on 2017 costs. **Attachment A** includes the spreadsheets used to calculate the values in **Table 3**.

Table 3 - Summary of Inflated-Depreciated Value

System	Inflated to 2017	Depreciated from 2017	Condition
City of Lawson Water and Wastewater	$7,700,035.94	$2,742,045.94	Good

Overall the water and wastewater system appears to be in good condition and well maintained. Although many of the assets are fully depreciated, they are still in operation and could continue to stay in operation well beyond the depreciation period.

Thank you for the opportunity to assist you on this project. Please let me know if you have any questions.

Sincerely,

Kelly A. Simpson

Kelly A. Simpson, PE, LEED® AP
Owner

Enclosures:
Attachment A – Depreciation Schedule – with added columns for inflation and depreciation
Attachment B – MDNR Operating Permit
Attachment C – Average Annual Inflation Rates

City of Lawson, MO
Depreciation Schedule

Provided by City											Added columns to calculate inflated cost and then depreciate					
Property Description	**Acquired**	**T**	**Method**	**Life**	**Cost/Basis**	**179 Exp/AFD**	**Add SDA**	**Prior Depr**	**Current Depr**	**Ending Depr**	**Ending Book Value**	Year	Factor to 2017	2017 Cost	Age	Depreciated 2017 Cost
Group #1																
2002 GO Bond	7/16/2002	N		SL	13.67	14,945.00	0	0	14,124.02	821	14,945.02	0.00	2002	1.331	$ 19,895.92	15	$ -
2004 $800,000	8/11/2004	N		SL	15	6,207.25	0	0	4,517.53	413.82	4,931.35	1,275.90	2004	1.282	$ 7,958.47	13	$ 1,061.13
Group #2																
Bond Premium	11/7/2002	N		SL	21	51,958.00	0	0	31,339.74	2474.19	33,813.93	18,144.07	2002	1.331	$ 69,170.45	15	$ 19,762.98
2005 $330,000	8/11/2004	N		SL	20	14,999.00	0	0	7,624.49	749.95	8,374.44	6,624.56	2004	1.282	$ 19,230.59	13	$ 6,730.71
Group #3																
Pumphouse	6/30/1958	N		SL	40	10,000.00	0	0	10,000.00	0	10,000.00	0.00	1958	8.559	$ 85,588.96	59	$ -
Police Station	6/30/1960	N		SL	40	22,489.00	0	0	22,489.00	0	22,489.00	0.00	1960	8.194	$ 184,284.05	57	$ -
Shelter House	6/30/1986	N		SL	40	5,000.00	0	0	3,375.00	125	3,500.00	1,500.00	1986	2.267	$ 11,335.28	31	$ 2,550.44
Bathroom @ city park	6/30/1993	N		SL	40	3,000.00	0	0	1,650.00	75	1,725.00	1,275.00	1993	1.680	$ 5,041.26	24	$ 2,016.50
Band Stand	6/30/1993	N		SL	40	3,534.00	0	0	1,943.70	88.35	2,032.05	1,501.95	1993	1.680	$ 5,938.61	24	$ 2,375.44
Bathroom @ city park	6/30/1993	N		SL	40	3,534.00	0	0	1,943.70	88.35	2,032.05	1,501.95	1993	1.680	$ 5,938.61	24	$ 2,375.44
War Memorial Shelter	6/30/1993	N		SL	40	3,000.00	0	0	1,650.00	75	1,725.00	1,275.00	1993	1.680	$ 5,041.26	24	$ 2,016.50
Maintenance Building	6/30/1996	N		SL	40	119,207.00	0	0	56,623.42	2980.18	59,603.60	59,603.40	1996	1.536	$ 183,142.44	21	$ 86,992.66
Announcer Stand	6/30/1996	N		SL	5	25,239.00	0	0	25,239.00	0	25,239.00	0.00	1996	1.536	$ 38,775.68	21	$ -
City Hall	6/30/1997	N		SL	40	365,828.00	0	0	164,622.60	9145.7	173,768.30	192,059.70	1997	1.496	$ 547,260.04	20	$ 273,630.02
Salt Shed	6/30/1997	N		SL	40	15,000.00	0	0	6,375.00	375	6,750.00	8,250.00	1997	1.496	$ 22,439.24	20	$ 11,219.62
Walking Track	6/30/2008	N		SL	20	34,364.00	0	0	15,463.80	1718.2	17,182.00	17,182.00	2008	1.175	$ 40,386.46	9	$ 22,212.55
Fencing	6/30/2008	N		SL	10	85,814.00	0	0	77,232.60	8581.4	85,814.00	0.00	2008	1.175	$ 100,853.32	9	$ 10,085.33
Concession Stand	6/30/2008	N		SL	40	35,335.00	0	0	7,950.42	883.38	8,833.80	26,501.20	2008	1.175	$ 41,527.63	9	$ 32,183.91
Air Conditioner	7/24/2007	N		SL	7	1,835.00	0	0	1,835.00	0	1,835.00	0.00	2007	1.202	$ 2,206.19	10	$ -
2 Overhead Doors	11/5/2009	N		SL	15	7,048.00	0	0	2,662.60	469.87	3,132.47	3,915.53	2009	1.149	$ 8,096.97	8	$ 3,778.58
Ballfield Netting	9/6/2012	N		SL	15	7,250.00	0	0	1,449.99	483.33	1,933.32	5,316.68	2012	1.100	$ 7,973.17	5	$ 5,315.45
Ballfield Electric Repair	4/8/2013	N		SL	15	20,265.00	0	0	4,053.00	1351	5,404.00	14,861.00	2013	1.077	$ 21,828.00	4	$ 16,007.20
Resurfacing	7/11/2014	N		SL	15	57,395.00	0	0	3,826.33	3826.33	7,652.66	49,742.34	2014	1.058	$ 60,728.66	3	$ 48,582.93
Group #4																
Bridge	6/30/1995	N		SL	20	3,860.00	0	0	3,860.00	0	3,860.00	0.00	1995	1.582	$ 6,108.18	22	$ -
Street lights/poles	6/30/2004	N		SL	20	36,450.00	0	0	20,047.50	1822.5	21,870.00	14,580.00	2004	1.282	$ 46,733.44	13	$ 16,356.70
Ball Park Lights	5/23/2007	N		SL	20	248,500.00	0	0	100,435.42	12425	112,860.42	135,639.58	2007	1.202	$ 298,768.00	10	$ 149,384.00
Ball Park Lights	11/12/2007	N		SL	20	115,400.00	0	0	44,236.67	5770	50,006.67	65,393.33	2007	1.202	$ 138,743.77	10	$ 69,371.89
Group #5																
Land - Penn & D Hwy	6/30/2001	R				35,000.00	0	0	0.00	0	0.00	35,000.00	2001		$ 35,000.00	16	$ 35,000.00
Sale Leaseback of 20	10/1/2007	R				200,000.00	0	0	0.00	0	0.00	200,000.00	2007		$ 200,000.00	10	$ 200,000.00
Group #6																
Civil Defense Storm Wthr	6/30/1968	N		SL	9	5,288.00	0	0	5,288.00	0	5,288.00	0.00	1968	7.134	$ 37,725.70	49	$ -
Radio Tower	6/30/1975	N		SL	9	818.00	0	0	818.00	0	818.00	0.00	1975	5.012	$ 4,099.93	42	$ -
Camera	6/30/2004	N		SL	5	5,467.00	0	0	5,467.00	0	5,467.00	0.00	2004	1.282	$ 7,009.38	13	$ -
2002 Crown Vic	2/9/2005	N		SL	5	14,500.00	0	0	14,500.00	0	14,500.00	0.00	2005	1.259	$ 18,262.09	12	$ -
2006 Ford Interceptor	10/31/2005	N		SL	5	22,462.00	0	0	22,462.00	0	22,462.00	0.00	2005	1.259	$ 28,289.87	12	$ -
Snow Plow Lights	4/30/2006	N		SL	7	700.00	0	0	700.00	0	700.00	0.00	2006	1.232	$ 862.64	11	$ -
Playground Equipment	6/30/2006	N		SL	7	10,000.00	0	0	9,999.99	0	9,999.99	0.01	2006	1.232	$ 12,323.43	11	$ -
Bleachers	6/30/2006	N		SL	10	26,239.00	0	0	23,015.10	2623.9	25,639.00	600.00	2006	1.232	$ 32,335.44	11	$ -
Picnic Tables	6/30/2006	N		SL	7	250.00	0	0	249.97	0	249.97	0.03	2006	1.232	$ 308.09	11	$ -
Computer	4/22/2008	N		SL	5	985.04	0	0	984.88	0	984.88	0.16	2008	1.175	$ 1,157.67	9	$ -
Server	7/14/2008	N		SL	5	979.00	0	0	979.00	0	979.00	0.00	2008	1.175	$ 1,150.57	9	$ -
2 Tasers	9/17/2008	N		SL	7	2,930.00	0	0	2,825.25	105	2,930.25	0.00	2008	1.175	$ 3,443.50	9	$ -
Court Computer	1/20/2009	N		SL	5	647.00	0	0	646.52	0	646.52	0.48	2009	1.149	$ 743.29	8	$ -

City of Lawson, MO
Depreciation Schedule

~~Taser - 26012~~	~~9/17/2008~~	~~N~~	~~SL~~	~~7~~	~~1,053.00~~	~~0~~	~~0~~	~~965.26~~	~~88~~	~~1,053.26~~	~~0.00~~	~~2008~~	~~1.175~~	~~$ 1,237.54~~	~~9~~	~~$ -~~
~~2007 Crown Victoria~~	~~7/15/2009~~	~~N~~	~~SL~~	~~5~~	~~13,250.00~~	~~0~~	~~0~~	~~13,250.00~~	~~0~~	~~13,250.00~~	~~0.00~~	~~2009~~	~~1.149~~	~~$ 15,222.02~~	~~8~~	~~$ -~~
~~2007 Crown Victoria~~	~~12/18/2009~~	~~N~~	~~SL~~	~~5~~	~~13,250.00~~	~~0~~	~~0~~	~~13,250.00~~	~~0~~	~~13,250.00~~	~~0.00~~	~~2009~~	~~1.149~~	~~$ 15,222.02~~	~~8~~	~~$ -~~
~~Crystal 256 Digital Comp~~	~~6/4/2010~~	~~N~~	~~SL~~	~~7~~	~~2,000.00~~	~~0~~	~~0~~	~~1,422.36~~	~~285.71~~	~~1,708.07~~	~~291.93~~	~~2010~~	~~1.130~~	~~$ 2,259.26~~	~~7~~	~~$ -~~
~~Summit Accounting Syste~~	~~2/17/2011~~	~~N~~	~~SL~~	~~5~~	~~11,501.00~~	~~0~~	~~0~~	~~9,987.53~~	~~1513~~	~~11,500.53~~	~~0.47~~	~~2011~~	~~1.118~~	~~$ 12,863.22~~	~~6~~	~~$ -~~
~~Training - Data Tech~~	~~12/31/2011~~	~~N~~	~~SL~~	~~7~~	~~3,719.63~~	~~0~~	~~0~~	~~1,904.11~~	~~531.38~~	~~2,435.49~~	~~1,284.14~~	~~2011~~	~~1.118~~	~~$ 4,160.20~~	~~6~~	~~$ 594.31~~
~~Computers/Software~~	~~12/31/2011~~	~~N~~	~~SL~~	~~5~~	~~5,314.81~~	~~0~~	~~0~~	~~3,808.94~~	~~1062.96~~	~~4,871.90~~	~~442.91~~	~~2011~~	~~1.118~~	~~$ 5,944.32~~	~~6~~	~~$ -~~
~~Sirens~~	~~12/31/2011~~	~~N~~	~~SL~~	~~7~~	~~15,859.80~~	~~0~~	~~0~~	~~8,118.72~~	~~2265.69~~	~~10,384.41~~	~~5,475.39~~	~~2011~~	~~1.118~~	~~$ 17,738.29~~	~~6~~	~~$ 2,534.04~~
~~Tarps for Ball Park~~	~~12/31/2011~~	~~N~~	~~SL~~	~~7~~	~~5,986.63~~	~~0~~	~~0~~	~~3,064.58~~	~~855.23~~	~~3,919.81~~	~~2,066.82~~	~~2011~~	~~1.118~~	~~$ 6,695.71~~	~~6~~	~~$ 956.53~~
~~Salt Shed Police Station~~	~~12/31/2011~~	~~N~~	~~SL~~	~~20~~	~~25,978.89~~	~~0~~	~~0~~	~~4,654.54~~	~~1298.94~~	~~5,953.48~~	~~20,025.41~~	~~2011~~	~~1.118~~	~~$ 29,055.92~~	~~6~~	~~$ 20,339.15~~
~~Training~~	~~12/31/2011~~	~~N~~	~~SL~~	~~7~~	~~619.63~~	~~0~~	~~0~~	~~317.20~~	~~88.52~~	~~405.72~~	~~213.91~~	~~2011~~	~~1.118~~	~~$ 693.02~~	~~6~~	~~$ 99.00~~
~~In Car Camera~~	~~1/24/2014~~	~~N~~	~~SL~~	~~7~~	~~10,891.00~~	~~0~~	~~0~~	~~3,111.72~~	~~1555.86~~	~~4,667.58~~	~~6,223.42~~	~~2014~~	~~1.058~~	~~$ 11,523.58~~	~~3~~	~~$ 6,584.90~~
Group #7																
Chemical & Equip Storage	1/1/1954	N	SL	40	3,500.00	0	0	3,500.00	0	3,500.00	0.00	1954	**8.559**	$ 29,956.14	63	$ -
Water Filtration Plant	1/1/1954	N	SL	40	35,000.00	0	0	35,000.00	0	35,000.00	0.00	1954	**8.559**	$ 299,561.35	63	$ -
CDBG Project-Engineering	7/1/2010	N	SL	15	17,535.00	0	0	5,845.00	1,169.00	7,014.00	10,521.00	2010	**1.130**	$ 19,808.03	7	$ 10,564.28
Group #8																
GMC 1 Ton Flatbed	1/1/1985	N	SL	7	10,250.00	0	0	10,250.00	0	10,250.00	0.00	1985	**2.365**	$ 24,236.53	32	$ -
Ford F150 Pickup	1/1/1986	N	SL	7	7,673.00	0	0	7,673.00	0	7,673.00	0.00	1986	**2.267**	$ 17,395.12	31	$ -
Computer Equipment	1/1/1989	N	SL	5	9,658.00	0	0	9,658.00	0	9,658.00	0.00	1989	**2.006**	$ 19,371.58	28	$ -
Equipment	7/1/1992	N	SL	7	8,093.00	0	0	8,093.00	0	8,093.00	0.00	1992	**1.743**	$ 14,102.83	25	$ -
Equipment	12/1/1992	N	SL	7	6,237.00	0	0	6,237.00	0	6,237.00	0.00	1992	**1.743**	$ 10,868.57	25	$ -
2000 Chevy Truck	7/1/2000	N	SL	5	32,483.23	0	0	32,483.23	0	32,483.23	0.00	2000	**1.399**	$ 45,433.34	17	$ -
Truck	7/1/2001	N	SL	5	33,255.00	0	0	33,255.00	0	33,255.00	0.00	2001	**1.366**	$ 45,422.65	16	$ -
Bobcat	7/1/2001	N	SL	5	17,240.46	0	0	17,240.46	0	17,240.46	0.00	2001	**1.366**	$ 23,548.56	16	$ -
Telemetry	12/31/2002	N	SL	7	12,079.60	0	0	12,079.60	0	12,079.60	0.00	2002	**1.331**	$ 16,081.28	15	$ -
Hand Held Meters	12/31/2002	N	SL	7	7,120.20	0	0	7,120.20	0	7,120.20	0.00	2002	**1.331**	$ 9,478.95	15	$ -
900 Hand Held Meters	7/1/2003	N	SL	20	127,000.00	0	0	76,200.00	6,350.00	82,550.00	44,450.00	2003	**1.300**	$ 165,109.44	14	$ 49,532.83
Computer	4/22/2008	N	SL	5	1,030.80	0	0	1,030.80	0	1,030.80	0.00	2008	**1.175**	$ 1,211.45	9	$ -
Rugged DO Field Kit	6/17/2008	N	SL	7	1,784.00	0	0	1,784.00	0	1,784.00	0.00	2008	**1.175**	$ 2,096.65	9	$ -
Basket for Water Lag	6/30/2008	N	SL	7	7,916.00	0	0	7,916.00	0	7,916.00	0.00	2008	**1.175**	$ 9,303.32	9	$ -
Server	7/11/2008	N	SL	5	979	0	0	979	0	979	0.00	2008	**1.175**	$ 1,150.57	9	$ -
2009 Ford F350	11/10/2008	N	SL	5	26,470.00	0	0	26,470.00	0	26,470.00	0.00	2008	**1.175**	$ 31,109.00	9	$ -
Computer System	2/10/2009	N	SL	5	681	0	0	680.55	0	680.55	0.45	2009	**1.149**	$ 782.35	8	$ -
Crystal 256 Digital Comp	6/4/2010	N	SL	5	1,600.00	0	0	1,188.57	320	1,508.57	91.43	2010	**1.130**	$ 1,807.40	7	$ -
Grasshopper Mower	9/28/2010	N	SL	7	11,400.00	0	0	7,735.71	1,628.57	9,364.28	2,035.72	2010	**1.130**	$ 12,877.76	7	$ -
Summit Accounting Syste	2/17/2011	N	SL	5	11,501.00	0	0	9,967.53	1,533.00	11,500.53	0.47	2011	**1.118**	$ 12,863.22	6	$ -
Computer	12/31/2011	N	SL	5	3,578.28	0	0	2,564.21	715.66	3,279.87	298.41	2011	**1.118**	$ 4,002.10	6	$ -
Pump Motor	12/31/2011	N	SL	7	3,595.72	0	0	1,840.65	513.67	2,354.32	1,241.40	2011	**1.118**	$ 4,021.61	6	$ 574.52
Tripod and Harness	12/31/2011	N	SL	7	3,520.00	0	0	1,801.91	502.86	2,304.77	1,215.23	2011	**1.118**	$ 3,936.92	6	$ 562.42
2012 F550	12/11/2012	N	SL	5	54,100.00	0	0	32,459.40	10,819.80	43,279.20	10,820.80	2012	**1.100**	$ 59,496.36	5	$ -
Group #9																
Land	6/30/1977	R			12,000.00	0	0	0	0	0	12,000.00	1977		$ 12,000.00	40	$ 12,000.00
Lagoon	6/30/1977	R			10,000.00	0	0	0	0	0	10,000.00	1977		$ 10,000.00	40	$ 10,000.00
Lift Station : Salvage: 7,300.00	1/1/1964	N	SL	25	100,000.00	0	0	100,000.00	0	100,000.00	0.00	1964	**7.782**	$ 778,179.57	53	$ -
Group #10																
~~Drainage Improvements~~	~~7/1/1992~~	~~N~~	~~SL~~	~~25~~	~~15,196.00~~	~~0~~	~~0~~	~~12,157.60~~	~~607.84~~	~~12,765.44~~	~~2,430.56~~	~~1992~~	~~1.743~~	~~$ 26,480.49~~	~~25~~	~~$ -~~
Sewer System Additions	1/1/1999	N	SL	10	95,545.00	0	0	95,545.00	0	95,545.00	0.00	1999	**1.428**	$ 136,442.34	18	$ -
Sewer System Addition	1/1/1995	N	SL	40	157,121.00	0	0	82,488.45	3,928.03	86,416.48	70,704.52	1995	**1.582**	$ 248,632.96	22	$ 111,884.83
Equipment	6/30/2000	N	SL	5	643	0	0	643	0	643	0.00	2000	**1.399**	$ 899.35	17	$ -
Sewer System Addition	1/1/2001	N	SL	40	53,661.02	0	0	19,452.19	1,341.53	20,793.72	32,867.30	2001	**1.366**	$ 73,295.01	16	$ 43,977.01
Sewer System Lines	7/1/2001	N	SL	40	254,737.29	0	0	148,189.02	6,368.43	154,557.45	100,179.84	2001	**1.366**	$ 347,942.94	16	$ 208,765.76
Sewer Extension	7/1/2001	N	SL	40	517,097.19	0	0	121,953.02	12,927.43	134,880.45	382,216.74	2001	**1.366**	$ 706,297.52	16	$ 423,778.51

City of Lawson, MO
Depreciation Schedule

Sewer Line Extension	6/1/2006	N	SL	40	342,308.00	0	0	77,732.44	8,557.70	86,290.14	256,017.86	2006	**1.232**	$	421,840.83	11	**$ 305,834.60**
Sewer Main Repairs	6/30/2006	N	SL	40	3,613.00	0	0	812.97	90.33	903.3	2,709.70	2006	**1.232**	$	4,452.45	11	**$ 3,228.03**
Lift Station Repairs	2/23/2009	N	SL	40	25,923.00	0	0	4,104.51	648.08	4,752.59	21,170.41	2009	**1.149**	$	29,781.17	8	**$ 23,824.93**
Lift Station Rehab	9/4/2009	N	SL	40	2,378.16	0	0	346.79	59.45	406.24	1,971.92	2009	**1.149**	$	2,732.11	8	**$ 2,185.68**
ABS Pump	9/10/2010	N	SL	40	5,308.00	0	0	1,371.23	132.7	1,503.93	3,804.07	2010	**1.130**	$	5,996.07	7	**$ 4,946.75**
Pump Float Package	1/6/2011	N	SL	10	2,070.00	0	0	828	207	1,035.00	1,035.00	2011	**1.118**	$	2,315.18	6	**$ 926.07**
Sewer Repairs	1/1/2013	N	SL	40	15,504.42	0	0	1,162.83	387.61	1,550.44	13,953.98	2013	**1.077**	$	16,700.25	4	**$ 15,030.22**
Sewer repairs	1/1/2014	N	SL	40	16,534.64	0	0	826.74	413.37	1,240.11	15,294.53	2014	**1.058**	$	17,495.02	3	**$ 16,182.89**
Group #11																	
Water Tank	1/1/1954	N	SL	40	57,000.00	0	0	57,000.00	0	57,000.00	0.00	1954	8.559	$	487,857.06	63	**$ -**
Pumphouse	1/1/1954	N	SL	40	1,000.00	0	0	1,000.00	0	1,000.00	0.00	1954	8.559	$	8,558.90	63	**$ -**
Filtration Plant Con	1/1/1954	N	SL	25	50,000.00	0	0	50,000.00	0	50,000.00	0.00	1954	8.559	$	427,944.79	63	**$ -**
Water Tower & Dist Syste	1/1/1991	N	SL	40	848,649.00	0	0	501,786.67	21,216.23	523,002.90	325,646.10	1991	**1.828**	$	1,551,315.91	26	**$ 542,960.57**
Water Line Extension	12/1/2003	N	SL	40	652,857.00	0	0	235,753.93	16,321.43	252,075.36	400,781.64	2003	**1.300**	$	848,762.64	14	**$ 551,695.71**
Water Line Extension	6/30/2007	N	SL	40	444,500.00	0	0	107,420.85	11,112.50	118,533.35	325,966.65	2007	**1.202**	$	534,416.01	10	**$ 400,812.01**
Hot Rods	12/7/2007	N	SL	10	23,100.00	0	0	17,517.50	2,310.00	19,827.50	3,272.50	2007	**1.202**	$	27,772.80	10	**$ -**
Hot Rods	6/2/2008	N	SL	10	8,625.00	0	0	6,517.71	862.5	7,380.21	1,244.79	2008	**1.175**	$	10,136.57	9	**$ 1,013.66**
Hot Rods	6/15/2008	N	SL	10	15,015.00	0	0	10,635.62	1,501.50	12,137.12	2,877.88	2008	**1.175**	$	17,646.45	9	**$ 1,764.65**

	Original Book Cost	Depreciated Book Cost	Inflated to 2017	Depreciated from 2017
excluding items that do not appear to be water or wastewater	4,180,470.01	2,054,390.34	7,700,035.94	2,742,045.94
everything in list	5,938,811.69	2,954,589.17	10,131,248.80	3,792,163.88

CPI-All Urban Consumers (Current Series)
12-Month Percent Change
US Department of Labor - Bureau of Labor Statistics
Series Id: CUUR0000SA0L1E
Not Seasonally Adjusted
Series Title: All items less food and energy in U.S. city
Area: U.S. city average
Item: All items less food and energy
Base Period: 1982-84=100
Years: 1958 to 2017

Added Columns to Calculate Inflation Factor

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual	HALF1	HALF2	Annual Factor	Factor to 2017
1958	3.2	3.2	2.8	2.4	2.4	2.1	2.4	2.1	1.7	1.7	1.7	1.7	2.4			1.024	8.559
1959	1.7	1.7	1.7	1.7	2.0	2.0	2.0	2.0	2.4	2.7	2.0	2.0	2.0			1.020	8.358
1960	2.0	2.3	2.0	2.0	1.7	1.7	1.3	1.3	1.0	1.0	1.0	1.0	1.3			1.013	8.194
1961	1.0	0.7	0.7	1.0	1.0	1.0	1.3	1.3	1.6	1.3	1.3	1.3	1.3			1.013	8.089
1962	1.3	1.3	1.6	1.3	1.6	1.6	1.3	1.3	1.3	1.3	1.3	1.3	1.3			1.013	7.985
1963	1.0	1.0	1.0	1.3	1.0	1.3	1.3	1.6	1.3	1.3	1.6	1.6	1.3			1.013	7.883
1964	1.9	1.9	1.9	1.6	1.6	1.6	1.6	0.9	1.3	1.3	1.2	1.2	1.6			1.016	7.782
1965	1.6	1.6	1.2	1.6	1.6	1.2	1.2	1.6	1.5	1.5	1.2	1.5	1.2			1.012	7.659
1966	0.9	1.2	1.5	1.8	2.1	2.4	2.8	3.1	3.0	3.3	3.6	3.3	2.4			1.024	7.568
1967	3.6	3.6	3.6	3.3	3.3	3.3	3.3	3.3	3.6	3.5	3.5	3.8	3.6			1.036	7.391
1968	4.1	4.1	4.4	4.4	4.3	4.6	4.9	4.9	4.9	4.8	5.1	5.1	4.6			1.046	7.134
1969	5.1	5.3	5.6	6.1	6.1	5.8	5.8	5.8	6.0	6.0	5.9	6.2	5.8			1.058	6.820
1970	6.2	6.1	6.1	5.8	6.0	6.5	6.2	6.2	6.2	6.4	6.6	6.6	6.3			1.063	6.447
1971	6.3	5.8	5.2	5.0	5.2	4.9	4.9	4.6	4.4	3.8	3.3	3.1	4.7			1.047	6.065
1972	3.1	3.3	3.3	3.3	3.1	2.8	2.8	3.3	2.8	3.0	3.0	3.0	3.0			1.030	5.792
1973	2.8	2.8	3.0	3.2	3.2	3.2	3.2	3.2	3.8	4.3	4.5	4.7	3.6			1.036	5.624
1974	4.9	5.4	5.8	6.2	6.8	7.9	8.8	9.6	10.2	10.6	11.2	11.1	8.3			1.083	5.428
1975	11.5	11.7	11.4	11.3	10.5	9.6	9.1	8.2	7.7	7.0	6.8	6.7	9.1			1.091	5.012
1976	6.7	6.5	6.6	6.4	6.5	6.5	6.7	6.8	6.8	6.7	6.5	6.1	6.5			1.065	4.594
1977	6.3	6.3	6.2	6.3	6.3	6.6	6.3	6.2	6.2	6.0	5.9	6.5	6.3			1.063	4.314
1978	6.4	6.2	6.3	6.5	6.8	7.0	7.4	7.5	7.9	8.4	8.7	8.5	7.4			1.074	4.058
1979	8.6	9.2	9.3	9.3	9.4	9.3	9.6	10.0	9.9	10.1	10.6	11.3	9.8			1.098	3.778
1980	12.0	12.0	12.5	13.0	13.3	13.6	12.4	11.8	12.0	12.3	12.1	12.2	12.4			1.124	3.441
1981	11.4	10.9	10.0	9.5	9.5	9.4	11.1	11.6	11.8	10.9	10.2	9.5	10.4			1.104	3.062
1982	9.3	9.1	8.8	8.9	8.7	8.6	7.6	7.1	5.9	5.9	5.3	4.5	7.4			1.074	2.773
1983	4.7	4.7	4.7	4.3	3.6	2.9	3.0	3.0	3.5	3.7	4.3	4.8	4.0			1.040	2.582
1984	4.8	4.8	5.0	5.0	5.2	5.1	5.0	5.1	5.1	4.9	4.6	4.7	5.0			1.050	2.483
1985	4.5	4.7	4.8	4.5	4.5	4.4	4.2	4.1	4.0	4.1	4.4	4.3	4.3	4.7	4.3	1.043	2.365
1986	4.4	4.2	4.1	4.2	4.0	4.0	4.1	4.0	4.1	4.0	3.8	3.8	4.0	4.1	4.0	1.040	2.267
1987	3.8	3.8	4.0	4.2	4.2	4.1	4.0	4.2	4.3	4.3	4.4	4.2	4.1	4.0	4.2	1.041	2.180
1988	4.3	4.3	4.4	4.3	4.3	4.5	4.5	4.4	4.4	4.5	4.4	4.7	4.4	4.4	4.5	1.044	2.094
1989	4.6	4.8	4.7	4.6	4.6	4.5	4.6	4.4	4.3	4.3	4.4	4.4	4.5	4.6	4.3	1.045	2.006
1990	4.4	4.6	4.9	4.8	4.8	4.9	5.0	5.5	5.5	5.3	5.3	5.2	5.0	4.8	5.3	1.050	1.919
1991	5.6	5.6	5.2	5.1	5.1	5.0	4.8	4.6	4.5	4.4	4.5	4.4	4.9	5.3	4.6	1.049	1.828
1992	3.9	3.8	3.9	3.9	3.8	3.8	3.7	3.5	3.3	3.5	3.4	3.3	3.7	3.8	3.4	1.037	1.743

CPI-All Urban Consumers (Current Series)
12-Month Percent Change
US Department of Labor - Bureau of Labor Statistics
Series Id: CUUR0000SA0L1E
Not Seasonally Adjusted
Series Title: All items less food and energy in U.S. city
Area: U.S. city average
Item: All items less food and energy
Base Period: 1982-84=100
Years: 1958 to 2017

Added Columns to Calculate Inflation Factor

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual	HALF1	HALF2	Annual Factor	Factor to 2017
1993	3.5	3.6	3.4	3.5	3.4	3.3	3.2	3.3	3.2	3.0	3.1	3.2	3.3	3.4	3.2	1.033	1.680
1994	2.9	2.8	2.9	2.8	2.8	2.9	2.9	2.9	3.0	2.9	2.8	2.6	2.8	2.8	2.9	1.028	1.627
1995	2.9	3.0	3.0	3.1	3.1	3.0	3.0	2.9	2.9	3.0	3.0	3.0	3.0	3.0	3.0	1.030	1.582
1996	3.0	2.9	2.8	2.7	2.7	2.7	2.7	2.6	2.7	2.6	2.6	2.6	2.7	2.7	2.7	1.027	1.536
1997	2.5	2.5	2.5	2.7	2.5	2.4	2.4	2.3	2.2	2.3	2.2	2.2	2.4	2.6	2.2	1.024	1.496
1998	2.2	2.3	2.1	2.1	2.2	2.2	2.2	2.5	2.5	2.3	2.3	2.4	2.3	2.2	2.4	1.023	1.461
1999	2.4	2.1	2.1	2.2	2.0	2.1	2.1	1.9	2.0	2.1	2.1	1.9	2.1	2.1	2.0	1.021	1.428
2000	2.0	2.2	2.4	2.3	2.4	2.5	2.5	2.6	2.6	2.5	2.6	2.6	2.4	2.3	2.5	1.024	1.399
2001	2.6	2.7	2.7	2.6	2.5	2.7	2.7	2.7	2.6	2.6	2.8	2.7	2.6	2.6	2.7	1.026	1.366
2002	2.6	2.6	2.4	2.5	2.5	2.3	2.2	2.4	2.2	2.2	2.0	1.9	2.4	2.5	2.2	1.024	1.331
2003	1.9	1.7	1.7	1.5	1.6	1.5	1.5	1.3	1.2	1.3	1.1	1.1	1.4	1.7	1.3	1.014	1.300
2004	1.1	1.2	1.6	1.8	1.7	1.9	1.8	1.7	2.0	2.0	2.2	2.2	1.8	1.6	2.0	1.018	1.282
2005	2.3	2.4	2.3	2.2	2.2	2.0	2.1	2.1	2.0	2.1	2.1	2.2	2.2	2.2	2.1	1.022	1.259
2006	2.1	2.1	2.1	2.3	2.4	2.6	2.7	2.8	2.9	2.7	2.6	2.6	2.5	2.2	2.7	1.025	1.232
2007	2.7	2.7	2.5	2.3	2.2	2.2	2.2	2.1	2.1	2.2	2.3	2.4	2.3	2.4	2.3	1.023	1.202
2008	2.5	2.3	2.4	2.3	2.3	2.4	2.5	2.5	2.5	2.2	2.0	1.8	2.3	2.3	2.3	1.023	1.175
2009	1.7	1.8	1.8	1.9	1.8	1.7	1.5	1.4	1.5	1.7	1.7	1.8	1.7	1.8	1.6	1.017	1.149
2010	1.6	1.3	1.1	0.9	0.9	0.9	0.9	0.9	0.8	0.6	0.8	0.8	1.0	1.1	0.8	1.010	1.130
2011	1.0	1.1	1.2	1.3	1.5	1.6	1.8	2.0	2.0	2.1	2.2	2.2	1.7	1.3	2.0	1.017	1.118
2012	2.3	2.2	2.3	2.3	2.3	2.2	2.1	1.9	2.0	2.0	1.9	1.9	2.1	2.2	2.0	1.021	1.100
2013	1.9	2.0	1.9	1.7	1.7	1.6	1.7	1.8	1.7	1.7	1.7	1.7	1.8	1.8	1.7	1.018	1.077
2014	1.6	1.6	1.7	1.8	2.0	1.9	1.9	1.7	1.7	1.8	1.7	1.6	1.7	1.8	1.7	1.017	1.058
2015	1.6	1.7	1.8	1.8	1.7	1.8	1.8	1.8	1.9	1.9	2.0	2.1	1.8	1.7	1.9	1.018	1.040
2016	2.2	2.3	2.2	2.1	2.2	2.2	2.2	2.3	2.2	2.1	2.1	2.2	2.2	2.2	2.2	1.022	1.022
2017	2.3	2.2	2.0	1.9													

STATE OF MISSOURI

DEPARTMENT OF NATURAL RESOURCES

MISSOURI CLEAN WATER COMMISSION

MISSOURI STATE OPERATING PERMIT

In compliance with the Missouri Clean Water Law, (Chapter 644 R.S. Mo. as amended, hereinafter, the Law), and the Federal Water Pollution Control Act (Public Law 92-500, 92nd Congress) as amended,

Permit No.	MO-0091031
Owner:	City of Lawson
Address:	P.O. Box 185, Lawson, MO 64062
Continuing Authority:	Same as above
Address:	Same as above
Facility Name:	Lawson Wastewater Treatment Facility
Facility Address:	0.6 miles northeast of Hwy 69 and Hwy D intersection, Lawson, MO 64062
Legal Description:	See Page 2
UTM Coordinates:	See Page 2
Receiving Stream:	See Page 2
First Classified Stream and ID:	See Page 2
USGS Basin & Sub-watershed No.:	See Page 2

is authorized to discharge from the facility described herein, in accordance with the effluent limitations and monitoring requirements as set forth herein:

FACILITY DESCRIPTION

See Page 2

This permit authorizes only wastewater discharges under the Missouri Clean Water Law and the National Pollutant Discharge Elimination System; it does not apply to other regulated areas. This permit may be appealed in accordance with Section 621.250 RSMo, Section 640.013 RSMo and Section 644.051.6 of the Law.

June 1, 2016
Effective Date

Sara Parker Pauley
Sara Parker Pauley, Director, Department of Natural Resources

December 31, 2018
Expiration Date

John Madras
John Madras, Director, Water Protection Program

FACILITY DESCRIPTION (continued):

Outfall #001 – POTW – SIC #4952
The use or operation of this facility shall be by or under the supervision of a Certified "D" Operator.
Four-cell lagoon / sludge retained in lagoon
Design population equivalent is 3,625.
Design flow is 300,000 gallons per day.
Actual flow is 247,000 gallons per day.
Controlled discharge flow is 2,000,000 gallons per day.
Design sludge production is 54.4 dry tons/year.

Legal Description:	NW ¼, NE ¼, SE ¼, Sec. 36, T54N, R30W, Clay County
UTM Coordinates:	X= 395433, Y=4367075
Receiving Stream:	Brushy Creek (C)
First Classified Stream and ID:	8-20-13 MUDD V1.0 (C) (3960)
USGS Basin & Sub-watershed No.:	(10300101-0701)

Permitted Feature SM1 – Instream Monitoring
Instream monitoring location – Upstream – upstream of Outfall #001 in Brushy Creek – See Special Condition #23

OUTFALL #001	TABLE A-1. INTERIM EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS	PAGE NUMBER 3 of 10
		PERMIT NUMBER MO-0091031

The permittee is authorized to discharge from outfall(s) with serial number(s) as specified in the application for this permit. The interim effluent limitations shall become effective on **June 1, 2016** and remain in effect through **May 31, 2020**. Such discharges shall be controlled, limited and monitored by the permittee as specified below:

EFFLUENT PARAMETER(S)	UNITS	INTERIM EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS	
		DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
Flow (Note 1)	MGD	*		*	twice/week	24 hr. estimate
Biochemical Oxygen Demand$_5$ (Note 1)	mg/L		65	45	once/month	grab
Total Suspended Solids (Note 1)	mg/L		120	80	once/month	grab
Ammonia as N (Note 1) (Apr 1 – Sep 30) (Oct 1 – Mar 31)	mg/L	5.9 7.5		1.2 2.9	once/month	grab
Oil & Grease (Note 1)	mg/L	15		10	once/month	grab
E. coli (Notes 1 & 2)	#/100mL		*	*	once/week	grab
MONITORING REPORTS SHALL BE SUBMITTED MONTHLY; THE FIRST REPORT IS DUE JULY 28, 2016. THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.						
Total Phosphorus (Note 1)	mg/L	*		*	once/quarter***	grab
Total Nitrogen (Note 1)	mg/L	*		*	once/quarter***	grab
MONITORING REPORTS SHALL BE SUBMITTED QUARTERLY; THE FIRST REPORT IS DUE OCTOBER 28, 2016.						
EFFLUENT PARAMETER(S)	UNITS	MINIMUM		MAXIMUM	MEASUREMENT FREQUENCY	SAMPLE TYPE
pH – Units ** (Note 1)	SU	6.5			once/month	grab
MONITORING REPORTS SHALL BE SUBMITTED MONTHLY; THE FIRST REPORT IS DUE JULY 28, 2016.						

* Monitoring requirement only.
** pH is measured in pH units and is not to be averaged.
*** See table below for quarterly sampling requirements.

Minimum Sampling Requirements			
Quarter	**Months**	**Total Phosphorus & Total Nitrogen**	**Report is Due**
First	January, February, March	Sample at least once during any month of the quarter	April 28th
Second	April, May, June	Sample at least once during any month of the quarter	July 28th
Third	July, August, September	Sample at least once during any month of the quarter	October 28th
Fourth	October, November, December	Sample at least once during any month of the quarter	January 28th

Note 1 - Controlled discharges from Outfall #001 shall be conducted according to the requirements of Special Condition #24.

Note 2 - Effluent limitations and monitoring requirements for *E. coli* are applicable only during the recreational season from April 1 through October 31. The Monthly Average Limit for *E. coli* is expressed as a geometric mean. The Weekly Average for *E. coli* will be expressed as a geometric mean if more than one (1) sample is collected during a calendar week (Sunday through Saturday).

OUTFALL #001	TABLE A-2. FINAL EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS	PAGE NUMBER 4 of 10
		PERMIT NUMBER MO-0091031

The permittee is authorized to discharge from outfall(s) with serial number(s) as specified in the application for this permit. The final effluent limitations shall become effective on **June 1, 2020** and remain in effect until expiration of the permit. Such discharges shall be controlled, limited and monitored by the permittee as specified below:

EFFLUENT PARAMETER(S)	UNITS	FINAL EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS	
		DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
Flow (Note 1)	MGD	*		*	twice/week	24 hr. estimate
Biochemical Oxygen Demand$_5$ (Note 1)	mg/L		65	45	once/month	grab
Total Suspended Solids (Note 1)	mg/L		120	80	once/month	grab
Ammonia as N (Note 1) (Apr 1 – Sep 30) (Oct 1 – Mar 31)	mg/L	5.9 7.5		1.2 2.9	once/month	grab
Oil & Grease (Note 1)	mg/L	15		10	once/month	grab
E. coli (Notes 1 & 2)	#/100mL		1030	206	once/week	grab
MONITORING REPORTS SHALL BE SUBMITTED MONTHLY; THE FIRST REPORT IS DUE JULY 28, 2020. THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.						
Total Phosphorus (Note 1)	mg/L	*		*	once/quarter***	grab
Total Nitrogen (Note 1)	mg/L	*		*	once/quarter***	grab
MONITORING REPORTS SHALL BE SUBMITTED QUARTERLY; THE FIRST REPORT IS DUE OCTOBER 28, 2020.						
EFFLUENT PARAMETER(S)	UNITS	MINIMUM		MAXIMUM	MEASUREMENT FREQUENCY	SAMPLE TYPE
pH – Units ** (Note 1)	SU	6.5			once/month	grab
MONITORING REPORTS SHALL BE SUBMITTED MONTHLY; THE FIRST REPORT IS DUE JULY 28, 2020.						

* Monitoring requirement only.
** pH is measured in pH units and is not to be averaged.
*** See table below for quarterly sampling requirements.

Minimum Sampling Requirements			
Quarter	**Months**	**Total Phosphorus & Total Nitrogen**	**Report is Due**
First	January, February, March	Sample at least once during any month of the quarter	April 28th
Second	April, May, June	Sample at least once during any month of the quarter	July 28th
Third	July, August, September	Sample at least once during any month of the quarter	October 28th
Fourth	October, November, December	Sample at least once during any month of the quarter	January 28th

Note 1 - Controlled discharges from Outfall #001 shall be conducted according to the requirements of Special Condition #24.

Note 2 - Effluent limitations and monitoring requirements for *E. coli* are applicable only during the recreational season from April 1 through October 31. The Monthly Average Limit for *E. coli* is expressed as a geometric mean. The Weekly Average for *E. coli* will be expressed as a geometric mean if more than one (1) sample is collected during a calendar week (Sunday through Saturday).

OUTFALL #001	TABLE A-5. WHOLE EFFLUENT TOXICITY FINAL EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS	PAGE NUMBER 5 of 10
		PERMIT NUMBER MO-0091031

The permittee is authorized to discharge from outfall(s) with serial number(s) as specified in the application for this permit. The final effluent limitations shall become effective on **June 1, 2016** and remain in effect until expiration of the permit. Such discharges shall be controlled, limited and monitored by the permittee as specified below:

EFFLUENT PARAMETER(S)	UNITS	FINAL EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS	
		DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
Acute Whole Effluent Toxicity (Note 3)	TU_a	*			once/permit cycle	grab
MONITORING REPORTS SHALL BE SUBMITTED ONCE PER PERMIT CYCLE; THE FIRST REPORT IS DUE JUNE 28, 2018.						

* Monitoring requirement only.

Note 3 – The Acute WET test shall be conducted once per permit cycle. See Special Condition #22 for additional requirements.

TABLE B.
INFLUENT MONITORING REQUIREMENTS

The facility is required to meet a removal efficiency of 65% or more as a monthly average. The monitoring requirements shall become effective on **June 1, 2016** and remain in effect until expiration of the permit. To determine removal efficiencies, the influent wastewater shall be monitored by the permittee as specified below:

SAMPLING LOCATION AND PARAMETER(S)	UNITS	MONITORING REQUIREMENTS	
		MEASUREMENT FREQUENCY	SAMPLE TYPE
Biochemical Oxygen $Demand_5$	mg/L	once/quarter***	Grab
Total Suspended Solids	mg/L	once/quarter***	Grab
MONITORING REPORTS SHALL BE SUBMITTED QUARTERLY; THE FIRST REPORT IS DUE OCTOBER 28, 2016.			

*** See table below for quarterly sampling requirements.

Minimum Sampling Requirements			
Quarter	**Months**	**Influent Parameters**	**Report is Due**
First	January, February, March	Sample at least once during any month of the quarter	April 28th
Second	April, May, June	Sample at least once during any month of the quarter	July 28th
Third	July, August, September	Sample at least once during any month of the quarter	October 28th
Fourth	October, November, December	Sample at least once during any month of the quarter	January 28th

PERMITTED FEATURE SM1	TABLE C-1. INSTREAM MONITORING REQUIREMENTS	PAGE NUMBER 6 of 10
		PERMIT NUMBER MO-0091031

The monitoring requirements shall become effective on **June 1, 2016** and remain in effect until expiration of the permit.

PARAMETER(S)	UNITS	MONITORING REQUIREMENTS				
		DAILY MAXIMUM		MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
Total Phosphorus	mg/L	*		*	once/quarter***	grab
Total Nitrogen	mg/L	*		*	once/quarter***	grab

MONITORING REPORTS SHALL BE SUBMITTED QUARTERLY; THE FIRST REPORT IS DUE OCTOBER 28, 2016.

* Monitoring requirement only.
*** See table below for quarterly sampling

Minimum Sampling Requirements			
Quarter	**Months**	**Total Nitrogen & Total Phosphorus**	**Report is Due**
First	January, February, March	Sample at least once during any month of the quarter	April 28th
Second	April, May, June	Sample at least once during any month of the quarter	July 28th
Third	July, August, September	Sample at least once during any month of the quarter	October 28th
Fourth	October, November, December	Sample at least once during any month of the quarter	January 28th

D. STANDARD CONDITIONS

In addition to specified conditions stated herein, this permit is subject to the attached Parts I, II, & III standard conditions dated August 1, 2014, May 1, 2013, and March 1, 2015, and hereby incorporated as though fully set forth herein.

E. SPECIAL CONDITIONS

1. This permit establishes final ammonia limitations based on Missouri's current Water Quality Standard. On August 22, 2013, the U.S. Environmental Protection Agency (EPA) published a notice in the Federal Register announcing of the final national recommended ambient water quality criteria for protection of aquatic life from the effects of ammonia in freshwater. The EPA's guidance, Final Aquatic Life Ambient Water Quality Criteria for Ammonia – Fresh Water 2013, is not a rule, nor automatically part of a state's water quality standards. States must adopt new ammonia criteria consistent with EPA's published ammonia criteria into their water quality standards that protect the designated uses of the water bodies. The Department of Natural Resources has initiated stakeholder discussions on how to best incorporate these new criteria into the State's rules. A date for when this rule change will occur has not been determined. Also, refer to Section VI of this permit's factsheet for further information including estimated future effluent limits for this facility. It is recommended the permittee view the Department's 2013 EPA criteria Factsheet located at http://dnr.mo.gov/pubs/pub2481.htm.

2. This permit may be reopened and modified, or alternatively revoked and reissued, to:
   (a) Comply with any applicable effluent standard or limitation issued or approved under Sections 301(b)(2)(C) and (D), 304(b)(2), and 307(a) (2) of the Clean Water Act, if the effluent standard or limitation so issued or approved:
      (1) contains different conditions or is otherwise more stringent than any effluent limitation in the permit; or
      (2) controls any pollutant not limited in the permit.
   (b) Incorporate new or modified effluent limitations or other conditions, if the result of a waste load allocation study, toxicity test or other information indicates changes are necessary to assure compliance with Missouri's Water Quality Standards.
   (c) Incorporate new or modified effluent limitations or other conditions if, as the result of a watershed analysis, a Total Maximum Daily Load (TMDL) limitation is developed for the receiving waters which are currently included in Missouri's list of waters of the state not fully achieving the state's water quality standards, also called the 303(d) list.
   (d) Incorporate the requirement to develop a pretreatment program pursuant to 40 CFR 403.8(a) when the Director of the Water Protection Program determines that a pretreatment program is necessary due to any new introduction of pollutants into the Publically Owned Treatment Works or any substantial change in the volume or character of pollutants being introduced.

   The permit as modified or reissued under this paragraph shall also contain any other requirements of the Clean Water Act then applicable.

E. SPECIAL CONDITIONS (continued)

3. All outfalls must be clearly marked in the field. This does not include instream monitoring locations.

4. Permittee will cease discharge by connection to a facility with an area-wide management plan per 10 CSR 20-6.010(3)(B) within 90 days of notice of its availability.

5. Report as no-discharge when a discharge does not occur during the report period. For instream samples, report as No Flow if no stream flow occurs during the report period.

6. Water Quality Standards
   (a) To the extent required by law, discharges to waters of the state shall not cause a violation of water quality standards rule under 10 CSR 20-7.031, including both specific and general criteria.
   (b) General Criteria. The following general water quality criteria shall be applicable to all waters of the state at all times including mixing zones. No water contaminant, by itself or in combination with other substances, shall prevent the waters of the state from meeting the following conditions:
      (1) Waters shall be free from substances in sufficient amounts to cause the formation of putrescent, unsightly or harmful bottom deposits or prevent full maintenance of beneficial uses;
      (2) Waters shall be free from oil, scum and floating debris in sufficient amounts to be unsightly or prevent full maintenance of beneficial uses;
      (3) Waters shall be free from substances in sufficient amounts to cause unsightly color or turbidity, offensive odor or prevent full maintenance of beneficial uses;
      (4) Waters shall be free from substances or conditions in sufficient amounts to result in toxicity to human, animal or aquatic life;
      (5) There shall be no significant human health hazard from incidental contact with the water;
      (6) There shall be no acute toxicity to livestock or wildlife watering;
      (7) Waters shall be free from physical, chemical or hydrologic changes that would impair the natural biological community;
      (8) Waters shall be free from used tires, car bodies, appliances, demolition debris, used vehicles or equipment and solid waste as defined in Missouri's Solid Waste Law, section 260.200, RSMo, except as the use of such materials is specifically permitted pursuant to section 260.200-260.247.

7. Changes in existing pollutants or the addition of new pollutants to the treatment facility

   The permittee must provide adequate notice to the Director of the following:
   (a) Any new introduction of pollutants into the POTW from an indirect discharger which would be subject to section 301 or 306 of CWA if it were directly discharging those pollutants; and
   (b) Any substantial change in the volume or character of pollutants being introduced into that POTW by a source introducing pollutants into the POTW at the time of issuance of the permit.
   (c) For purposes of this paragraph, adequate notice shall include information on;
      (1) the quality and quantity of effluent introduced into the POTW, and
      (2) any anticipated impact of the change on the quantity or quality of effluent to be discharged from the POTW.

8. Reporting of Non-Detects:
   (a) An analysis conducted by the permittee or their contracted laboratory shall be conducted in such a way that the precision and accuracy of the analyzed result can be enumerated.
   (b) The permittee shall not report a sample result as "Non-Detect" without also reporting the detection limit of the test. Reporting as "Non Detect" without also including the detection limit will be considered failure to report, which is a violation of this permit.
   (c) The permittee shall provide the "Non-Detect" sample result using the less than sign and the minimum detection limit (e.g. <10).
   (d) The permittee shall use one-half of the detection limit for the non-detect result when calculating monthly averages.
   (e) See Standard Conditions Part I, Section A, #4 regarding proper detection limits used for sample analysis.

9. It is a violation of the Missouri Clean Water Law to fail to pay fees associated with this permit (644.055 RSMo).

10. The permittee shall comply with any applicable requirements listed in 10 CSR 20-9, unless the facility has received written notification that the Department has approved a modification to the requirements. The monitoring frequencies contained in this permit shall not be construed by the permittee as a modification of the monitoring frequencies listed in 10 CSR 20-9. If a modification of the monitoring frequencies listed in 10 CSR 20-9 is needed, the permittee shall submit a written request to the Department for review and, if deemed necessary, approval.

E. SPECIAL CONDITIONS (continued)

11. The permittee shall develop and implement a program for maintenance and repair of the collection system. The recommended guidance is the US EPA's Guide For Evaluating Capacity, Management, Operation, And Maintenance (CMOM) Programs At Sanitary Sewer Collection Systems (Document number EPA 305-B-05-002) or the Departments' CMOM Model located at http://dnr.mo.gov/env/wpp/permits/docs/cmom-template.doc. For additional information regarding the Departments' CMOM Model, see the CMOM Plan Model Guidance document at http://dnr.mo.gov/pubs/pub2574.htm.

    The permittee shall also submit a report to the Kansas City Regional Office annually, by January 28th, for the previous calendar year. The report shall contain the following information:
    (a) A summary of the efforts to locate and eliminate sources of excessive infiltration and inflow into the collection system serving the facility for the previous year.
    (b) A summary of the general maintenance and repairs to the collection system serving the facility for the previous year.
    (c) A summary of any planned maintenance and repairs to the collection system serving the facility for the upcoming calendar year. This list shall include locations (GPS, 911 address, manhole number, etc.) and actions to be taken.

12. Bypasses are not authorized at this facility unless they meet the criteria in 40 CFR 122.41(m). If a bypass occurs, the permittee shall report in accordance to 40 CFR 122.41(m)(3), and with Standard Condition Part I, Section B, subsection 2.b. Bypasses are to be reported to the Kansas City Regional Office or by using the online Sanitary Sewer Overflow/Facility Bypass Application, located at: http://dnr.mo.gov/modnrcag/ during normal business hours or the Environmental Emergency Response hotline at 573-634-2436 outside of normal business hours. Blending, which is the practice of combining a partially-treated wastewater process stream with a fully-treated wastewater process stream prior to discharge, is not considered a form of bypass. If the permittee wishes to utilize blending, the permittee shall file an application to modify this permit to facilitate the inclusion of appropriate monitoring conditions.

13. The facility must be sufficiently secured to restrict entry by children, livestock and unauthorized persons as well as to protect the facility from vandalism.

14. At least one gate must be provided to access the wastewater treatment facility and provide for maintenance and mowing. The gate shall remain closed except when temporarily opened by; the permittee to access the facility, perform operational monitoring, sampling, maintenance, mowing, or for inspections by the Department. The gate shall be closed and locked when the facility is not staffed.

15. At least one (1) warning sign shall be placed on each side of the facility enclosure in such positions as to be clearly visible from all directions of approach. There shall also be one (1) sign placed for every five hundred feet (500') (150 m) of the perimeter fence. A sign shall also be placed on each gate. Minimum wording shall be SEWAGE TREATMENT FACILITY—KEEP OUT. Signs shall be made of durable materials with characters at least two inches (2") high and shall be securely fastened to the fence, equipment or other suitable locations.

16. An Operation and Maintenance (O & M) manual shall be maintained by the permittee and made available to the operator. The O & M manual shall include key operating procedures and a brief summary of the operation of the facility.

17. An all-weather access road shall be provided to the treatment facility.

18. The discharge from the wastewater treatment facility shall be conveyed to the receiving stream via a closed pipe or a paved or rip-rapped open channel. Sheet or meandering drainage is not acceptable. The outfall sewer shall be protected against the effects of floodwater, ice or other hazards as to reasonably insure its structural stability and freedom from stoppage. The outfall shall be maintained so that a sample of the effluent can be obtained at a point after the final treatment process and before the discharge mixes with the receiving waters.

19. A minimum of two (2) feet freeboard must be maintained in each lagoon cell. A lagoon level gauge, which clearly marks the minimum freeboard level, shall be provided in each lagoon cell.

20. The berms of the lagoon shall be mowed and kept free of any deep-rooted vegetation, animal dens, or other potential sources of damage to the berms.

21. The facility shall ensure that adequate provisions are provided to prevent surface water intrusion into the lagoon and to divert stormwater runoff around the lagoon and protect embankments from erosion.

E. SPECIAL CONDITIONS (continued)

22. Acute Whole Effluent Toxicity (WET) tests shall be conducted as follows:

SUMMARY OF ACUTE WET TESTING FOR THIS PERMIT					
OUTFALL	AEC	Acute Toxic Unit (TU_a)	FREQUENCY	SAMPLE TYPE	MONTH
001	100%	*	once/permit cycle	Grab	Any

* Monitoring requirement only.

DILUTION SERIES						
100%	50%	25%	12.5%	6.25%	(Control) 100% upstream, if available	(Control) 100% Lab Water, also called synthetic water

(a) Freshwater Species and Test Methods

(1) Species and short-term test methods for estimating the acute toxicity of NPDES effluents are found in the most recent edition of *Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms* (EPA/821/R-02/012; Table IA, 40 CFR Part 136). The permittee shall concurrently conduct 48-hour static non-renewal toxicity tests with the following vertebrate species:

- The fathead minnow, *Pimephales promelas* (Acute Toxicity Test Method 2000.0).

And the following invertebrate species:

- The daphnid, *Ceriodaphnia dubia* (Acute Toxicity Test Method 2002.0).

(2) Chemical and physical analysis of an upstream control sample and effluent sample shall occur immediately upon being received by the laboratory, prior to any manipulation of the effluent sample beyond preservation methods consistent with federal guidelines for WET testing that are required to stabilize the sample during shipping. Where upstream receiving water is not available, synthetic laboratory control water may be used.

(3) Test conditions must meet all test acceptability criteria required by the EPA Method used in the analysis.

(4) Any and all chemical or physical analysis of the effluent sample performed in conjunction with the WET test shall be performed at the 100% Effluent concentration in addition to analysis performed upon any other effluent concentration.

(5) All chemical analyses shall be performed and results shall be recorded in the appropriate field of the report form. The parameters for chemical analysis include Temperature (°C), pH (SU), Conductivity (µmohs/cm), Dissolved Oxygen (mg/L), Total Residual Chlorine (mg/L), Un-ionized Ammonia (mg/L), Total Alkalinity (mg/L), and Total Hardness (mg/L).

(b) Reporting of Acute Toxicity Monitoring Results

(1) WET test results shall be submitted to the Kansas City Regional Office, or by eDMR, with the permittee's Discharge Monitoring Reports once per permit cycle by **June 28, 2018**. The submittal shall include:

i. A full laboratory report for all toxicity testing.
ii. Copies of chain-of-custody forms.
iii. The WET form provided by the Department upon permit issuance.

(2) The report must include a quantification of acute toxic units ($TU_a = 100/LC_{50}$) reported according to the test methods manual chapter on report preparation and test review. The Lethal Concentration, 50 Percent (LC_{50}) is the toxic or effluent concentration that would cause death in 50 percent of the test organisms over a specified period of time.

(c) Permit Reopener for Acute Toxicity

In accordance with 40 CFR Parts 122 and 124, this permit may be modified to include effluent limitations or permit conditions to address acute toxicity in the effluent or receiving waterbody, as a result of the discharge; or to implement new, revised, or newly interpreted water quality standards applicable to acute toxicity.

23. Receiving Water Monitoring Conditions

(a) The upstream receiving water sample should be collected at a point upstream from any influence of the effluent, where the water is visibly flowing down stream. In the event that a safe, accessible location is not present at the location(s) listed, a suitable location can be negotiated with the Department. Samples should be taken at least four feet from the bank or from the middle of the stream (whichever is less) and 6-inches below the surface, if possible.

(b) When conducting in-stream monitoring, the permittee shall record observations that include: the time of day, weather conditions, unusual stream characteristics (e.g., septic conditions, algae growth, etc.), the stream segment (e.g., riffle, pool or run) from where the sample was collected. These observations shall be submitted with the sample results.

(c) Samples shall not be collected from areas with especially turbulent flow, still water or from the stream bank, unless these conditions are representative of the stream reach or no other areas are available for sample collection. Sampling should not

E. SPECIAL CONDITIONS (continued)

be made when significant precipitation has occurred recently. The sampling event should be terminated and rescheduled if any of the following conditions occur:

- If turbidity in the stream increases notably; or
- If rainfall over the past two weeks exceeds 2.5 inches or exceeds 1 inch in the last 24 hours

(d) Always use the correct sampling technique and handling procedure specified for the parameter of interest. Please refer to the latest edition of Standard Methods for the Examination of Water and Wastewater for further discussion of proper sampling techniques. All analyses must be conducted in accordance with an approved EPA method. Meters shall be calibrated immediately (within 1 hour) prior to the sampling event.

(e) Please contact the Department if you need additional instructions or assistance.

24. Controlled Discharges.
    (a) The term "controlled discharge" used herein shall mean a discharge event to allow water to flow from the facility through the permitted outfall(s) into the receiving stream that is initiated by the operator by means of opening a single or multiple valves, gates, or other operational control and then stopped by the operator by closing the same valves, gates, or other operational control.
    (b) Controlled discharges shall be limited to 2,000,000 gallons per day. Discharges above 2,000,000 gallons per are allowed to occur when storage capacity is exceeded during periods of heavy precipitation.
    (c) Sampling for the monthly effluent limitations in in Tables A-1 and A-2 during a batch release shall be conducted weekly, with at least two sampling events during the release. One sampling event shall be conducted near the beginning of the batch release and another sampling event conducted near the end of the batch release. Batch release sampling results can be considered as the monthly sampling requirement as required by Tables A-1 and A-2.
    (d) Sampling for the quarterly effluent limitations in Tables A-1 and A-2 during a batch release shall be conducted monthly, with at least two sampling events during the release. One sampling event shall be conducted near the beginning of the batch release and another sampling event conducted near the end of the batch release. Batch release sampling results can be considered as the quarterly sampling requirement as required by Tables A-1 and A-2.
    (e) To avoid adversely affecting the hydrology of the receiving stream, means to dissipate the energy of the controlled discharge flow shall be provided. Energy dissipation may be provided by rip-rap, diffuser, or other Department approved method.
    (f) Effluent limitations and Water Quality Standards shall not be violated at any time during a controlled discharge.

25. Discharge Monitoring Reports
    (a) All reports and results required to be submitted by the permit, excluding 24-hr. bypass reporting, must be submitted to the Department via the electronic Discharge Monitoring Report Submission System (eDMR). In regards to Standard Conditions Part I, Section B, #7, the eDMR data reporting system is the only Department approved reporting method for this permit.
    (b) To access the eDMR data reporting system, use the following link in your web browser: https://edmr.dnr.mo.gov/edmr/E2/Shared/Pages/Main/Login.aspx.

F. SCHEDULE OF COMPLIANCE

E. coli

The facility shall attain compliance with final effluent limitations as soon as reasonably achievable or no later than **4 years** of the effective date of this permit.

1. The permittee shall submit interim progress reports detailing progress made in attaining compliance with the final effluent limits every 12 months from effective date.

2. Within **4 years** of the effective date of this permit, the permittee shall attain compliance with the final effluent limits.

Please submit progress reports to the Missouri Department of Natural Resources, Kansas City Regional Office, 500 Northeast Colbern Road, Lee's Summit, MO 64086.

MISSOURI DEPARTMENT OF NATURAL RESOURCES
FACT SHEET
FOR THE PURPOSE OF RENEWAL
OF
MO-0091031
LAWSON WASTEWATER TREATMENT FACILITY

The Federal Water Pollution Control Act ("Clean Water Act" Section 402 Public Law 92-500 as amended) established the National Pollution Discharge Elimination System (NPDES) permit program. This program regulates the discharge of pollutants from point sources into the waters of the United States, and the release of stormwater from certain point sources. All such discharges are unlawful without a permit (Section 301 of the "Clean Water Act"). After a permit is obtained, a discharge not in compliance with all permit terms and conditions is unlawful. Missouri State Operating Permits (MSOPs) are issued by the Director of the Missouri Department of Natural Resources (Department) under an approved program, operating in accordance with federal and state laws (Federal "Clean Water Act" and "Missouri Clean Water Law" Section 644 as amended). MSOPs are issued for a period of five (5) years unless otherwise specified.

As per [40 CFR Part 124.8(a)] and [10 CSR 20-6.020(1)2.] a Factsheet shall be prepared to give pertinent information regarding the applicable regulations, rationale for the development of effluent limitations and conditions, and the public participation process for the Missouri State Operating Permit (operating permit) listed below.

A Factsheet is not an enforceable part of an operating permit.

This Factsheet is for a Minor

Part I – Facility Information

Facility Type: POTW - SIC #4952

Facility Description:
Four-cell lagoon / sludge retained in lagoon

Have any changes occurred at this facility or in the receiving water body that effects effluent limit derivation?
☒ - Yes; Brushy Creek, 8-20-13 MUDD V1.0 (C) (3960) is now classified as EPA has approved the Department's new stream classifications. A schedule of compliance has been included in the permit to meet final effluent limitations for *E. coli* which are protective of the WBC - B use designation of the stream.

☐ - No.

Application Date: 11/20/2013
Expiration Date: 05/28/2014

OUTFALL(S) TABLE:

OUTFALL	DESIGN FLOW (CFS)	TREATMENT LEVEL	EFFLUENT TYPE
#001	0.5	Equivalent to Secondary	Domestic

Facility Performance History:
The facility exceeded final effluent limitations for Ammonia and Total Suspended Solids on the June 2013 Discharge Monitoring Report (DMR). The facility exceeded final effluent limitations for Biochemical Oxygen Demand on the February 2010 DMR. The facility failed to submit the 2013 and 2014 Whole Effluent Toxicity tests. This facility was last inspected on March 13, 2012. The inspection showed the following unsatisfactory features; failure to submit the Annual Inflow and Infiltration report for 2011 and failure to have proper operational control by not having pond level gauges installed.

Comments:
Changes in this permit include the addition of Total Nitrogen and Total Phosphorus monitoring and *E. coli* limits at Outfall #001 and also instream, and recalculated Ammonia limits. See Part VII of the Fact Sheet for further information regarding the addition and removal of effluent parameters. Special conditions were updated to include the addition of inflow and infiltration reporting requirements, reporting of Non-detects, bypass reporting requirements, addition of controlled discharge requirements, and the addition of instream monitoring requirements.

This facility conducts controlled discharges from the lagoon system as stated on the application for renewal and as evidenced on the discharge monitoring reports that show several months of no-discharge. During a controlled discharge, the facility may begin drawing from areas in the lagoon that have not received full treatment as the water level is lowered in the lagoon cell. This becomes more of a problem if the lagoon is drawn down in a few days. Although the discharge might meet effluent limitations at the beginning, it may not at the end. Additional sampling requirements are included as Note 1 and Special Conditions #24 in the permit. Special Condition #24 also limits the amount of water that can be released during a controlled discharge to 2,000,000 gallons per day as the City has provided information regarding the volume of flow that the energy dissipation structure (rip-rap) can manage.

Part II – Operator Certification Requirements

☒ - This facility is required to have a certified operator.

As per [10 CSR 20-6.010(8) Terms and Conditions of a Permit], the permittee shall operate and maintain facilities to comply with the Missouri Clean Water Law and applicable permit conditions and regulations. Operators or supervisors of operations at regulated wastewater treatment facilities shall be certified in accordance with [10 CSR 20-9.020(2)] and any other applicable state law or regulation. As per [10 CSR 20-9.020(2)(A)], requirements for operation by certified personnel shall apply to all wastewater treatment systems, if applicable, as listed below:

Owned or operated by or for a

- ☒ - Municipalities
- ☐ - State agency
- ☐ - Federal agency
- ☐ - Public Sewer District
- ☐ - County
- ☐ - Public Water Supply Districts
- ☐ - Private Sewer Company regulated by the Public Service Commission
- ☐ - State agency
- ☐ - Federal agency

Each of the above entities are only applicable if they have a Population Equivalent greater than two hundred (200) or fifty (50) or more service connections.

This facility currently requires an operator with a D Certification Level. Please see **Appendix - Classification Worksheet**. Modifications made to the wastewater treatment facility may cause the classification to be modified.

Operator's Name: Kenneth A. Boydston
Certification Number: 6009
Certification Level: A

The listing of the operator above only signifies that staff drafting this operating permit have reviewed appropriate Department records and determined that the name listed on the operating permit application has the correct and applicable Certification Level.

☐ - This facility is not required to have a certified operator.

Part III– Operational Monitoring

☐ - As per [10 CSR 20-9.010(4))], the facility is not required to conduct operational monitoring.

☒ - As per [10 CSR 20-9.010(4))], the facility is required to conduct operational monitoring.

Part IV – Receiving Stream Information

10 CSR 20-7.031 Missouri Water Quality Standards, the Department defines the Clean Water Commission water quality objectives in terms of "water uses to be maintained and the criteria to protect those uses." The receiving stream and/or 1st classified receiving stream's beneficial water uses to be maintained are located in the Receiving Stream Table located below in accordance with [10 CSR 20-7.031(4)].

RECEIVING STREAM(S) TABLE: OUTFALL #001

WATER-BODY NAME	CLASS	WBID	DESIGNATED USES*	12-DIGIT HUC	DISTANCE TO CLASSIFIED SEGMENT (MI)
Brushy Creek (8-20-13 MUDD V1.0)	C	3960	IRR, LWW, AQL, HHP, WBC-B, SCR	10300101-0701	0

* - Irrigation (IRR), Livestock & Wildlife Watering (LWW), Protection of Warm Water Aquatic Life (AQL), Human Health Protection (HHP), Cool Water Fishery (CLF), Cold Water Fishery (CDF), Whole Body Contact Recreation – Category A (WBC-A), Whole Body Contact Recreation – Category B (WBC-B), Secondary Contact Recreation (SCR), Drinking Water Supply (DWS), Industrial (IND), Groundwater (GRW).

RECEIVING STREAM(S) LOW-FLOW VALUES:

RECEIVING STREAM (C, E, P, P1)	LOW-FLOW VALUES (CFS)		
	1Q10	7Q10	30Q10
Brushy Creek (8-20-13 MUDD V1.0) (C)	--	--	--

MIXING CONSIDERATIONS

MIXING CONSIDERATIONS TABLE:

MIXING ZONE (CFS) [10 CSR 20-7.031(5)(A)4.B.(I)(a)]			ZONE OF INITIAL DILUTION (CFS) [10 CSR 20-7.031(5)(A)4.B(I)(b)]		
1Q10	7Q10	30Q10	1Q10	7Q10	30Q10
0	0	0	0	0	N/A

RECEIVING STREAM MONITORING REQUIREMENTS:

Facilities with a design flow greater than 100,000 gallons per day are required to sample their effluent quarterly for Total Phosphorus and Total Nitrogen per 10 CSR 20-7.015(9)(D)7. Upstream monitoring for these parameters is necessary to determine background concentrations in order to complete calculations related to future effluent limit derivation where necessary or appropriate.

Permitted Feature SM1. (Upstream)

Receiving Water Body's Water Quality
No stream survey has been conducted on the receiving stream.

Part V – Rationale and Derivation of Effluent Limitations & Permit Conditions

ALTERNATIVE EVALUATIONS FOR NEW FACILITIES:
As per [10 CSR 20-7.015(4)(A)], discharges to losing streams shall be permitted only after other alternatives including land application, discharges to a gaining stream and connection to a regional wastewater treatment facility have been evaluated and determined to be unacceptable for environmental and/or economic reasons.

☐ - The facility discharges to a Losing Stream as defined by [10 CSR 20-2.010(36)] & [10 CSR 20-7.031(1)(N)], or is an existing facility, and has submitted an alternative evaluation.

☒ - The facility does not discharge to a Losing Stream as defined by [10 CSR 20-2.010(36)] & [10 CSR 20-7.031(1)(N)], or is an existing facility.

ANTI-BACKSLIDING:
A provision in the Federal Regulations [CWA §303(d)(4); CWA §402(o); 40 CFR Part 122.44(l)] that requires a reissued permit to be as stringent as the previous permit with some exceptions.

☐ - All limits in this operating permit are at least as protective as those previously established; therefore, backsliding does not apply.

☒ - Limitations in this operating permit for the reissuance of this permit conform to the anti-backsliding provisions of Section 402(o) of the Clean Water Act, and 40 CFR Part 122.44.

☒ - Information is available which was not available at the time of permit issuance (other than revised regulations, guidance, or test methods) and which would have justified the application of a less stringent effluent limitation at the time of permit issuance.

- Effluent limitations were re-calculated for Ammonia based new information derived from discharge monitoring reports and on the current Missouri Water Quality Standards for Ammonia.

☒ - The Department determines that technical mistakes or mistaken interpretations of law were made in issuing the permit under section 402(a)(1)(b).

- This permit changes WET test requirements for the facility from a pass/fail requirement to monitoring only for toxic units. This change reflects modifications to Missouri's Effluent Regulation found at 10 CSR 20-7.015. 40 CFR 122.44(d)(1)(ii) requires the Department to establish effluent limitations that control all parameters which have the reasonable potential to cause or contribute to an excursion above any state water quality standard, including state narrative criteria. The previous permit imposed a pass/fail limitation without collecting sufficient data to make a reasonable potential determination. Furthermore, the method of reporting associated with the pass/fail limitation prevented the Department from gathering the data necessary to make a finding of reasonable potential. Implementation of the toxic unit monitoring requirement will allow the Department to implement numeric acute criteria in accordance with water quality standards established under §303 of the CWA.

ANTIDEGRADATION:
In accordance with Missouri's Water Quality Standard [10 CSR 20-7.031(3)], the Department is to document by means of Antidegradation Review that the use of a water body's available assimilative capacity is justified. Degradation is justified by documenting the socio-economic importance of a discharging activity after determining the necessity of the discharge.

☒ - No degradation proposed and no further review necessary. Facility did not apply for authorization to increase pollutant loading or to add additional pollutants to their discharge.

☐ - This permit contains new and/or expanded discharge, please see **APPENDIX FOR ANTIDEGRADATION ANALYSIS.**

AREA-WIDE WASTE TREATMENT MANAGEMENT & CONTINUING AUTHORITY:
As per [10 CSR 20-6.010(3)(B)], …An applicant may utilize a lower preference continuing authority by submitting, as part of the application, a statement waiving preferential status from each existing higher preference authority, providing the waiver does not conflict with any area-wide management plan approved under section 208 of the Federal Clean Water Act or any other regional sewage service and treatment plan approved for higher preference authority by the Department.

BIOSOLIDS & SEWAGE SLUDGE:
Biosolids are solid materials resulting from domestic wastewater treatment that meet federal and state criteria for beneficial uses (i.e. fertilizer). Sewage sludge is solids, semi-solids, or liquid residue generated during the treatment of domestic sewage in a treatment works; including but not limited to, domestic septage; scum or solids removed in primary, secondary, or advanced wastewater treatment process; and a material derived from sewage sludge. Sewage sludge does not include ash generated during the firing of sewage sludge in a sewage sludge incinerator or grit and screening generated during preliminary treatment of domestic sewage in a treatment works. Additional information regarding biosolids and sludge is located at the following web address: http://extension.missouri.edu/main/DisplayCategory.aspx?C=74, items WQ422 through WQ449.

☒ - Permittee is not authorized to land apply biosolids. Sludge/biosolids are removed by contract hauler, incinerated, stored in the lagoon, etc. The permittee must submit a sludge management plan for approval that details removal and disposal plans when sludge is to be removed from lagoons.

☐ - This condition is not applicable to the permittee for this facility.

COMPLIANCE AND ENFORCEMENT:
Enforcement is the action taken by the Water Protection Program (WPP) to bring an entity into compliance with the Missouri Clean Water Law, its implementing regulations, and/or any terms and conditions of an operating permit. The primary purpose of the enforcement activity in the WPP is to resolve violations and return the entity to compliance.

☐ - The facility is currently under enforcement action.

☒ - The facility is not currently under Water Protection Program enforcement action.

DISCHARGE MONITORING REPORTS:
On July 30, 2013, EPA proposed the Clean Water Act National Pollutant Discharge Elimination System (NPDES) Electronic Reporting Rule, which requires electronic reporting of NPDES information rather than the currently-required paper-based reports from permitted facilities. To comply with the upcoming federal rule, the Department is asking all permittees to begin submitting discharge monitoring data online. For permittees already using the Department's eDMR data reporting system, those permittees will be required to exclusively use the eDMR data reporting system.

☒ - The permittee/facility is currently using the eDMR data reporting system.

☐ - The permittee/facility is not currently using the eDMR data reporting system. To sign up for the eDMR system, visit the Department's eDMR page at http://dnr.mo.gov/env/wpp/edmr.htm.

PRETREATMENT PROGRAM:
The reduction of the amount of pollutants, the elimination of pollutants, or the alteration of the nature of pollutant properties in wastewater prior to or in lieu of discharging or otherwise introducing such pollutants into a Publicly Owned Treatment Works [40 CFR Part 403.3(q)].

Pretreatment programs are required at any POTW (or combination of POTW operated by the same authority) and/or municipality with a total design flow greater than 5.0 MGD and receiving industrial wastes that interfere with or pass through the treatment works or are otherwise subject to the pretreatment standards. Pretreatment programs can also be required at POTWs/municipals with a design flow less than 5.0 MGD if needed to prevent interference with operations or pass through.

Several special conditions pertaining to the permittee's pretreatment program may be included in the permit, and are as follows:
- Implementation and enforcement of the program,
- Annual pretreatment report submittal,
- Submittal of list of industrial users,
- Technical evaluation of need to establish local limitations, and
- Submittal of the results of the evaluation

☐ - This permittee has an approved pretreatment program in accordance with the requirements of [40 CFR Part 403] and [10 CSR 20-6.100] and is expected to implement and enforce its approved program.

☒ - The permittee, at this time, is not required to have a Pretreatment Program or does not have an approved pretreatment program.

REASONABLE POTENTIAL ANALYSIS (RPA):
Federal regulation [40 CFR Part 122.44(d)(1)(i)] requires effluent limitations for all pollutants that are or may be discharged at a level that will cause or have the reasonable potential to cause or contribute to an in-stream excursion above narrative or numeric water quality standard.

In accordance with [40 CFR Part 122.44(d)(1)(iii)] if the permit writer determines that any given pollutant has the reasonable potential to cause, or contribute to an in-stream excursion above the WQS, the permit must contain effluent limits for that pollutant.

☒ - A RPA was conducted on appropriate parameters. Please see **APPENDIX – RPA RESULTS.**

☐ - A RPA was not conducted for this facility.

REMOVAL EFFICIENCY:
Removal efficiency is a method by which the Federal Regulations define Secondary Treatment and Equivalent to Secondary Treatment, which applies to Biochemical Oxygen Demand 5-day (BOD_5) and Total Suspended Solids (TSS) for Publicly Owned Treatment Works (POTWs)/municipals.

☐ - Secondary Treatment is 85% removal [40 CFR Part 133.102(a)(3) & (b)(3)].

☒ - Equivalent to Secondary Treatment is 65% removal [40 CFR Part 133.105(a)(3) & (b)(3)].

SANITARY SEWER OVERFLOWS (SSO) AND INFLOW AND INFILTRATION (I&I):
Sanitary Sewer Overflows (SSOs) are defined as untreated sewage releases and are considered bypassing under state regulation [10 CSR 20-2.010(11)] and should not be confused with the federal definition of bypass. SSOs result from a variety of causes including blockages, line breaks, and sewer defects that can either allow wastewater to backup within the collection system during dry weather conditions or allow excess stormwater and groundwater to enter and overload the collection system during wet weather conditions. SSOs can also result from lapses in sewer system operation and maintenance, inadequate sewer design and construction, power failures, and vandalism. SSOs include overflows out of manholes, cleanouts, broken pipes, and other into waters of the state and onto city streets, sidewalks, and other terrestrial locations.

Inflow and Infiltration (I&I) is defined as unwanted intrusion of stormwater or groundwater into a collection system. This can occur from points of direct connection such as sump pumps, roof drain downspouts, foundation drains, and storm drain cross-connections or through cracks, holes, joint failures, faulty line connections, damaged manholes, and other openings in the collection system itself. I&I results from a variety of causes including line breaks, improperly sealed connections, cracks caused by soil erosion/settling, penetration of vegetative roots, and other sewer defects. In addition, excess stormwater and groundwater entering the collection system from line breaks and sewer defects have the potential to negatively impact the treatment facility.

Missouri RSMo §644.026.1.(13) mandates that the Department issue permits for discharges of water contaminants into the waters of this state, and also for the operation of sewer systems. Such permit conditions shall ensure compliance with all requirements as established by sections 644.006 to 644.141. Standard Conditions Part I, referenced in the permit, contains provisions requiring proper

operation and maintenance of all facilities and systems of treatment and control. Missouri RSMo §644.026.1.(15) instructs the Department to require proper maintenance and operation of treatment facilities and sewer systems and proper disposal of residual waste from all such facilities. To ensure that public health and the environment are protected, any noncompliance which may endanger public health or the environment must be reported to the Department within 24 hours of the time the permittee becomes aware of the noncompliance. Standard Conditions Part I, referenced in the permit, contains the reporting requirements for the permittee when bypasses and upsets occur. The permit also contains requirements for permittees to develop and implement a program for maintenance and repair of the collection system. The permit requires that the permittee submit an annual report to the Department for the previous calendar year that contains a summary of efforts taken by the permittee to locate and eliminate sources of excess I & I, a summary of general maintenance and repairs to the collection system, and a summary of any planned maintenance and repairs to the collection system for the upcoming calendar year.

☒ - At this time, the Department recommends the US EPA's Guide for Evaluating Capacity, Management, Operation and Maintenance (CMOM) Programs At Sanitary Sewer Collection Systems (Document # EPA 305-B-05-002) or the Departments' CMOM Model located at http://dnr.mo.gov/env/wpp/permits/docs/cmom-template.doc. For additional information regarding the Departments' CMOM Model, see the CMOM Plan Model Guidance document at http://dnr.mo.gov/pubs/pub2574.htm. The CMOM identifies some of the criteria used to evaluate a collection system's management, operation, and maintenance and was intended for use by the EPA, state, regulated community, and/or third party entities. The CMOM is applicable to small, medium, and large systems; both public and privately owned; and both regional and satellite collection systems. The CMOM does not substitute for the Clean Water Act, the Missouri Clean Water Law, and both federal and state regulations, as it is not a regulation.

☐ - This facility is not required to develop or implement a program for maintenance and repair of the collection system; however, it is a violation of Missouri State Environmental Laws and Regulations to allow untreated wastewater to discharge to waters of the state.

SCHEDULE OF COMPLIANCE (SOC):

Per 644.051.4 RSMo, a permit may be issued with a Schedule of Compliance (SOC) to provide time for a facility to come into compliance with new state or federal effluent regulations, water quality standards, or other requirements. Such a schedule is not allowed if the facility is already in compliance with the new requirement, or if prohibited by other statute or regulation. A SOC includes an enforceable sequence of interim requirements (actions, operations, or milestone events) leading to compliance with the Missouri Clean Water Law, its implementing regulations, and/or the terms and conditions of an operating permit. *See also* Section 502(17) of the Clean Water Act, and 40 CFR §122.2. For new effluent limitations, the permit includes interim monitoring for the specific parameter to demonstrate the facility is not already in compliance with the new requirement. Per 40 CFR § 122.47(a)(1) and 10 CSR 20-7.031(11), compliance must occur as soon as possible. If the permit provides a schedule for meeting new water quality based effluent limits, a SOC must include an enforceable, final effluent limitation in the permit even if the SOC extends beyond the life of the permit.

A SOC is not allowed:

- For effluent limitations based on technology-based standards established in accordance with federal requirements, if the deadline for compliance established in federal regulations has passed. 40 CFR § 125.3.
- For a newly constructed facility in most cases. Newly constructed facilities must meet applicable effluent limitations when discharge begins, because the facility has installed the appropriate control technology as specified in a permit or antidegradation review. A SOC is allowed for a new water quality based effluent limit that was not included in a previously public noticed permit or antidegradation review, which may occur if a regulation changes during construction.
- To develop a TMDL, UAA, or other study associated with development of a site specific criterion. A facility is not prohibited from conducting these activities, but a SOC may not be granted for conducting these activities.

In order to provide guidance to Permit Writers in developing SOCs, and attain a greater level of consistency, on April 9, 2015 the Department issued an updated policy on development of SOCs. This policy provides guidance to Permit Writers on the standard time frames for schedules for common activities, and guidance on factors that may modify the length of the schedule such as a Cost Analysis for Compliance.

☒ - The time given for effluent limitations of this permit listed under Interim Effluent Limitation and Final Effluent Limitations were established in accordance with [10 CSR 20-7.031(11)]. The facility has been given a schedule of compliance to meet final effluent limits for *E. coli*. The four year schedule of compliance allowed for this facility should provide adequate time to evaluate operations, obtain an engineering report, hold a bond election if necessary, obtain a construction permit and implement upgrades required to meet effluent limits. Please see the Cost Analysis for Compliance attached as an appendix to the permit for further detail on how the socio-economic status of the community has impacted this SOC.

☐ - This permit does not contain a SOC.

STORMWATER POLLUTION PREVENTION PLAN (SWPPP):

In accordance with 40 CFR 122.44(k) *Best Management Practices (BMPs)* to control or abate the discharge of pollutants when: (1) Authorized under section 304(e) of the Clean Water Act (CWA) for the control of toxic pollutants and hazardous substances from ancillary industrial activities: (2) Authorized under section 402(p) of the CWA for the control of stormwater discharges; (3) Numeric effluent limitations are infeasible; or (4) the practices are reasonably necessary to achieve effluent limitations and standards or to carry out the purposes and intent of the CWA.

In accordance with the EPA's *Developing Your Stormwater Pollution Prevention Plan, A Guide for Industrial Operators*, (Document number EPA 833-B-09-002) [published by the United States Environmental Protection Agency (USEPA) in February 2009], BMPs are measures or practices used to reduce the amount of pollution entering (regarding this operating permit) waters of the state. BMPs may take the form of a process, activity, or physical structure.

Additionally in accordance with the Stormwater Management, a SWPPP is a series of steps and activities to (1) identify sources of pollution or contamination, and (2) select and carry out actions which prevent or control the pollution of stormwater discharges.

☐ - 10 CSR 20-6.200 and 40 CFR 122.26 includes treatment works treating domestic sewage or any other sewage sludge or wastewater treatment device or system, used in the storage treatment, recycling, and reclamation of municipal or domestic sewage, including land dedicated to the disposal of sewage sludge that is located within the confines of the facility, with a design flow of 1.0 mgd or more, or are required to have an approved pretreatment program under 40 CFR part 403, as an industrial activity in which permit coverage is required.

In lieu of requiring sampling in the site-specific permit, the facility is required to develop and implement a Stormwater Pollution Prevention Plan. A facility can apply for conditional exclusion for "no exposure" of industrial activities and materials to stormwater by submitting to the Department a completed NPDES Form 3510-11 – No Exposure Certification for Exclusion from NPDES Stormwater Permitting. That document and additional information may be found at http://water.epa.gov/polwaste/npdes/stormwater/Conditional-No-Exposure-Exclusion.cfm. Upon approval on the "No Exposure", the permit can be modified to remove the SWPPP requirements. If the facility chooses to retain the conditional exclusion for "no exposure", the facility is required to renew the "No Exposure" exemption during the permit renewal period by submitting NPDES Form 3510-11 with Form B2.

☒ - At this time, the permittee is not required to develop and implement a SWPPP.

VARIANCE:
As per the Missouri Clean Water Law § 644.061.4, variances shall be granted for such period of time and under such terms and conditions as shall be specified by the commission in its order. The variance may be extended by affirmative action of the commission. In no event shall the variance be granted for a period of time greater than is reasonably necessary for complying with the Missouri Clean Water Law §§644.006 to 644.141 or any standard, rule or regulation promulgated pursuant to Missouri Clean Water Law §§644.006 to 644.141.

☐ - This operating permit is drafted under premises of a petition for variance.

☒ - This operating permit is not drafted under premises of a petition for variance.

WASTELOAD ALLOCATIONS (WLA) FOR LIMITS:
As per [10 CSR 20-2.010(78)], the amount of pollutant each discharger is allowed by the Department to release into a given stream after the Department has determined total amount of pollutant that may be discharged into that stream without endangering its water quality.

☒ - Wasteload allocations were calculated where applicable using water quality criteria or water quality model results and the dilution equation below:

$$Ce = \frac{(Qe + Qs)C - (Qs \times Cs)}{(Qe)}$$ (EPA/505/2-90-001, Section 4.5.5)

Where C = downstream concentration
Ce = effluent concentration
Cs = upstream concentration
Qe = effluent flow
Qs = upstream flow

Chronic wasteload allocations were determined using applicable chronic water quality criteria (CCC: criteria continuous concentration) and stream volume of flow at the edge of the mixing zone (MZ). Acute wasteload allocations were determined using applicable water quality criteria (CMC: criteria maximum concentration) and stream volume of flow at the edge of the zone of initial dilution (ZID).

Water quality based maximum daily and average monthly effluent limitations were calculated using methods and procedures outlined in USEPA's "Technical Support Document For Water Quality-based Toxics Control" (EPA/505/2-90-001).

Number of Samples "n":
Additionally, in accordance with the TSD for water quality-based permitting, effluent quality is determined by the underlying distribution of daily values, which is determined by the Long Term Average (LTA) associated with a particular Wasteload Allocation (WLA) and by the Coefficient of Variation (CV) of the effluent concentrations. Increasing or decreasing the monitoring frequency does not affect this underlying distribution or treatment performance, which should be, at a minimum, be targeted to comply with the values dictated by the WLA. Therefore, it is recommended that the actual planned frequency of monitoring normally be used to determine the value of "n" for calculating the AML. However, in situations where monitoring frequency is once per month or less, a higher value for "n" must be assumed for AML derivation purposes. Thus, the statistical procedure being employed using an assumed number of samples is "n = 4" at a minimum. For Total Ammonia as Nitrogen, "n = 30" is used

☐ - Wasteload allocations were not calculated.

WLA MODELING:
There are two general types of effluent limitations, technology-based effluent limits (TBELs) and water quality based effluent limits (WQBELs). If TBELs do not provide adequate protection for the receiving waters, then WQBEL must be used.

☐ - A WLA study including model was submitted to the Department.

☒ - A WLA study was either not submitted or determined not applicable by Department staff.

WATER QUALITY STANDARDS:
Per [10 CSR 20-7.031(4)], General Criteria shall be applicable to all waters of the state at all times including mixing zones. Additionally, [40 CFR 122.44(d)(1)] directs the Department to establish in each NPDES permit to include conditions to achieve water quality established under Section 303 of the Clean Water Act, including State narrative criteria for water quality.

WHOLE EFFLUENT TOXICITY (WET) TEST:

☒ - The permittee is required to conduct WET test for this facility.

A WET test is a quantifiable method of determining if a discharge from a facility may be causing toxicity to aquatic life by itself, in combination with or through synergistic responses when mixed with receiving stream water.

Under the federal Clean Water Act (CWA) §101(a)(3), requiring WET testing is reasonably appropriate for site-specific Missouri State Operating Permits for discharges to waters of the state issued under the National Pollutant Discharge Elimination System (NPDES). WET testing is also required by 40 CFR 122.44(d)(1). WET testing ensures that the provisions in the 10 CSR 20-6.010(8)(A)7. and the Water Quality Standards 10 CSR 20-7.031(4)(D),(F),(G),(I)2.A & B are being met. Under [10 CSR 20-6.010(8)(A)4], the Department may require other terms and conditions that it deems necessary to assure compliance with the Clean Water Act and related regulations of the Missouri Clean Water Commission. In addition the following MCWL apply: §§§644.051.3 requires the Department to set permit conditions that comply with the MCWL and CWA; 644.051.4 specifically references toxicity as an item we must consider in writing permits (along with water quality-based effluent limits, pretreatment, etc…); and 644.051.5 is the basic authority to require testing conditions. WET test will be required by facilities meeting the following criteria:

☐ Facility is a designated Major.
☐ Facility continuously or routinely exceeds its design flow.
☐ Facility that exceeds its design population equivalent (PE) for BOD_5 whether or not its design flow is being exceeded.
☐ Facility (whether primarily domestic or industrial) that alters its production process throughout the year.
☐ Facility handles large quantities of toxic substances, or substances that are toxic in large amounts.
☐ Facility has Water Quality-based Effluent Limitations for toxic substances (other than NH_3)
☒ Facility is a municipality with a Design Flow ≥ 22,500 gpd.
☐ Other – please justify.

☐ - At this time, the permittee is not required to conduct WET test for this facility.

40 CFR 122.41(M) - BYPASSES:
The federal Clean Water Act (CWA), Section 402 prohibits wastewater dischargers from "bypassing" untreated or partially treated sewage (wastewater) beyond the headworks. A bypass is defined as an intentional diversion of waste streams from any portion of a treatment facility, [40 CFR 122.41(m)(1)(i)]. Additionally, Missouri regulation 10 CSR 20-7.015(9)(G) states a bypass means the intentional diversion of waste streams from any portion of a treatment facility, except in the case of blending, to waters of the state. Only under exceptional and specified limitations do the federal regulations allow for a facility to bypass some or all of the flow from its treatment process. Bypasses are prohibited by the CWA unless a permittee can meet all of the criteria listed in 40 CFR 122.41(m)(4)(i)(A), (B), & (C). Any bypasses from this facility are subject to the reporting required in 40 CFR 122.41(l)(6) and per Missouri's Standard Conditions I, Section B, part 2.b. Additionally, Anticipated Bypasses include bypasses from peak flow basins or similar devices designed for peak wet weather flows.

☐ - Bypasses occur or have occurred at this facility.

☒ - This facility does not anticipate bypassing.

303(d) LIST & TOTAL MAXIMUM DAILY LOAD (TMDL):
Section 303(d) of the federal Clean Water Act requires that each state identify waters that are not meeting water quality standards and for which adequate water pollution controls have not been required. Water quality standards protect such beneficial uses of water as whole body contact (such as swimming), maintaining fish and other aquatic life, and providing drinking water for people, livestock and wildlife. The 303(d) list helps state and federal agencies keep track of waters that are impaired but not addressed by normal water pollution control programs.

A TMDL is a calculation of the maximum amount of a given pollutant that a body of water can absorb before its water quality is affected. If a water body is determined to be impaired as listed on the 303(d) list, then a watershed management plan will be developed that shall include the TMDL calculation

☐ - This facility discharges to a 303(d) listed stream.

☒ - This facility does not discharge to a 303(d) listed stream.

☐ - This facility discharges to a stream with an EPA approved TMDL.

Part VI –2013 Water Quality Criteria for Ammonia

Upcoming changes to the Water Quality Standard for ammonia may require significant upgrades to wastewater treatment facilities.

On August 22, 2013, the U.S. Environmental Protection Agency (EPA) finalized new water quality criteria for ammonia, based on toxicity studies of mussels and gill breathing snails. Missouri's current ammonia criteria are based on toxicity testing of several species, but did not include data from mussels or gill breathing snails. Missouri is home to 69 of North America's mussel species, which are spread across the state. According to the Missouri Department of Conservation nearly two-thirds of the mussel species in Missouri are considered to be "of conservation concern". Nine species are listed as federally endangered, with an additional species currently proposed as endangered and another species proposed as threatened.

The adult forms of mussels that are seen in rivers, lakes, and streams are sensitive to pollutants because they are sedentary filter feeders. They vacuum up many pollutants with the food they bring in and cannot escape to new habitats, so they can accumulate toxins in their bodies and die. But very young mussels, called glochidia, are exceptionally sensitive to ammonia in water. As a result of a citizen suit, the EPA was compelled to conduct toxicity testing and develop ammonia water quality criteria that would be protective if young mussels may be present in a waterbody. These new criteria will apply to any discharge with ammonia levels that may pose a reasonable potential to violate the standards. Nearly all discharging domestic wastewater treatment facilities (cities, subdivisions, mobile home parks, etc.), as well as certain industrial and stormwater dischargers with ammonia in their effluent, will be affected by this change in the regulations.

When new water quality criteria are established by the EPA, states must adopt them into their regulations in order to keep their authorization to issue permits under the National Pollutant Discharge Elimination System (NPDES). States are required to review their water quality standards every three years, and if new criteria have been developed they must be adopted. States may be more protective than the Federal requirements, but not less protective. Missouri does not have the resources to conduct the studies necessary for developing new water quality standards, and therefore our standards mirror those developed by the EPA; however, we will utilize any available flexibility based on actual species of mussels that are native to Missouri and their sensitivity to ammonia.

Many treatment facilities in Missouri are currently scheduled to be upgraded to comply with the current water quality standards. But these new ammonia standards may require a different treatment technology than the one being considered by the permittee. It is important that permittees discuss any new and upcoming requirements with their consulting engineers to ensure that their treatment systems are capable of complying with the new requirements. The Department encourages permittees to construct treatment technologies that can attain effluent quality that supports the EPA ammonia criteria.

Ammonia toxicity varies by temperature and by pH of the water. Assuming a stable pH value, but taking into account winter and summer temperatures, Missouri includes two seasons of ammonia effluent limitations. Current effluent limitations in this permit are:

Summer – 5.9 mg/L daily maximum, 1.2 mg/L monthly average.
Winter – 7.5 mg/L daily maximum, 2.9 mg/L monthly average.

Under the new EPA criteria, where mussels of the family Unionidae are present or expected to be present, the estimated effluent limitations for a facility in a location such as this that discharges to a receiving stream with no mixing will be:

Season	Temp (°C)	pH (SU)	Total Ammonia Nitrogen CCC (mg/L)	Total Ammonia Nitrogen CMC (mg/L)
Summer	26	7.8	0.7	3.4
Winter	6	7.8	2.3	13

Summer: April 1 – September 30

Chronic WLA: $C_e = ((0.465 + 0.0)0.7 – (0.0 * 0.01))/0.465$
$C_e = 0.7$ mg/L

Acute WLA: $C_e = ((0.465 + 0.0)3.4 – (0.0 * 0.01))/0.465$
$C_e = 3.4$ mg/L

$LTA_c = 0.7$ mg/L $(0.5312) = 0.37$ mg/L [CV = 1.62, 99th Percentile, 30 day avg.]
$LTA_a = 3.4$ mg/L $(0.136) = 0.46$ mg/L [CV = 1.62, 99th Percentile]

Use most protective number of LTA_c or LTA_a.

MDL = 0.37 mg/L (7.3658) = 2.7 mg/L [CV = 1.62, 99th Percentile]
AML = 0.37 mg/L (1.55) = 0.6 mg/L [CV = 1.62, 95th Percentile, n =30]

Winter: October 1 – March 31

Chronic WLA: $C_e = ((0.465 + 0.0)2.3 – (0.0 * 0.01))/0.465$
$C_e = 2.3$ mg/L

Acute WLA: $C_e = ((0.465 + 0.0)13 – (0.0 * 0.01))/0.465$
$C_e = 13$ mg/L

$LTA_c = 2.3$ mg/L $(0.780) = 1.79$ mg/L [CV = 0.6, 99th Percentile, 30 day avg.]
$LTA_a = 13$ mg/L $(0.321) = 4.17$ mg/L [CV = 0.6, 99th Percentile]

Use most protective number of LTA_c or LTA_a.

MDL = 1.79 mg/L (3.11) = 5.6 mg/L [CV = 0.6, 99th Percentile]
AML = 1.79 mg/L (1.19) = 2.1 mg/L [CV = 0.6, 95th Percentile, n =30]

Summer – 2.7 mg/L daily maximum, 0.6 mg/L monthly average.
Winter – 5.6 mg/L daily maximum, 2.1 mg/L monthly average.

These estimated limits above are based in part on the actual performance of the plant at the time of the drafting of this permit and should not be construed as future effluent limitations. Future effluent limits, based on the EPA's 2013 water quality criteria for ammonia, will depend in part on the actual performance of the facility at the time the permit is renewed.

Operating permits for facilities in Missouri must be written based on current statutes and regulations. Therefore permits will be written with the existing effluent limitations until the new standards are adopted. To aid permittees in decision making, an advisory will be added to permit Fact Sheets notifying permittees of the expected effluent limitations for ammonia. When setting schedules of compliance for ammonia effluent limitations, consideration will be given to facilities that have recently constructed upgraded facilities to meet the current ammonia limitations.

For more information on this topic feel free to contact the Missouri Department of Natural Resources, Water Protection Program, Water Pollution Control Branch, Operating Permits Section at (573) 751-1300.

Part VII – Effluent Limits Determination

APPLICABLE DESIGNATIONS OF WATERS OF THE STATE:
As per Missouri's Effluent Regulations [10 CSR 20-7.015], the waters of the state are divided into the below listed seven (7) categories. Each category lists effluent limitations for specific parameters, which are presented in each outfall's Effluent Limitation Table and further discussed in the Derivation & Discussion of Limits section.

- ☐ Missouri or Mississippi River [10 CSR 20-7.015(2)]
- ☐ Lake or Reservoir [10 CSR 20-7.015(3)]
- ☐ Losing [10 CSR 20-7.015(4)]
- ☐ Metropolitan No-Discharge [10 CSR 20-7.015(5)]
- ☐ Subsurface Water [10 CSR 20-7.015(7)]
- ☒ All Other Waters [10 CSR 20-7.015(8)]

OUTFALL #001 – MAIN FACILITY OUTFALL

Effluent limitations derived and established in the below Effluent Limitations Table are based on current operations of the facility. Future permit action due to facility modification may contain new operating permit terms and conditions that supersede the terms and conditions, including effluent limitations, of this operating permit.

EFFLUENT LIMITATIONS TABLE:

PARAMETER	Unit	Basis for Limits	Daily Maximum	Weekly Average	Monthly Average	Modified	Previous Permit Limit	Sampling Frequency	Reporting Frequency	Sample Type ****
Flow	MGD	1	*		*	No	*/*	2/week	monthly	M
BOD_5	mg/L	1		65	45	No	65/45	1/month	monthly	G
TSS	mg/L	1		120	80	No	120/80	1/month	monthly	G
Escherichia coli ** (Interim)	#/100mL	1, 3		*	*	Yes	***	1/week	monthly	G
Escherichia coli ** (Final)	#/100mL	1, 3		1030	206	Yes	*/*	1/week	monthly	G
Ammonia as N (Apr 1 –Sep 30)	mg/L	2, 3	5.9		1.2	Yes	5.9/1.4	1/month	monthly	G
Ammonia as N (Oct 1 – Mar 31)	mg/L	2, 3	7.5		2.9	No	7.5/2.9	1/month	monthly	G
Oil & Grease	mg/L	1, 3	15		10	No	15/10	1/month	monthly	G
Total Nitrogen	mg/L	1	*		*	Yes	***	1/quarter	quarterly	G
Total Phosphorus	mg/L	1	*		*	Yes	***	1/quarter	quarterly	G
Acute Whole Effluent Toxicity	TUa	1, 9	*			Yes	***	1/permit cycle	1/permit cycle	G

PARAMETER	Unit	Basis for Limits	Minimum		Maximum	Modified	Previous Permit Limit	Sampling Frequency	Reporting Frequency	Sample Type
pH	SU	1	6.5					1/month	monthly	G

* - Monitoring requirement only.
** - #/100mL; the Monthly Average for *E. coli* is a geometric mean.
*** - Parameter not previously established in previous state operating permit.

**** - C = 24-hour composite
G = Grab
M = Total Measured / Measured
E=24-hour estimate

Basis for Limitations Codes:

1. State or Federal Regulation/Law
2. Water Quality Standard (includes RPA)
3. Water Quality Based Effluent Limits
4. Antidegradation Review
5. Antidegradation Policy
6. Water Quality Model
7. Best Professional Judgment
8. TMDL or Permit in lieu of TMDL
9. WET Test Policy

OUTFALL #001 – DERIVATION AND DISCUSSION OF LIMITS:

- **Flow**. In accordance with [40 CFR Part 122.44(i)(1)(ii)] the volume of effluent discharged from each outfall is needed to assure compliance with permitted effluent limitations. If the permittee is unable to obtain effluent flow, then it is the responsibility of the permittee to inform the Department, which may require the submittal of an operating permit modification.

- **Biochemical Oxygen Demand (BOD_5).**

  ☒ - Effluent limitations have been retained from previous state operating permit, please see the **APPLICABLE DESIGNATION OF WATERS OF THE STATE** sub-section of the **Effluent Limits Determination.**

- **Total Suspended Solids (TSS).**

  ☒ - Effluent limitations have been retained from previous state operating permit, please see the **APPLICABLE DESIGNATION OF WATERS OF THE STATE** sub-section of the **Effluent Limits Determination.**

Please note that the final effluent limits for BOD and TSS contained in the permit are Equivalent to Secondary limits as per 10 CSR 20-7.015. Any changes made to the lagoon system that modifies it such that it no longer functions as a typical lagoon will result in the facility no longer qualifying for Equivalent to Secondary limitations. The facility may be required to also to follow the Missouri Antidegradation Rule and Implementation Procedure if the discharge is expanded.

- ***Escherichia coli (E. coli)***. Monthly average of 206 per 100 mL as a geometric mean and Weekly Average of 1030 per 100 mL as a geometric mean during the recreational season (April 1 – October 31), to protect Whole Body Contact Recreation (B) designated use of the receiving stream, as per 10 CSR 20-7.031(5)(C). An effluent limit for both monthly average and weekly average is required by 40 CFR 122.45(d). The Geometric Mean is calculated by multiplying all of the data points and then taking the nth root of this product, where n = # of samples collected. For example: Five E. coli samples were collected with results of 1, 4, 6, 10, and 5 (#/100mL). Geometric Mean = 5^{th} root of (1)(4)(6)(10)(5) = 5^{th} root of 1,200 = 4.1 #/100mL.

- **Total Ammonia Nitrogen**. Early Life Stages Present Total Ammonia Nitrogen criteria apply [10 CSR 20-7.031(5)(B)7.C. & Table B3]. Background total ammonia nitrogen = 0.01 mg/L. No mixing considerations allowed; therefore, WLA = appropriate criterion.

Season	Temp (°C)	pH (SU)	Total Ammonia Nitrogen CCC (mg/L)	Total Ammonia Nitrogen CMC (mg/L)
Summer	26	7.8	1.5	12.1
Winter	6	7.8	3.1	12.1

Summer: April 1 – September 30

Chronic WLA: $C_e = ((0.465 + 0.0)1.5 – (0.0 * 0.01))/0.465$
$C_e = 1.5$ mg/L

Acute WLA: $C_e = ((0.465 + 0.0)12.1 – (0.0 * 0.01))/0.465$
$C_e = 12.1$ mg/L

$LTA_c = 1.5$ mg/L (0.5312) = 0.80 mg/L [CV = 1.62, 99th Percentile, 30 day avg.]
$LTA_a = 12.1$ mg/L (0.136) = 1.64 mg/L [CV = 1.62, 99th Percentile]

Use most protective number of LTA_c or LTA_a.

MDL = 0.80 mg/L (7.3658) = 5.9 mg/L [CV = 1.62, 99th Percentile]
AML = 0.80 mg/L (1.55) = 1.2 mg/L [CV = 1.62, 95th Percentile, n =30]

Winter: October 1 – March 31

Chronic WLA: $C_e = ((0.465 + 0.0)3.1 – (0.0 * 0.01))/0.465$
$C_e = 3.1$ mg/L

Acute WLA: $C_e = ((0.465 + 0.0)12.1 – (0.0 * 0.01))/0.465$
$C_e = 12.1$ mg/L

$LTA_c = 3.1$ mg/L (0.780) = 2.42 mg/L [CV = 0.6, 99th Percentile, 30 day avg.]
$LTA_a = 12.1$ mg/L (0.321) = 3.89 mg/L [CV = 0.6, 99th Percentile]

Use most protective number of LTA_c or LTA_a.

MDL = 2.42 mg/L (3.11) = 7.5 mg/L [CV = 0.6, 99th Percentile]
AML = 2.42 mg/L (1.19) = 2.9 mg/L [CV = 0.6, 95th Percentile, n =30]

- **Oil & Grease**. Conventional pollutant, effluent limitation for protection of aquatic life; 10 mg/L monthly average, 15 mg/L daily maximum.

- **Total Phosphorus and Total Nitrogen**. Monitoring required for facilities greater than 100,000 gpd design flow per 10 CSR 20-7.015(9)(D)7. Total Nitrogen shall be determined by testing for Total Kjeldahl Nitrogen (TKN) and Nitrate + Nitrite and reporting the sum of the results (reported as N). Nitrate + Nitrite can be analyzed together or separately.
  - **pH**. – ≥ 6.5 SU. Technology based effluent limitations of 6.0-9.0 SU [10 CSR 20-7.015] are not protective of the Water Quality Standard, which states that water contaminants shall not cause pH to be outside the range of 6.5-9.0 SU. 10 CSR 20-7.015 allows pH for lagoons to be maintained above 6.0 SU. With no mixing zone, the water quality standard, ≥ 6.5 SU, must be met at the outfall.

Whole Effluent Toxicity

- **Acute Whole Effluent Toxicity**. Monitoring requirement only. Monitoring is required to determine if reasonable potential exists for this facility's discharge to exceed water quality standards

  Acute and/or Chronic Allowable Effluent Concentrations (AECs) for facilities that discharge to Waters of the State lacking designated uses, Class C, Class P (with default Mixing Considerations), or Lakes [10 CSR 20-7.031(5)(A)4.B.(IV)(b)] are 100%, 50%, 25%, 12.5%, & 6.25%.

Sampling Frequency Justification:

Sampling and Reporting Frequency was set at monthly for all parameters but flow, which is required twice per week. The permit also contains a requirement for additional sampling during batch discharges. Weekly sampling is required for *E. coli*, per 10 CSR 20-7.015(9)(D)6.A.

WET Test Sampling Frequency Justification. WET Testing schedules and intervals are established in accordance with the Department's Permit Manual; Section 5.2 *Effluent Limits / WET Testing for Compliance Bio-monitoring.* It is recommended that WET testing be conducted during the period of lowest stream flow.

Acute Whole Effluent Toxicity

☒ -No less than **ONCE/PERMIT CYCLE:**
  ☒ -Municipality with a design flow ≥ 22,500 gpd, but less than 1.0 MGD.
  ☐ - Other, please justify.

Sampling Type Justification

As per 10 CSR 20-7.015, BOD_5, TSS and WET test samples collected for lagoons may be grab samples. Grab samples must be collected for pH, Ammonia as N, *E. coli*, Oil & Grease, and Total Phosphorus. This is due to the holding time restriction for *E. coli*, the volatility of Ammonia, and the fact that pH cannot be preserved and must be sampled in the field. As Ammonia, Oil & Grease, and Total Phosphorus samples must be immediately preserved, these samples are to be collected as a grab. For further information on sampling and testing methods please review 10 CSR 20-7.015(9)(D) 2.

PERMITTED FEATURE #SM1 – INSTREAM MONITORING (UPSTREAM)

The monitoring requirements established in the below Monitoring Requirements Table are based on current operations of the facility. Future permit action due to facility modification may contain new operating permit terms and conditions that supersede the terms and conditions, including the monitoring requirements listed in this table..

MONITORING REQUIREMENTS TABLE:

PARAMETER	Unit	Basis for Limits	Daily Maximum	Weekly Average	Monthly Average	Modified	Previous Permit Limit	Sampling Frequency	Reporting Frequency	Sample Type ****
Total Nitrogen	mg/L	7	*		*	Yes	***	quarterly	quarterly	G
Total Phosphorus	mg/L	7	*		*	Yes	***	quarterly	quarterly	G

* - Monitoring requirement only.
*** - Parameter not previously established in previous state operating permit.
**** - C = 24-hour composite
G = Grab
M = Total Measured / Measured

Basis for Limitations Codes:
1. State or Federal Regulation/Law
2. Water Quality Standard (includes RPA)
3. Water Quality Based Effluent Limits
4. Antidegradation Review
5. Antidegradation Policy
6. Water Quality Model
7. Best Professional Judgment
8. TMDL or Permit in lieu of TMDL
9. WET Test Policy

PERMITTED FEATURE #SM1 – DERIVATION AND DISCUSSION OF MONITORING REQUIREMENTS:

- **Total Phosphorus and Total Nitrogen**. Facilities with a design flow greater than 100,000 gallons per day are required to sample their effluent quarterly for Total Phosphorus and Total Nitrogen per 10 CSR 20-7.015(9)(D)7. Upstream monitoring for these parameters is necessary to determine background stream concentrations in order to complete calculations that determine instream nutrient loading.

Sampling Frequency Justification:
The sampling and reporting frequency for Total Phosphorus and Total Nitrogen has been established to match the required sampling frequency of these parameters in the effluent.

Sampling Type Justification
As Total Phosphorus and Total Nitrogen samples must be immediately preserved; these samples are to be collected as a grab.

Part VIII – Cost Analysis for Compliance

Pursuant to Section 644.145, RSMo, when issuing permits under this chapter that incorporate a new requirement for discharges from publicly owned combined or separate sanitary or storm sewer systems or publicly owned treatment works, or when enforcing provisions of this chapter or the Federal Water Pollution Control Act, 33 U.S.C. 1251 et seq., pertaining to any portion of a publicly owned combined or separate sanitary or storm sewer system or [publicly owned] treatment works, the Department of Natural Resources shall make a "finding of affordability" on the costs to be incurred and the impact of any rate changes on ratepayers upon which to base such permits and decisions, to the extent allowable under this chapter and the Federal Water Pollution Control Act. This process is completed through a cost analysis for compliance. Permits that do not include new requirements may be deemed affordable.

☒ - The Department is required to determine "findings of affordability" because the permit applies to a **combined or separate sanitary sewer system for a publically-owned treatment works.**

Cost Analysis for Compliance - The Department has made a reasonable search for empirical data indicating the permit is affordable. The search consisted of a review of Department records that might contain economic data on the community, a review of information provided by the applicant as part of the application, and public comments received in response to public notices of this draft permit. If the empirical cost data was used by the permit writer, this data may consist of median household income, any other ongoing projects that the Department has knowledge, and other demographic financial information that the community provided as contemplated by Section 644. 145.3. See **Appendix – Cost Analysis for Compliance**

☐ - The Department is not required to determine Cost Analysis for Compliance because the permit contains no new conditions or requirements that convey a new cost to the facility.

Part IX – Administrative Requirements

On the basis of preliminary staff review and the application of applicable standards and regulations, the Department, as administrative agent for the Missouri Clean Water Commission, proposes to issue a permit(s) subject to certain effluent limitations, schedules, and special conditions contained herein and within the operating permit. The proposed determinations are tentative pending public comment.

PERMIT SYNCHRONIZATION:
The Department of Natural Resources is currently undergoing a synchronization process for operating permits. Permits are normally issued on a five-year term, but to achieve synchronization many permits will need to be issued for less than the full five years allowed by regulation. The intent is that all permits within a watershed will move through the Watershed Based Management (WBM) cycle together will all expire in the same fiscal year. This will allow further streamlining by placing multiple permits within a smaller geographic area on public notice simultaneously, thereby reducing repeated administrative efforts. This will also allow the Department to explore a watershed based permitting effort at some point in the future. Renewal applications must continue to be submitted within 180 days of expiration, however, in instances where effluent data from the previous renewal is less than 4 years old, that data may be re-submitted to meet the requirements of the renewal application. If the permit provides a schedule of compliance for meeting new water quality based effluent limits beyond the expiration date of the permit, the time remaining in the schedule of compliance will be allotted in the renewed permit. This permit will expire in the 4th Quarter of calendar year 2018.

PUBLIC NOTICE:
The Department shall give public notice that a draft permit has been prepared and its issuance is pending. Additionally, public notice will be issued if a public hearing is to be held because of a significant degree of interest in and water quality concerns related to a draft permit. No public notice is required when a request for a permit modification or termination is denied; however, the requester and permittee must be notified of the denial in writing. The Department must issue public notice of a pending operating permit or of a new or reissued statewide general permit. The public comment period is the length of time not less than 30 days following the date of the public notice which interested persons may submit written comments about the proposed permit. For persons wanting to submit comments regarding this proposed operating permit, then please refer to the Public Notice page located at the front of this draft operating permit. The Public Notice page gives direction on how and where to submit appropriate comments.

☒ - The Public Notice period for this operating permit was from March 11, 2016 to April 11, 2016. No responses received.

DATE OF FACT SHEET: FEBRUARY 18, 2016

COMPLETED BY:

BRANT FARRIS, ENVIRONMENTAL SPECIALIST III
MISSOURI DEPARTMENT OF NATURAL RESOURCES
WATER PROTECTION PROGRAM
OPERATING PERMITS SECTION - DOMESTIC WASTEWATER UNIT
(660) 385-8061
brant.farris@dnr.mo.gov

Appendices

APPENDIX - CLASSIFICATION WORKSHEET:

ITEM	POINTS POSSIBLE	POINTS ASSIGNED
Maximum Population Equivalent (P.E.) served (Max 10 pts.)	1 pt./10,000 PE or major fraction thereof.	
Maximum: 10 pt Design Flow (avg. day) or peak month; use greater (Max 10 pts.)	1 pt. / MGD or major fraction thereof.	
EFFLUENT DISCHARGE RECEIVING WATER SENSITIVITY:		
Missouri or Mississippi River	0	
All other stream discharges except to losing streams and stream reaches supporting whole body contact	1	
Discharge to lake or reservoir outside of designated whole body contact recreational area	2	
Discharge to losing stream, or stream, lake or reservoir area supporting whole body contact recreation	3	3
PRELIMINARY TREATMENT - Headworks		
Screening and/or comminution	3	
Grit removal	3	
Plant pumping of main flow (lift station at the headworks)	3	3
PRIMARY TREATMENT		
Primary clarifiers	5	
Combined sedimentation/digestion	5	
Chemical addition (except chlorine, enzymes)	4	
REQUIRED LABORATORY CONTROL – performed by plant personnel (highest level only)		
Push – button or visual methods for simple test such as pH, Settleable solids	3	
Additional procedures such as DO, COD, BOD, titrations, solids, volatile content	5	5
More advanced determinations such as BOD seeding procedures, fecal coliform, nutrients, total oils, phenols, etc.	7	
Highly sophisticated instrumentation, such as atomic absorption and gas chromatograph	10	
ALTERNATIVE FATE OF EFFLUENT		
Direct reuse or recycle of effluent	6	
Land Disposal – low rate	3	
High rate	5	
Overland flow	4	
Total from page ONE (1)	----	11

APPENDIX - CLASSIFICATION WORKSHEET (CONTINUED):

ITEM	POINTS POSSIBLE	POINTS ASSIGNED
VARIATION IN RAW WASTE (highest level only) (DMR exceedances and Design Flow exceedances)		
Variation do not exceed those normally or typically expected	0	
Recurring deviations or excessive variations of 100 to 200 % in strength and/or flow	2	
Recurring deviations or excessive variations of more than 200 % in strength and/or flow	4	
Raw wastes subject to toxic waste discharge	6	
SECONDARY TREATMENT		
Trickling filter and other fixed film media with secondary clarifiers	10	
Activated sludge with secondary clarifiers (including extended aeration and oxidation ditches)	15	
Stabilization ponds without aeration	5	5
Aerated lagoon	8	
Advanced Waste Treatment Polishing Pond	2	
Chemical/physical – without secondary	15	
Chemical/physical – following secondary	10	
Biological or chemical/biological	12	
Carbon regeneration	4	
DISINFECTION		
Chlorination or comparable	5	
Dechlorination	2	
On-site generation of disinfectant (except UV light)	5	
UV light	4	
SOLIDS HANDLING - SLUDGE		
Solids Handling Thickening	5	
Anaerobic digestion	10	
Aerobic digestion	6	
Evaporative sludge drying	2	
Mechanical dewatering	8	
Solids reduction (incineration, wet oxidation)	12	
Land application	6	
Total from page TWO (2)	----	5
Total from page ONE (1)	---	11
Grand Total	---	16

☐ - A: 71 points and greater
☐ - B: 51 points – 70 points
☐ - C: 26 points – 50 points
☒ - D: 0 points – 25 points

APPENDIX – RPA RESULTS:

Parameter	CMC*	RWC Acute*	CCC*	RWC Chronic*	n**	Range max/min	CV***	MF	RP Yes/No
Total Ammonia as Nitrogen (Summer) mg/L	12.1	7.50	1.5	7.50	10.00	2.5/0.01	1.62	3.00	YES
Total Ammonia as Nitrogen (Winter) mg/L	12.1	17.92	3.1	17.92	9.00	5.6/0.1	0.60	3.20	YES

N/A – Not Applicable
* - Units are (µg/L) unless otherwise noted.
** - If the number of samples is 10 or greater, then the CV value must be used in the WQBEL for the applicable constituent. If the number of samples is < 10, then the default CV value must be used in the WQBEL for the applicable constituent.
*** - Coefficient of Variation (CV) is calculated by dividing the Standard Deviation of the sample set by the Mean of the same sample set.
RWC – Receiving Water Concentration. It is the concentration of a toxicant or the parameter toxicity in the receiving water after mixing (if applicable).
n – Is the number of samples.
MF – Multiplying Factor. 99% Confidence Level and 99% Probability Basis.
RP – Reasonable Potential. It is where an effluent is projected or calculated to cause an excursion above a water quality standard based on a number of factors including, as a minimum, the four factors listed in 40 CFR 122.44(d)(1)(ii).

Reasonable Potential Analysis is conducted as per (TSD, EPA/505/2-90-001, Section 3.3.2). A more detailed version including calculations of this RPA is available upon request.

APPENDIX – COST ANALYSIS FOR COMPLIANCE:

Missouri Department of Natural Resources
Water Protection Program
Cost Analysis for Compliance
(In accordance with RSMo 644.145)

Lawson WWTF, Permit Renewal
City of Lawson
Missouri State Operating Permit #MO-0091031

Section 644.145 RSMo requires the Department of Natural Resources (DNR) to make a "finding of affordability" when "issuing permits under" or "enforcing provisions of" state or federal clean water laws "pertaining to any portion of a combined or separate sanitary sewer system for publicly-owned treatment works."

This cost analysis is based on data available to the Department as provided by the permittee and data obtained from readily available sources. For the most accurate analysis, it is essential that the permittee provides the Department with current information about the City's financial and socioeconomic situation. The financial questionnaire available to permittees on the DNR website (http://dnr.mo.gov/forms/780-2511-f.pdf) should have been submitted with the permit renewal application. If it was not received with the renewal application, the Department sent a request to complete it with the welcome letter. The Department currently uses software to estimate the cost for reconstruction of a treatment plant titled CAPDETWORKS (CapDet). CapDet is a preliminary design and costing software program from Hydromantis[1] for wastewater treatment plants that uses national indices, such as the Marshall and Swift Index and Engineering News Records Cost Index for pricing in development of capital, operating, maintenance, material, and energy costs for each treatment technology. As the program works from national indices and each community is unique in its budget commitments and treatment design, the estimated costs are expected to be higher than actual costs. The cost estimates located within this document are for the construction of a brand new treatment facility or system that is the most practical to facilitate compliance with new requirements. For the most accurate analysis, it is essential that the permittee provides the Department with current information about the City's financial and socioeconomic situation.

The Department is required to issue a permit with final effluent limits in accordance with 644.051.1.(1) RSMo, 644.051.1.(2) RSMo, and the Clean Water Act. The table below summarizes the results of this cost analysis for the City of Lawson. The practical result of this analysis is to incorporate a long compliance schedule into the permit in order to mitigate adverse impact to distressed populations resulting from the costs of upgrading the wastewater treatment facility.

Cost Analysis for Compliance Summary Table

Estimated present worth to upgrade to an UV Disinfection System	Median Household Income (MHI) for the City of Lawson & the State of Missouri	Estimated monthly cost per user as a percent of MHI
$438,732	Lawson -$52,842 State of Missouri - $49,008*	0.7%

* Due to the fact that the Median Household Income of the City of Lawson is higher than the State of Missouri's Median Household income, the State of Missouri's Median Household Income of $49,008 has been used to complete this analysis.

Current Facility Description:

Flow evaluated: 300,000 gpd

Residential Connections:	759
Commercial Connections:	61
Industrial Connections:	0
Total Connections for this facility:	820

New Permit Requirements:

The permit requires new sampling requirements for Total Phosphorus and Total Nitrogen at Outfall #001 and also instream. In addition, the permit requires compliance with new effluent limitations for *E. coli*, which may require the design, construction and operation of different treatment technology. The cost assumptions in this cost analysis anticipate the construction of a new disinfection system. To calculate the estimated user cost per 5,000 gallons, the Department used the equations currently being used in the Financial Assistance Center's rate calculator. The equations account for replacement of equipment during the life of the treatment facility, debt retirement, capital costs, and an inflation factor. The calculator evaluates multiple technologies through CapDet at a range of flows, then, using a linear interpolation, develops a spreadsheet outlining high and low costs for treatment plants. For this analysis the Department has selected the disinfection treatment technology that could be the most practical solution to meet the new requirements for the community. Because the methods used to derive the analysis estimate costs that are greater than actual costs associated with an upgrade, it reflects a conservative estimate anticipated for a community. An overestimation of costs is due to the fact that it is not possible for the permit writer to determine what existing equipment and structures will be reused in the upgraded facility before an engineer completes a facility design.

The size of the facility evaluated for upgrades was chosen based on the permitted design flow. If significant population growth is expected in the community, or if a significant portion of the flow is due to I&I, the flows used in the Facility Plan prepared by a consulting engineer may be different than this flow.

Anticipated Costs Associated with Complying with the New Requirements:

The cost to conduct quarterly sampling for Total Phosphorus and Total Nitrogen for both Outfall #001 and instream is estimated at $800 per year, or $0.08 per household per month

Cost associated with disinfection treatment:
The total present worth to add UV disinfection treatment is estimated at $438,732 (*CAPDETWORKS cost estimator was used*). This cost, if financed through user fees, might cost each household approximately $3.02 per month. Due to the design limitations in the CapDet cost estimator, the costs for disinfection have been over estimated. For any flows less than 100,000 gpd, CapDet assumes a flow of 100,000 gpd when estimating the cost for UV disinfection. The assumptions for chlorine disinfection are that the chlorine used will either be in the liquid or gas phase and not the tablets which are used by many smaller facilities.

This cost analysis does not dictate that a permittee will upgrade their facility, or how they will comply with the new permit requirements. For any questions associated with the *CAPDETWORKS cost estimator*, please contact the Engineering Section at (573) 751-6621.

(1) A community's financial capability and ability to raise or secure necessary funding;

Current User Rates:	$24.75
Rate Capacity or Pay as You Go Option:	Pay as You Go
Municipal Bond Rating (if applicable):	Not provided
Bonding Capacity: *(General Obligation Bond capacity allowed by constitution:* *cities=up to 20% of taxable tangible property* *sewer districts or villages=up to 5% of taxable tangible property)*	$4,763,390
Current outstanding debt for the City:	$328,475
Current outstanding debt for the Wastewater System:	$0
Amount within the current user rate used toward payments on outstanding debt related to the current wastewater infrastructure:	$0

(2) Affordability of pollution control options for the individuals or households at or below the median household income level of the community;

A Current Costs

Current operating costs (exclude depreciation):	$243,050
Current user rate:	$24.75

B Estimated Costs for Disinfection System Option

Estimated total present worth of pollution control*:	$438,732
Estimated capital cost of pollution control**:	$315,600
Annual cost of operation and maintenance***:	$9,880
Estimated additional user cost per household per month****:	$3.10
Estimated resulting user cost per household per month:	$27.85
Median household income(MHI)*****: [2]	$49,008
Cost per household as a percent of median household income: [3]	0.7%

CAPDET estimates the total present worth to finance disinfection system to be approximately $438,732. If financed through user costs, the future user costs have the potential to be estimated at $27.85 per month. These costs assume a 5% interest rate over 20 years for the disinfection treatment. It is the Department's opinion that the UV disinfection system is the most practical treatment option for design flow of this facility.

The resulting cost per household as a percent of MHI will be used as the residential indicator in Criteria 7 below.

* Total Present Worth includes a five percent interest rate to construct and perform annual operation and maintenance of the new treatment plant over the term of the loan.

** Capital Cost includes project costs from CapDet with design, inspection and contingency costs.

*** O&M cost shown in Tables B-1 and B-2 is includes operations, maintenance, materials, chemical and electrical costs for the facility on an annual basis. It includes items that are expected to replace during operations, such as bulbs. O&M is estimated between 15% and 45% of the user cost.

**** The Estimated User Cost shown in Tables B-1 and B-2 is composed of two factors, Operation & Maintenance (O&M), and Debt Retirement Costs, and the cost for the additional sampling.

***** Due to the fact that the Median Household Income of the City of Lawson is higher than the State of Missouri's Median Household income, the State of Missouri's Median Household Income of $49,008 has been used to complete this analysis. The resulting cost per household as a percent of MHI is 0.7% using the state's MHI. The resulting cost per household as a percent of MHI will be used as the residential indicator in Criteria 7 below.

(3) An evaluation of the overall costs and environmental benefits of the control technologies;

The investment in wastewater treatment will provide several social, environmental and economic benefits. Improved wastewater provides benefits such as avoided health costs due to water-related illness, enhanced environmental ecosystem quality, and improved natural resources. The preservation of natural resources has been proven to increase the economic value and sustainability of the surrounding communities. Maintaining Missouri's water quality standards fulfill the goals of restoring and maintaining the chemical, physical and biological integrity of the receiving stream; and, where attainable, to achieves a level of water quality that provides for the protection and propagation of fish, shellfish, wildlife and recreation in and on the water.

Disinfection

E. coli is a species of bacteria that normally live in the intestines of humans and warm-blooded animals. While some strains of *E. coli* are harmless, there are several strains that can cause severe diarrhea, abdominal cramps, and severe kidney failure. The people most susceptible to these consequences are young children, the elderly and those with weakened immune systems. The receiving stream that your facility discharges to contains the WBC-B designated use to protect human health in accordance with Water Quality Standards (10 CSR 20-7.031) and the Clean Water Act. The disinfection of wastewater effluent benefits human health by reducing exposure to disease-causing bacteria, such as *E.coli*, and viruses and reducing health care costs to those infected by contaminated water. The City of Lawson should construct and install a disinfection system at the treatment facility in order to protect human health as well as meet water quality standards.

Nutrient Monitoring
Nutrients are mineral compounds that are required for organisms to grow and thrive. Of the six (6) elemental macronutrients, Nitrogen and Phosphorus are generally not readily available and limit growth of organisms. Excess nitrogen and phosphorus will cause a shift in the ecosystem's food web. Once excess nitrogen and phosphorous are introduced into a waterbody, some species' populations will dramatically increase, while other populations will not be able to sustain life. Competition and productivity are two factors in which nutrients can alter aquatic ecosystems and the designated uses of a waterbody. For example, designated uses, such as drinking water sources and recreational uses become impaired when algal blooms take over a waterbody. These blooms can cause foul tastes and odors in the drinking water, unsightly appearance, and fish mortality in the waterbody. Some algae also produce toxins that may cause serious adverse health conditions such as liver damage, tumor promotion, paralysis, and kidney damage. The monitoring requirements for Nitrogen and Phosphorus have been added to the permit to provide data regarding the health of the receiving stream's aquatic life. A healthy ecosystem is beneficial as it provides reduced impacts on human and aquatic health as well as recreational opportunities.

(4) Inclusion of ongoing costs of operating and maintaining the existing wastewater collection and treatment system, including payments on outstanding debts for wastewater collection and treatment systems when calculating projected rates:

The community has reported that they have no outstanding debts for the current wastewater collection and treatment systems.

(5) An inclusion of ways to reduce economic impacts on distressed populations in the community, including but not limited to low and fixed income populations. This requirement includes but is not limited to:

(a) Allowing adequate time in implementation schedules to mitigate potential adverse impacts on distressed populations resulting from the costs of the improvements and taking into consideration local community economic considerations.
(b) Allowing for reasonable accommodations for regulated entities when inflexible standards and fines would impose a disproportionate financial hardship in light of the environmental benefits to be gained.

Socioeconomic Data: [4-6]

Potentially Distressed Populations – City of Lawson	
Unemployment	3.5%
Adjusted Median Household Income (MHI)	$52,842 / $49,008
Percent Change in MHI (1990-2012)	+26.2%
Percent Population Growth/Decline (1990-2012)	-0.1%
Change in Median Age in Years (1990-2012)	+2.4
Percent of Households in Poverty	10.1%
Percent of Households Relying on Food Stamps	7.2%

Opportunity for cost savings or cost avoidance:

- If available, connection to a larger centralized sewer system in the area may be more cost effective for the community.
- An opportunity may exist for the relocation of the point of discharge to a receiving stream capable of a greater mixing zone.
- The permittee may apply for State Revolving Fund (SRF) financial support in order to help fund a Capital Improvements Plan. Other loans and grants also exist for which the facility may be eligible. Contact information for the Department's Financial Assistance Center (FAC) and more information can be found on the Department's website at http://dnr.mo.gov/env/wpp/srf/wastewater-assistance.htm.

Opportunity for changes to implementation/compliance schedule, new technology, site specific criteria, use attainability analysis:

- The facility may propose changes to the schedule of compliance based on their own cost estimate or financial information.
- An integrated plan may be an appropriate option if they community needs to meet other environmental obligations as well as the new requirements within this permit. The integrated plan needs to be well thought out with specific timeframes built into the management plan that the municipality can reasonably commit to. The plan should be designed that will allow each municipality to meet their Clean Water Act obligations by maximizing their infrastructure improvement dollars through the appropriate sequencing of work.
- If the permittee can demonstrate that the proposed pollution controls result in substantial and widespread economic and social impact, the permittee may use Factor 6 of the Use Attainability Analysis (UAA) 40 CFR 131.10(g)(6) in the form of a variance. This process is completed by determining the treatment type with the highest attainable effluent quality that would not result in a socio-economic hardship. This process could potentially become expensive in itself.

(6) An assessment of other community investments and operating costs relating to environmental improvements and public health protection;

The City provided that they are planning on doing sewer main replacements, lift station rebuilds, lagoon walls and floor maintenance, emergency power hookups, and scheduling a sewer system analysis in the future. The only costs provided were for the emergency power hookups, which were in the range of $50,000, to be completed within the next year and a half.

(7) An assessment of factors set forth in the United States Environmental Protection Agency's guidance, including but not limited to the "Combined Sewer Overflow Guidance for Financial Capability Assessment and Schedule Development" that may ease the cost burdens of implementing wet weather control plans, including but not limited to small system considerations, the attainability of water quality standards, and the development of wet weather standards;

Secondary indicators for consideration:

Indicators	Strong (3 points)	Mid-Range (2 points)	Weak (1 point)	Score
Bond Rating Indicator	Above BBB or Baa	BBB or Baa	Below BBB or Baa	NA
Overall Net Debt as a % of Full Market Property Value	Below 2%	2% - 5%	Above 5%	3
Unemployment Rate	>1% below Missouri average of 4.1%	± 1% of Missouri average of 4.1%	>1% above Missouri average of 4.1%	2
Median Household Income	More than 25% above Missouri MHI ($49,008)	± 25% of Missouri MHI ($49,008)	More than 25% below Missouri MHI ($49,008)	2
Percent of Households in Poverty*	>10% below Missouri average of 11.7%	± 10% of Missouri average of 11.7%	>10% above Missouri average of 11.7%	2
Percent of Households Relying on Food Stamps*	>5% below Missouri average of 10.6%	± 5% of Missouri average of 10.6%	>5% above Missouri average of 10.6%	2
Property Tax Revenues as a % of Full Market Property Value	Below 2%	2% - 4%	Above 4%	3
Property Tax Collection Rate	Above 98%	94% - 98%	Below 94%	1

Financial Capability (FCI) Indicators Average Score: 2.1
Residential Indicator (RI, from Criteria #2 above): 0.7

* Financial Capability Indicators are specific to the State of Missouri

Financial Capability Matrix:

Financial Capability Indicators Score from above ↓	**Residential Indicator (User cost as a % of MHI)**		
	Low (Below 1%)	Mid-Range (Between 1.0% and 2.0%	High (Above 2.0%)
Weak (below 1.5)	Medium Burden	High Burden	High Burden
Mid-Range (1.5 – 2.5)	Low Burden	Medium Burden	High Burden
Strong (above 2.5)	Low Burden	Medium Burden	High Burden

Estimated Financial Burden for a UV Disinfection System: Low Burden

The resulting financial burden has been determined by comparing the Financial Capability Indicator score (FCI) with the Residential Indicator (RI) stated in Criteria #2. The cost associated with a UV disinfection system could result in a low financial burden placed on the community due to the Mid-Range FCI paired with the Low RI.

(8) An assessment of any other relevant local community economic condition.

The City reported that Lawson is predominantly a bedroom community with employment outside of Lawson. The School District is the largest employer and the enrollment has trended down the past two years.

Conclusion and Finding

As a result of new regulations, the Department is proposing modifications to the current operating permit that may require the permittee to upgrade the facility and construct new control technologies and to increase monitoring.

The Department considered the eight (8) criteria presented in subsection 644.145.3 when evaluating the cost associated with the relevant actions. The Department estimates the resulting monthly user costs for a disinfection system in order to meet new *E. coli* effluent limits, and conduct additional sampling could be $27.85. Using this analysis, the Department finds that a UV disinfection system is the most practical and affordable option for your community. The construction and operation of a UV disinfection system will ensure that the individuals within the community will not be required to make unreasonable sacrifices in their essential lifestyle or spending patterns or undergo hardships in order to make the projected monthly payments for sewer connections.

In accordance with 40 CFR § 122.47(a)(1) and 10 CSR 20-7.031(11), compliance must occur as soon as possible. Therefore, based on this analysis including the Rural Population Sustainability Assessment Tool the City of Lawson has received a four (4) year schedule of compliance for the design and construction of a UV disinfection system

This determination is based on readily available data and may overestimate the financial impact on the community. The community's facility plan that is submitted as a part of the construction permit process includes a discussion of community details, what the community can afford, existing obligations, future growth potential, an evaluation of options available to the community with cost information, and a discussion on no-discharge alternatives. The cost information provided through the facility plan process, which is developed by the community and their engineer, is more comprehensive of the community's individual factors in relation to selected treatment technology and costing information.

References:

1. http://www.hydromantis.com/
2. The Median Household Income was found using the American Community Survey by the U.S. Census Bureau
3. (27.85/(49,008/12))100 = 0.7% (mechanical)
4. Unemployment data was obtained from Missouri Department of Economic Development (November 2015) – http://www.missourieconomy.org/pdfs/urel1511.pdf
5. Population trend data was obtained from online at: 2012 Census Bureau Population Data - http://factfinder2.census.gov/faces/tableservices/jsf/pages/productview.xhtml?fpt=table, 2000 Census Bureau Population Data - http://www.census.gov/popest/data/cities/totals/2009/tables/SUB-EST2009-04-29.xls, 1990 Census Bureau Population Data - http://www.census.gov/prod/cen1990/cp1/cp-1-27.pdf
6. Poverty data – American Community Survey- http://factfinder2.census.gov/faces/nav/jsf/pages/searchresults.xhtml?refresh=t

STANDARD CONDITIONS FOR NPDES PERMITS
ISSUED BY
THE MISSOURI DEPARTMENT OF NATURAL RESOURCES
MISSOURI CLEAN WATER COMMISSION
REVISED
AUGUST 1, 2014

These Standard Conditions incorporate permit conditions as required by 40 CFR 122.41 or other applicable state statutes or regulations. These minimum conditions apply unless superseded by requirements specified in the permit.

Part I – General Conditions
Section A – Sampling, Monitoring, and Recording

1. **Sampling Requirements.**
   a. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.
   b. All samples shall be taken at the outfall(s) or Missouri Department of Natural Resources (Department) approved sampling location(s), and unless specified, before the effluent joins or is diluted by any other body of water or substance.

2. **Monitoring Requirements**.
   a. Records of monitoring information shall include:
      i. The date, exact place, and time of sampling or measurements;
      ii. The individual(s) who performed the sampling or measurements;
      iii. The date(s) analyses were performed;
      iv. The individual(s) who performed the analyses;
      v. The analytical techniques or methods used; and
      vi. The results of such analyses.
   b. If the permittee monitors any pollutant more frequently than required by the permit at the location specified in the permit using test procedures approved under 40 CFR Part 136, or another method required for an industry-specific waste stream under 40 CFR subchapters N or O, the results of such monitoring shall be included in the calculation and reported to the Department with the discharge monitoring report data (DMR) submitted to the Department pursuant to Section B, paragraph 7.

3. **Sample and Monitoring Calculations.** Calculations for all sample and monitoring results which require averaging of measurements shall utilize an arithmetic mean unless otherwise specified in the permit.

4. **Test Procedures**. The analytical and sampling methods used shall conform to the reference methods listed in 10 CSR 20-7.015 unless alternates are approved by the Department. The facility shall use sufficiently sensitive analytical methods for detecting, identifying, and measuring the concentrations of pollutants. The facility shall ensure that the selected methods are able to quantify the presence of pollutants in a given discharge at concentrations that are low enough to determine compliance with Water Quality Standards in 10 CSR 20-7.031 or effluent limitations unless provisions in the permit allow for other alternatives. A method is "sufficiently sensitive" when; 1) the method minimum level is at or below the level of the applicable water quality criterion for the pollutant or, 2) the method minimum level is above the applicable water quality criterion, but the amount of pollutant in a facility's discharge is high enough that the method detects and quantifies the level of pollutant in the discharge, or 3) the method has the lowest minimum level of the analytical methods approved under 10 CSR 20-7.015. These methods are also required for parameters that are listed as monitoring only, as the data collected may be used to determine if limitations need to be established. A permittee is responsible for working with their contractors to ensure that the analysis performed is sufficiently sensitive.

5. **Record Retention.** Except for records of monitoring information required by the permit related to the permittee's sewage sludge use and disposal activities, which shall be retained for a period of at least five (5) years (or longer as required by 40 CFR part 503), the permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by the permit, and records of all data used to complete the application for the permit, for a period of at least three (3) years from the date of the sample, measurement, report or application. This period may be extended by request of the Department at any time.

6. **Illegal Activities.**
   a. The Federal Clean Water Act provides that any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under the permit shall, upon conviction, be punished by a fine of not more than $10,000, or by imprisonment for not more than two (2) years, or both. If a conviction of a person is for a violation committed after a first conviction of such person under this paragraph, punishment is a fine of not more than $20,000 per day of violation, or by imprisonment of not more than four (4) years, or both.
   b. The Missouri Clean Water Law provides that any person or who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained pursuant to sections 644.006 to 644.141 shall, upon conviction, be punished by a fine of not more than $10,000, or by imprisonment for not more than six (6) months, or by both. Second and successive convictions for violation under this paragraph by any person shall be punished by a fine of not more than $50,000 per day of violation, or by imprisonment for not more than two (2) years, or both.

Section B – Reporting Requirements

1. **Planned Changes.**
   a. The permittee shall give notice to the Department as soon as possible of any planned physical alterations or additions to the permitted facility when:
      i. The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source in 40 CFR 122.29(b); or
      ii. The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants which are subject neither to effluent limitations in the permit, nor to notification requirements under 40 CFR 122.42;
      iii. The alteration or addition results in a significant change in the permittee's sludge use or disposal practices, and such alteration, addition, or change may justify the application of permit conditions that are different from or absent in the existing permit, including notification of additional use or disposal sites not reported during the permit application process or not reported pursuant to an approved land application plan;
      iv. Any facility expansions, production increases, or process modifications which will result in a new or substantially different discharge or sludge characteristics must be reported to the Department 60 days before the facility or process modification begins. Notification may be accomplished by application for a new permit. If the discharge does not violate effluent limitations specified in the permit, the facility is to submit a notice to the Department of the changed discharge at least 30 days before such changes. The Department may require a construction permit and/or permit modification as a result of the proposed changes at the facility.

2. **Non-compliance Reporting.**
   a. The permittee shall report any noncompliance which may endanger health or the environment. Relevant information shall be provided orally or via the current electronic method approved by the Department, within 24 hours from the time the permittee becomes aware of the circumstances, and shall be reported to the appropriate Regional Office during normal business hours or the Environmental Emergency Response hotline at 573-634-2436 outside of normal business hours. A written submission shall also be provided within five (5) business days of the time the permittee becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.

b. The following shall be included as information which must be reported within 24 hours under this paragraph.
   i. Any unanticipated bypass which exceeds any effluent limitation in the permit.
   ii. Any upset which exceeds any effluent limitation in the permit.
   iii. Violation of a maximum daily discharge limitation for any of the pollutants listed by the Department in the permit required to be reported within 24 hours.

c. The Department may waive the written report on a case-by-case basis for reports under paragraph 2. b. of this section if the oral report has been received within 24 hours.

3. **Anticipated Noncompliance**. The permittee shall give advance notice to the Department of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements. The notice shall be submitted to the Department 60 days prior to such changes or activity.

4. **Compliance Schedules.** Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of the permit shall be submitted no later than 14 days following each schedule date. The report shall provide an explanation for the instance of noncompliance and a proposed schedule or anticipated date, for achieving compliance with the compliance schedule requirement.

5. **Other Noncompliance.** The permittee shall report all instances of noncompliance not reported under paragraphs 2, 3, and 6 of this section, at the time monitoring reports are submitted. The reports shall contain the information listed in paragraph 2. a. of this section.

6. **Other Information**. Where the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Department, it shall promptly submit such facts or information.

7. **Discharge Monitoring Reports.**
   a. Monitoring results shall be reported at the intervals specified in the permit.
   b. Monitoring results must be reported to the Department via the current method approved by the Department, unless the permittee has been granted a waiver from using the method. If the permittee has been granted a waiver, the permittee must use forms provided by the Department.
   c. Monitoring results shall be reported to the Department no later than the 28th day of the month following the end of the reporting period.

Section C – Bypass/Upset Requirements

1. **Definitions.**
   a. *Bypass*: the intentional diversion of waste streams from any portion of a treatment facility, except in the case of blending.
   b. *Severe Property Damage*: substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.
   c. *Upset*: an exceptional incident in which there is unintentional and temporary noncompliance with technology based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.

2. **Bypass Requirements.**
   a. Bypass not exceeding limitations. The permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions of paragraphs 2. b. and 2. c. of this section.
   b. Notice.
      i. Anticipated bypass. If the permittee knows in advance of the need for a bypass, it shall submit prior notice, if possible at least 10 days before the date of the bypass.
      ii. Unanticipated bypass. The permittee shall submit notice of an unanticipated bypass as required in Section B – Reporting Requirements, paragraph 5 (24-hour notice).
   c. Prohibition of bypass.
      i. Bypass is prohibited, and the Department may take enforcement action against a permittee for bypass, unless:
         1. Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;
         2. There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance; and
         3. The permittee submitted notices as required under paragraph 2. b. of this section.
      ii. The Department may approve an anticipated bypass, after considering its adverse effects, if the Department determines that it will meet the three (3) conditions listed above in paragraph 2. c. i. of this section.

3. **Upset Requirements.**
   a. Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with such technology based permit effluent limitations if the requirements of paragraph 3. b. of this section are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.
   b. Conditions necessary for a demonstration of upset. A permittee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:
      i. An upset occurred and that the permittee can identify the cause(s) of the upset;
      ii. The permitted facility was at the time being properly operated; and
      iii. The permittee submitted notice of the upset as required in Section B – Reporting Requirements, paragraph 2. b. ii. (24-hour notice).
      iv. The permittee complied with any remedial measures required under Section D – Administrative Requirements, paragraph 4.
   c. Burden of proof. In any enforcement proceeding, the permittee seeking to establish the occurrence of an upset has the burden of proof.

Section D – Administrative Requirements

1. **Duty to Comply.** The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Missouri Clean Water Law and Federal Clean Water Act and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or denial of a permit renewal application.
   a. The permittee shall comply with effluent standards or prohibitions established under section 307(a) of the Federal Clean Water Act for toxic pollutants and with standards for sewage sludge use or disposal established under section 405(d) of the CWA within the time provided in the regulations that establish these standards or prohibitions or standards for sewage sludge use or disposal, even if the permit has not yet been modified to incorporate the requirement.
   b. The Federal Clean Water Act provides that any person who violates section 301, 302, 306, 307, 308, 318 or 405 of the Act, or any permit condition or limitation implementing any such sections in a permit issued under section 402, or any requirement imposed in a pretreatment program approved under sections 402(a)(3) or 402(b)(8) of the Act, is subject to a civil penalty not to exceed $25,000 per day for each violation. The Federal Clean Water Act provides that any person who negligently violates sections 301, 302, 306, 307, 308, 318, or 405 of the Act, or any condition or limitation implementing any of such sections in a permit issued under section 402 of the Act, or any requirement

imposed in a pretreatment program approved under section 402(a)(3) or 402(b)(8) of the Act, is subject to criminal penalties of $2,500 to $25,000 per day of violation, or imprisonment of not more than one (1) year, or both. In the case of a second or subsequent conviction for a negligent violation, a person shall be subject to criminal penalties of not more than $50,000 per day of violation, or by imprisonment of not more than two (2) years, or both. Any person who knowingly violates such sections, or such conditions or limitations is subject to criminal penalties of $5,000 to $50,000 per day of violation, or imprisonment for not more than three (3) years, or both. In the case of a second or subsequent conviction for a knowing violation, a person shall be subject to criminal penalties of not more than $100,000 per day of violation, or imprisonment of not more than six (6) years, or both. Any person who knowingly violates section 301, 302, 303, 306, 307, 308, 318 or 405 of the Act, or any permit condition or limitation implementing any of such sections in a permit issued under section 402 of the Act, and who knows at that time that he thereby places another person in imminent danger of death or serious bodily injury, shall, upon conviction, be subject to a fine of not more than $250,000 or imprisonment of not more than 15 years, or both. In the case of a second or subsequent conviction for a knowing endangerment violation, a person shall be subject to a fine of not more than $500,000 or by imprisonment of not more than 30 years, or both. An organization, as defined in section 309(c)(3)(B)(iii) of the CWA, shall, upon conviction of violating the imminent danger provision, be subject to a fine of not more than $1,000,000 and can be fined up to $2,000,000 for second or subsequent convictions.

c. Any person may be assessed an administrative penalty by the EPA Director for violating section 301, 302, 306, 307, 308, 318 or 405 of this Act, or any permit condition or limitation implementing any of such sections in a permit issued under section 402 of this Act. Administrative penalties for Class I violations are not to exceed $10,000 per violation, with the maximum amount of any Class I penalty assessed not to exceed $25,000. Penalties for Class II violations are not to exceed $10,000 per day for each day during which the violation continues, with the maximum amount of any Class II penalty not to exceed $125,000.

d. It is unlawful for any person to cause or permit any discharge of water contaminants from any water contaminant or point source located in Missouri in violation of sections 644.006 to 644.141 of the Missouri Clean Water Law, or any standard, rule or regulation promulgated by the commission. In the event the commission or the director determines that any provision of sections 644.006 to 644.141 of the Missouri Clean Water Law or standard, rules, limitations or regulations promulgated pursuant thereto, or permits issued by, or any final abatement order, other order, or determination made by the commission or the director, or any filing requirement pursuant to sections 644.006 to 644.141 of the Missouri Clean Water Law or any other provision which this state is required to enforce pursuant to any federal water pollution control act, is being, was, or is in imminent danger of being violated, the commission or director may cause to have instituted a civil action in any court of competent jurisdiction for the injunctive relief to prevent any such violation or further violation or for the assessment of a penalty not to exceed $10,000 per day for each day, or part thereof, the violation occurred and continues to occur, or both, as the court deems proper. Any person who willfully or negligently commits any violation in this paragraph shall, upon conviction, be punished by a fine of not less than $2,500 nor more than $25,000 per day of violation, or by imprisonment for not more than one year, or both. Second and successive convictions for violation of the same provision of this paragraph by any person shall be punished by a fine of not more than $50,000 per day of violation, or by imprisonment for not more than two (2) years, or both.

2. **Duty to Reapply.**
   a. If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee must apply for and obtain a new permit.
   b. A permittee with a currently effective site-specific permit shall submit an application for renewal at least 180 days before the expiration date of the existing permit, unless permission for a later date has been granted by the Department. (The Department shall not grant permission for applications to be submitted later than the expiration date of the existing permit.)
   c. A permittees with currently effective general permit shall submit an application for renewal at least 30 days before the existing permit expires, unless the permittee has been notified by the Department that an earlier application must be made. The Department may grant permission for a later submission date. (The Department shall not grant permission for applications to be submitted later than the expiration date of the existing permit.)

3. **Need to Halt or Reduce Activity Not a Defense.** It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

4. **Duty to Mitigate.** The permittee shall take all reasonable steps to minimize or prevent any discharge or sludge use or disposal in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

5. **Proper Operation and Maintenance**. The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems which are installed by a permittee only when the operation is necessary to achieve compliance with the conditions of the permit.

6. **Permit Actions.**
   a. Subject to compliance with statutory requirements of the Law and Regulations and applicable Court Order, this permit may be modified, suspended, or revoked in whole or in part during its term for cause including, but not limited to, the following:
      i. Violations of any terms or conditions of this permit or the law;
      ii. Having obtained this permit by misrepresentation or failure to disclose fully any relevant facts;
      iii. A change in any circumstances or conditions that requires either a temporary or permanent reduction or elimination of the authorized discharge; or
      iv. Any reason set forth in the Law or Regulations.
   b. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not stay any permit condition.

7. **Permit Transfer.**
   a. Subject to 10 CSR 20-6.010, an operating permit may be transferred upon submission to the Department of an application to transfer signed by the existing owner and the new owner, unless prohibited by the terms of the permit. Until such time the permit is officially transferred, the original permittee remains responsible for complying with the terms and conditions of the existing permit.
   b. The Department may require modification or revocation and reissuance of the permit to change the name of the permittee and incorporate such other requirements as may be necessary under the Missouri Clean Water Law or the Federal Clean Water Act.
   c. The Department, within 30 days of receipt of the application, shall notify the new permittee of its intent to revoke or reissue or transfer the permit.

8. **Toxic Pollutants.** The permittee shall comply with effluent standards or prohibitions established under section 307(a) of the Federal Clean Water Act for toxic pollutants and with standards for sewage sludge use or disposal established under section 405(d) of the Federal Clean Water Act within the time provided in the regulations that establish these standards or prohibitions or standards for sewage sludge use or disposal, even if the permit has not yet been modified to incorporate the requirement.

9. **Property Rights.** This permit does not convey any property rights of any sort, or any exclusive privilege.

10. **Duty to Provide Information.** The permittee shall furnish to the Department, within a reasonable time, any information which the Department may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit or to determine compliance with this permit. The permittee shall also furnish to the Department upon request, copies of records required to be kept by this permit.

11. **Inspection and Entry.** The permittee shall allow the Department, or an authorized representative (including an authorized contractor acting as a representative of the Department), upon presentation of credentials and other documents as may be required by law, to:
    a. Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of the permit;
    b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;
    c. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and
    d. Sample or monitor at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the Federal Clean Water Act or Missouri Clean Water Law, any substances or parameters at any location.

12. **Closure of Treatment Facilities.**
    a. Persons who cease operation or plan to cease operation of waste, wastewater, and sludge handling and treatment facilities shall close the facilities in accordance with a closure plan approved by the Department.
    b. Operating Permits under 10 CSR 20-6.010 or under 10 CSR 20-6.015 are required until all waste, wastewater, and sludges have been disposed of in accordance with the closure plan approved by the Department and any disturbed areas have been properly stabilized. Disturbed areas will be considered stabilized when perennial vegetation, pavement, or structures using permanent materials cover all areas that have been disturbed. Vegetative cover, if used, shall be at least 70% plant density over 100% of the disturbed area.

13. **Signatory Requirement.**
    a. All permit applications, reports required by the permit, or information requested by the Department shall be signed and certified. (See 40 CFR 122.22 and 10 CSR 20-6.010)
    b. The Federal Clean Water Act provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or non-compliance shall, upon conviction, be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than six (6) months per violation, or by both.
    c. The Missouri Clean Water Law provides that any person who knowingly makes any false statement, representation or certification in any application, record, report, plan, or other document filed or required to be maintained pursuant to sections 644.006 to 644.141 shall, upon conviction, be punished by a fine of not more than ten thousand dollars, or by imprisonment for not more than six months, or by both.

14. **Severability.** The provisions of the permit are severable, and if any provision of the permit, or the application of any provision of the permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of the permit, shall not be affected thereby.

STANDARD CONDITIONS FOR NPDES PERMITS
ISSUED BY
THE MISSOURI DEPARTMENT OF NATURAL RESOURCES
MISSOURI CLEAN WATER COMMISSION
REVISED
MAY 1, 2013

PART II - SPECIAL CONDITIONS – PUBLICLY OWNED TREATMENT WORKS
SECTION A – INDUSTRIAL USERS

1. Definitions

Definitions as set forth in the Missouri Clean Water Laws and approved by the Missouri Clean Water Commission shall apply to terms used herein.

Significant Industrial User (SIU). Except as provided in the *General Pretreatment Regulation* 10 CSR 20-6.100, the term Significant Industrial User means:

1. All Industrial Users subject to Categorical Pretreatment Standards; and
2. Any other Industrial User that: discharges an average of 25,000 gallons per day or more of process wastewater to the Publicly-Owned Treatment Works (POTW) (excluding sanitary, noncontact cooling and boiler blowdown wastewater); contributes a process wastestream which makes up 5 percent or more of the average dry weather hydraulic or organic capacity of the POTW treatment plant; or is designated as such by the Control Authority on the basis that the Industrial User has a reasonable potential for adversely affecting the POTW's or for violating any Pretreatment Standard or requirement.

Clean Water Act (CWA) is the the federal Clean Water Act of 1972, 33 U.S.C. § 1251 et seq. (2002).

2. Identification of Industrial Discharges

Pursuant to 40 CFR 122.44(j)(1), all POTWs shall identify, in terms of character and volume of pollutants, any Significant Industrial Users discharging to the POTW subject to Pretreatment Standards under section 307(b) of the CWA and 40 CFR 403.

3. Application Information

Applications for renewal or modification of this permit must contain the information about industrial discharges to the POTW pursuant to 40 CFR 122.21(j)(6)

4. Notice to the Department

Pursuant to 40 CFR 122.42(b), all POTWs must provide adequate notice of the following:

1. Any new introduction of pollutants into the POTW from an indirect discharger which would be subject to section 301 or 306 of CWA if it were directly discharging these pollutants; and
2. Any substantial change into the volume or character of pollutants being introduced into that POTW by a source introducing pollutants into the POTW at the time of issuance of the permit.
3. For purposes of this paragraph, adequate notice shall include information on:
   i. the quality and quantity of effluent introduced into the POTW, and
   ii. any anticipated impact of the change on the quantity or quality of effluent to be discharged from the POTW.

For POTWs without an approved pretreatment program, the notice of industrial discharges which was not included in the permit application shall be made as soon as practicable. For POTWs with an approved pretreatment program, notice is to be included in the annual pretreatment report required in the special conditions of this permit. Notice may be sent to:

Missouri Department of Natural Resources
Water Protection Program
Attn: Pretreatment Coordinator
P.O. Box 176
Jefferson City, MO 65102

STANDARD CONDITIONS FOR NPDES PERMITS
ISSUED BY
THE MISSOURI DEPARTMENT OF NATURAL RESOURCES
MISSOURI CLEAN WATER COMMISSION
March 1, 2015

PART III – SLUDGE AND BIOSOLIDS FROM DOMESTIC AND INDUSTRIAL WASTEWATER TREATMENT FACILITIES

SECTION A – GENERAL REQUIREMENTS

1. This permit pertains to sludge requirements under the Missouri Clean Water Law and regulation for domestic wastewater and industrial process wastewater. This permit also incorporates applicable federal sludge disposal requirements under 40 CFR 503 for domestic wastewater. The Environmental Protection Agency (EPA) has principal authority for permitting and enforcement of the federal sludge regulations under 40 CFR 503 for domestic wastewater. EPA has reviewed and accepted these standard sludge conditions. EPA may choose to issue a separate sludge addendum to this permit or a separate federal sludge permit at their discretion to further address the federal requirements.
2. These PART III Standard Conditions apply only to sludge and biosolids generated at domestic wastewater treatment facilities, including public owned treatment works (POTW), privately owned facilities and sludge or biosolids generated at industrial facilities.
3. Sludge and Biosolids Use and Disposal Practices:
    a. The permittee is authorized to operate the sludge and biosolids treatment, storage, use, and disposal facilities listed in the facility description of this permit.
    b. The permittee shall not exceed the design sludge volume listed in the facility description and shall not use sludge disposal methods that are not listed in the facility description, without prior approval of the permitting authority.
    c. The permittee is authorized to operate the storage, treatment or generating sites listed in the Facility Description section of this permit.
4. Sludge Received from other Facilities:
    a. Permittees may accept domestic wastewater sludge from other facilities including septic tank pumpings from residential sources as long as the design sludge volume is not exceeded and the treatment facility performance is not impaired.
    b. The permittee shall obtain a signed statement from the sludge generator or hauler that certifies the type and source of the sludge
5. These permit requirements do not supersede nor remove liability for compliance with county and other local ordinances.
6. These permit requirements do not supersede nor remove liability for compliance with other environmental regulations such as odor emissions under the Missouri Air Pollution Control Law and regulations.
7. This permit may (after due process) be modified, or alternatively revoked and reissued, to comply with any applicable sludge disposal standard or limitation issued or approved under Section 405(d) of the Clean Water Actor under Chapter 644 RSMo.
8. In addition to STANDARD CONDITIONS, the Department may include sludge limitations in the special conditions portion or other sections of a site specific permit.
9. Alternate Limits in the Site Specific Permit.
   Where deemed appropriate, the Department may require an individual site specific permit in order to authorize alternate limitations:
    a. A site specific permit must be obtained for each operating location, including application sites.
    b. To request a site specific permit, an individual permit application, permit fee, and supporting documents shall be submitted for each operating location. This shall include a detailed sludge/biosolids management plan or engineering report.
10. Exceptions to these Standard Conditions may be authorized on a case-by-case basis by the Department, as follows:
    a. The Department will prepare a permit modification and follow permit notice provisions as applicable under 10 CSR 20-6.020, 40 CFR 124.10, and 40 CFR 501.15(a)(2)(ix)(E). This includes notification of the owner of the property located adjacent to each land application site, where appropriate.
    b. Exceptions cannot be granted where prohibited by the federal sludge regulations under 40 CFR 503.

SECTION B – DEFINITIONS

1. Best Management Practices include agronomic loading rates, soil conservation practices and other site restrictions.
2. Biosolids means organic fertilizer or soil amendment produced by the treatment of domestic wastewater sludge.
3. Biosolids land application facility is a facility where biosolids are spread onto the land at agronomic rates for production of food or fiber. The facility includes any structures necessary to store the biosolids until soil, weather, and crop conditions are favorable for land application.
4. Class A biosolids means a material that has met the Class A pathogen reduction requirements or equivalent treatment by a Process to Further Reduce Pathogens (PFRP) in accordance with 40 CFR 503.
5. Class B biosolids means a material that has met the Class B pathogen reduction requirements or equivalent treatment by a Process to Significantly Reduce Pathogens (PFRP) in accordance with 40 CFR 503.
6. Domestic wastewater means wastewater originating from the sanitary conveniences of residences, commercial buildings, factories and institutions; or co-mingled sanitary and industrial wastewater processed by a (POTW) or a privately owned facility.
7. Industrial wastewater means any wastewater, also known as process water, not defined as domestic wastewater. Per 40 CFR Part 122, process water means any water which, during manufacturing or processing, comes into direct contact with or results from the production or use of any raw material, intermediate product, finished product, byproduct, or waste product.
8. Mechanical treatment plants are wastewater treatment facilities that use mechanical devices to treat wastewater, including septic tanks, sand filters, extended aeration, activated sludge, contact stabilization, trickling filters, rotating biological discs, and other similar facilities. It does not include wastewater treatment lagoons and constructed wetlands for wastewater treatment.
9. Operating location as defined in 10 CSR 20-2.010 is all contiguous lands owned, operated or controlled by one (1) person or by two (2) or more persons jointly or as tenants in common.
10. Plant Available Nitrogen (PAN) is the nitrogen that will be available to plants during the growing seasons after biosolids application.
11. Public contact site is land with a high potential for contact by the public. This includes, but is not limited to, public parks, ball fields, cemeteries, plant nurseries, turf farms, and golf courses.
12. Sludge is the solid, semisolid, or liquid residue removed during the treatment of wastewater. Sludge includes septage removed from septic tanks or equivalent facilities. Sludge does not include carbon coal byproducts (CCBs)
13. Sludge lagoon is part of a mechanical wastewater treatment facility. A sludge lagoon is an earthen basin that receives sludge that has been removed from a wastewater treatment facility. It does not include a wastewater treatment lagoon or sludge treatment units that are not a part of a mechanical wastewater treatment facility.
14. Septage is the material pumped from residential septic tanks and similar treatment works (with a design population of less than 150 people). The standard for biosolids from septage is different from other sludges.

SECTION C – MECHANICAL WASTEWATER TREATMENT FACILITIES

1. Sludge shall be routinely removed from wastewater treatment facilities and handled according to the permit facility description and sludge conditions of this permit.
2. The permittee shall operate the facility so that there is no sludge discharged to waters of the state.
3. Mechanical treatment plants shall have separate sludge storage compartments in accordance with 10 CSR 20, Chapter 8. Failure to remove sludge from these storage compartments on the required design schedule is a violation of this permit.

SECTION D – SLUDGE DISPOSED AT OTHER TREATMENT FACILITY OR CONTRACT HAULER

1. This section applies to permittees that haul sludge to another treatment facility for disposal or use contract haulers to remove and dispose of sludge.
2. Permittees that use contract haulers are responsible for compliance with all the terms of this permit including final disposal, unless the hauler has a separate permit for sludge or biosolids disposal issued by the Department; or the hauler transports the sludge to another permitted treatment facility.
3. Haulers who land apply septage must obtain a state permit.
4. Testing of sludge, other than total solids content, is not required if sludge is hauled to a municipal wastewater treatment facility or other permitted wastewater treatment facility, unless it is required by the accepting facility.

SECTION E – INCINERATION OF SLUDGE

1. Sludge incineration facilities shall comply with the requirements of 40 CFR 503 Subpart E; air pollution control regulations under 10 CSR 10; and solid waste management regulations under 10 CSR 80.
2. Permittee may be authorized under the facility description of this permit to store incineration ash in lagoons or ash ponds. This permit does not authorize the disposal of incineration ash. Incineration ash shall be disposed in accordance with 10 CSR 80; or if the ash is determined to be hazardous with 10 CSR 25.
3. In addition to normal sludge monitoring, incineration facilities shall report the following as part of the annual report, quantity of sludge incinerated, quantity of ash generated, quantity of ash stored, and ash used or disposal method, quantity, and location. Permittee shall also provide the name of the disposal facility and the applicable permit number.

SECTION F – SURFACE DISPOSAL SITES AND SLUDGE LAGOONS

1. Surface disposal sites of domestic facilities shall comply with the requirements in 40 CFR 503 Subpart C; air pollution control regulations under 10 CSR 10; and solid waste management regulations under 10 CSR 80.
2. Sludge storage lagoons are temporary facilities and are not required to obtain a permit as a solid waste management facility under 10 CSR 80. In order to maintain sludge storage lagoons as storage facilities, accumulated sludge must be removed routinely, but not less than once every two years unless an alternate schedule is approved in the permit. The amount of sludge removed will be dependent on sludge generation and accumulation in the facility. Enough sludge must be removed to maintain adequate storage capacity in the facility.
    a. In order to avoid damage to the lagoon seal during cleaning, the permittee may leave a layer of sludge on the bottom of the lagoon, upon prior approval of the Department; or
    b. Permittee shall close the lagoon in accordance with Section H.

SECTION G – LAND APPLICATION

1. The permittee shall not land apply sludge or biosolids unless land application is authorized in the facility description or the special conditions of the issued NPDES permit.
2. Land application sites within a 20 miles radius of the wastewater treatment facility are authorized under this permit when biosolids are applied for beneficial use in accordance with these standard conditions unless otherwise specified in a site specific permit. If the permittee's land application site is greater than a 20 mile radius of the wastewater treatment facility, approval must be granted from the Department.
3. Land application shall not adversely affect a threatened or endangered species or its designated critical habitat.
4. Biosolids shall not be applied unless authorized in this permit or exempted under 10 CSR 20, Chapter 6.
    a. This permit does not authorize the land application of domestic sludge except for when sludge meets the definition of biosolids.
    b. This permit authorizes "Class A or B" biosolids derived from domestic wastewater and/or process water sludge to be land applied onto grass land, crop land, timber or other similar agricultural or silviculture lands at rates suitable for beneficial use as organic fertilizer and soil conditioner.
5. Public Contact Sites:

    Permittees who wish to apply Class A biosolids to public contact sites must obtain approval from the Department after two years of proper operation with acceptable testing documentation that shows the biosolids meet Class A criteria. A shorter length of testing will be allowed with prior approval from the Department. Authorization for land applications must be provided in the special conditions section of this permit or in a separate site specific permit.
    a. After Class B biosolids have been land applied, public access must be restricted for 12 months.
    b. Class B biosolids are only land applied to root crops, home gardens or vegetable crops whose edible parts will not be for human consumption.
6. Agricultural and Silvicultural Sites:

    Septage – Based on Water Quality guide 422 (WQ422) published by the University of Missouri
    a. Haulers that land apply septage must obtain a state permit
    b. Do not apply more than 30,000 gallons of septage per acre per year.
    c. Septage tanks are designed to retain sludge for one to three years which will allow for a larger reduction in pathogens and vectors, as compared to other mechanical type treatment facilities.
    d. To meet Class B sludge requirements, maintain septage at 12 pH for at least thirty (30) minutes before land application. 50 pounds of hydrated lime shall be added to each 1,000 gallons of septage in order to meet pathogen and vector stabilization for septage biosolids applied to crops, pastures or timberland.
    e. Lime is to be added to the pump truck and not directly to the septic tanks, as lime would harm the beneficial bacteria of the septic tank.

Biosolids - Based on Water Quality guide 423, 424, and 425 (WQ423, WQ424, WQ425) published by the University of Missouri;

a. Biosolids shall be monitored to determine the quality for regulated pollutants

b. The number of samples taken is directly related to the amount of sludge produced by the facility (See Section I of these Standard Conditions). Report as dry weight unless otherwise specified in the site specific permit. Samples should be taken only during land application periods. When necessary, it is permissible to mix biosolids with lower concentrations of biosolids as well as other suitable Department approved material to reach the maximum concentration of pollutants allowed.

c. Table 1 gives the maximum concentration allowable to protect water quality standards

TABLE 1

Biosolids ceiling concentration [1]	
Pollutant	Milligrams per kilogram dry weight
Arsenic	75
Cadmium	85
Copper	4,300
Lead	840
Mercury	57
Molybdenum	75
Nickel	420
Selenium	100
Zinc	7,500

[1] Land application is not allowed if the sludge concentration exceeds the maximum limits for any of these pollutants

d. The low metal concentration biosolids has reduced requirements because of its higher quality and can safely be applied for 100 years or longer at typical agronomic loading rates. (See Table 2)

TABLE 2

Biosolids Low Metal Concentration [1]	
Pollutant	Milligrams per kilogram dry weight
Arsenic	41
Cadmium	39
Copper	1,500
Lead	300
Mercury	17
Nickel	420
Selenium	36
Zinc	2,800

[1] You may apply low metal biosolids without tracking cumulative metal limits, provided the cumulative application of biosolids does not exceed 500 dry tons per acre.

e. Each pollutant in Table 3 has an annual and a total cumulative loading limit, based on the allowable pounds per acre for various soil categories.

TABLE 3

Pollutant	CEC 15+		CEC 5 to 15		CEC 0 to 5	
	Annual	Total [1]	Annual	Total [1]	Annual	Total [1]
Arsenic	1.8	36.0	1.8	36.0	1.8	36.0
Cadmium	1.7	35.0	0.9	9.0	0.4	4.5
Copper	66.0	1,335.0	25.0	250.0	12.0	125.0
Lead	13.0	267.0	13.0	267.0	13.0	133.0
Mercury	0.7	15.0	0.7	15.0	0.7	15.0
Nickel	19.0	347.0	19.0	250.0	12.0	125.0
Selenium	4.5	89.0	4.5	44.0	1.6	16.0
Zinc	124.0	2,492.0	50.0	500.0	25.0	250.0

[1] Total cumulative loading limits for soils with equal or greater than 6.0 pH (salt based test) or 6.5 pH (water based test)

TABLE 4 - Guidelines for land application of other trace substances [1]

Cumulative Loading	
Pollutant	Pounds per acre
Aluminum	4,000[2]
Beryllium	100
Cobalt	50
Fluoride	800
Manganese	500
Silver	200
Tin	1,000
Dioxin	(10 ppt in soil)[3]
Other	[4]

[1] Design of land treatment systems for Industrial Waste, 1979. Michael Ray Overcash, North Carolina State University and Land Treatment of Municipal Wastewater, EPA 1981.)

[2] This applies for a soil with a pH between 6.0 and 7.0 (salt based test) or a pH between 6.5 to 7.5 (water based test). Case-by-case review is required for higher pH soils.

[3] Total Dioxin Toxicity Equivalents (TEQ) in soils, based on a risk assessment under 40 CFR 744, May 1998.

[4] Case by case review. Concentrations in sludge should not exceed the 95th percentile of the National Sewage Sludge Survey, EPA, January 2009.

Best Management Practices – Based on Water Quality guide 426 (WQ426) published by the University of Missouri

a. Use best management practices when applying biosolids.
b. Biosolids cannot discharge from the land application site
c. Biosolid application is subject to the Missouri Department of Agriculture State Milk Board concerning grazing restrictions of lactating dairy cattle.
d. Biosolid application must be in accordance with section 4 of the Endangered Species Act.
e. Do not apply more than the agronomic rate of nitrogen needed.
f. The applicator must document the Plant Available Nitrogen (PAN) loadings, available nitrogen in the soil, and crop removal when either of the following occurs: 1) When biosolids are greater than 50,000 mg/kg TN; or 2) When biosolids are land applied at an application rate greater than two dry tons per acre per year.
    i. PAN can be determined as follows and is in accordance with WQ426
    (Nitrate + nitrite nitrogen) + (organic nitrogen x 0.2) + (ammonia nitrogen x volatilization factor[1])
    [1] Volatilization factor is 0.7 for surface application and 1 for subsurface application
g. Buffer zones are as follows:
    i. 300 feet of a water supply well, sinkhole, lake, pond, water supply reservoir or water supply intake in a stream;
    ii. 300 feet of a losing stream, no discharge stream, stream stretches designated for whole body contact recreation, wild and scenic rivers, Ozark National Scenic Riverways or outstanding state resource waters as listed in the Water Quality Standards, 10 CSR 20-7.031;
    iii. 150 feet if dwellings;
    iv. 100 feet of wetlands or permanent flowing streams;
    v. 50 feet of a property line or other waters of the state, including intermittent flowing streams.
h. Slope limitation for application sites are as follows;
    i. A slope 0 to 6 percent has no rate limitation
    ii. Applied to a slope 7 to 12 percent, the applicator may apply biosolids when soil conservation practices are used to meet the minimum erosion levels
    iii. Slopes > 12 percent, apply biosolids only when grass is vegetated and maintained with at least 80 percent ground cover at a rate of two dry tons per acre per year or less.
i. No biosolids may be land applied in an area that it is reasonably certain that pollutants will be transported into waters of the state.
j. Do not apply biosolids to sites with soil that is snow covered, frozen or saturated with liquid without prior approval by the Department.
k. Biosolids / sludge applicators must keep detailed records up to five years.

SECTION H – CLOSURE REQUIREMENTS

1. This section applies to all wastewater facilities (mechanical, industrial, and lagoons) and sludge or biosolids storage and treatment facilities and incineration ash ponds. It does not apply to land application sites.
2. Permittees of a domestic wastewater facility who plan to cease operation must obtain Department approval of a closure plan which addresses proper removal and disposal of all residues, including sludge, biosolids. Mechanical plants, sludge lagoons, ash ponds and other storage structures must obtain approval of a closure plan from the Department. Permittee must maintain this permit until the facility is closed in accordance with the approved closure plan per 10 CSR 20 – 6. 010 and 10 CSR 20 – 6.015.
3. Residuals that are left in place during closure of a lagoon or earthen structure or ash pond shall not exceed the agricultural loading rates as follows:
    a. Residuals shall meet the monitoring and land application limits for agricultural rates as referenced in Section H of these standard conditions.
    b. If a wastewater treatment lagoon has been in operation for 15 years or more without sludge removal, the sludge in the lagoon qualifies as a Class B biosolids with respect to pathogens due to anaerobic digestion, and testing for fecal coliform is not required. For other lagoons, testing for fecal coliform is required to show compliance with Class B biosolids limitations. In order to reach Class B biosolids requirements, fecal coliform must be less than 2,000,000 colony forming units or 2,000,000 most probable number. All fecal samples must be presented as geometric mean per gram.
    c. The allowable nitrogen loading that may be left in the lagoon shall be based on the plant available nitrogen (PAN) loading. For a grass cover crop, the allowable PAN is 300 pounds/acre.
        i. PAN can be determined as follows:

        (Nitrate + nitrite nitrogen) + (organic nitrogen x 0.2) + (ammonia nitrogen x volatilization factor[1]).

        [1] Volatilization factor is 0.7 for surface application and 1 for subsurface application.
4. When closing a domestic wastewater treatment lagoon with a design treatment capacity equal or less than 150 persons, the residuals are considered "septage" under the similar treatment works definition. See Section B of these standard conditions. Under the septage category, residuals may be left in place as follows:
    a. Testing for metals or fecal coliform is not required
    b. If the wastewater treatment lagoon has been in use for less than 15 years, mix lime with the sludge at a rate of 50 pounds of hydrated lime per 1000 gallons (134 cubic feet) of sludge.
    c. The amount of sludge that may be left in the lagoon shall be based on the plant available nitrogen (PAN) loading. 100 dry tons/acre of sludge may be left in the basin without testing for nitrogen. If 100 dry tons/acre or more will be left in the lagoon, test for nitrogen and determine the PAN using the calculation above. Allowable PAN loading is 300 pounds/acre.
5. Residuals left within the domestic lagoon shall be mixed with soil on at least a 1 to 1 ratio, the lagoon berm shall be demolished, and the site shall be graded and contain ≥70% vegetative density over 100% of the site so as to avoid ponding of storm water and provide adequate surface water drainage without creating erosion.
6. Lagoons and/or earthen structure and/or ash pond closure activities shall obtain a storm water permit for land disturbance activities that equal or exceed one acre in accordance with 10 CSR 20-6.200
7. When closing a mechanical wastewater and/or industrial process wastewater plant; all sludge must be cleaned out and disposed of in accordance with the Department approved closure plan before the permit for the facility can be terminated.
    a. Land must be stabilized which includes any grading, alternate use or fate upon approval by the Department, remediation, or other work that exposes sediment to stormwater per 10 CSR 20-6.200. The site shall be graded and contain ≥70% vegetative density over 100% of the site, so as to avoid ponding of storm water and provide adequate surface water drainage without creating erosion.
    b. Per 10 CSR 20-6.015(4)(B)6, Hazardous Waste shall not be land applied or disposed during industrial and mechanical plant closures unless in accordance with Missouri Hazardous Waste Management Law and Regulations under 10 CSR 25.
    c. After demolition of the mechanical plant / industrial plant, the site must only contain clean fill defined in RSMo 260.200 (5) as uncontaminated soil, rock, sand, gravel, concrete, asphaltic concrete, cinderblocks, brick, minimal amounts of wood and metal, and inert solids as approved by rule or policy of the Department for fill or other beneficial use. Other solid wastes must be removed.
8. If sludge from the domestic lagoon or mechanical treatment plant exceeds agricultural rates under Section G and/or H, a landfill permit or solid waste disposal permit must be obtained if the permittee chooses to seek authorization for on-site sludge disposal under the Missouri Solid Waste Management Law and regulations per 10 CSR 80, and the permittee must comply with the surface disposal requirements under 40 CFR 503, Subpart C.

SECTION I – MONITORING FREQUENCY

1. At a minimum, sludge or biosolids shall be tested for volume and percent total solids on a frequency that will accurately represent sludge quantities produced and disposed. Please see the table below.

TABLE 5

Design Sludge Production (dry tons per year)	Monitoring Frequency (See Notes 1, 2, and 3)			
	Metals, Pathogens and Vectors	Nitrogen TKN [1]	Nitrogen PAN [2]	Priority Pollutants and TCLP [3]
0 to 100	1 per year	1 per year	1 per month	1 per year
101 to 200	biannual	biannual	1 per month	1 per year
201 to 1,000	quarterly	quarterly	1 per month	1 per year
1,001 to 10,000	1 per month	1 per month	1 per week	--[4]
10,001 +	1 per week	1 per week	1 per day	--[4]

[1] Test total Kjeldahl nitrogen, if biosolids application is 2 dry tons per acre per year or less.

[2] Calculate plant available nitrogen (PAN) when either of the following occurs: 1) when biosolids are greater than 50,000 mg/kg TN; or 2) when biosolids are land applied at an application rate greater than two dry tons per acre per year.

[3] Priority pollutants (40 CFR 122.21, Appendix D, Tables II and III) and toxicity characteristic leaching procedure (40 CFR 261.24) is required only for permit holders that must have a pre-treatment program.

[4] One sample for each 1,000 dry tons of sludge.

Note 1: Total solids: A grab sample of sludge shall be tested one per day during land application periods for percent total solids. This data shall be used to calculate the dry tons of sludge applied per acre.
Note 2: Total Phosphorus: Total phosphorus and total potassium shall be tested at the same monitoring frequency as metals.
Note 3: Table 5 is not applicable for incineration and permit holders that landfill their sludge.

2. If you own a wastewater treatment lagoon or sludge lagoon that is cleaned out once a year or less, you may choose to sample only when the sludge is removed or the lagoon is closed. Test one composite sample for each 100 dry tons of sludge or biosolids removed from the lagoon during the year within the lagoon at closing. Composite sample must represent various areas at one-foot depth.
3. Additional testing may be required in the special conditions or other sections of the permit. Permittees receiving industrial wastewater may be required to conduct additional testing upon request from the Department.
4. At this time, the Department recommends monitoring requirements shall be performed in accordance with, "POTW Sludge Sampling and Analysis Guidance Document," United States Environmental Protection Agency, August 1989, and the subsequent revisions.

SECTION J – RECORD KEEPING AND REPORTING REQUIREMENTS

1. The permittee shall maintain records on file at the facility for at least five years for the items listed in these standard conditions and any additional items in the Special Conditions section of this permit. This shall include dates when the sludge facility is checked for proper operation, records of maintenance and repairs and other relevant information.
2. Reporting period
    a. By January 28th of each year, an annual report shall be submitted for the previous calendar year period for all mechanical wastewater treatment facilities, sludge lagoons, and sludge or biosolids disposal facilities.
    b. Permittees with wastewater treatment lagoons shall submit the above annual report only when sludge or biosolids are removed from the lagoon during the report period or when the lagoon is closed.
3. Report Forms. The annual report shall be submitted on report forms provided by the Department or equivalent forms approved by the Department.
4. Reports shall be submitted as follows:

Major facilities (those serving 10,000 persons or 1 million gallons per day) shall report to both the Department and EPA. Other facilities need to report only to the Department. Reports shall be submitted to the addresses listed as follows:

DNR regional office listed in your permit
(see cover letter of permit)
ATTN: Sludge Coordinator

EPA Region VII
Water Compliance Branch (WACM)
Sludge Coordinator
11201 Renner Blvd.
Lenexa, KS 66219

5. Annual report contents. The annual report shall include the following:
    a. Sludge and biosolids testing performed. Include a copy or summary of all test results, even if not required by the permit.
    b. Sludge or biosolids quantity shall be reported as dry tons for quantity generated by the wastewater treatment facility, the quantity stored on site at the end of the year, and the quantity used or disposed.
    c. Gallons and % solids data used to calculate the dry ton amounts.
    d. Description of any unusual operating conditions.
    e. Final disposal method, dates, and location, and person responsible for hauling and disposal.
        i. This must include the name, address for the hauler and sludge facility. If hauled to a municipal wastewater treatment facility, sanitary landfill, or other approved treatment facility, give the name of that facility.
        ii. Include a description of the type of hauling equipment used and the capacity in tons, gallons, or cubic feet.
    f. Contract Hauler Activities:
    If contract hauler, provide a copy of a signed contract from the contractor. Permittee shall require the contractor to supply information required under this permit for which the contractor is responsible. The permittee shall submit a signed statement from the contractor that he has complied with the standards contained in this permit, unless the contract hauler has a separate sludge or biosolids use permit.
    g. Land Application Sites:
        i. Report the location of each application site, the annual and cumulative dry tons/acre for each site, and the landowners name and address. The location for each spreading site shall be given as a legal description for nearest ¼, ¼, Section, Township, Range, and county, or UTM coordinates. The facility shall report PAN when either of the following occurs: 1) When biosolids are greater than 50,000 mg/kg TN; or 2) when biosolids are land applied at an application rate greater than two dry tons per acre per year.
        ii. If the "Low Metals" criteria are exceeded, report the annual and cumulative pollutant loading rates in pounds per acre for each applicable pollutant, and report the percent of cumulative pollutant loading which has been reached at each site.
        iii. Report the method used for compliance with pathogen and vector attraction requirements.
        iv. Report soil test results for pH, CEC, and phosphorus. If none was tested during the year, report the last date when tested and results.

NOV 20 20

MISSOURI DEPARTMENT OF NATURAL RESOURCES
WATER PROTECTION PROGRAM, WATER POLLUTION CONTROL BRANCH

FORM B2 – APPLICATION FOR CONSTRUCTION OR OPERATING PERMIT FOR FACILITIES WHICH RECEIVE PRIMARILY DOMESTIC WASTE AND HAVE A DESIGN FLOW MORE THAN 100,000 GALLONS PER DAY

WATER PROTECTION PROGRAM

FACILITY NAME	
LAWSON WASTEWATER LAGOON	
PERMIT NO.	COUNTY
MO0091031	CLAY

APPLICATION OVERVIEW

Form B2 has been developed in a modular format and consists of Parts A, B and C and a Supplemental Application Information (Parts D, E, F and G) packet. All applicants must complete Parts A, B and C. Some applicants must also complete parts of the Supplemental Application Information packet. The following items explain which parts of Form B2 you must complete. Submittal of an incomplete application may result in the application being returned.

BASIC APPLICATION INFORMATION

A. Basic Application Information for all Applicants. All applicants must complete Part A.

B. Additional Application Information for all Applicants. All applicants must complete Part B.

C. Certification. All applicants must complete Part C.

SUPPLEMENTAL APPLICATION INFORMATION

D. Expanded Effluent Testing Data. A treatment works that discharges effluent to surface water of the United States and meets one or more of the following criteria must complete *Part D - Expanded Effluent Testing Data*:

1. Has a design flow rate greater than or equal to 1 million gallons per day.
2. Is required to have or currently has a pretreatment program.
3. Is otherwise required by the permitting authority to provide the information.

E. Toxicity Testing Data. A treatment works that meets one or more of the following criteria must complete *Part E - Toxicity Testing Data*:

1. Has a design flow rate greater than or equal to 1 million gallons per day.
2. Is required to have or currently has a pretreatment program.
3. Is otherwise required by the permitting authority to provide the information.

F. Industrial User Discharges and Resource Conservation and Recovery Act / Comprehensive Environmental Response, Compensation and Liability Act Wastes. A treatment works that accepts process wastewater from any significant industrial users, also known as SIUs, or receives a Resource Conservation and Recovery Act or CERCLA wastes must complete *Part F - Industrial User Discharges and Resource Conservation and Recovery Act /CERCLA Wastes*.

SIUs are defined as:

1. All Categorical Industrial Users, or CIUs, subject to Categorical Pretreatment Standards under 40 Code of Federal Regulations 403.6 and 40 Code of Federal Regulations 403.6 and 40 CFR Chapter 1, Subchapter N.
2. Any other industrial user that meets one or more of the following:
   i. Discharges an average of 25,000 gallons per day or more of process wastewater to the treatment works (with certain exclusions).
   ii. Contributes a process waste stream that makes up five percent or more of the average dry weather hydraulic or organic capacity of the treatment plant.
   iii. Is designated as an SIU by the control authority.

G. Combined Sewer Systems. A treatment works that has a combined sewer system must complete *Part G - Combined Sewer Systems*.

ALL APPLICANTS MUST COMPLETE PARTS A, B and C

AP 17019 C12510

NOV 20 2013

MISSOURI DEPARTMENT OF NATURAL RESOURCES
WATER PROTECTION PROGRAM, WATER POLLUTION CONTROL BRANCH

FORM B2 – APPLICATION FOR CONSTRUCTION OR OPERATING PERMIT FOR FACILITIES WHICH RECEIVE PRIMARILY DOMESTIC WASTE AND HAVE A DESIGN FLOW MORE THAN 100,000 GALLONS PER DAY

FOR AGENCY USE ONLY	
CHECK NUMBER	
DATE RECEIVED	FEE SUBMITTED
11/20/13	✓

PART A – BASIC APPLICATION INFORMATION

1. This application is for:

- ☐ An operating permit and antidegradation review public notice.
- ☐ A construction permit following an appropriate operating permit and antidegradation review public notice.
- ☐ A construction permit, a concurrent operating permit and antidegradation review public notice.
- ☐ A construction permit (submitted before Aug. 30, 2008 or antidegradation review is not required).
- ☐ An operating permit for a new or unpermitted facility. Construction Permit # _____
- ■ An operating permit renewal: Permit #MO- 0091031 Expiration Date 05/28/14
- ☐ An operating permit modification: Permit #MO-_____ Reason: _____

1.1 Is this a Federal/State Funded Project? ☐ Yes ☑ No Funding Agency/Project #: _____

1.2 Is the appropriate fee included with the application (See instructions for appropriate fee)? ☑ Yes ☐ No

2. FACILITY

NAME		TELEPHONE NUMBER WITH AREA CODE	
LAWSON WASTEWATER LAGOON		816-580-3217	
ADDRESS (PHYSICAL)	CITY	STATE	ZIP
1/2 MILE E. OF HWY 69 N OF ROUTE D	LAWSON	MO	64062

2.1 **LEGAL DESCRIPTION** (Plant Site): ¼, NW ¼, SE ¼, Sec. 39 , T 54n , R 30w County CLAY

2.2 UTM Coordinates Easting (X): 3926488 Northing (Y): 09412549
For Universal Transverse Mercator (UTM), Zone 15 North referenced to North American Datum 1983 (NAD83)

3. OWNER CITY OF LAWSON

NAME	TITLE	TELEPHONE NUMBER WITH AREA CODE	
CITY OF LAWSON		816-580-3217	
ADDRESS	CITY	STATE	ZIP
PO BOX 185	LAWSON	MO	64062

3.1 Request review of draft permit prior to Public Notice? ☑ Yes ☐ No

4. CONTINUING AUTHORITY: Permanent organization which will serve as the continuing authority for the operation, maintenance and modernization of the facility.

NAME		CITY	
SAME AS OWNER		LAWSON	
ADDRESS	CERTIFICATE NUMBER (IF APPLICABLE)	STATE	ZIP
103 S PENNSYLVANIA AVE	6009	MO	64062

5. OPERATOR

NAME	TITLE	TELEPHONE NUMBER WITH AREA CODE
KENNETH ALLEN BOYDSTON CERT#6009	SUPERINTENDENT	816-580-3217

6. FACILITY CONTACT

NAME	TITLE
KENNETH ALLEN BOYDSTON	SUPERINTENDENT

MO 780-1805 (09-08)

FACILITY NAME	PERMIT NO.	OUTFALL NO.
LAWSON WASTEWATER LAGOON	MO- 0091031	001

PART A – BASIC APPLICATION INFORMATION

7. ADDITIONAL FACILITY INFORMATION

7.1 BRIEF DESCRIPTION OF FACILITIES

FOUR CELL WASTE WATER- STABILIZATION LAGOON - 17.8 ACRE PRIMARY CELL, 5.23 ACRE SECONDARY CELL, 2 FIVE ACRE FINISHING CELLS, 1 OUTFALL

7.2 TOPOGRAPHIC MAP. ATTACH TO THIS APPLICATION A TOPOGRAPHIC MAP OF THE AREA EXTENDING AT LEAST ONE MILE BEYOND FACILITY PROPERTY BOUNDARIES. THIS MAP MUST SHOW THE OUTLINE OF THE FACILITY AND THE FOLLOWING INFORMATION. (YOU MAY SUBMIT MORE THAN ONE MAP IF ONE MAP DOES NOT SHOW THE ENTIRE AREA.)

a. The area surrounding the treatment plant, including all unit processes.
b. The location of the downstream landowner(s). (See Item 10.)
c. The major pipes or other structures through which wastewater enters the treatment works and the pipes or other structures through which treated wastewater is discharged from the treatment plant. Include outfalls from bypass piping, if applicable.
d. The actual point of discharge.
e. Wells, springs, other surface water bodies and drinking water wells that are: 1) within ¼ mile of the property boundaries of the treatment works, and 2) listed in public record or otherwise known to the applicant.
f. Any areas where the sewage sludge produced by the treatment works is stored, treated or disposed.
g. If the treatment works receives waste that is classified as hazardous under the Resource Conservation and Recovery Act, or RCRA, by truck, rail or special pipe, show on the map where that hazardous waste enters the treatment works and where it is treated, stored or disposed.

7.3 PROCESS FLOW DIAGRAM OR SCHEMATIC. PROVIDE A DIAGRAM SHOWING THE PROCESSES OF THE TREATMENT PLANT. ALSO, PROVIDE A WATER BALANCE SHOWING ALL TREATMENT UNITS, INCLUDING DISINFECTION (E.G. CHLORINATION AND DECHLORINATION). THE WATER BALANCE MUST SHOW DAILY AVERAGE FLOW RATES AT INFLUENT AND DISCHARGE POINTS AND APPROXIMATE DAILY FLOW RATES BETWEEN TREATMENT UNITS. INCLUDE A BRIEF NARRATIVE DESCRIPTION OF THE DIAGRAM.

7.4 FACILITY SIC CODE	DISCHARGE SIC CODE:	FACILITY NAICS CODE:	DISCHARGE NAICS CODE:
4952	001		

7.5 NUMBER OF SEPARATE DISCHARGE POINTS
ONE

7.6 NUMBER OF PEOPLE PRESENTLY CONNECTED OR POPULATION EQUIVALENT	DESIGN POPULATION EQUIVILENT
2500	3600

NUMBER OF UNITS PRESENTLY CONNECTED
HOMES 853 APARTMENTS 71 TRAILERS 0 OTHER 72

TOTAL DESIGN FLOW (ALL OUTFALLS)	ACTUAL FLOW
300,000 GPD	247,000

7.7 DOES ANY BYPASSING OCCUR ANYWHERE IN THE COLLECTION SYSTEM OR AT THE TREATMENT FACILITY?
Yes ☐ No ■ (If Yes, attach an explanation.)

7.8 LENGTH OF THE SANITARY SEWER COLLECTION SYSTEM IN MILES
19.4

7.9 IS INDUSTRIAL WASTE DISCHARGED TO THE FACILITY IDENTIFIED IN ITEM 2? Yes ☐ No ☑

7.10 WILL THE DISCHARGE BE CONTINUOUS THROUGH THE YEAR? Yes ☐ No ☑

A. DISCHARGE WILL OCCUR DURING THE FOLLOWING MONTHS	B. HOW MANY DAYS OF THE WEEK WILL THE DISCHARGE OCCUR?
2 MONTHS P/YEAR SPRING AND FALL	7 DAYS PER WEEK, 24 HOURS PER DAY

7.11 IS WASTEWATER LAND APPLIED? (If Yes, Attach Form I)	7.12 DOES THIS FACILITY DISCHARGE TO A LOSING STREAM OR SINKHOLE?
Yes ☐ No ☑	Yes ☐ No ☑

7.13 HAS A WASTE LOAD ALLOCATION STUDY BEEN COMPLETED FOR THIS FACILITY?
Yes ☐ No ☑

7.14 LIST ALL PERMIT VIOLATIONS, INCLUDING EFFLUENT LIMIT EXCEEDANCES IN THE LAST FIVE YEARS.
ATTACH A SEPARATE SHEET IF NECESSARY. IF NONE, WRITE NONE. None

8. LABORATORY CONTROL INFORMATION

8.1 LABORATORY WORK CONDUCTED BY PLANT PERSONNEL

Lab work conducted outside of plant.	Yes ☑	No ☐
Push–button or visual methods for simple test such as pH, settleable solids.	Yes ☑	No ☐
Additional procedures such as Dissolved Oxygen, Chemical Oxygen Demand, Biological Oxygen Demand, titrations, solids, volatile content.	Yes ☑	No ☐
More advanced determinations such as BOD seeding procedures, fecal coliform, nutrients, total oils, phenols, etc.	Yes ☑	No ☐
Highly sophisticated instrumentation, such as atomic absorption and gas chromatograph.	Yes ☐	No ☑

FACILITY NAME	PERMIT NO.	OUTFALL NO.
LAWSON WASTEWATER LAGOON	MO- 0091031	001

PART A - BASIC APPLICATION INFORMATION

9. SLUDGE HANDLING, USE AND DISPOSAL

9.1 IS THE SLUDGE A HAZARDOUS WASTE AS DEFINED BY 10 CSR 25?
Yes ☐ No ☑

9.2 SLUDGE PRODUCTION, INCLUDING SLUDGE RECEIVED ROM OTHERS
Design Dry Tons/Year 46.57, 1 LB/1,000 GAL Actual Dry Tons/Year

9.3 CAPACITY OF SLUDGE HOLDING STRUCTURES

9.4 SLUDGE STORAGE PROVIDED
Cubic Feet Days of Storage Average Percent Solids of Sludge ☑ No Sludge Storage is Provided

9.5 TYPE OF STORAGE
☐ Holding Tank ☐ Basin ☐ Building ☐ Concrete Pad ☑ Other (Describe) STABILIZATION BASINS

9.6 SLUDGE TREATMENT
☐ Anaerobic Digester ☐ Storage Tank ☐ Lime Stabilization ☑ Lagoon
☐ Aerobic Digester ☐ Air or Heat Drying ☐ Composting ☐ Other (Attach Description)

9.7 SLUDGE USE OR DISPOSAL
☐ Land Application ☐ Contract Hauler ☐ Hauled to Another Treatment Facility ☐ Solid Waste Landfill
☑ Surface Disposal (Sludge Disposal Lagoon, Sludge Held For More Than Two Years) ☐ Incineration
☐ Other (Attach Explanation Sheet) _____

9.8 PERSON RESPONSIBLE FOR HAULING SLUDGE TO DISPOSAL FACILITY

NAME			
N/A			
ADDRESS	CITY	STATE	ZIP
CONTACT PERSON	TELEPHONE NUMBER WITH AREA CODE	PERMIT NO	
		MO-	

9.9 SLUDGE USE OR DISPOSAL FACILITY
■ By Applicant ☐ By Others (Complete Below)

NAME			
CITY OFLAWSON			
ADDRESS	CITY	STATE	ZIP
103 S PENNSYLVANIA AVE	LAWSON	MO	64062
CONTACT PERSON	TELEPHONE NUMBER WITH AREA CODE	PERMIT NO	
KENNETH ALLEN BOYDSTON	816-580-3217	MO-0091031	

9.10 DO THE SLUDGE OR BIOSOLIDS DISPOSAL COMPLY WITH FEDERAL SLUDGE REGULATIONS UNDER 40 CFR 503?
■ Yes ☐ No (Attach Explanation)

10. DOWNSTREAM LANDOWNER(S). (ATTACH ADDITIONAL SHEETS AS NECESSARY.)

NAME			
GAIL WILSON			
ADDRESS	CITY	STATE	ZIP
19205 D HIGHWAY	LAWSON	MO	64062

11. DRINKING WATER SUPPLY INFORMATION

11.1 SOURCE OF YOUR DRINKING WATER SUPPLY

A. PUBLIC SUPPLY (MUNICIPAL OR WATER DISTRICT WATER) (IF PUBLIC, PLEASE GIVE NAME OF PUBLIC SUPPLY)
CITY OF EXCELSIOR SPRINGS

B. PRIVATE WELL

C. SURFACE WATER (LAKE, POND OR STREAM)

11.2 DOES YOUR DRINKING WATER SOURCE SERVE AT LEAST 25 PEOPLE AT LEAST 60 DAYS PER YEAR (NOT NECESSARILY CONSECUTIVE DAYS)? Yes ☑ No ☐

11.3 DOES YOUR SPPLY SERVE HOUSING THAT IS OCCUPIED YEAR ROUND BY THE SAME PEOPLE? THIS DOES NOT INCLUDE HOUSING THAT IS OCCUPIED SEASONALLY? Yes ☑ No ☐

END OF PART A

MO 780-1805 (09-08)

MAKE ADDITIONAL COPIES OF THIS FORM FOR EACH OUTFALL

FACILITY NAME	PERMIT NO.	OUTFALL NO.
LAWSON WASTEWATER LAGOON	MO- 0091031	001

PART B - ADDITIONAL APPLICATION INFORMATION

20. INFLOW AND INFILTRATION

ESTIMATE THE AVERAGE NUMBER OF GALLONS PER DAY THAT FLOW INTO THE TREATMENT WORKS FROM INFLOW AND INFILTRATION.

Gallons Per Day 40,000

BRIEFLY EXPLAIN ANY STEPS UNDERWAY OR PLANNED TO MINIMIZE INFLOW AND INFILTRATION.

CLEANING AND CCTV, MANHOLE REHAB

20.1 OPERATION AND MAINTENANCE PERFORMED BY CONTRACTOR(S)

ARE ANY OPERATIONAL OR MAINTENANCE ASPECTS (RELATED TO WASTEWATER TREATMENT AND EFFLUENT QUALITY) OF THE TREATMENT WORKS THE RESPONSIBILITY OF A CONTRACTOR?

Yes ☐ No ☑ If Yes, list the name, address, telephone number and status of each contractor and describe the contractor's responsibilities. (Attach additional pages if necessary.)

NAME

N/A

MAILING ADDRESS

TELEPHONE NUMBER WITH AREA CODE

RESPONSIBILITIES OF CONTRACTOR

20.2 SCHEDULED IMPROVEMENTS AND SCHEDULES OF IMPLEMENTATION. PROVIDE INFORMATION ABOUT ANY UNCOMPLETED IMPLEMENTATION SCHEDULE OR UNCOMPLETED PLANS FOR IMPROVEMENTS THAT WILL AFFECT THE WASTEWATER TREATMENT, EFFLUENT QUALITY OR DESIGN CAPACITY OF THE TREATMENT WORKS. IF THE TREATMENT WORKS HAS SEVERAL DIFFERENT IMPLEMENTATION SCHEDULES OR IS PLANNING SEVERAL IMPROVEMENTS, SUBMIT SEPARATE RESPONSES FOR EACH. (IF NONE, GO TO QUESTION B-20.3.)

A. List the outfall number that is covered by this implementation schedule	B. Indicate whether the planned improvements or implementation schedule are required by local, state or federal agencies.
Outfall No.	Yes ☐ No ☐

20.3 WASTEWATER DISCHARGES:

COMPLETE QUESTIONS 20.4 THROUGH 20.7 ONCE FOR EACH OUTFALL (INCLUDING BYPASS POINTS) THROUGH WHICH EFFLUENT IS DISCHARGED. DO NOT INCLUDE INFORMATION ON COMBINED SEWER OVERFLOWS IN THIS SECTION.

20.4 DESCRIPTION OF OUTFALL

OUTFALL NUMBER **001**

A. LOCATION

¼ ___ ¼ NW ¼ SE Section 36 Township 54N Range 30W ☐ E ☑ W

UTM Coordinates Easting (X): 39 Northing (Y): 54n

For Universal Transverse Mercator (UTM), Zone 15 North referenced to North American Datum 1983 (NAD83)

B. Distance from Shore (If Applicable)	C. Depth Below Surface (If Applicable)	D. Average Daily Flow Rate
30 ft.	N/A ft.	0.255 mgd

E. Does this outfall have either an intermittent or periodic discharge?

☑ Yes ☐ No If Yes, Provide the following information:

Number of Days Per Year Discharge Occurs:	Average Duration of Each Discharge:	Average Flow Per Discharge:	Months in Which Discharge Occurs:
60	30	0.9 mgd	SPRING & FALL

Is Outfall Equipped with a Diffuser? ☐ Yes ■ No

20.5 DESCRIPTION OF RECEIVING WATER

B. Name of Receiving Water

BRUSHY CREEK

B. Name of Watershed (If Known)	U.S. Soil Conservation Service 14-Digit Watershed Code (If Known)
BRUSHY CREEK (C) 00377	UNKNOWN
B. Name of State Management/River Basin (If Known)	U.S. Geological Survey 8-Digit Hydrologic Cataloging Unit Code (If Known)
UNKNOWN	10300101-14000
B. Critical Flow of Receiving Stream (If Applicable) Acute N/A cfs Chronic N/A cfs	B. Total Hardness of Receiving Stream at Critical Low Flow (If Applicable) mg/L of $CaCO_3$

MO 780-1805 (09-08)

FACILITY NAME	PERMIT NO.	OUTFALL NO.
LAWSON WASTEWATER LAGOON	MO- 0091031	001

PART B - ADDITIONAL APPLICATION INFORMATION (CONTINUED)

20.6 DESCRIPTION OF TREATMENT

A. WHAT LEVELS OF TREATMENT ARE PROVIDED? Check All That Apply

☑ Primary ☑ Secondary ☐ Advanced ■ Other (Describe) 2 FIVE ACRE FINISHING CELLS

B. INDICATE THE FOLLOWING REMOVAL RATES (AS APPLICABLE)

Design BOD_5 Removal Or Design $CBOD_5$ Removal 90 % Design SS Removal 90 %

Design P Removal NA % Design N Removal NA % Other ____ ____ %

C. What type of disinfection is used for the effluent from this outfall? If disinfection varies by season, please describe:

NONE

If disinfection is by chlorination, is dechlorination used for this outfall? ☐ Yes ■ No

Does the treatment plant have post aeration? ☐ Yes ■ No

20.7 EFFLUENT TESTING DATA. ALL APPLICANTS THAT DISCHARGE TO WATERS OF THE U.S. MUST PROVIDE EFFLUENT TESTING DATA FOR THE FOLLOWING PARAMETERS. PROVIDE THE INDICATED EFFLUENT DATA **FOR EACH OUTFALL THROUGH WHICH EFFLUENT IS DISCHARGED**. DO NOT INCLUDE INFORMATION OF COMBINED SEWER OVERFLOWS IN THIS SECTION. ALL INFORMATION REPORTED MUST BE BASED ON DATA COLLECTED THROUGH ANALYSIS CONDUCTED USING 40 CFR PART 136 METHODS. IN ADDITION, THIS DATA MUST COMPLY WITH QA/QC REQUIREMENTS OF 40 CFR PART 136 AND OTHER APPROPRIATE QA/QC REQUIREMENTS FOR STANDARD METHODS FOR ANALYTES NOT ADDRESSED BY 40 CFR PART 136.

OUTFALL NUMBER 001

PARAMETER	MAXIMUM DAILY VALUE		AVERAGE DAILY VALUE		
	VALUE	UNITS	VALUE	UNITS	NO. OF SAMPLES
pH (Minimum)	6.81	S.U.	7.7	S.U.	10 GRAB
pH (Maximum)	9.4	S.U.	8.6	S.U.	10 GRAB
FLOW RATE	750,000	MGD	0.445	MGD	
TEMPERATURE (Winter)		°C		°C	
TEMPERATURE (Summer)		°C		°C	

*For pH report a minimum and a maximum daily value.

POLLUTANT		MAXIMUM DAILY DISCHARGE		AVERAGE DAILY DISCHARGE			ANALYTICAL METHOD	ML/MDL
		CONC.	UNITS	CONC.	UNITS	NO. OF SAMPLES		
Conventional and Nonconventional Compounds								
BIOCHEMICAL OXYGEN DEMAND (Report One)	BOD_5	25	mg/L	15.4	mg/L			
	$CBOD_5$	N/A	mg/L	N/A	mg/L			
FECAL COLIFORM			#/100 mL		#/100 mL			
TOTAL SUSPENDED SOLIDS (TSS)		34	mg/L	20.2	mg/L			
AMMONIA (AS N)		1.25	mg/L	0.79	mg/L			
CHLORINE (TOTAL RESIDUAL, TRC)			mg/L		mg/L			
DISSOLVED OXYGEN		7.9	mg/L	6.576	mg/L			
TOTAL KJELDAHL NITROGEN (TKN)			mg/L		mg/L			
NITRATE PLUS NITRITE NITROGEN			mg/L		mg/L			
OIL AND GREASE		2.2	mg/L	0.678	mg/L			
PHOSPHORUS (TOTAL)			mg/L		mg/L			
TOTAL DISSOLVE SOLIDS (TDS)			mg/L		mg/L			
OTHER			mg/L		mg/L			

END OF PART B

MO 780-1805 (09-08)

PART C - CERTIFICATION

30. CERTIFICATION

All applicants must complete the Certification Section. This certification must be signed by an officer of the company or city official. All applicants must complete all applicable sections as explained in the Application Overview. By signing this certification statement, applicants confirm that they have reviewed the entire form and have completed all sections that apply to the facility for which this application is submitted.

ALL APPLICANTS MUST COMPLETE THE FOLLOWING CERTIFICATION.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

PRINTED NAME AND OFFICIAL TITLE (MUST BE AN OFFICER OF THE COMPANY OR CITY OFFICIAL)

DAVID BLACKBURN, CITY ADMININSTRATOR

SIGNATURE

TELEPHONE NUMBER WITH AREA CODE

816-580-3217

DATE SIGNED

11/15/2013

Upon request of the permitting authority, you must submit any other information necessary to assess wastewater treatment practices at the treatment works or identify appropriate permitting requirements.

For Design Flows Less than 1 Million Gallons Per Day, Send Completed Form to:	For Design Flows of 1 Million Gallons Per Day or Greater, Send Completed Form to:
Appropriate Regional Office Map of regional offices with addresses and phone numbers is available on the Web at www.dnr.mo.gov/regions/ro-map.pdf.	Department of Natural Resources Water Protection Program ATTN: NPDES Permits and Engineering Section P.O. Box 176 Jefferson City, MO 65102

END OF PART C

REFER TO THE APPLICATION OVERVIEW TO DETERMINE WHICH OTHER PARTS OF FORM 2C YOU MUST COMPLETE.

Do not complete the remainder of this application, unless:

1. Your facility design flow is equal to or greater than 1,000,000 gallons per day.
2. Your facility is a pretreatment treatment works.
3. Your facility is a combined sewer system.

Submittal of an incomplete application may result in the application being returned. Permit fees for returned applications shall be forfeited. Permit fees for applications being processed by the department that are withdrawn by the applicant shall be forfeited.

MAKE ADDITIONAL COPIES OF THIS FORM FOR EACH OUTFALL.

FACILITY NAME	PERMIT NO.	OUTFALL NO.
	MO-	

PART D – EXPANDED EFFLUENT TESTING DATA

40. EXPANDED EFFLUENT TESTING DATA

Refer to the supplemental application information to determine whether Part D applies to the treatment works.

40.1 EFFLUENT TESTING: IF THE TREATMENT WORKS HAS A DESIGN FLOW GREATER THAN OR EQUAL TO 1 MILLION GALLONS PER DAY OR IT HAS (OR IS REQUIRED TO HAVE) A PRETREATMENT PROGRAM, OR IS OTHERWISE REQUIRED BY THE PERMITTING AUTHORITY TO PROVIDE THE DATA, THEN PROVIDE EFFLUENT TESTING DATA FOR THE FOLLOWING POLLUTANTS. PROVIDE THE INDICATED EFFLUENT TESTING INFORMATION **FOR EACH OUTFALL THROUGH WHICH EFFLUENT IS DISCHARGED**. DO NOT INCLUDE INFORMATION ON COMBINED SEWER OVERFLOWS IN THIS SECTION. ALL INFORMATION REPORTED MUST BE BASED ON DATA COLLECTED THROUGH ANALYSIS CONDUCTED USING 40 CFR PART 136 METHODS. IN ADDITION, THIS DATA MUST COMPLY WITH QA/QC REQUIREMENTS OF 40 CFR PART 136 AND OTHER APPROPRIATE QA/QC REQUIREMENTS FOR STANDARD METHODS FOR ANALYTES NOT ADDRESSED BY 40 CFR PART 136. INDICATE IN THE BLANK ROWS PROVIDED BELOW ANY DATA YOU MAY HAVE ON POLLUTANTS NOT SPECIFICALLY LISTED IN THIS FORM. EFFLUENT TESTING MUST NOT BE MORE THAN FOUR AND ONE-HALF YEARS OLD.

OUTFALL NUMBER (Complete Once for Each Outfall Discharging Effluent to Waters of the State.)

POLLUTANT	MAXIMUM DAILY DISCHARGE				AVERAGE DAILY DISCHARGE					ANALYTICAL METHOD	ML/MDL
	CONC	UNITS	MASS	UNITS	CONC	UNITS	MASS	UNITS	NO. OF SAMPLES		
METALS (TOTAL RECOVERABLE), CYANIDE, PHENOLS AND HARDNESS											
ANTIMONY											
ARSENIC											
BERYLLIUM											
CADMIUM											
CHROMIUM											
COPPER											
LEAD											
MERCURY											
NICKEL											
SELENIUM											
SILVER											
THALLIUM											
ZINC											
CYANIDE											
TOTAL PHENOLIC COMPOUNDS											
HARDNESS (as $CaCO_3$)											
USE THIS SPACE (OR A SEPARATE SHEET) TO PROVIDE INFORMATION ON OTHER METALS REQUESTED BY THE PERMIT WRITER.											

FACILITY NAME	PERMIT NO. MO-	OUTFALL NO.

PART D – EXPANDED EFFLUENT TESTING DATA (CONTINUED)

40.1 EXPANDED EFFLUENT TESTING DATA (CONTINUED)

Complete Once for Each Outfall Discharging Effluent to Waters of the State.

POLLUTANT	MAXIMUM DAILY DISCHARGE				AVERAGE DAILY DISCHARGE					ANALYTICAL METHOD	ML/MDL
	CONC	UNITS	MASS	UNITS	CONC	UNITS	MASS	UNITS	NO. OF SAMPLES		
VOLATILE ORGANIC COMPOUNDS											
ACROLEIN											
ACRYLONITRILE											
BENZENE											
BROMOFORM											
CARBON TETRACHLORIDE											
CHLOROBENZENE											
CHLORODIBROMO-METHANE											
CHLOROETHANE											
2-CHLORO-ETHYLVINYL ETHER											
CHLOROFORM											
DICHLOROBROMO-METHANE											
1,1-DICHLORO-ETHANE											
1,2-DICHLORO-ETHANE											
TRANS-1,2-DICHLOROETHYLENE											
1,1-DICHLORO-ETHYLENE											
1,2-DICHLORO-PROPANE											
1,3-DICHLORO-PROPYLENE											
ETHYLBENZENE											
METHYL BROMIDE											
METHYL CHLORIDE											
METHYLENE CHLORIDE											
1,1,2,2-TETRA-CHLOROETHANE											
TETRACHLORO-ETHANE											
TOLUENE											
3,4-BENZO-FLUORANTHENE											
BENZO(GH) PHERYLENE											
BENZO(K) FLUORANTHENE											

FACILITY NAME	PERMIT NO. MO-	OUTFALL NO.

PART D - EXPANDED EFFLUENT TESTING DATA (CONTINUED)

40.1 EXPANDED EFFLUENT TESTING DATA (CONTINUED)

Complete Once for Each Outfall Discharging Effluent to Waters of the State.

POLLUTANT	MAXIMUM DAILY DISCHARGE				AVERAGE DAILY DISCHARGE					ANALYTICAL METHOD	ML/MDL
	CONC	UNITS	MASS	UNITS	CONC	UNITS	MASS	UNITS	NO. OF SAMPLES		
BIS (2-CHLOROTHOXY) METHANE											
BIS (2-CHLOROETHYL) – ETHER											
BIS (2-ETHYLHEXYL) PHTHALATE											
4-BROMOPHENYL PHENYL ETHER											
BUTYL BENZYL PHTHALATE											
2-CHLORONAPH-THALENE											
4-CHLORPHENYL PHENYL ETHER											
CHRYSENE											
DI-N-BUTYL PHTHALATE											
DEBENZO (A,H) ANTHRACENE											
1,2-DICHLORO-BENZENE											
1,3-DICHLORO-BENZENE											
1,4-DICHLORO-BENZENE											
3,3-DICHLORO-BENZIDINE											
DIETHYL PHTHALATE											
DIMETHYL PHTHALATE											
2,4-DINITRO-TOLUENE											
2,6-DINITRO-TOLUENE											
1,2-DIPHENYL-HYDRAZINE											
1,1,1-TRICHLORO-ETHANE											
1,1,2-TRICHLORO-ETHANE											
TRICHLORETHYLENE											
VINYL CHLORIDE											
USE THIS SPACE (OR A SEPARATE SHEET) TO PROVIDE INFORMATION ON OTHER VOLATILE ORGANIC COMPOUNDS REQUESTED BY THE PERMIT WRITER											

MO 780-1805 (09-08)

FACILITY NAME	PERMIT NO. MO-	OUTFALL NO.

PART D – EXPANDED EFFLUENT TESTING DATA (CONTINUED)

40.1 EXPANDED EFFLUENT TESTING DATA (CONTINUED)

Complete Once for Each Outfall Discharging Effluent to Waters of the State.

POLLUTANT	MAXIMUM DAILY DISCHARGE				AVERAGE DAILY DISCHARGE					ANALYTICAL METHOD	ML/MDL
	CONC	UNITS	MASS	UNITS	CONC	UNITS	MASS	UNITS	NO. OF SAMPLES		
ACID-EXTRACTABLE COMPOUNDS											
P-CHLORO-M-CRESOL											
2-CHLOROPHENOL											
2,4-DICHLOROPHENOL											
2,4-DIMETHYLPHENOL											
4,6-DINITRO-O-CRESOL											
2,4-DINITROPHENOL											
2-NITROPHENOL											
4-NITROPHENOL											
PENTACHLOROPHENOL											
PHENOL											
2,4,6-TRICHLOROPHENOL											
USE THIS SPACE (OR A SEPARATE SHEET) TO PROVIDE INFORMATION ON OTHER ACID-EXTRACTABLE COMPOUNDS REQUESTED BY THE PERMIT WRITER.											

MO 780-1805 (09-08)

FACILITY NAME	PERMIT NO. MO-	OUTFALL NO.

PART D – EXPANDED EFFLUENT TESTING DATA (CONTINUED)

40.1 EXPANDED EFFLUENT TESTING DATA (CONTINUED)

POLLUTANT	MAXIMUM DAILY DISCHARGE				AVERAGE DAILY DISCHARGE					ANALYTICAL METHOD	ML/MDL
	CONC	UNITS	MASS	UNITS	CONC	UNITS	MASS	UNITS	NO. OF SAMPLES		
BASE-NEUTRAL COMPOUNDS											
ACENAPHTHENE											
ACENAPHTHYLENE											
ANTHRACENE											
BENZIDINE											
BENZO(A)ANTHRACENE											
BENZO(A)PYRENE											
FLUORANTHENE											
FLUORENE											
HEXACHLOROBENZENE											
HEXACHLOROCYCLO-PENTADIENE											
HEXACHLOROETHANE											
INDENO (1,2,3-CD) PYRENE											
ISOPHORONE											
NAPHTHALENE											
NITROBENZENE											
N-NITROSODI-PROPYLAMINE											
N-NITROSODI-METHYLAMINE											
N-NITROSODI-PHENYLAMINE											
PHENANTHRENE											
PYRENE											
1,2,4-TRICHLOROBENZENE											
USE THIS SPACE (OR SEPARATE SHEET) TO PROVIDE INFORMATION ON OTHER BASE-NEUTRAL COMPOUNDS REQUESTED BY THE PERMIT WRITER.											

END OF PART D

REFER TO THE APPLICATION OVERVIEW TO DETERMINE WHICH OTHER PARTS OF FORM 2C YOU MUST COMPLETE.

MO 780-1805 (09-08)

MAKE ADDITIONAL COPIES OF THIS FORM FOR EACH OUTFALL.		
FACILITY NAME	PERMIT NO. MO-	OUTFALL NO.

PART E - TOXICITY TESTING DATA

50. TOXICITY TESTING DATA

Refer to the Supplemental Application Information to determine whether Part E applies to the treatment works.

Publicly owned treatment works, or POTWS, meeting one or more of the following criteria must provide the results of whole effluent toxicity tests for acute or chronic toxicity for each of the facility's discharge points.

A. POTWs with a design flow rate greater than or equal to 1 million gallons per day.

B. POTWs with a pretreatment program (or those that are required to have one under 40 CFR Part 403).

C. POTWs required by the permitting authority to submit data for these parameters

- At a minimum, these results must include quarterly testing for a 12-month period within the past one year using multiple species (minimum of two species), or the results from four tests performed at least annually in the four and one-half years prior to the application, provided the results show no appreciable toxicity, and testing for acute or chronic toxicity, depending on the range of receiving water dilution. Do not include information about combined sewer overflows in this section. All information reported must be based on data collected through analysis conducted using 40 CFR Part 136 methods. In addition, this data must comply with QA/QC requirements of 40 CFR Part 136 and other appropriate QA/QC requirements for standard methods for analytes not addressed by 40 CFR Part 136.
- If EPA methods were not used, report the reason for using alternative methods. If test summaries are available that contain all of the information requested below, they may be submitted in place of Part E. If no biomonitoring data is required, do not complete Part E. Refer to the application overview for directions on which other sections of the form to complete.

50.1 REQUIRED TESTS. INDICATE THE NUMBER OF WHOLE EFFLUENT TOXICITY TESTS CONDUCTED IN THE PAST FOUR AND ONE-HALF YEARS.

CHRONIC	ACUTE

INDIVIDUAL TEST DATA. Complete the following chart **for the last three whole effluent toxicity tests.** Allow one column per test (where each species constitutes a test). Copy this page if more than three tests are being reported.

	MOST RECENT	2ND MOST RECENT	3RD MOST RECENT
A. TEST INFORMATION			
TEST NUMBER			
TEST SPECIES AND TEST METHOD NUMBER			
AGE AT INITIATION OF TEST			
OUTFALL NUMBER			
DATES SAMPLE COLLECTED			
DATE TEST STARTED			
DURATION			
B. GIVE TOXICITY TEST METHODS FOLLOWED			
MANUAL TITLE			
EDITION NUMBER AND YEAR OF PUBLICATION			
PAGE NUMBER(S)			
C. GIVE THE SAMPLE COLLECTION METHOD(S) USED. FOR MULTIPLE GRAB SAMPLES, INDICATE THE NUMBER OF GRAB SAMPLES USED.			
24-HOUR COMPOSITE			
GRAB			
D. INDICATE WHERE THE SAMPLE WAS TAKEN IN RELATION TO DISINFECTION. (CHECK ALL THAT APPLY FOR EACH)			
BEFORE DISINFECTION	☐	☐	☐
AFTER DISINFECTION	☐	☐	☐
AFTER DECHLORINATION	☐	☐	☐
E. DESCRIBE THE POINT IN THE TREATMENT PROCESS AT WHICH THE SAMPLE WAS COLLECTED			
SAMPLE WAS COLLECTED			
F. FOR EACH TEST, INCLUDE WHETHER THE TEST WAS INTENDED TO ASSESS CHRONIC TOXICITY, ACUTE TOXICITY OR BOTH.			
CHRONIC TOXICITY	☐	☐	☐
ACUTE TOXICITY	☐	☐	☐
G. PROVIDE THE TYPE OF TEST PERFORMED			
STATIC	☐	☐	☐
STATIC STATIC-RENEWAL	☐	☐	☐
FLOW-THROUGH	☐	☐	☐
H. SOURCE OF DILUTION WATER. IF LABORATORY WATER, SPECIFY TYPE; IF RECEIVING WATER, SPECIFY SOURCE			
LABORATORY WATER			
RECEIVING WATER			

FACILITY NAME	PERMIT NO. MO-	OUTFALL NO.

PART E – TOXICITY TESTING DATA (CONTINUED)

50.1 WHOLE EFFLUENT TOXICITY TESTS DATA (CONTINUED)

	MOST RECENT	2ND MOST RECENT	3RD MOST RECENT
I. TYPE OF DILUTION WATER, IF SALT WATER, SPECIFY "NATURAL" OR TYPE OF ARTIFICIAL SEA SALTS OR BRINE USED.			
FRESH WATER			
SALT WATER			
J. GIVE THE PERCENTAGE EFFLUENT USED FOR ALL CONCENTRATIONS IN THE TEST SERIES.			
K. PARAMETERS MEASURED DURING THE TEST. (STATE WHETHER PARAMETER MEETS TEST METHOD SPECIFICATIONS)			
pH			
SALINITY			
TEMPERATURE			
AMMONIA			
DISSOLVED OXYGEN			
L. TEST RESULTS			
ACUTE:			
PERCENT IN SURVIVAL IN 100% EFFLUENT			
LC_{50}			
95% C.I.			
CONTROL PERCENT SURVIVAL			
OTHER (DESCRIBE)			
CHRONIC:			
NOEC			
IC_{25}			
CONTROL PERCENT SURVIVAL			
OTHER (DESCRIBE)			
M. QUALITY CONTROL ASSURANCE			
IS REFERENCE TOXICANT DATA AVAILABLE?			
WAS REFERENCE TOXICANT TEST WITHIN ACCEPTABLE BOUNDS?			
WHAT DATE WAS REFERENCED TOXICANT TEST RUN (MM/DD/YYYY)?			
OTHER (DESCRIBE)			

50.2 TOXICITY REDUCTION EVALUATION

Is the treatment works involved in a toxicity reduction evaluation? ☐ Yes ☐ No

If yes, describe:

50.3 SUMMARY OF SUBMITTED BIOMONITORING TEST INFORMATION

If you have submitted biomonitoring test information, or information regarding the cause of toxicity, within the past four and one-half years, provide the dates the information was submitted to the permitting authority and a summary of the results.

Date Submitted (MM/DD/YYYY)

Summary of Results (See Instructions)

END OF PART E

REFER TO THE APPLICATION OVERVIEW TO DETERMINE WHICH OTHER PARTS OF FORM 2C YOU MUST COMPLETE.

MO 780-1805 (09-08)

MAKE ADDITIONAL COPIES OF THIS FORM FOR EACH OUTFALL.

FACILITY NAME	PERMIT NO. MO-	OUTFALL NO.

PART F - INDUSTRIAL USER DISCHARGES AND RCRA/CERCLA WASTES

60. INDUSTRIAL USER DISCHARGES AND RCRA/CERCLA WASTES

Refer to the Supplemental Application Information to determine whether Part F applies to the treatment works.

All treatment works receiving discharges from significant industrial users or which receive RCRA, CERCLA, or other remedial wastes must complete this form.

GENERAL INFORMATION

60.1 PRETREATMENT PROGRAM

Does the treatment works have, or is it subject to, an approved pretreatment program?

☐ Yes ☐ No

60.2 NUMBER OF NON-CATEGORICAL SIGNIFICANT INDUSTRIAL USERS, or SIUs AND CATEGORICAL INDUSTRIAL USERS, or CIUs. PROVIDE THE NUMBER OF EACH OF THE FOLLOWING TYPES OF INDUSTRIAL USERS THAT DISCHARGE TO THE TREATMENT WORKS.

A. Number of Non-Categorical SIUs	B. Number of CIUs

60.3 SIGNIFICANT INDUSTIRAL USER INFORMATION

Supply the following information for each SIU. If more than one SIU discharges to the treatment works, provide the information requested for each. Submit additional pages as necessary.

NAME

MAILING ADDRESS	CITY	STATE	ZIP

60.4 INDUSTRIAL PROCESSES

DESCRIBE ALL OF THE INDUSTRIAL PROCESSES THAT AFFECT OR CONTRIBUTE TO THE SIU's DISCHARGE.

60.5 PRINCIPAL PRODUCT(S) AND RAW MATERIAL (S)

Describe all of the principle processes and raw materials that affect or contribute to the SIU's discharge.

PRINCIPAL PRODUCT(S)

RAW MATERIAL(S)

60.6 FLOW RATE

A. PROCESS WASTEWATER FLOW RATE. Indicate the average daily volume of process wastewater discharged into the collection system in gallons per day, or gpd, and whether the discharge is continuous or intermittent.

gpd ☐ Continuous ☐ Intermittent

B. NON-PROCESS WASTEWATER FLOW RATE. Indicate the average daily volume of non-process wastewater discharged into the collection system in gallons per day, or gpd, and whether the discharge is continuous or intermittent.

C.

gpd ☐ Continuous ☐ Intermittent

60.7 PRETREATMENT STANDARDS

Indicate whether the SIU is subject to the following

A.	Local Limits	☐ Yes	☐ No
B.	Categorical Pretreatment Standards	☐ Yes	☐ No

If subject to categorical pretreatment standards, which category and subcategory?

60.8 PROBLEMS AT THE TREATMENT WORKS ATTRIBUTED TO WASTE DISCHARGED BY THE SIU

Has the SIU caused or contributed to any problems (e.g., upsets, interference) at the treatment works in the past three years?

☐ Yes ☐ No If Yes, describe each episode

MAKE ADDITIONAL COPIES OF THIS FORM FOR EACH OUTFALL.

FACILITY NAME	PERMIT NO. MO-	OUTFALL NO.

PART C - INDUSTRIAL USER DISCHARGES AND RCRA/CERCLA WASTES (CONTINUED)

60.9 RCRA HAZARDOUS WASTE RECEIVED BY TRUCK, RAIL, OR DEDICATED PIPELINE

RCRA WASTE. Does the treatment works receive or has it in the past three years received RCRA hazardous waste by truck, rail or dedicated pipe?
☐ Yes ☐ No

WASTE TRANSPORT. Method by which RCRA waste is received. (Check all that apply)
☐ Truck ☐ Rail ☐ Dedicated Pipe

WASTE DESCRIPTION. Give EPA hazardous waste number and amount (volume or mass, specify units).

EPA HAZARDOUS WASTE NUMBER	AMOUNT	UNITS

60.10 CERCLA, OR SUPERFUND, WASTEWATER, RCRA REMEDIATION/CORRECTIVE ACTION WASTEWATER AND OTHER REMEDIAL ACTIVITY WASTEWATER

REMEDIATION WASTE. Does the treatment works currently (or has it been notified that it will) receive waste from remedial activities?
☐ Yes ☐ No Provide a list of sites and the requested information for each current and future site.

60.11 WASTE ORIGIN

Describe the site and type of facility at which the CERCLA/RCRA/or other remedial waste originates (or is expected to originate in the next five years).

60.12 POLLUTANTS

List the hazardous constituents that are received (or are expected to be received). Included data on volume and concentration, if known. (Attach additional sheets if necessary)

60.13 WASTE TREATMENT

A. Is this waste treated (or will it be treated) prior to entering the treatment works?
☐ Yes ☐ No

If Yes, describe the treatment (provide information about the removal efficiency):

B. Is the discharge (or will the discharge be) continuous or intermittent?
☐ Continuous ☐ Intermittent

If intermittent, describe the discharge schedule:

END OF PART C
REFER TO THE APPLICATION OVERVIEW TO DETERMINE WHICH OTHER PARTS OF FORM 2A YOU MUST COMPLETE.

MO 780-1805 (09-08)

MAKE ADDITIONAL COPIES OF THIS FORM FOR EACH OUTFALL.		
FACILITY NAME	PERMIT NO. MO-	OUTFALL NO.

PART G - COMBINED SEWER SYSTEMS

70. COMBINED SEWER SYSTEMS (COMPLETE THIS PART IF THE TREATMENT WORKS HAS A COMBINED SEWER SYSTEM.)

Refer to the Supplemental Application Information to determine whether Part G applies to the treatment works.

70.1 SYSTEM MAP

Provide a map indicating the following: (May be included with basic application information.)

A. All CSO Discharges.

B. Sensitive Use Areas Potentially Affected by CSOs. (e.g., beaches, drinking water supplies, shellfish beds, sensitive aquatic ecosystems and Outstanding Natural Resource Waters.)

C. Waters that Support Threatened and Endangered Species Potentially Affected by CSOs.

70.2 SYSTEM DIAGRAM

Provide a diagram, either in the map provided above or on a separate drawing, of the Combined Sewer Collection System that includes the following information:

A. Locations of Major Sewer Trunk Lines, Both Combined and Separate Sanitary.

B. Locations of Points where Separate Sanitary Sewers Feed into the Combined Sewer System.

C. Locations of In-Line or Off-Line Storage Structures.

D. Locations of Flow-Regulating Devices.

E. Locations of Pump Stations.

70.3 PERCENT OF COLLECTION SYSTEM THAT IS COMBINED SEWER

70.4 POPULATION SERVED BY COMBINED SEWER COLLECTION SYSTEM

70.5 NAME OF ANY SATELLITE COMMUNITY WITH COMBINED SEWER COLLECTION SYSTEM

70.6 CSO OUTFALLS. COMPLETE THE FOLLOWING ONCE FOR EACH CSO DISCHARGE POINT

70.7 DESCRIPTION OF OUTFALL

A. Outfall Number

B. Location

C. Distance from Shore (if applicable)
_____ ft

D. Depth Below Surface (if applicable)
_____ ft

E. Which of the following were monitored during the last year for this CSO?
☐ Rainfall ☐ CSO Pollutant Concentrations ☐ CSO ☐ CSO Flow Volume ☐ Receiving Water Quality

F. How many storm events were monitored last year?

70.8 CSO EVENTS

A. Give the Number of CSO Events in the Last Year
_____ Events ☐ Actual ☐ Approximate

B. Give the Average Duration Per CSO Event
_____ Hours ☐ Actual ☐ Approximate

C. Give the Average Volume Per CSO Event
_____ Million Gallons ☐ Actual ☐ Approximate

D. GIVE THE MINIMUM RAINFALL THAT CAUSED A CSO EVENT IN THE LAST YEAR _____ INCHES OF RAINFALL

70.9 DESCRIPTION OF RECEIVING WATERS

A. Name of Receiving Water

B. Name of Watershed/River/Stream System

U.S. Soil Conservation Service 14-Digit Watershed Code (If Known)

Name of State Management/River Basin

U.S. Geological Survey 8- Digit Hydrologic Cataloging Unit Code (If Known)

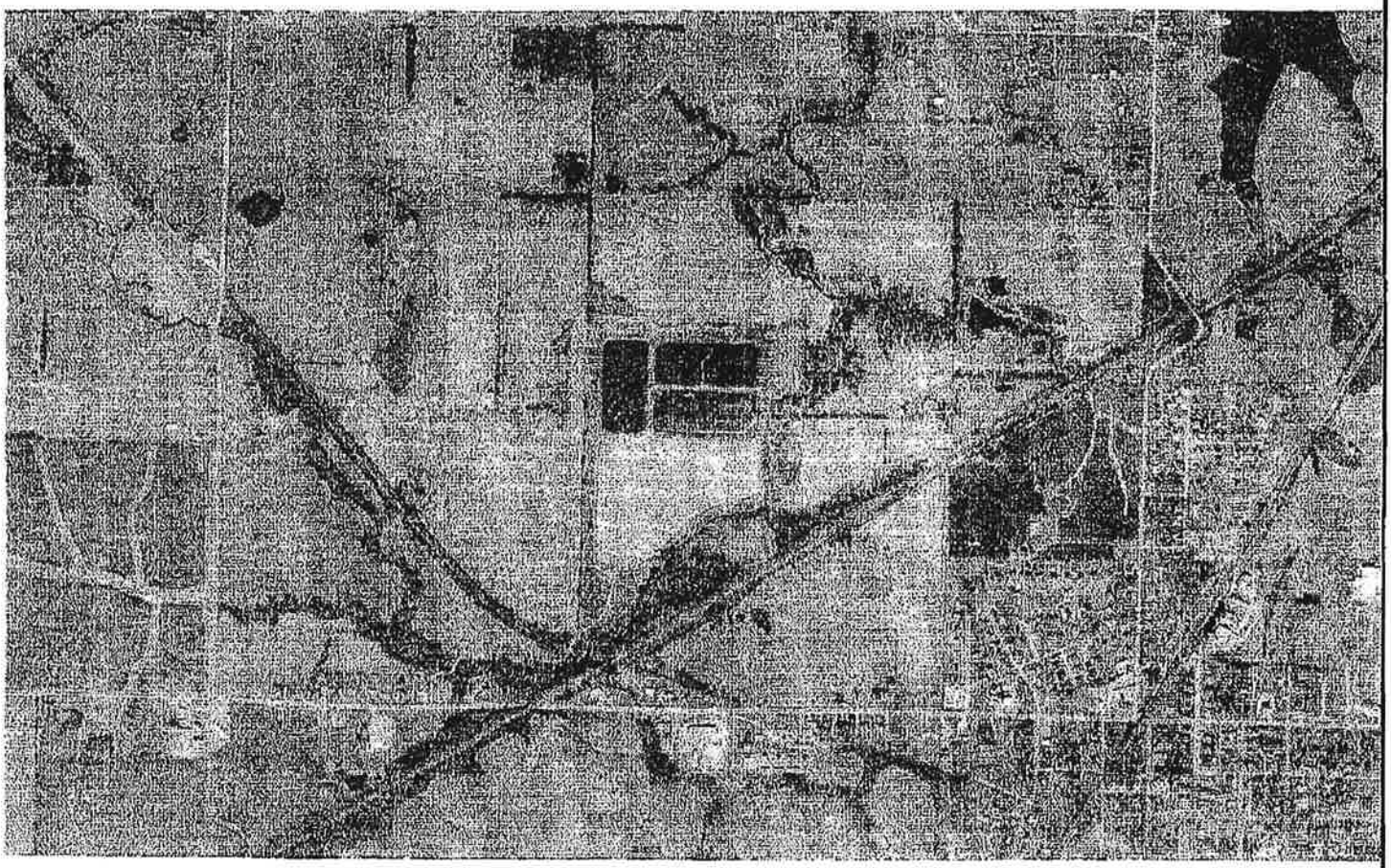
70.10 CSO OPERATIONS

Describe any known water quality impacts on the receiving water caused by this CSO (e.g., permanent or intermittent beach closings, permanent or intermittent shellfish bed closings, fish kills, fish advisories, other recreational loss, or violation of any applicable state water quality standard.)

END OF PART G

REFER TO THE APPLICATION OVERVIEW TO DETERMINE WHICH OTHER PARTS OF FORM 2C YOU MUST COMPLETE.

MO 780-1805 (09-08)



-N-

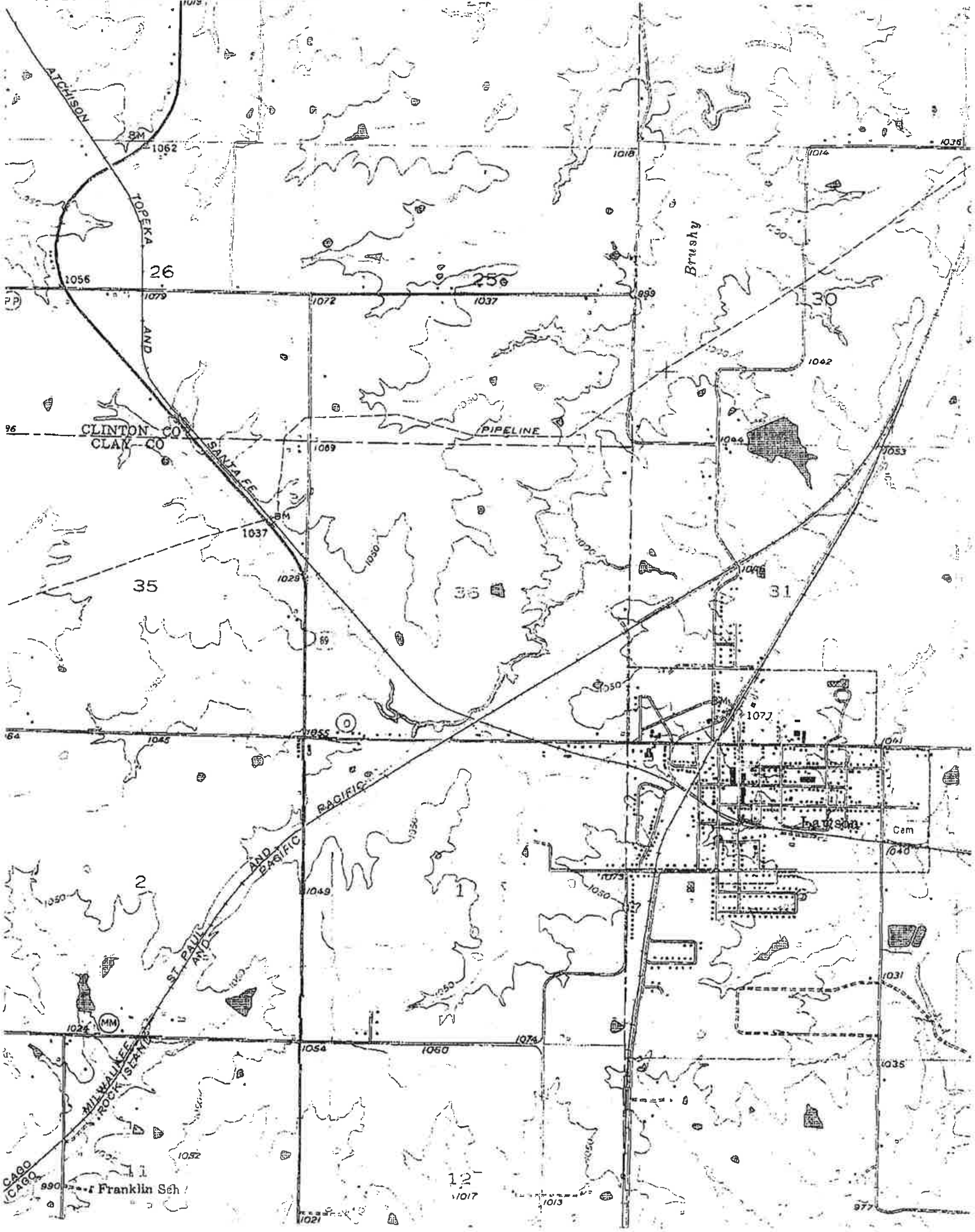
LARKIN GROUP INC
9200 WARD PARKWAY, SUITE 400
KANSAS CITY, MISSOURI 64114
(816) 361-0440

LAWSON WASTE WATER LAGOON
FOR
CITY OF LAWSON, MISSOURI

USGS MAP

SCALE: 1"=1000'

Date:
Drawn By:
Checked by:
Approved by:
File:
Job#


ATCHISON
TOPEKA
AND
SANTA FE
BM
1062
1056
1079
1072
1037
1018
1036
1014
899
26
25
30
Brushy
1042
PIPELINE
CLINTON CO
CLAY CO
1069
1044
1053
BM
1037
1028
35
36
31
69
1050
1077
1041
1045
1055
PACIFIC
AND
PACIFIC
Lawson
Cem
1040
1073
2
1
1049
ST. PAUL
AND
1031
1024
MM
MILWAUKEE
ROCK ISLAND
1054
1060
1074
1035
1052
11
12
990
Franklin Sch
1017
1013
1021
977

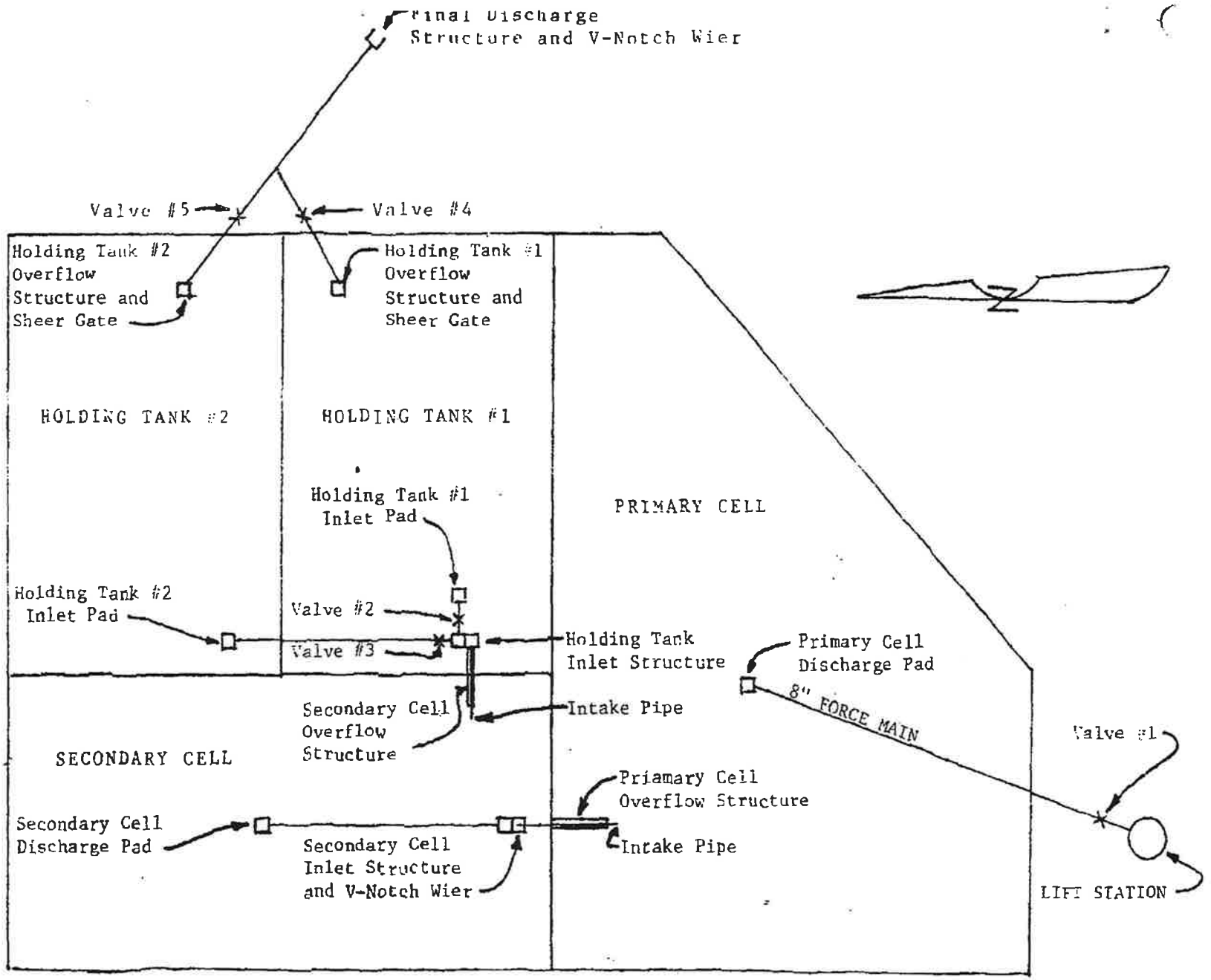


Fig. 3