

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-0136930

Owner: Ed and Ruth Rose
Address: 410 Vacation Lane, Reeds Spring, MO 65737

Continuing Authority: Same as Above
Address: Same as Above

Facility Name: Four Seasons Resort
Facility Address: 410 Vacation Lane, Reeds Spring MO 65737

Legal Description: NW¼, SE¼, Sec. 31, T23N, R23W, Stone County
UTM (X/Y): 458705 / 4056184

Receiving Stream: Table Rock Lake (L2) 303 (d)
First Classified Stream and ID: Table Rock Lake (L2) (07313) 303 (d)
USGS Basin & Sub-watershed No.: (11010002-0602)

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

FACILITY DESCRIPTION

Outfall #001 - Resort - SIC #7011

The use or operation of this facility does not require a CERTIFIED OPERATOR.

Septic tank / Advantex recirculating textile filter / chemical feed to facilitate phosphorus removal / flash mix / phosphorus settling / breakpoint chlorination / dechlorination / ultraviolet disinfection / post aeration / sludge disposal by contract hauler.

Design organic population equivalent is 38
Design flow is 0.00375 MGD.
Design sludge production is 0.38 dry tons/year.

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 644.051.6 of the Law.

January 1, 2015

Effective Date


Sara Parker Pauley, Director, Department of Natural Resources

December 31, 2019

Expiration Date


John Madros, Director, Water Protection Program

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (continued)					PAGE NUMBER 2 of 4	
					PERMIT NUMBER MO-0136930	
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 upon issuance and remain in effect until expiration of the permit. Such discharges shall be controlled, limited and monitored by the permittee as specified below:						
OUTFALL NUMBER AND EFFLUENT PARAMETER(S)	UNITS	FINAL EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS	
		DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
<u>Outfall #001</u>						
Flow	MGD	*		*	once/month**	24 hr. estimate
Biochemical Oxygen Demand ₅	mg/L	15		10	once/month**	grab
Total Suspended Solids	mg/L	20		15	once/month**	grab
<i>E. coli</i> (Note 1)	#/100 ml	630		126	once/month**	grab
pH – Units	SU	***		***	once/month**	grab
Total Residual Chlorine as CL ₂ (Note 2)	mg/L	0.019 (0.13 ML)		0.0095 (0.13 ML)	once/month**	grab
Ammonia as N	mg/L	12.1		4.6	once/month**	grab
Total Phosphorous as P	mg/L	*		0.5	once/month**	grab
Aluminum, Total Recoverable (Note 3)	mg/L	0.75		0.37	once/month**	grab
Iron, Total Recoverable (Note 3)	mg/L	*		*	once/month**	grab
OUTFALL NUMBER AND EFFLUENT PARAMETER(S)	UNITS	DAILY MINIMUM	WEEKLY AVERAGE MINIMUM	MONTHLY AVERAGE MINIMUM	MEASUREMENT FREQUENCY	SAMPLE TYPE
<u>Outfall #001</u>						
Dissolved Oxygen	mg/L	*		*	once/month**	grab
MONITORING REPORTS SHALL BE SUBMITTED MONTHLY ; THE FIRST REPORT IS DUE FEBRUARY 28, 2015. THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.						
B. STANDARD CONDITIONS						
IN ADDITION TO SPECIFIED CONDITIONS STATED HEREIN, THIS PERMIT IS SUBJECT TO THE ATTACHED <u>Parts I & III</u> STANDARD CONDITIONS DATED <u>October 1, 1980 and August 15, 1994</u> , AND HEREBY INCORPORATED AS THOUGH FULLY SET FORTH HEREIN.						

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (continued)

- * Monitoring requirement only.
- ** Reports shall be submitted by the 28th day of the month following the reporting period, e.g. Reporting period is the month of March (samples collected monthly), report due by April 28th.
- *** pH is measured in pH units and is not to be averaged. The pH for all facilities except lagoons is limited to the range of 6.5-9.0 pH units.

Note 1 – Final effluent limits of 126 cfu per 100 ml daily maximum and monthly average applicable year round due to the possible use of chlorine for ammonia treatment.

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (continued)

Note 2 - This permit contains a Total Residual Chlorine (TRC) limit.

- (a) This effluent limit is below the minimum quantification level (ML) of the most common and practical EPA approved CLTRC methods. The Department has determined the current acceptable ML for total residual chlorine to be 0.13 mg/L when using the DPD Colorimetric Method #4500 – CL G. from Standard Methods for the Examination of Waters and Wastewater. The permittee will conduct analyses in accordance with this method, or equivalent, and report actual analytical values. Measured values greater than or equal to the minimum quantification level of 0.13 mg/L will be considered violations of the permit and values less than the minimum quantification level of 0.13 mg/L will be considered to be in compliance with the permit limitation. The minimum quantification level does not authorize the discharge of chlorine in excess of the effluent limits stated in the permit.
- (b) Disinfection is required year-round unless the permit specifically states that “Final limitations and monitoring requirements for *E. coli* are applicable only during the recreational season from April 1 through October 31.” If your permit does not require disinfection during the non-recreational months, do not chlorinate in those months.
- (c) Do not chemically dechlorinate **if it is not needed to meet the limits in your permit**.
- (d) If no chlorine was used in a given sampling period, an actual analysis is not necessary. Simply report as “0 mg/L” TRC.

Note 3 - If no Aluminum or Iron was used in a given sampling period, an actual analysis is not necessary. Simply report as “0 mg/L”.

C. 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 V 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.

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

3. All outfalls must be clearly marked in the field.
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.

C. SPECIAL CONDITIONS (continued)

5. Water Quality Standards

- (a) 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.

6. Changes in Discharges of Toxic Substances:

The permittee shall notify the Director as soon as it knows or has reason to believe:

- (a) That any activity has occurred or will occur which would result in the discharge of any toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels:"
 - (1) One hundred micrograms per liter (100 µg/L);
 - (2) Two hundred micrograms per liter (200 µg/L) for acrolein and acrylonitrile; five hundred micrograms per liter (500 µg/L) for 2,5 dinitrophenol and for 2-methyl-4, 6-dinitrophenol; and one milligram per liter (1 mg/L) for antimony;
 - (3) Five (5) times the maximum concentration value reported for the pollutant in the permit application;
 - (4) The level established in Part A of the permit by the Director.
- (b) That they have begun or expect to begin to use or manufacture as an intermediate or final product or byproduct any toxic pollutant, which was not reported in the permit application.

7. Report as no-discharge when a discharge does not occur during the report period.

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

9. 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.

10. Bypasses are not authorized at this facility and are subject to 40 CFR 122.41(m). If a bypass occurs, the permittee shall report in accordance to 40 CFR 122.41(m)(3)(i), and with Standard Condition Part I, Section B, subsection 2.b. Bypasses are to be reported to the Southwest Regional Office Regional Office.

11. At least one sign shall appear on the fence on each side of each facility. Minimum wording shall be "SEWAGE TREATMENT FACILITY – KEEP OUT", in letters at least 2 inches high.

12. 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.

13. An all-weather access road shall be provided from a public right-of-way to the treatment facility.

Missouri Department of Natural Resources
Statement of Basis
Four Seasons Resort WWTF
MSOP #: MO-0136930
Stone County

A Statement of Basis (Statement) gives pertinent information regarding the applicable regulations and rationale for the development of the NPDES Missouri State Operating Permit (operating permit). This Statement includes Wasteload Allocations, Water Quality Based Effluent Limitations, and Reasonable Potential Analysis calculations as well as any other calculations that effect the effluent limitations of this operating permit. This Statement does not pertain to operating permits that include sewage sludge land application plans and variance procedures, and does not include the public comment process for this operating permit.

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

Plans and specifications for this facility have been reviewed under construction permit number CP0001122 by the Department of Natural Resources. The design engineer, a registered Missouri professional engineer, has certified that the plans and specifications meet all requirements of 10 CSR 20-Chapter 8 Waste Treatment Design.

Part I – Facility Information

Outfall #001 - Resort - SIC #7011

The use or operation of this facility does not require a CERTIFIED OPERATOR.

Septic tank / Advantex recirculating textile filter / chemical feed to facilitate phosphorus removal / flash mix / phosphorus settling / breakpoint chlorination / dechlorination / ultraviolet disinfection / post aeration / sludge disposal by contract hauler.

Design organic population equivalent is 38
Design flow is 0.00375 MGD.
Design sludge production is 0.38 dry tons/year.

OUTFALL(S) TABLE:

OUTFALL	DESIGN FLOW (CFS)	TREATMENT LEVEL	EFFLUENT TYPE	DISTANCE TO CLASSIFIED SEGMENT (MI)
001	0.00581	Secondary	Domestic	0.0

Receiving Water Body's Water Quality & Facility Performance History:

This is for a new operating permit.

Part II – Operator Certification Requirements

As per [10 CSR 20-6.010(8) Terms and Conditions of a Permit], permittees 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 20-9.010(2)(A)], requirements for operation by certified personnel shall apply to all wastewater treatment systems, if applicable, as listed below:

Not Applicable ; This facility is not required to have a certified operator.

Part III – Receiving Stream Information

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)]:
- Special Stream [10 CSR 20-7.015(6)]:
- Subsurface Water [10 CSR 20-7.015(7)]:
- All Other Waters [10 CSR 20-7.015(8)]:

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(3)].

RECEIVING STREAM(S) TABLE:

WATERBODY NAME	CLASS	WBID	DESIGNATED USES*	8-DIGIT HUC	EDU**
Table Rock Lake	L2	07313	AQL, LWW, WBC-A, SCR	11010002	Ozark/White

* - Irrigation (IRR), Livestock & Wildlife Watering (LWW), Protection of Warm Water Aquatic Life and Human Health-Fish Consumption (AQL), Cool Water Fishery(CLF), Cold Water Fishery (CDF), Whole Body Contact Recreation (WBC), Secondary Contact Recreation (SCR), Drinking Water Supply (DWS), Industrial (IND).

** - Ecological Drainage Unit

RECEIVING STREAM(S) LOW-FLOW VALUES TABLE:

RECEIVING STREAM (U, C, P)	LOW-FLOW VALUES (CFS)		
	1Q10	7Q10	30Q10
Table Rock Lake	13	35.5	135.2

MIXING CONSIDERATIONS TABLE:

MIXING ZONE (CFS) [10 CSR 20-7.031(4)(A)4.B.(II)(a)]		
1Q10	7Q10	30Q10
3.25	8.875	33.8

Zone of Initial Dilution: Not Allowed [10 CSR 20-7.031(4)(A)4.B.(I)(b)].

Part IV – 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.

Not Applicable ;

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(c); 40 CFR Part 122.44(I)] that requires a reissued permit to be as stringent as the previous permit with some exceptions.

- New facility, backsliding does not apply.

AREA-WIDE WASTE TREATMENT MANAGEMENT & CONTINUING AUTHORITY:

As per [10 CSR 20-6.010(8)(A)10.], when a Continuing Authority under paragraph 10 CSR 20-6.010(3)(B)1. or 2. is expected to be available for connection within the next five (5) years, any operating permit issued to a permittee under this paragraph, located within the service area of the paragraph (3)(B)1. or 2. facility, shall contain the following special condition... This language is contained in Special Condition #3 of this operating permit.

ANTIDegradation:

Policies which ensure protection of water quality for a particular water body where the water quality exceeds levels necessary to protect fish and wildlife propagation and recreation on and in the water. This also includes special protection of waters designated as outstanding natural resource waters. Antidegradation requirements are consistent with 40 CFR 131.12 that outlines methods used to assess activities that may impact the integrity of a water and protect existing uses. This policy may compel the state to maintain a level of water quality above those mandated by criteria.

Applicable ;

Please see **APPENDIX A – ANTIDegradation ANALYSIS.**

APPLICABLE PERMIT PARAMETERS:

Effluent parameters for conventional, non-conventional, and toxic pollutants have been obtained from the technology based effluent limits, water quality based limits, and from appropriate sections of the application.

BIO-SOLIDS, SLUDGE, & SEWAGE SLUDGE:

Bio-solids are solid materials resulting from wastewater treatment that meet federal and state criteria for beneficial uses (i.e. fertilizer). Sludge is any solid, semi-solid, or liquid waste generated from a municipal, commercial, or industrial wastewater treatment plant, water supply treatment plant, or air pollution control facility or any other such waste having similar characteristics and effect. 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://dnr.mo.gov/env/wpp/pub/index.html>, items WQ422 through WQ449.

- Not applicable;

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.

Not Applicable ;

The permittee/facility is not currently under Water Protection Program enforcement action.

FINDING OF AFFORDABILITY:

Pursuant to Section 644.145, RSMo., the Department is required to determine whether a permit or decision is affordable and makes a finding of affordability for certain permitting and enforcement decisions. This requirement applies to discharges from combined or separate sanitary sewer systems or publically-owned treatment works.

Not Applicable;

The Department is not required to determine findings of affordability because the facility is not a **combined or separate sanitary sewer system for a publically-owned treatment works.**

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

Not Applicable ;

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):

Limitations must control all pollutants or pollutant parameters that are or may be discharged at a level which will cause, have reasonable potential to cause, or contribute to an excursion above the Missouri Water Quality Standards.

Not Applicable ;

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 (BOD₅) and Total Suspended Solids (TSS) for Publicly Owned Treatment Works (POTWs). Please see the United States Environmental Protection Agency's (EPA) website for interpretation of percent removal requirements for National Pollutant Discharge Elimination System Permit Application Requirements for Publicly Owned Treatment Works and Other Treatment Works Treating Domestic Sewage @ www.epa.gov/fedrgstr/EPA-WATER/1999/August/Day-04/w18866.htm

Not Applicable ;

This wastewater treatment facility is not a POTW. Influent monitoring is not being required to determine percent removal.

SANITARY SEWER OVERFLOWS (SSOs), BYPASSES, INFLOW & INFILTRATION (I&I) – PREVENTION/REDUCTION:

Sanitary Sewer Overflows (SSOs) are defined as an untreated or partially treated sewage release are considered bypassing under state regulation [10 CSR 20-2.010(11)] and should not be confused with the federal definition of bypass. SSO's have a variety of causes including blockages, line breaks, and sewer defects that allow excess storm water and ground water to (1) enter and overload the collection system, and (2) overload the treatment facility. Additionally, SSO's can be also be caused by lapses in sewer system operation and maintenance, inadequate sewer design and construction, power failures, and vandalism. SSOs also include overflows out of manholes and onto city streets, sidewalks, and other terrestrial locations.

Additionally, Missouri RSMo §644.026.1 mandates that the Department require proper maintenance and operation of treatment facilities and sewer systems and proper disposal of residual waste from all such facilities.

- Not applicable. 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):

A schedule of remedial measures included in a permit, including 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.

Not Applicable ;

This permit does not contain a SOC.

STORM WATER 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 storm water 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 *Storm Water Management for Industrial Activities: Developing Pollution Prevention Plans and Best Management Practices* [EPA 832-R-92-006] (Storm Water Management), 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 Storm Water 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 storm water discharges.

Not Applicable ;

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

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 to total amount of pollutant that may be discharged into that stream without endangering its water quality.

Applicable ;

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

$$C = \frac{(C_s \times Q_s) + (C_e \times Q_e)}{(Q_e + Q_s)} \quad (\text{EPA/505/2-90-001, Section 4.5.5})$$

Where C = downstream concentration

C_s = upstream concentration

Q_s = upstream flow

C_e = effluent concentration

Q_e = effluent 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.

WLA MODELING:

Not Applicable ;

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

WATER QUALITY STANDARDS:

Per [10 CSR 20-7.031(3)], 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:

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.

Not Applicable ;

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 20-2.010(11) defines a bypass as the diversion of wastewater from any portion of wastewater treatment facility or sewer system 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.

- Not Applicable, this facility does not bypass.

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

Applicable ;

Table Rock Lake is listed on the 2010 Missouri 303(d) List for Nutrients, Chlorophyll and nitrogen.

– This facility is not considered to be a source of the above listed pollutant(s) or considered to contribute to the impairment of Table Rock Lake.

– This facility is considered to be a source of or has the potential to contribute to the above listed pollutant(s). When the nutrient implementation procedure is approved, the permit may be reopened and modified to include nutrient monitoring. Once a TMDL is developed, the permit will be modified to include WLAs from the TMDL.

Not Applicable ;

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

Adjusted Design Flow:

10 CSR 20-6.011(1)(B)1. provides for an Adjusted Design Flow when calculating permit fees on human sewage treatment facilities. If the average flow is sixty percent (60%) or less than the system’s design flow, the average flow may be substituted for the design flow when calculating the permit fee on human sewage treatment facilities. If the facility’s actual average flow is consistently 60% or less than the permitted design flow, the facility may qualify for a reduction in your fee when:

- The facility has a valid permit, or has applied for re-issuance, is in compliance with the terms, conditions and effluent limitations of the permit, and the facility has a good compliance history; and
- Flow is not expected to exceed 60% of design flow for the remaining term of the existing operating permit.

Not Applicable ;

At this time, the permittee has not requested an Adjusted Design Flow modification.

Outfall #001 – Main Facility Outfall
EFFLUENT LIMITATIONS TABLE:

PARAMETER	UNIT	BASIS FOR LIMITS	DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MODIFIED	PREVIOUS PERMIT LIMITATIONS
FLOW	MGD	1	*		*	N/A	N/A
BOD ₅	MG/L	1,6		15	10	N/A	N/A
TSS	MG/L	1,6		20	15	N/A	N/A
PH (S.U.)	SU	1	6.5-9.0		6.5-9.0	N/A	N/A
AMMONIA AS N	MG/L	1,6	12.1		4.6	N/A	N/A
ESCHERICHIA COLI	***	1,2,3	630		126	N/A	N/A
CHLORINE, TOTAL RESIDUAL	MG/L	1	0.019		0.0095	N/A	N/A
DISSOLVED OXYGEN	MG/L	8	*		*	N/A	N/A
TOTAL PHOSPHORUS	MG/L	1,8	*		0.5	N/A	N/A
IRON, TOTAL RECOVERABLE	MG/L	8	*		*	N/A	N/A
ALUMINUM, TOTAL RECOVERABLE	MG/L	3,6	0.75		0.37	N/A	N/A
MONITORING FREQUENCY	Please see Minimum Sampling and Reporting Frequency Requirements in the Derivation and Discussion Section below.						

* - **Monitoring requirement only**

*** - # of colonies/100mL; the Monthly Average for E. coli is a geometric mean.

**** - Parameter not previously established in previous state operating permit.

N/A – Not applicable

S – Same as previous operating permit

Basis for Limitations Codes:

- | | |
|--|-----------------------------------|
| 1. State or Federal Regulation/Law | 6. Antidegradation Policy |
| 2. Water Quality Standard (includes RPA) | 7. Water Quality Model |
| 3. Water Quality Based Effluent Limits | 8. Best Professional Judgment |
| 4. Lagoon Policy | 9. TMDL or Permit in lieu of TMDL |
| 5. Ammonia Policy | 10. WET test Policy |
| | 11. Dissolved Oxygen 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 (BOD₅).

Please see **APPENDIX A – ANTIDegradation ANALYSIS.**

Total Suspended Solids (TSS).

Please see **APPENDIX A – ANTIDegradation ANALYSIS.**

pH.

Please see **APPENDIX A – ANTIDegradation ANALYSIS.**

Ammonia as N

Please see APPENDIX A – ANTIDegradation ANALYSIS.

Escherichia coli (E. coli).

Please see APPENDIX A – ANTIDegradation ANALYSIS.

Total Residual Chlorine (TRC).

Please see APPENDIX A – ANTIDegradation ANALYSIS.

Total Phosphorus

Please see APPENDIX A – ANTIDegradation ANALYSIS.

Aluminum, Total Recoverable

Please see APPENDIX A – ANTIDegradation ANALYSIS.

Iron, Total Recoverable

Please see APPENDIX A – ANTIDegradation ANALYSIS.

Dissolved Oxygen. Monitoring requirement only. Monitoring for dissolved oxygen are included to determine whether “reasonable potential” to exceed water quality standards exists after the discharge begins.

Minimum Sampling and Reporting Frequency Requirements.

PARAMETER	SAMPLING FREQUENCY	REPORTING FREQUENCY
FLOW	MONTHLY	MONTHLY
BOD ₅	MONTHLY	MONTHLY
TSS	MONTHLY	MONTHLY
PH	MONTHLY	MONTHLY
AMMONIA AS N	MONTHLY	MONTHLY
<i>E. COLI</i>	MONTHLY	MONTHLY
TOTAL RESIDUAL CHLORINE	MONTHLY	MONTHLY
DISSOLVED OXYGEN	MONTHLY	MONTHLY
IRON, TOTAL RECOVERABLE	MONTHLY	MONTHLY
ALUMINUM, TOTAL RECOVERABLE	MONTHLY	MONTHLY
TOTAL PHOSPHORUS	MONTHLY	MONTHLY

Sampling Frequency Justification:

This facility is a new facility monthly sampling is required to determine if the facility will be in compliance with the operating permit in accordance with Appendix U of Missouri’s Water Pollution Control Permit Manual. The Clean Water Commission has directed the Department to proceed with amending 10 CSR 20-7.015 to reduce the sampling frequency required for E.coli to a lesser frequency, still protective of water quality standards, for smaller facilities, including those with discharges of 100,000 gallons per day or less.

Sampling Type Justification

Recirculating filters are not define in the regulations, they are not technically mechanical plants and based on the small flow grab samples are appropriate.

Part V –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.

Typical effluent limits for ammonia for a facility in a location such as this, under current regulations, with lake mixing criteria, would be 12.1 mg/L daily maximum, 4.6 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, with lake mixing criteria, will be 8.1 mg/L daily maximum, 3.1 mg/L monthly average.

Actual effluent limits will depend in part on the actual performance of the facility.

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.

Public noticed from 3/16/12 to 4/15/12.

Date of Factsheet: March 13, 2012:

Mr. Joshua L. Grosvenor, EI
WP Engineering Unit
(417) 891-4300
josh.grosvenor@dnr.mo.gov

Finalized by Todd Blanc, 11/21/14
WPP Engineering Section, 314-416-2064
Todd.Blanc@dnr.mo.gov



APPENDIX A – ANTIDEGRADATION ANALYSIS:

You may proceed with submittal of an application for an operating permit and antidegradation review public notice, an engineering report, or a complete application for a construction permit to Southwest Regional Office (SWRO). These submittals must reflect the design flow, facility description, and general treatment components of this WQAR or this preliminary determination may have to be revisited. The proposed technology is considered a new technology, and you will need to submit additional data with your application.. With a new technology, you will need to work with the review engineer to ensure equipment is sized properly and that the technology will consistently achieve the proposed effluent limits. The operating permit may contain additional requirements to evaluate the effectiveness of the technology once the facility is in operation.

Following the Department's public notice of draft Missouri State Operating Permit including the antidegradation review findings and preliminary determination, the Department will review any public notice comments received. If significant comments are made, the project may require another public notice and potentially another antidegradation review. If no comments are received or comments are resolved without another public notice, these findings and determinations will be considered final. Following issuance of the construction permit and completion of the actual facility construction, the Department will proceed with the issuance of the operating permit.

If you should have questions, please feel free to contact Leasue Meyers by telephone at (573) 751-7906, by e-mail at leasue.meyers@dnr.mo.gov, or by mail at P.O. Box 176, Jefferson City, Missouri 65102-0176.

Sincerely,

WATER PROTECTION PROGRAM

A handwritten signature in black ink, appearing to read "John R. Mefrakis" with a stylized flourish at the end.

Refaat Mefrakis, P.E., Chief
NPDES Permits and Engineering Section

Enclosures

RM:lmn

c: Total Environmental Services, Inc., ATTN: Mr. Seth Coggin, 515 Old South 5,
Camdenton, MO 65020
Josh Grosvenor, SWRO
File Copy

**Missouri Department of Natural Resources
Water Protection Program
Water Pollution Control Branch
NPDES Permits and Engineering Section**

Water Quality and Antidegradation Review

*For the Protection of Water Quality and Determination of Effluent Limits for
Discharge to Table Rock Lake*

by

Four Seasons Resort Wastewater Treatment Facility



October 2011

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1. FACILITY INFORMATION

FACILITY NAME: Four Seasons Resort WWTF NPDES #: NEW FACILITY

FACILITY TYPE/DESCRIPTION: Proposed Advantex recirculating packed bed media facility with ultraviolet disinfection, chemical addition for phosphorus treatment and breakpoint chlorination for ammonia treatment. The proposed facility will replace 12 onsite systems for an existing 14 cabins. The proposed flow is 3,750 gallons per day.

COUNTY: Stone UTM COORDINATES: x= 458705; y= 4056184
 12- DIGIT HUC: 11010002-0602 LEGAL DESCRIPTION: NW ¼, SE ¼, Sec. 31, T23N, R23W
 EDU*: Ozark/White ECOREGION: Ozark Highlands/ White River Plains

* - Ecological Drainage Unit

2. WATER QUALITY INFORMATION

In accordance with Missouri's Water Quality Standard [10 CSR 20-7.031(2)] and federal antidegradation policy at Title 40 Code of Federal Regulation (CFR) Section 131.12 (a), the Missouri Department of Natural Resources (MDNR) developed a statewide antidegradation policy and corresponding procedures to implement the policy. A proposed discharge to a water body will be required to undergo a level of Antidegradation Review which documents that the use of a water body's available assimilative capacity is justified. Effective August 30, 2008, a facility is required to use *Missouri's Antidegradation Rule and Implementation Procedure (AIP)* for new and expanded wastewater discharges.

2.1. WATER QUALITY HISTORY:

New facility, no water quality history. Table Rock Lake is on the 303(d) list for nutrients.

OUTFALL	DESIGN FLOW (CFS)	TREATMENT LEVEL	RECEIVING WATERBODY	DISTANCE TO CLASSIFIED SEGMENT (MI)
001	0.00581	Secondary	Table Rock Lake	0.0

3. RECEIVING WATERBODY INFORMATION

WATERBODY NAME	CLASS	WBID	LOW-FLOW VALUES (CFS)			DESIGNATED USES**
			1Q10	7Q10	30Q10	
Table Rock Lake	L2	7313	--	--	--	AQL, LWV, SCR, WBC(A)

** Protection of Warm Water Aquatic Life and Human Health-Fish Consumption (AQL), Cold Water Fishery (CDF), Cool Water Fishery (CLF), Drinking Water Supply (DWS), Industrial (IND), Irrigation (IRR), Livestock & Wildlife Watering (LWW), Secondary Contact Recreation (SCR), Whole Body Contact Recreation (WBC).

RECEIVING WATER BODY SEGMENT #1: Little Anne's Creek Cove

Upper end segment* UTM coordinates: x= 458705; y= 4056184(outfall)

Lower end segment* UTM coordinates: x= 458699; y= 4056169(confluence with Little Anne's Creek Cove)

RECEIVING WATER BODY SEGMENT #1: Little Anne's Creek Cove confluence with Table Rock Lake

Upper end segment* UTM coordinates: x= 458699; y= 4056169 (Little Anne's Creek Cove confluence)

Lower end segment* UTM coordinates: x= 457789; y= 4056155(confluence with Table Rock Lake main stem)

*Segment is the portion of the stream where discharge occurs. Segment is used to track changes in assimilative capacity and is bound at a minimum by existing sources and confluences with other significant water bodies.

4. GENERAL COMMENTS

Total Environmental Services prepared, on behalf of Four Seasons Resort, the *Antidegradation Report Proposed Four Seasons WWTF* dated August 2011. Geohydrological Evaluation was submitted with the request and the receiving stream is gaining for discharge purposes (Appendix A: Map). Applicant elected to assume that all pollutants of concern (POC) are significantly degrading the receiving stream in the absence of existing water quality. Dissolved oxygen modeling was not completed as the applicant proposed the protective limits of 10 mg/L as stated in the Dissolved Oxygen Modeling Guidance, and as the discharge is directly into Table Rock Lake. An alternative analysis was conducted to fulfill the requirements of the AIP. A Missouri Department of Conservation Natural Heritage Review was obtained by the applicant; and no endangered species were found to be impacted by the discharge (Appendix B). Appendix C contains the geohydrological evaluation. Information that was provided by the applicant in the submitted report and summary forms in Appendix D was used to develop this review document.

5. ANTIDegradation REVIEW INFORMATION

The following is a review of the *Antidegradation* dated July 2011.

5.1. TIER DETERMINATION

Below is a list of pollutants of concern reasonably expected to be in the discharge (see Appendix D: Tier Determination and Effluent Limit Summary). Pollutants of concern are defined as those pollutants "proposed for discharge that affects beneficial use(s) in waters of the state. POCs include pollutants that create conditions unfavorable to beneficial uses in the water body receiving the discharge or proposed to receive the discharge." (AIP, Page 7). Tier 2 was assumed for all POCs (see Appendix D).

Table 1. Pollutants of Concern and Tier Determination

POLLUTANTS OF CONCERN	TIER*	DEGRADATION	COMMENT
BOD ₅	2	Significant	
Total Suspended Solids (TSS)	**	Significant	
Ammonia	2	Significant	
pH	***	Significant	Permit limits applied
Escherichia coli (E. coli)	2	Significant	Permit limits applied
Phosphorus, Total	2	Significant	Permit limits applied
Aluminum, Total Recoverable	2	Significant	
Iron, Total Recoverable	2	Significant	

* Tier assumed. Tier determination not possible: ** No in-stream standards for these parameters. *** Standards for these parameters are ranges

The following Antidegradation Review Summary attachments in Appendix D were used by the applicant:

- Tier Determination and Effluent Summary
- Attachment A, Tier 2 with significant degradation.

5.2. EXISTING WATER QUALITY

No existing water quality data was submitted. All POCs were considered to be Tier 2 and significantly degraded in the absence of existing water quality.

5.3. DEMONSTRATION OF NECESSITY AND SOCIAL AND ECONOMIC IMPORTANCE

Missouri's antidegradation implementation procedures specify that if the proposed activity does result in significant degradation then a demonstration of necessity (i.e., alternatives analysis) and a determination of social and economic importance are required. Six alternatives from non-degrading to less degrading to degrading alternatives were evaluated. Subsurface irrigation and land application were eliminated as options due to the poor soils present, the limited land available, and the cost of land in the Table Rock Lake area. Connection to a regional sewer was considered and eliminated as the closest publicly owned treatment plant, Kimberling City, is five miles away and the surrounding private resorts and subdivisions do not have the capacity to add additional flows. For discharging options, the proposed facility considered three options: extended aeration, recirculating sand filter, and the Advantex packed bed media filter. Alternative four, the extended aeration facility was considered the base case as it met Lake Water Quality Standards and had the lowest present worth cost. Extended aeration is an established technology and is common throughout the state. This was not the preferred alternative due to the variability of the amount of flows and their strength, especially in meeting ammonia limits and does not remove the highest amount of BOD. This was not the preferred alternative as it does not achieve the highest removal of BOD.

Alternative five, the recirculating sand filter, was considered practical and economical as it meets water quality standards. Recirculating sand filters are common throughout the state, especially near the lakes due to their small footprint. This was not the preferred alternative as it does not have the highest BOD removal rate and RSF can have trouble meeting ammonia effluent limits. Also this alternative had higher present worth cost associated with it than the extended aeration plant or alternative six, the Advantex Filter.

Alternative six, the Advantex packed bed media filter was considered practical and economical at 15% more than the extended aeration plant. This is the preferred alternative as due to the smallness of the operating footprint, the aesthetic associated with the process, the lack of blowers and noise, the ability to handle variable flows, and the ease of maintenance. This alternative also achieved the highest BOD removal. The applicant proposed adding chlorination to further ensure that the ammonia effluent limits are met and to potentially provide backup for the ultraviolet disinfection system.

Table 2: Alternatives Analysis Comparison

Parameter	Extended Aeration	Recirculating Sand Filter	Advantex Filter
BOD	15 mg/L	15 mg/L	10 mg/L
TSS	20 mg/L	10 mg/L	15 mg/L
Ammonia	<3	<6	<6
Phosphorus	0.5 mg/L	0.5 mg/L	0.5 mg/L
Practical	Y	Y	Y
Economical	Y	Y	Y
Present Worth *	\$247,000	\$289,500	\$283,000
Ratio	1.0	1.17	1.15

* Present Worth cost at 40 year design life and 6.0% interest

The identified community is specifically the people residing at the resort, along with those staying in the cove surrounding the resort. The community also includes all people that will be using Table Rock Lake and other entertainment in the area. By replacing twelve onsite systems with one centralized advanced wastewater system, this provides an environmental and health benefit to the public by providing disinfection and limiting the pollutants of concern entering Table Rock Lake.

5.3.1. REGIONALIZATION ALTERNATIVE

Within Section II B 1. of the AIP, discussion of the potential for discharge to a regional waste water collection system is mentioned. The applicant provided discussion of this alternative. There is not a regional authority available, so a waiver required under 10 CSR 20-6.010(3) (B) 1 is not required. The Continuing Authority listed on forms is Four Seasons Resort.

NEEDS A WAIVER TO PREVENT CONFLICT WITH AREA WIDE MANAGEMENT PLAN APPROVED UNDER SECTION 208 OF THE CLEAN WATER ACT AND UNDER 10 CSR 20-6.010(3)(B) 1 CONTINUING AUTHORITIES? (Y OR N) N

6. GENERAL ASSUMPTIONS OF THE WATER QUALITY AND ANTIDegradation REVIEW

1. A Water Quality and Antidegradation Review (WQAR) assumes that [10 CSR 20-6.010(3) Continuing Authorities and 10 CSR 20-6.010(4) (D), consideration for no discharge] has been or will be addressed in a Missouri State Operating Permit or Construction Permit Application.
2. A WQAR does not indicate approval or disapproval of alternative analysis as per [10 CSR 20-7.015(4) Losing Streams], and/or any section of the effluent regulations.
3. Changes to Federal and State Regulations made after the drafting of this WQAR may alter Water Quality Based Effluent Limits (WQBEL).
4. Effluent limitations derived from Federal or Missouri State Regulations (FSR) may be WQBEL or Effluent Limit Guidelines (ELG).
5. WQBEL supersede ELG only when they are more stringent. Mass limits derived from technology based limits are still appropriate.
6. A WQAR does not allow discharges to waters of the state, and shall not be construed as a National Pollution Discharge Elimination System or Missouri State Operating Permit to discharge or a permit to construct, modify, or upgrade.
7. Limitations and other requirements in a WQAR may change as Water Quality Standards, Methodology, and Implementation procedures change.
8. Nothing in this WQAR removes any obligations to comply with county or other local ordinances or restrictions.
9. If the proposed treatment technology is not covered in 10 CSR 20-8 Design Guides, the treatment process may be considered a new technology. As a new technology, the permittee will need to work with the review engineer to ensure equipment is sized properly. The operating permit may contain additional requirements to evaluate the effectiveness of the technology once the facility is in operation. This Antidegradation Review is based on the information provided by the facility and is not a comprehensive review of the proposed treatment technology. If the review engineer determines the proposed technology will not consistently meet proposed effluent limits, the permittee will be required to revise their Antidegradation Report.

7. MIXING CONSIDERATIONS

Triangular Prism Method

Mixing Zone (MZ) Parameters: According to the USGS 1:24,000K Quadrangle, the cove width near the facility outfall location is approximately 217.4 feet (ft). One quarter of this width equals 54.35 ft. Therefore, MZ Width = 54.35 feet [10 CSR 20-7.031 (4)(A) 4.B.(IV)(a)].

Mixing Zone (MZ): The flow volume approximates a triangular prism because of the slope of the lake bottom, where the formula is $\text{Volume} = L * W * (D * 0.5)$. Assuming that the width will be either side of the

discharge (MZ) length (100 feet) to form the plume effect, the box dimensions are length (L) = 100 ft, width (W) = 54.35 ft, and depth (D) = 15 ft. Depth was obtained using mixing zone length projected 100 ft from shoreline to the intersecting contour on 7.5' USGS topographic map. Volume = L*W*(D*(0.5)) = (100)*(54.35)*(15*0.5)= 30,375 ft³. The flow volume of 40,762.5 ft³ is assumed as the daily mixing zone. Therefore (40,762.5 ft³/day)*(1 day/86,400 sec) = 0.47 ft³/sec.

Zone of Initial Dilution (ZID): Not Allowed [10 CSR 20-7.031(4)(A)4.B.(IV)(b)]

8. PERMIT LIMITS AND MONITORING INFORMATION

OUTFALL #001

WASTELOAD ALLOCATION STUDY CONDUCTED (Y OR N):	Y	USE ATTAINABILITY ANALYSIS CONDUCTED (Y OR N):	N	WHOLE BODY CONTACT USE RETAINED (Y OR N):	Y
WET TEST (Y OR N):	N	FREQUENCY:	NA	AEC:	NA
				METHOD:	NA

TABLE 3: EFFLUENT LIMITS

PARAMETER	UNITS	DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	BASIS FOR LIMIT (NOTE 2)	MONITORING FREQUENCY
FLOW	MGD	*		*	FSR	ONCE/MONTH
BIOCHEMICAL OXYGEN DEMAND ₅ ***	MG/L	15		10	PEL	ONCE/MONTH
TOTAL SUSPENDED SOLIDS	MG/L	20		15	PEL	ONCE/MONTH
PH	SU	6.5-9.0		6.5-9.0	FSR	ONCE/MONTH
AMMONIA AS N	MG/L	12.1		4.6	WQBEL/PEL	ONCE/MONTH
ESCHERICHIA COLIFORM (E. COLI)	NOTE 1	630**		126**	FSR	ONCE/MONTH
CHLORINE, TOTAL RESIDUAL	MG/L	0.019 (0.13 ML)		0.0095 (0.13 ML)	FSR	ONCE/MONTH
PHOSPHORUS, TOTAL	MG/L	*		0.5	FSR	ONCE/MONTH
ALUMINUM, TOTAL RECOVERABLE	µG/L	750		370	WQBEL	ONCE/MONTH
IRON, TOTAL RECOVERABLE	µG/L	*		*	WQBEL	ONCE/MONTH

NOTE 1 - COLONIES/100 ML

NOTE 2- WATER QUALITY-BASED EFFLUENT LIMITATION --WQBEL; OR MINIMALLY DEGRADING EFFLUENT LIMIT--MBEL; OR PREFERRED ALTERNATIVE EFFLUENT LIMIT-PEL; TECHNOLOGY-BASED EFFLUENT LIMIT-TBEL;OR NO DEGRADATION EFFLUENT LIMIT--NDEL; OR FSR -- FEDERAL/STATE REGULATION; OR N/A--NOT APPLICABLE. ALSO, PLEASE SEE THE **GENERAL ASSUMPTIONS OF THE WQAR #4 & #5.**

* - Monitoring requirements only.

** - The Monthly Average for E. coli shall be reported as a Geometric Mean.

9. RECEIVING WATER MONITORING REQUIREMENTS

No receiving water monitoring requirements recommended at this time.

10. DERIVATION AND DISCUSSION OF LIMITS

Wasteload allocations and limits were calculated using two methods:

1) Water quality-based – Using water quality criteria or water quality model results and the dilution equation below:

$$C = \frac{(C_s \times Q_s) + (C_e \times Q_e)}{(Q_e + Q_s)} \quad \text{(EPA/505/2-90-001, Section 4.5.5)}$$

Where C = downstream concentration

C_s = upstream concentration

Q_s = upstream flow

C_e = effluent concentration

Q_e = effluent 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).

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).

2) Alternative Analysis-based – Using the preferred alternative's treatment capacity for conventional pollutants such as BOD₅ and TSS that are provided by the consultant as the WLA, the significantly-degrading effluent average monthly and average weekly limits are determined by applying the WLA as the average monthly (AML) and multiplying the AML by 1.5 to derive the average weekly limit (AWL). For toxic and nonconventional pollutant such as ammonia, the treatment capacity is applied as the significantly-degrading effluent monthly average (AML). A maximum daily can be derived by dividing the AML by 1.19 to determine the long-term average (LTA). The LTA is then multiplied by 3.11 to obtain the maximum daily limitation. This is an accepted procedure that is defined in USEPA's "Technical Support Document For Water Quality-based Toxics Control" (EPA/505/2-90-001).

Note: Significantly-degrading effluent limits have been based on the authority included in Section III. Permit Consideration of the AIP. Also under 40 CFR 133.105, permitting authorities shall require more stringent limitations than equivalent to secondary treatment limitations for 1) existing facilities if the permitting authority determines that the 30-day average and 7-day average BOD₅ and SS effluent values that could be achievable through proper operation and maintenance of the treatment works, and 2) new facilities if the permitting authority determines that the 30-day average and 7-day average BOD₅ and SS effluent values that could be achievable through proper operation and maintenance of the treatment works, considering the design capability of the treatment process.

10.1. *OUTFALL #001: MAIN FACILITY OUTFALL LIMIT DERIVATION*

- **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 (BOD₅).** BOD₅ limits of 10 mg/L monthly average, 15 mg/L average weekly limits were proposed. The department believes the effluent limits will be protective of the dissolved oxygen limit, according to the Dissolved Oxygen Modeling Guidance. Influent monitoring may be required for this facility in its Missouri State Operating Permit.
- **Total Suspended Solids (TSS).** TSS effluent limits of 15 mg/L monthly average, 20 mg/L average weekly limit were proposed. The influent monitoring may be required for this facility in its Missouri State Operating Permit.
- **pH.** pH shall be maintained in the range from 6.5 to nine (6.5– 9.0) standard units [10 CSR 20-7.015 (3)(A)1B.].

- **Total Ammonia Nitrogen.** Applicant supplied an alternative analysis-based technology limit of <6.0 mg/L for preferred alternative treatment (see Appendix D). MDNR calculated the summer Water Quality Based Effluent Limits, using the mass balance equation, see WQBEL below. Early Life Stages Present Total Ammonia Nitrogen criteria apply [10 CSR 20-7.031(4)(B)7.C. & Table B3]. Background total ammonia nitrogen = 0.01 mg/L. No ammonia decay due to the discharge being piped directly into Table Rock Lake. Water Quality Based Effluent Limits (WQBEL) was calculated using the Triangular Prism Method for determining the Regulatory Mixing Zone. Only the summer WQBEL limits were calculated as the acute criteria is the limiting criterion for both seasons. As the proposed effluent limit of less than 6.0 mg/L is not more stringent than the WQBEL, year round effluent limits will be applied of MDL=12.1 mg/L and AML= 4.6 mg/L.

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

Summer: April 1 – September 30, Winter: October 1 – March 31.

Summer

$$C_e = (((Q_e + Q_s) * C) - (Q_s * C_s)) / Q_e$$

$$\text{Chronic WLA: } C_e = ((0.00581 + 0.47)1.5 - (0.47 * 0.01)) / 0.00581$$

$$C_e = 122 \text{ mg/L}$$

$$\text{Acute WLA: } C_e = ((0.00581 + 0.0)12.1 - (0.0 * 0.01)) / 0.00581$$

$$C_e = 12.1 \text{ mg/L}$$

$$LTA_c = 122 \text{ mg/L (0.780)} = 95.19 \text{ mg/L}$$

$$LTA_a = 12.1 \text{ mg/L (0.321)} = 3.88 \text{ mg/L}$$

$$\text{MDL} = 3.88 \text{ mg/L (3.11)} = 12.1 \text{ mg/L}$$

$$\text{AML} = 3.88 \text{ mg/L (1.19)} = 4.6 \text{ mg/L}$$

[CV = 0.6, 99th Percentile, 30 day avg.]

[CV = 0.6, 99th Percentile]

[CV = 0.6, 99th Percentile]

[CV = 0.6, 95th Percentile, n = 30]

- **E. coli.** Effluent limitations for WBC(A) are 126 colonies per 100 ml monthly average and 630 colonies per 100 ml daily maximum [10 CSR 20-7.015 (8)(A)4.] and [10 CSR 20-7.031(4)(C), Table A]. Per the Clean Water Commission Directive in January 2011, the *E. Coli* sampling/monitoring frequency shall be set to match the monitoring frequency of other parameters in the permit during the recreational season (April 1 – October 31), with compliance to be determined by calculating the geometric mean of all samples collected during the reporting period (samples collected during the calendar week for the weekly average, and samples collected during the calendar month for the monthly average). The weekly average requirement is consistent with EPA federal regulation 40 CFR 122.45(d). Further, the limit may change depending on the outcome of future state effluent regulation revision. Please see **GENERAL ASSUMPTIONS OF THE WQAR #7**. Facility is proposing using Ultraviolet Disinfection to meet *E. Coli* effluent limits.
- **Phosphorus, Total.** Monthly average = 0.5 mg/L. Facility plans to use chemical treatment of alum or ferric chloride to meet phosphorus limits. 10 CSR 20-7.015(3)(F).
- **Total Residual Chlorine (TRC).** Warm-water Protection of Aquatic Life CCC = 10 µg/L, CMC = 19 µg/L [10 CSR 20-7.031, Table A]. Background TRC = 0.0 µg/L. Facility is proposing using breakpoint

chlorination to help meet ammonia effluent limits. Standard compliance language for TRC, including the minimum level (ML), should be included in the permit.

$$C_e = ((Q_e + Q_s) * C) - (Q_s * C_s) / Q_e$$

$$\text{Chronic WLA: } C_e = ((0.00581 + 0.47)10 - (0.47 * 0.0)) / 0.00581$$

$$C_e = 818.95 \mu\text{g/L}$$

$$\text{Acute WLA: } C_e = ((0.00581 + 0.0)19 - (0.0 * 0.0)) / 0.00581$$

$$C_e = 19 \mu\text{g/L}$$

$$LTA_c = 818.95 \mu\text{g/L} (0.527) = 431.6 \mu\text{g/L} \quad [\text{CV} = 0.6, 99^{\text{th}} \text{ Percentile}]$$

$$LTA_a = 19 \mu\text{g/L} (0.321) = 6.1 \mu\text{g/L} \quad [\text{CV} = 0.6, 99^{\text{th}} \text{ Percentile}]$$

$$\text{MDL} = 6.1 \mu\text{g/L} (3.11) = 19 \mu\text{g/L} \quad [\text{CV} = 0.6, 99^{\text{th}} \text{ Percentile}]$$

$$\text{AML} = 6.1 \mu\text{g/L} (1.55) = 9.5 \mu\text{g/L} \quad [\text{CV} = 0.6, 95^{\text{th}} \text{ Percentile, } n = 4]$$

- **Aluminum, Total Recoverable.** The facility is proposing to use the addition of alum to meet the total phosphorus limit. Protection of aquatic criteria acute = 750 $\mu\text{g/l}$. MDL = 750 $\mu\text{g/l}$; AML = 370 $\mu\text{g/l}$.

$$\text{Acute WLA: } C_e = ((0.00581 + 0.0)750 - (0.0 * 0.0)) / 0.00581$$

$$C_e = 750 \mu\text{g/L}$$

$$LTA_a = 750(0.321) = 241 \mu\text{g/L} \quad [\text{CV} = 0.6, 99^{\text{th}} \text{ Percentile}]$$

$$\text{MDL} = 241(3.11) = 750 \mu\text{g/L} \quad [\text{CV} = 0.6, 99^{\text{th}} \text{ Percentile}]$$

$$\text{AML} = 241(1.55) = 370 \mu\text{g/L} \quad [\text{CV} = 0.6, 95^{\text{th}} \text{ Percentile, } n = 4]$$

- **Iron, Total Recoverable.** The facility is proposing to use the addition of ferric chloride to meet the total phosphorus limit. Monitoring only for the protection of Aquatic Criteria chronic = 1,000 $\mu\text{g/L}$.

11. ANTIDegradation REVIEW PRELIMINARY DETERMINATION

The proposed new facility discharge, Four Seasons WWTF, 0.003750 MGD will result in significant degradation of the segment identified in Table Rock Lake. Extended Aeration was determined to be the base case technology (lowest cost alternative that meets technology and water quality based effluent limitations). The cost effectiveness of the other technologies were evaluated, and the Advantex packed bed media filter was found to be cost effective and was determined to be the preferred alternative.

The Advantex System is not covered in 10 CSR 20-8 Design Guides and may be considered a new treatment technology. As a new technology, the permittee will need to work with the review engineer to ensure equipment is sized properly and that the technology will consistently achieve the proposed effluent limits. The operating permit may contain additional requirements to evaluate the effectiveness of the technology once the facility is in operation.

Per the requirements of the AIP, the effluent limits in this review were developed to be protective of beneficial uses and to attain the highest statutory and regulatory requirements. MDNR has determined that the submitted review is sufficient and meets the requirements of the AIP. No further analysis is needed for this discharge.

Reviewer: Leasue Meyers

Four Seasons Resort WWTF

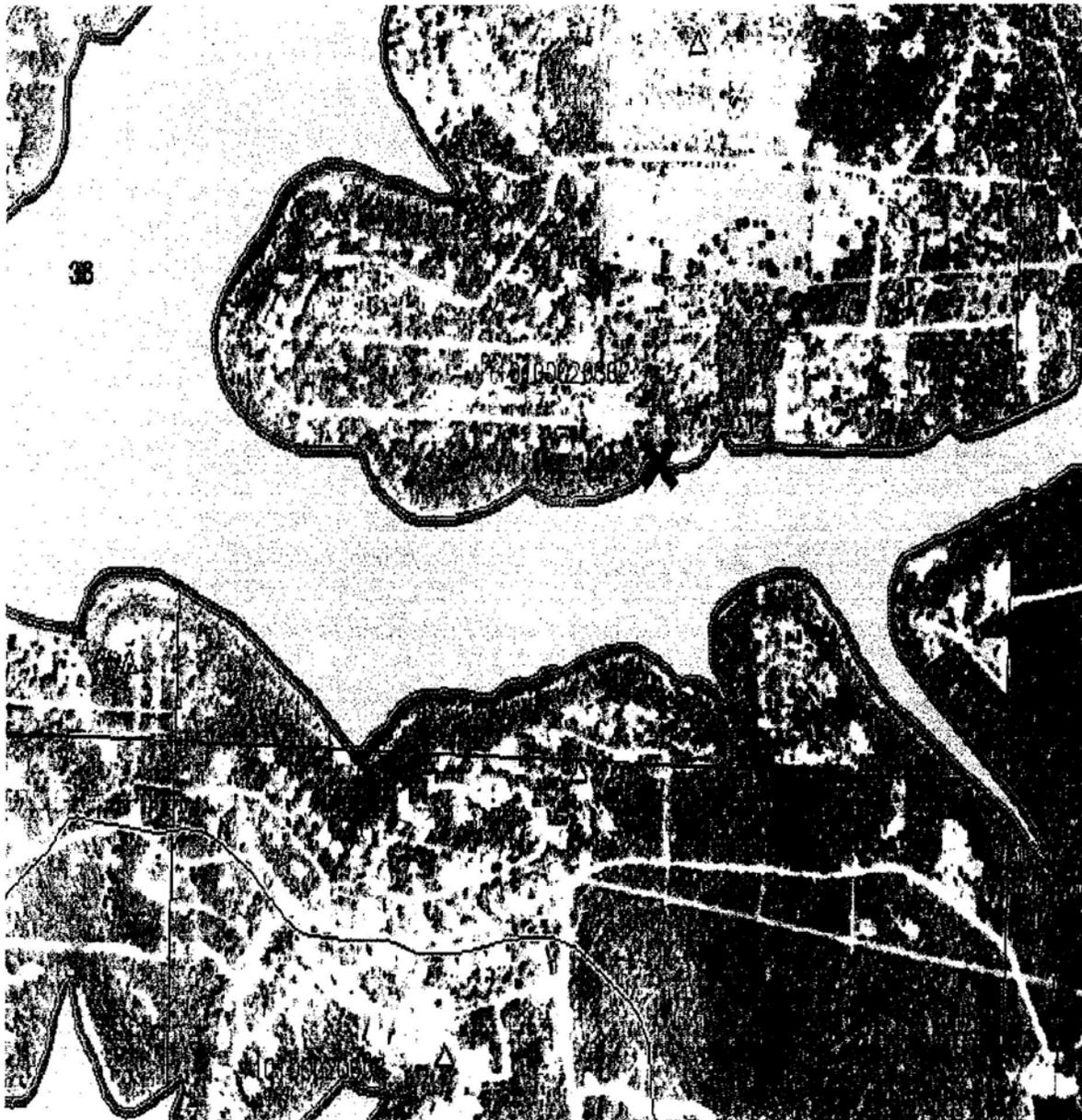
10/14/11

Page 11

Date: October 12, 2011

Unit Chief: John Rustige, P.E. 

Appendix A: Map of Discharge Location



Appendix B: Natural Heritage Review

6/23/2011 5:35:54 PM

This document (queryID 1324) is confirmation of your Level 2 Species of Concern Response.

Your login and project information below:

User ID: 1324
First Name: Seth
Last Name: Coggin
Email Address: sethcoggin@totalenvironmental.com
Business: Total Environmental Services, Inc.
Project: Wastewater

Your query information below:

User ID	Response Level	Township	Range	Section	Direction	Latitude	Longitude	Point Line	UTM North	UTM East	Rectangle	TimeStamp
1324		23	23	31	W	0	0		0	0		6/23/2011 5:34:10 PM

Thank you for accessing the Missouri Natural Heritage Review Web Site developed by the Missouri Department of Conservation and the U.S. Fish and Wildlife Service with funding assistance by the U.S. Army Corps of Engineers. The purpose of this web site is to provide information to federal, state and local agencies, organizations, municipalities, corporations and consultants regarding sensitive fish, wildlife, plants and their habitats to assist in planning, designing and permitting stages of projects.

The results of a database query of the above referenced location indicate that no federally-listed threatened or endangered species (including those species proposed for listing) or critical habitat (designated or proposed) are known to occur on or near the project site. The U.S. Fish and Wildlife Service response is provided under the authority of the National Environmental Policy Act of 1969 (42 U.S.C. 4321-4347) and the Endangered Species Act of 1973, as amended (16 U.S.C. 1531-1543).

The results of a database query of the above-referenced location indicate that state endangered species other species or natural communities of conservation concern (e.g., prairie, glade, fen) are known to occur on or near the project site and may be impacted by project construction activities. An MDC specialist needs to review your request to determine if your project is close enough to impact the resource in question. Please contact the Missouri Department of Conservation for further consultation. A written request containing the project description, county name, U.S.G.S. 1:24,000 topographic quadrangle name, township, range and section, and a location map (e.g., U.S.G.S topo. quad.) with the project area clearly identified, and a copy of this document noting the unique reference code should be sent to: Missouri Department of Conservation, Policy Coordination Section, Missouri Natural Heritage Review Web Site, P.O. Box 180, Jefferson City, MO 65102-0180.

The web site also provides additional information regarding management practices for planning purposes if your project is within the known range of certain sensitive species and habitats (e.g., karst areas, grasslands, stream reaches with critical spawning restrictions). Please note that this information does not serve as a substitute for direct consultation with Missouri Department of Conservation staff.

Thank you for helping us protect Missouri's sensitive natural resources. If you have any questions or require further assistance you may contact the U.S. Fish and Wildlife Service at (573)234-2132 or the Missouri Department at (573)522-4115, Ext. 3250.

Missouri Department of Conservation U.S. Fish and Wildlife Service
Missouri Natural Heritage Database Environmental Review Web Site

http://mdcgis.mdc.mo.gov/heritage/docs/response/13_4.asp



Appendix C: Geohydrological Evaluation



Missouri Department Of Natural Resources

Division of Geology and Land Survey
P.O. Box 250
Rolla, Missouri 65402-0250
Phone - 573.368.2161 Fax - 573.368.2111
E-mail - gspgeol@dnr.mo.gov

Project ID Number

LWE10049

County

STONE

Project **Four Seasons Resort**

Quadrangle **REEDS SPRING**

Location

Section **31** Township **23 N** Range **23 W**

Additional Location Information **410 Vacation Lane, Reeds Springs, MO 65737**

Latitude **36 Deg 39 Min 7 Sec** Longitude **93 Deg 27 Min 43 Sec**

Ed Rose (417) 739-4441
410 Vacation Lane, Reeds Springs, MO 65737

Total Environmental Services, Inc. (573) 346-3810
2765 South State Hwy. 5, Camdenon, MO 65085

Previous Reports Not Applicable

Date

Identification Number

Fiscal Year

- | | | |
|---|---|--|
| <input type="radio"/> Mechanical treatment plant | <input type="radio"/> Animal | <input checked="" type="radio"/> PPG |
| <input checked="" type="radio"/> Recirculating filter bed | <input checked="" type="radio"/> Human | <input type="radio"/> WWLF-SRF |
| <input type="radio"/> Earthen lagoon with discharge | <input type="radio"/> Process or industrial | <input type="radio"/> Non-Point Source |
| <input type="radio"/> Earthen holding basin | <input type="radio"/> Leachate | <input type="radio"/> Plans were submitted |
| <input type="radio"/> Land application | <input type="radio"/> Other waste type | <input type="radio"/> Site was investigated by NRCS |
| <input type="radio"/> Other type of facility | | <input type="radio"/> Soil or geotechnical data were submitted |

01/05/2010 Gaining Losing No discharge

- | | | | | |
|---|---|--|--|--------------------------------------|
| <input checked="" type="radio"/> Slight | <input type="radio"/> Not applicable | <input type="radio"/> < 4% | <input type="radio"/> Broad uplands | <input type="radio"/> Floodplain |
| <input type="radio"/> Moderate | <input checked="" type="radio"/> Slight | <input type="radio"/> 4% to 8% | <input type="radio"/> Ridgetop | <input type="radio"/> Alluvial plain |
| <input type="radio"/> Severe | <input type="radio"/> Moderate | <input checked="" type="radio"/> 8% to 15% | <input checked="" type="radio"/> Hillslope | <input type="radio"/> Terrace |
| | <input type="radio"/> Severe | <input type="radio"/> > 15% | <input type="radio"/> Narrow ravine | <input type="radio"/> Sinkhole |

The bedrock is Ordovician-age Cotter Dolomite.

The surficial material is composed of sandy brown clay containing abundant unsorted chert gravel.

Project ID Number **LWE10049**

Page 2

[REDACTED]

- Installation of clay pad
- Diversion of subsurface flow
- Rock excavation
- Completion
- Artificial sealing
- Limit excavation depth

[REDACTED]

[REDACTED]

[REDACTED]

- Particle size analysis
- Standard Proctor density
- Permeability coefficient for undisturbed sample
- Atterberg limits
- Overburden thickness
- Permeability coefficient for remolded sample

[REDACTED]

- Groundwater elevation
- Direction of groundwater flow
- 25-year flood level
- 100-year flood level

[REDACTED]

- Before exploration
- During construction
- After construction
- Not necessary

A site evaluation, per the request of Total Environmental Services, Inc., was performed on January 5, 2010 for the proposed recirculating filter bed. The goal of such an evaluation is to determine the geologic and hydrologic elements of the site as they relate to the facility construction, geologic collapse potential, and the potential for groundwater contamination in the event that treatment failure occurs.

Discharge from the proposed recirculating filter bed will migrate approximately 550 feet along the bedrock-surficial material interface or through the upper weathered portion of the Cotter Dolomite and into Table Rock Lake. The lake is considered to be a gaining setting for discharge purposes.

The uppermost bedrock is the Ordovician-age Cotter Dolomite. The bedrock unit is a medium bedded, finely crystalline, tan dolomite that weathers to thin beds. It contains thin, discontinuous beds of white, tan and light gray chert. Also present is a 1 to 2 foot thick, fine-grained, white, permeable sandstone bed exhibiting secondary iron oxide replacement. The dolomite displays moderate solution-enlarged vertical fractures, resulting in a moderate to high permeability. Groundwater was observed seeping from the bedding planes on the day of the evaluation. The surficial material is estimated to be less than 5 feet thick. It is composed of sandy, brown clay and contains abundant poorly sorted chert fragments ranging in size from pebbles to cobbles.

Given the geologic and hydrologic characteristics observed during the site visit, this site receives a slight overall geologic limitations rating and a slight collapse potential rating. In the event of treatment failure, effluent could impact the surface waters of Table Rock Lake and the shallow hydrologic environment within the Cotter Dolomite. The proposed excavation depth of 8 feet for the recirculating pump may require the removal of bedrock.

This document is a preliminary report. It is not a permit. Additional data may be required by the Department of Natural Resources prior to the issuance of a permit. This report is valid only at the above location and becomes invalid one year after the report date below.

Report By: Christopher B. Vierrether *Christopher B. Vierrether*
CC WPP, SWRO

Report Date: 1/14/2010



Appendix D: Antidegradation Review Summary Attachments

The attachments that follow contain summary information provided by the applicant, Four Seasons Resort.

- 1) Water Quality Review Assistance: No changes needed.
- 2) Attachment A: No changes needed.
- 3) Tier Determination and Effluent Limit Summary Sheet: No changes needed.

2011-07-21
 07910

JUL 21 2011



MISSOURI DEPARTMENT OF NATURAL RESOURCES
 WATER PROTECTION PROGRAM, WATER POLLUTION CONTROL BRANCH
WATER QUALITY REVIEW ASSISTANCE/ANTIDEGRADATION REVIEW REQUEST
 PRE-CONSTRUCTION REVIEW FOR PROTECTION OF BENEFICIAL USES AND DEVELOPING EFFLUENT LIMITS

WATER PROTECTION PROGRAM

TYPE OF PROJECT <input type="checkbox"/> Grant <input type="checkbox"/> SRF Loan <input checked="" type="checkbox"/> All Other Projects			
REQUESTER Seth A. Coggin, P.E., Total Environmental Services, Inc.		TELEPHONE NUMBER WITH AREA CODE (417) 581-6646	
PERMITTEE Ed & Ruth Rose, Four Seasons Resort		TELEPHONE NUMBER WITH AREA CODE (417) 739-4441	
REASON FOR REQUEST:			
<input checked="" type="checkbox"/> New Discharge (See Instruction #9) <input type="checkbox"/> Upgrade (No expansion) (See AIP) <input type="checkbox"/> Expansion			
DESCRIPTION OF PROPOSED ACTIVITY: Conversion of existing on-site wastewater treatment systems to a central treatment system.			
FACILITY INFORMATION			
FACILITY NAME Four Seasons Resort Wastewater Treatment Facility		MSOP NUMBER (IF APPLICABLE) Pending	
COUNTY Stone		SIC / NAICS CODE 4952 / 221320	
METHOD OF BACTERIA COMPLIANCE <input type="checkbox"/> Chlorine Disinfection <input checked="" type="checkbox"/> Ultraviolet Disinfection <input type="checkbox"/> Ozone <input type="checkbox"/> Not Applicable			
WATER QUALITY ISSUES None.			
Water quality issues include: effluent limit compliance issues, notice (s) of violation, water body beneficial uses not attained or supported, etc.			
OUTFALL	LOCATION (LAT/LONG OR LEGAL DESCRIPTION)	MAPPED ¹ (CHECK)	RECEIVING WATER BODY ²
001	36° 39' 07" N, 93° 27' 43" W	<input checked="" type="checkbox"/>	Table Rock Lake
		<input type="checkbox"/>	
		<input type="checkbox"/>	
¹ Attach topographic map (See www.dnr.mo.gov/internetmapviewer/) with outfall location(s) clearly marked. For additional outfalls, attach a separate form. ² See general instructions for discharges to streams.			
OUTFALL	NEW DESIGN FLOW ** (MGD)	TREATMENT TYPE	EFFLUENT TYPES*
001	0.003750	Recirculating Packed Bed Media	Domestic Wastewater
* Describe predominating character of effluent. Example: domestic wastewater, municipal wastewater, industrial wastewater, storm water, mining leachate, etc. ** If expansion, indicate new design flow.			
<input checked="" type="checkbox"/> Checked for rare or endangered species and provided determination with this request. See Instruction #8.			
ANTIDEGRADATION REVIEW SUBMISSION:			
See attached Antidegradation instructions. Applicant supplied a summary within:			
<input checked="" type="checkbox"/> Tier Determination and Effluent Limit Summary <input checked="" type="checkbox"/> Attachment A – Significant Degradation <input type="checkbox"/> Attachment B – Minimal Degradation <input type="checkbox"/> Attachment C – Temporary degradation <input type="checkbox"/> Attachment D – Tier 1 Review <input type="checkbox"/> No Degradation Evaluation – Conclusion of Antidegradation Review			

MO 780-1893 (03-09)



See general instructions. Additional information may be needed to complete your request. Your request may be returned if items are missing. Revised submittal will be considered a new submittal.

SIGNATURE 	DATE 06/24/2011
PRINT NAME Seth A. Coggin, P.E.	
E-MAIL ADDRESS sethcoggin@totalenvironmental.com	



MISSOURI DEPARTMENT OF NATURAL RESOURCES
 WATER PROTECTION PROGRAM, WATER POLLUTION CONTROL BRANCH
ANTIDEGRADEATION REVIEW SUMMARY
ATTACHMENT A: TIER 2 – SIGNIFICANT DEGRADATION

1. FACILITY						
NAME Four Seasons Resort Wastewater Treatment Facility				TELEPHONE NUMBER WITH AREA CODE 417-739-4441		
ADDRESS (PHYSICAL) 410 Vacation Lane			CITY Reeds Spring	STATE MO	ZIP CODE 65737	
2. RECEIVING WATER BODY SEGMENT #1						
NAME Table Rock Lake						
3. WATER BODY SEGMENT #2 (IF APPLICABLE)						
NAME N/a						
4. IDENTIFYING ALTERNATIVES						
Supply a summary of the alternatives considered and the level of treatment attainable with regards to the alternative. "For Discharges likely to cause significant degradation, an analysis of non-degrading and less-degrading alternatives must be provided," as stated in the Antidegradation Implementation Procedure Section II.B.1. Per 10 CSR 20-6.010(4)(D)1., the feasibility of a no-discharge system must be considered. Attach all supportive documentation in the Antidegradation Review report.						
Non-degrading alternatives: Land Application, Subsurface Irrigation, Regional Sewer						
Alternatives ranging from less-degrading to degrading including Preferred Alternative (All must meet water quality standards):						
Alternatives	Level of Treatment Attainable for each Pollutant of Concern					
	BOD	TSS	Ammonia as N	Bacteria (E. Coli)	Phos. (P)	
	(mg/L)	(mg/L)	(mg/L)	(#/100mL)		
AdvanTex Textile Filter	10	10	6	126	0.5	
Recirculating Sand Filter	15	10	6	126	0.5	
Extended Aeration	15	20	3	126	0.5	
Identifying Alternatives Summary: _____						
Non-degrading and less-degrading alternatives have been evaluated to determine the feasibility of each alternative. The non-dregrading aalternatives have been determined to be not practical and / or economically feasible.						

MO780-2021 (01/09)



5. DETERMINATION OF THE REASONABLE ALTERNATIVE

Per the Antidegradation Implementation Procedure Section II.B.2, "a reasonable alternative is one that is practicable, economically efficient and affordable." Provide basis and supporting documentation in the Antidegradation Review report.

Practicability Summary:

"The practicability of an alternative is considered by evaluating the effectiveness, reliability, and potential environmental impacts," according to the Antidegradation Implementation Procedure Section II.B.2.a. Examples of factors to consider, including secondary environmental impacts, are given in the Antidegradation Implementation Procedure Section II.B.2.a.

The non-degrading alternatives have been determined not practicable based on existing soil conditions, land availability, etc.

Economic Efficiency Summary:

Alternatives that are deemed practicable must undergo a direct cost comparison in order to determine economic efficiency. Means to determine economic efficiency are provided in the Antidegradation Implementation Procedure Section II.B.2.b.

Since the least degrading option has been chosen an economic analysis was not performed.

Affordability Summary:

Alternatives identified as most practicable and economically efficient are considered affordable if the applicant does not supply an affordability analysis. An affordability analysis per the Antidegradation Implementation Procedure Section II.B.2.c, "may be used to determine if the alternative is too expensive to reasonably implement."

An affordability analysis was not performed since the least degrading option has been chosen.

Preferred Chosen Alternative:

An AdvanTex Recirculating Textile Filter is the preferred alternative since it has been determined to be the least degrading and is still affordable.

Reasons for Rejecting the other Evaluated Alternatives:

All other alternatives were rejected because they were not less degrading.

Comments/Discussion:

All alternatives require disinfection systems as well as phosphorus removal systems in order to comply with permit limitations.

9. SUMMARY OF THE PROPOSED ANTIDEGRADATION REVIEW EFFLUENT LIMITS

What are the proposed pollutants of concern and their respective effluent limits that the selected treatment option will comply with:

Pollutant of Concern	Units	Wasteload Allocation	Average Monthly Limit	Daily Maximum Limit
BOD5	mg/l		10	15
TSS	mg/l		15	20
Dissolved Oxygen	mg/l		monitoring only	monitoring only
Ammonia	mg/l		4.6	12.1
Bacteria (E. Coli)	colonies / 100ml		126	
Phosphorus	mg/l		0.5	1.0
Aluminum	ug/l		monitoring only	monitoring only
Total Residual Cl	mg/l		0.13ML	0.13ML
Iron	mg/l		monitoring only	monitoring only

These proposed limits must not violate water quality standards, be protective of beneficial uses and achieve the highest statutory and regulatory requirements.

Attach the Antidegradation Review report and all supporting documentation.

CONSULTANT: I have prepared or reviewed this form and all attached reports and documentation. The conclusion proposed is consistent with the Antidegradation Implementation Procedure and current state and federal regulation.

SIGNATURE  DATE 06/24/2011

NAME AND OFFICIAL TITLES
 Seth A. Coggin, P.E.

COMPANY NAME
 Total Environmental Services, Inc.

ADDRESS 515 Old South 5 CITY Camdenton STATE MO ZIP CODE 65020

TELEPHONE NUMBER WITH AREA CODE 573-346-3810 E-MAIL ADDRESS sethcoggin@totalenvironmental.com

OWNER: I have read and reviewed the prepared documents and agree with this submittal.

SIGNATURE  DATE 7-13-11

NAME AND OFFICIAL TITLES
 Ed Rose

ADDRESS 410 Vacation Lane CITY Reeds Spring STATE MO ZIP CODE 65737

TELEPHONE NUMBER WITH AREA CODE 417-739-4441 E-MAIL ADDRESS 4seasons@tri-lakes.net

CONTINUING AUTHORITY: Continuing Authority is the permanent organization that will be responsible for the operation, maintenance and modernization of the facility. The regulatory requirement regarding continuing authority is found in 10 CSR 20-6.010(3) available at www.sos.mo.gov/adrules/csr/current/10csr/10c20-6a.pdf.

I have read and reviewed the prepared documents and agree with this submittal.

SIGNATURE  DATE 7-13-11

NAME AND OFFICIAL TITLES
 Ed Rose

ADDRESS 410 Vacation Lane CITY Reeds Spring STATE MO ZIP CODE 65737

TELEPHONE NUMBER WITH AREA CODE 417-739-4441 E-MAIL ADDRESS 4seasons@tri-lakes.net





MISSOURI DEPARTMENT OF NATURAL RESOURCES
 WATER PROTECTION PROGRAM
ANTIDegradation REVIEW SUMMARY
TIER DETERMINATION AND EFFLUENT LIMIT SUMMARY

1. FACILITY			
NAME Four Seasons Resort Wastewater Treatment Facility		TELEPHONE NUMBER WITH AREA CODE 417-739-4441	
ADDRESS (PHYSICAL) 410 Vacation Lane		CITY Reeds Spring	STATE MO
		ZIP CODE 65737	
2. RECEIVING WATER BODY SEGMENT #1			
NAME Table Rock Lake			
2.1 UPPER END OF SEGMENT (Location of discharge) UTM NAD 83, Zone 83, 458705E, 4056184N			
2.2 LOWER END OF SEGMENT UTM NAD 83, Zone 83, 472176E, 4050039N			
Per the Missouri Antidegradation Rule and Implementation Procedure, or AIP, the definition of a segment, "a segment is a section of water that is bound, at a minimum, by significant existing sources and confluences with other significant water bodies."			
3. WATER BODY SEGMENT #2 (IF APPLICABLE)			
NAME			
3.1 UPPER END OF SEGMENT UTM _____ OR Lat _____, Long _____			
3.2 LOWER END OF SEGMENT UTM _____ OR Lat _____, Long _____			
4. WATER BODY SEGMENT #3 (IF APPLICABLE)			
NAME			
4.1 UPPER END OF SEGMENT UTM _____ OR Lat _____, Long _____			
4.2 LOWER END OF SEGMENT UTM _____ OR Lat _____, Long _____			
5. PROJECT INFORMATION			
Is the receiving water body an Outstanding National Resource Water, an Outstanding State Resource Water, or drainage thereto? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
In Tables D and E of 10 CSR 20-7.031, Outstanding National Resource Waters and Outstanding State Resource Water are listed. Per the Antidegradation Implementation Procedure Section 1.B.3., "any degradation of water quality is prohibited in these waters unless the discharge only results in temporary degradation." Therefore, if degradation is significant or minimal, the Antidegradation Review will be denied.			
Will the proposed discharge of all pollutants of concern, or POCs, result in no net increase in the ambient water quality concentration of the receiving water after mixing? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
If yes, submit a summary table showing the levels of each pollutant of concern before and after the proposed discharge in the receiving water and then complete Attachment B for the first downstream classified water body segment.			
Will the discharge result in temporary degradation? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
If yes, complete Attachment C.			
Has the project been determined as non-degrading? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
If yes, complete No Degradation Evaluation – Conclusion of Antidegradation Review form. Submit with the appropriate Construction Permit Application as no antidegradation review is required.			
If yes to one of the above questions, skip to Section 8 - Wet Weather.			



6. EXISTING WATER QUALITY DATA OR MODEL SUMMARY

Obtaining Existing Water Quality is possible by three methods according to the Antidegradation Implementation Procedure Section II.A.1.: (1) using previously collected data with an appropriate Quality Assurance Project Plan, or QAPP (2) collecting water quality data by approved the Missouri Department of Natural Resources methodology or (3) using an appropriate water quality model. QAPPs must be submitted to the department for approval well in advance (six months) of the proposed activity. Provide all the appropriate corresponding data and reports which were approved by the department Water Quality Monitoring and Assessment Section.

Date existing water quality data was provided by the Water Quality Monitoring and Assessment Section:

Approval date of the QAPP by the Water Quality Monitoring and Assessment Section:

Approval date of the project sampling plan by the Water Quality Monitoring and Assessment Section:

Approval date of the data collected for all appropriate pollutants of concern by the Water Quality Monitoring and Assessment Section:

Comments/Discussion:

7. POLLUTANTS OF CONCERN AND TIER DETERMINATION(S)

Pollutants of Concern to be considered include those pollutants reasonably expected to be present in the discharge per the Antidegradation Implementation Procedure Section II.S. The tier protection levels are specified and defined in rule at 10 CSR 20-7.031 (2).

Water Body Segment One Pollutants of Concern and Tier Determination(s)		
Tier 1	Tier 2 with Minimal Degradation	Tier 2 with Significant Degradation
		BOD5* & TSS*
		DO*
		AMMONIA AS N*
		E. COLI*
		PHOS.* (P) & AL*

Note: Add an asterisk to items that you only assume are Tier 2 with significant degradation.

Water Body Segment Two Pollutants of Concern and Tier Determination(s)		
Tier 1	Tier 2 with Minimal Degradation	Tier 2 with Significant Degradation

- For pollutants of concern that are Tier 2 with significant degradation, complete Attachment A.
- For pollutants of concern that are Tier 2 with minimal degradation, complete Attachment B.
- For pollutants of concern that are Tier 1, complete Attachment D. Additionally, a Tier 2 review must be conducted for each pollutant of concern on the appropriate water body segment.

8. WET WEATHER ANTICIPATIONS

If an applicant anticipates excessive inflow or infiltration and pursues approval from the department to bypass secondary treatment, a feasibility analysis is required. The feasibility analysis must comply with the criteria of all applicable state and federal regulations including 40 CFR 122.41(m)(4). Attach the feasibility analysis to this report.

What is the Wet Weather Flow Peaking Factor in relation to design flow?
One (1)

Wet Weather Design Summary:

This is a new system and thus will have little to no inflow & infiltration.

6. SOCIAL AND ECONOMIC IMPORTANCE OF THE PREFERRED ALTERNATIVE

If the preferred alternative will result in significant degradation, then it must be demonstrated that it will allow important economic and social development in accordance to the Antidegradation Implementation Procedure Section II.E. Social and Economic Importance is defined as the social and economic benefits to the community that will occur from any activity involving a new or expanding discharge.

Identify the affected community:

The affected community is defined in 10 CSR 20-7.031(2)(B) as the community "in the geographical area in which the waters are located.: Per the Antidegradation Implementation Procedure Section II.E.1, "the affected community should include those living near the site of the proposed project as well as those in the community that are expected to directly or indirectly benefit from the project."

Adjacent landowners and downstream and immediate recreational users.

Identify relevant factors that characterize the social and economic conditions of the affected community:

Examples of social and economic factors are provided in the Antidegradation Implementation Procedure Section II.E.1., but specific community examples are encouraged.

Removes stigma of unregulated, Department of Health and Social Services on-site sewers and gives the peace of mind of a new wastewater treatment facility that is subject to regulatory permitting, oversight, and effluent regulations.

Describe the important social and economic development associated with the project:

Determining benefits for the community and the environment should be site specific and in accordance with the Antidegradation Implementation Procedure Section II.E.1.

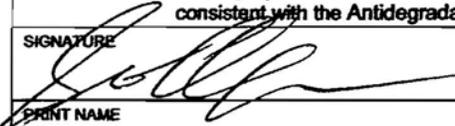
The wastewater treatment facility will allow current owners to demonstrate compliance with wastewater treatment for future customers and real estate transactions.

PROPOSED PROJECT SUMMARY:

Four Seasons Resort desires to remove existing on-site septic tanks and laterals, and convert the method of wastewater treatment to a regulated facility that will be designed, constructed, operated and tested under State mandated rules and regulations. The facility will include: septic tank effluent pumping tanks, phosphorus removal, packed bed media filter (AdvanTex), chlorination / dechlorination for ammonia reduction, UV disinfection, and re-aeration.

Attach the Antidegradation Review report and all supporting documentation. This is a technical document, which must be signed, sealed and dated by a registered professional engineer of Missouri.

CONSULTANT: I have prepared or reviewed this form and all attached reports and documentation. The conclusion proposed in consistent with the Antidegradation Implementation Procedure and current state and federal regulations.

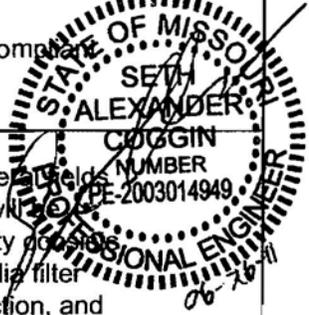
SIGNATURE 		DATE 06/26/11
PRINT NAME Seth A. Coggin, P.E.	LICENSE # : Professional Engineer #2003014949	
TELEPHONE NUMBER WITH AREA CODE 417-581-6646	E-MAIL ADDRESS: sethcoggin@totalenvironmental.com	

OWNER: I have read and reviewed the prepared documents and agree with this submittal.

SIGNATURE 	DATE 7-13-11
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CONTINUING AUTHORITY: I have read and reviewed the prepared documents and agree with this submittal.

SIGNATURE 	DATE 7-13-11
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**STANDARD CONDITIONS FOR NPDES PERMITS
ISSUED BY
THE MISSOURI DEPARTMENT OF NATURAL RESOURCES
MISSOURI CLEAN WATER COMMISSION**

**Revised
October 1, 1980**

**PART I - GENERAL CONDITIONS
SECTION A - MONITORING AND REPORTING**

1. **Representative Sampling**
 - a. Samples and measurements taken as required herein shall be representative of the nature and volume, respectively, of the monitored discharge. All samples shall be taken at the outfall(s), and unless specified, before the effluent joins or is diluted by any other body of water or substance.
 - b. Monitoring results shall be recorded and reported on forms provided by the Department, postmarked no later than the 28th day of the month following the completed reporting period. Signed copies of these, and all other reports required herein, shall be submitted to the respective Department Regional Office, the Regional Office address is indicated in the cover letter transmitting the permit.
2. **Schedule of Compliance**

No later than fourteen (14) calendar days following each date identified in the "Schedule of Compliance", the permittee shall submit to the respective Department Regional Office as required therein, either a report of progress or, in the case of specific actions being required by identified dates, a written notice of compliance or noncompliance. In the latter case, the notice shall include the cause of noncompliance, any remedial actions taken, and the probability of meeting the next scheduled requirements, or if there are no more scheduled requirements, when such noncompliance will be corrected. The Regional Office address is indicated in the cover letter transmitting the permit.
3. **Definitions**

Definitions as set forth in the Missouri Clean Water Law and Missouri Clean Water Commission Definition Regulation 10 CSR 20-2.010 shall apply to terms used herein.
4. **Test Procedures**

Test procedures for the analysis of pollutant shall be in accordance with the Missouri Clean Water Commission Effluent Regulation 10 CSR 20-7015.
5. **Recording of Results**
 - a. For each measurement or sample taken pursuant to the requirements of this permit, the permittee shall record the following information:
 - (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. 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 this permit 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 both.
 - c. Calculations for all limitations which require averaging of measurements shall utilize an arithmetic mean unless otherwise specified by the Director in the permit.
6. **Additional Monitoring by Permittee**

If the permittee monitors any pollutant at the location(s) designated herein more frequently than required by this permit, using approved analytical methods as specified above, the results of such monitoring shall be included in the calculation and reporting of the values required in the Monitoring Report Form. Such increased frequency shall also be indicated.

7. **Records Retention**

The permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recording for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this 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.

SECTION B - MANAGEMENT REQUIREMENTS

1. **Change in Discharge**
 - a. All discharges authorized herein shall be consistent with the terms and conditions of this permit. The discharge of any pollutant not authorized by this permit or any pollutant identified in this permit more frequently than or at a level in excess of that authorized shall constitute a violation of the permit.
 - b. Any facility expansions, production increases, or process modifications which will result in new, different, or increased discharges of pollutants shall be reported by submission of a new NPDES application at least sixty (60) days before each such change, or, if they will not violate the effluent limitations specified in the permit, by notice to the Department at least thirty (30) days before such changes.
2. **Noncompliance Notification**
 - a. If, for any reason, the permittee does not comply with or will be unable to comply with any daily maximum effluent limitation specified in this permit, the permittee shall provide the Department with the following information, in writing within five (5) days of becoming aware of such conditions:
 - (i) a description of the discharge and cause of noncompliance, and
 - (ii) the period of noncompliance, including exact dates and times or, if not corrected, the anticipated time the noncompliance is expected to continue, and steps being taken to reduce, eliminate and prevent recurrence of the noncomplying discharge.
 - b. Twenty-four hour reporting. The permittee shall report any noncompliance which may endanger health or the environment. Any information shall be provided orally with 24 hours from the time the permittee becomes aware of the circumstances. A written submission shall also be provided with five (5) days of the time the permittee becomes aware of the circumstances. The Department may waive the written report on a case-by-case basis if the oral report has been received within 24 hours.
3. **Facilities Operation**

Permittees shall operate and maintain facilities to comply with the Missouri Clean Water Law and applicable permit conditions. Operators or supervisors of operations at publicly owned or publicly regulated wastewater treatment facilities shall be certified in accordance with 10 CSR 209.020(2) and any other applicable law or regulation. Operators of other wastewater treatment facilities, water contaminant source or point sources, shall, upon request by the Department, demonstrate that wastewater treatment equipment and facilities are effectively operated and maintained by competent personnel.
4. **Adverse Impact**

The permittee shall take all necessary steps to minimize any adverse impact to waters of the state resulting from noncompliance with any effluent limitations specified in this permit or set forth in the Missouri Clean Water Law and Regulations (hereinafter the Law and Regulations), including such accelerated or additional monitoring as necessary to determine the nature and impact of the noncomplying discharge.

- a. Any bypass or shut down of a wastewater treatment facility and tributary sewer system or any part of such a facility and sewer system that results in a violation of permit limits or conditions is prohibited except:
 - (i) where unavoidable to prevent loss of life, personal injury, or severe property damages; and
 - (ii) where unavoidable excessive storm drainage or runoff would catastrophically damage any facilities or processes necessary for compliance with the effluent limitations and conditions of this permit;
 - (iii) where maintenance is necessary to ensure efficient operation and alternative measures have been taken to maintain effluent quality during the period of maintenance.
 - b. The permittee shall notify the Department in writing of all bypasses or shut down that result in a violation of permit limits or conditions. This section does not excuse any person from liability, unless such relief is otherwise provided by the statute.
6. **Removed Substances**
Solids, sludges, filter backwash, or any other pollutants removed in the course of treatment or control of wastewaters shall be disposed of in a manner such as to prevent any pollutants from entering waters of the state unless permitted by the Law, and a permanent record of the date and time, volume and methods of removal and disposal of such substances shall be maintained by the permittee.
 7. **Power Failures**
In order to maintain compliance with the effluent limitations and other provisions of this permit, the permittee shall either:
 - a. in accordance with the "Schedule of Compliance", provide an alternative power source sufficient to operate the wastewater control facilities; or,
 - b. if such alternative power source is not in existence, and no date for its implementation appears in the Compliance Schedule, halt or otherwise control production and all discharges upon the reduction, loss, or failure of the primary source of power to the wastewater control facilities.
 8. **Right of Entry**
For the purpose of inspecting, monitoring, or sampling the point source, water contaminant source, or wastewater treatment facility for compliance with the Clean Water Law and these regulations, authorized representatives of the Department, shall be allowed by the permittee, upon presentation of credentials and at reasonable times;
 - a. to enter upon permittee's premises in which a point source, water contaminant source, or wastewater treatment facility is located or in which any records are required to be kept under terms and conditions of the permit;
 - b. to have access to, or copy, any records required to be kept under terms and conditions of the permit;
 - c. to inspect any monitoring equipment or method required in the permit;
 - d. to inspect any collection, treatment, or discharge facility covered under the permit; and
 - e. to sample any wastewater at any point in the collection system or treatment process.
 9. **Permits Transferable**
 - a. Subject to Section (3) of 10 CSR 20-6.010 an operating permit may be transferred upon submission to the Department of an application to transfer signed by a new owner. Until such time as the permit is officially transferred, the original permittee remains responsible for complying with the terms and conditions of the existing permit.
 - b. The Department, within thirty (30) days of receipt of the application shall notify the new permittee of its intent to revoke and reissue or transfer the permit.
 10. **Availability of Reports**
Except for data determined to be confidential under Section 308 of the Act, and the Law and Missouri Clean Water Commission Regulation for Public Participation, Hearings and Notice to Governmental Agencies 10 CSR 20-6.020, all reports prepared in accordance with the terms of this permit shall be available for public inspection at the offices of the Department. As required by statute, effluent data shall not be considered confidential. Knowingly making any false statement on any such report shall be subject to the imposition of criminal penalties as provided in Section 204.076 of the Law.
 - 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) violation 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 and 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.
12. **Permit Modification - Less Stringent Requirements**
If any permit provisions are based on legal requirements which are lessened or removed, and should no other basis exist for such permit provisions, the permit shall be modified after notice and opportunity for a hearing.
 13. **Civil and Criminal Liability**
Except as authorized by statute and provided in permit conditions on "Bypassing" (Standard Condition B-5) and "Power Failures" (Standard Condition B-7) nothing in this permit shall be construed to relieve the permittee from civil or criminal penalties for noncompliance.
 14. **Oil and Hazardous Substance Liability**
Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties to which the permittee is or may be subject under Section 311 of the Act, and the Law and Regulations. Oil and hazardous materials discharges must be reported in compliance with the requirements of the Federal Clean Water Act.
 15. **State Laws**
Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable state statute or regulations.
 16. **Property Rights**
The issuance of this permit does not convey any property rights in either real or personal property, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of or violation of federal, state or local laws or regulations.
 17. **Duty to Reapply**
If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee must apply for a new permit 180 days prior to expiration of this permit.
 18. **Toxic Pollutants**
If a toxic effluent standard, prohibition, or schedule of compliance is established, under Section 307(a) of the Federal Clean Water Act for a toxic pollutant in the discharge of permittee's facility and such standard is more stringent than the limitations in the permit, then the more stringent standard, prohibition, or schedule shall be incorporated into the permit as one of its conditions, upon notice to the permittee.
 19. **Signatory Requirement**
All reports, or information submitted to the Director shall be signed (see 40 CFR-122.6).
 20. **Rights Not Affected**
Nothing in this permit shall affect the permittee's right to appeal or seek a variance from applicable laws or regulations as allowed by law.
 21. **Severability**
The provisions of this permit are severable, and if any provisions of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.

**STANDARD CONDITIONS FOR NPDES PERMITS
ISSUED BY
THE MISSOURI DEPARTMENT OF NATURAL RESOURCES
MISSOURI CLEAN WATER COMMISSION
AUGUST 15, 1994**

PART III – SLUDGE & BIOSOLIDS FROM DOMESTIC WASTEWATER TREATMENT FACILITIES

SECTION A – GENERAL REQUIREMENTS

1. This permit pertains to sludge requirements under the Missouri Clean Water Law and regulation and incorporates applicable federal sludge disposal requirements under 40 CFR 503. The Environmental Protection Agency (EPA) has principal authority for permitting and enforcement of the federal sludge regulations under 40 CFS 503 until such time as Missouri is delegated the new EPA sludge program. 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 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) and privately owned facilities.
3. Sludge and Biosolids Use and Disposal Practices.
 - a. Permittee is authorized to operate the sludge and biosolids treatment, storage, use, and disposal facilities listed in the facility description of this permit.
 - b. 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. Permittee is authorized to operate the storage, treatment or generating sites listed in the Facility Description section of this permit.
 - d. A separate operating permit is required for each operating location where sludge or biosolids are generated, stored, treated, or disposed, unless specifically exempted in this permit or in 10 CSR 20, Chapter 6 regulations. For land application, see section H, subsection 3 of these standard conditions.
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.
 - c. Sludge received from out-of-state generators shall receive prior approval of the permitting authority and shall be listed in the facility description or special conditions section of the permit.
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 du 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 Act or under Chapter 644 RsMo.
8. In addition to the STANDARD CONDITIONS, the department may include sludge limitations in the special conditions portion or other sections of this permit.
9. Alternate Limits in Site Specific Permit.

Where deemed appropriate, the department may require an individual site specific permit in order to authorize alternate limitations:

 - a. An individual permit must be obtained for each operating location, including application sites.
 - b. To request a site specific permit, an individual permit application, permit fees, 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 public 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 owners of 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.
11. Compliance Period
Compliance shall be achieved as expeditiously as possible but no later than the compliance dates under 40 CFR 503.2.

SECTION B – DEFINITIONS

1. Biosolids means an organic fertilizer or soil amendment produced by the treatment of domestic wastewater sludge. Untreated sludge or sludge that does not conform to the pollutants and pathogen treatment requirements in this permit is not considered biosolids.
2. 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.
3. 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.
4. 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.
5. 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 public owned treatment works (POTW) or privately owned facility.
6. Mechanical treatment plants are wastewater treatment facilities that use mechanical devices to treat wastewater, including septic tanks, extended aeration, activated sludge, contact stabilization, trickling filters, rotating biological discs, and other similar facilities. It does not include unaerated wastewater treatment lagoons and constructed wetlands for wastewater treatment.
7. 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.
8. Plant Available Nitrogen (PAN) is the nitrogen that will be available to plants during the next growing season after biosolids application.
9. Sinkhole is a depression in the land surface into which surface water flows to join an underground drainage system.
10. Site Specific Permit is a permit that has alternate limits developed to address specific site conditions for each land application site or storage site.
11. Sludge is the solid, semisolid, or liquid residue removed during the treatment of wastewater. Sludge includes septage removed from septic tanks.
12. 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.
13. Wetlands are those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamp, marshes, bogs, and similar areas. Wetlands do not include constructed wetlands used for wastewater treatment.

SECTION C – MECHANICAL WASTEWATER TREATMENT FACILITIES

1. Sludge shall be routinely removed from the wastewater treatment facilities and handled according to the permit facility description and sludge conditions in this permit.
2. The permittee shall operate the facility so that there is no sludge loss into the discharged effluent in excess of permit limits, no sludge bypassing, and no discharge of sludge 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. The permittee shall require documentation from the contractor of the disposal methods used and permits obtained by the contractor.
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.

SECTION E – WASTEWATER TREATMENT LAGOONS AND STORMWATER RETENTION BASINS

1. Sludge that is retained within a wastewater treatment lagoon is subject to sludge disposal requirements when the sludge is removed from the lagoon or when the lagoon ceases to receive and treat wastewater.
2. If sludge is removed during the year, an annual sludge report must be submitted.
3. Storm water retention basins or other earthen basins, which have been used as sludge storage for a mechanical treatment system is considered a sludge lagoon and must comply with Section G of this permit.

SECTION F – 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 waste, shall be disposed in accordance 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 use or disposal method, quantity, and location. Permittee shall also provide the name of the disposal facility and the applicable permit number.
4. Additional limitations, monitoring, and reporting requirements may be addressed in the Special Conditions sections of this permit.

SECTION G – SURFACE DISPOSAL SITES AND SLUDGE LAGOONS

1. Surface disposal sites shall comply with the requirements in 40 CFR 503 Subpart C, and solid waste disposal regulations under 10 CSR 80.
2. Additional limitations, monitoring, and reporting requirements may be addressed in the Special Conditions section of this permit.
3. Effective February 19, 1995, a sludge lagoon that has been in use for more than two years without removal of accumulated sludge, or that has not been properly closed shall comply with one of the following options:
 - a. Permittee shall obtain a site specific permit to address surface disposal requirements under 40 CFR 503, ground water quality regulations under 10 CSR 20, Chapter 7 and 8, and solid waste management regulations under 10 CSR 80;
 - b. Permittee shall clean out the sludge lagoon to remove any sludge over two years old and shall continue to remove accumulated sludge at least every two years or an alternate schedule approved under 40 CFR 503.20(b). 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
 - c. Permittee shall close the lagoon in accordance with Section 1.

SECTION H – LAND APPLICATION

1. The permittee shall not land apply sludge or biosolids unless land application is authorized in the Facility Description or special conditions section of the permit.
2. This permit replaces and terminates all previous sludge management plan approvals by the department for land application of sludge or biosolids.
3. Land application sites within a 20 mile 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 a site specific permit is required under Section A, Subsection 9.
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 sludge except when sludge meets the definition of biosolids.
 - b. This permit authorizes “Class A or B” biosolids derived from domestic wastewater sludges to be land applied onto grass land, crop land, timber land 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. Applications for approval shall be in the form of an engineering report and shall address priority pollutants and dioxin concentrations. Authorization for land applications must be provided in the special conditions section of this permit or in a separate site-specific permit.

6. Agricultural and Silvicultural Sites.

In addition to specified conditions herein, this permit is subject to the attached Water Quality Guides numbers WQ 422 through 426 published by the University of Missouri, and hereby incorporated as though fully set forth herein. The guide topics are as follows:

WQ 422	Land Application of Septage
WQ 423	Monitoring Requirements for Biosolids Land Application
WQ 424	Biosolids Standards for Pathogens and Vectors
WQ 425	Biosolids Standards for Metals and Other Trace Substances
WQ 426	Best Management Practices for Biosolids Land Applications

SECTION I – CLOSURE REQUIREMENTS

1. This section applies to all wastewater treatment facilities (mechanical and lagoons) and sludge or biosolids storage and treatment facilities and incineration ash ponds. It does not apply to land application sites.
2. Permittees 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, and ash. Permittee must maintain this permit until the facility is properly closed 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 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, the sludge in the lagoon qualifies for Class B with respect to pathogens (see WQ 424, Table 3), and testing for fecal coliform is not required. For other lagoons, testing for fecal coliform is required to show compliance with Class B limitations. See WQ 423 and 424.
 - c. The allowable nitrogen loading that may be left in the lagoon shall be based on the plant available nitrogen (PAN) loading. See WQ 426 for calculation procedures. For a grass cover crop, the allowable PAN is 300 pounds/acre.
4. When closing a 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 WQ 422. 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 the 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 more than 100 dry tons/acre will be left in the lagoon, test for nitrogen and determine the PAN in accordance with WQ 426. Allowable PAN loading is 300 pounds/acre.
5. Residuals left within the lagoon shall be mixed with soil on at least a 1 to 1 ratio, the lagoon berms shall be demolished, and the site shall be graded and vegetated so as to avoid ponding of storm water and provide adequate surface water drainage without creating erosion.
6. Lagoon closure activities shall obtain a storm water permit for land disturbance activities that equal or exceed five acres in accordance with 10 CSR 20-6.200.
7. If sludge exceeds agricultural loading rates under Section H or I, a landfill permit or solid waste disposal permit shall be obtained to authorize 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 J – 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.
2. Testing for land application is listed under Section H, Subsection 6 of these standard conditions (see WQ 423). Once per year is the minimum test frequency. Additional testing shall be performed for each 100 dry tons of sludge generated or stored during the year.
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. Monitoring requirements shall be performed in accordance with, “POTW Sludge Sampling and Analysis Guidance Document”, United States Environmental Protection Agency, August 1989, and subsequent revisions.

SECTION K – 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. Report 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)

EPA Region VII
Water Compliance Branch (WACM)
Sludge Coordinator
901 N 5th Street
Kansas City, KS 66101

5. Annual Report Contents. The annual report shall include the following:
 - a. Sludge/biosolids testing performed. Include a copy or summary of all test results, even if not required by this 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 end of 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.
 - (1) This must include the name, address and permit number for the hauler and the sludge facility. If hauled to a municipal wastewater treatment facility, sanitary landfill, or other approved treatment facility, give the name and permit number of that facility.
 - (2) 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 or billing receipts 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 disposal or biosolids use permit.
 - g. Land Application Sites.
 - (1) 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 legal description for nearest ¼, ¼, Section, Township, Range, and County, or as latitude and longitude.
 - (2) If biosolids application exceeds 2 dry tons/acre/year, report biosolids nitrogen results. Plant Available Nitrogen (PAN) in pounds/acre, crop nitrogen requirement, available nitrogen in the soil prior to biosolids application, and PAN calculations for each site.
 - (3) If the “Low Metals” criteria is exceeded, report the annual and cumulative pollutant loading rates in pounds per acre for each applicable pollutant, and report the percent of cumulative loading which has been reached at each site.
 - (4) Report the method used for compliance with pathogen and vector attraction requirements.
 - (5) Report soil test results for pH, CEC, and phosphorus. If none was tested during the year, report the last date when tested and results.

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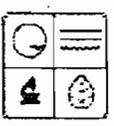
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MO-036930

WATER PROTECTION PROGRAM



MISSOURI DEPARTMENT OF NATURAL RESOURCES
WATER PROTECTION PROGRAM
FORM B: APPLICATION FOR OPERATING PERMIT FOR FACILITIES THAT RECEIVE
PRIMARILY DOMESTIC WASTE AND HAVE A DESIGN FLOW LESS THAN OR
EQUAL TO 100,000 GALLONS PER DAY

FOR AGENCY USE ONLY	
CHECK NUMBER	6353
DATE RECEIVED	10/30/14
FEE SUBMITTED	\$100.00

PLEASE READ THE ACCOMPANYING INSTRUCTIONS BEFORE COMPLETING THIS FORM

1. THIS APPLICATION IS FOR:

An operating permit for a new or unpermitted facility. Construction Permit # CP0001122
(Please include completed antidegradation review or request for antidegradation review, see instructions)

An operating permit renewal: Permit #MO-_____ Expiration Date _____

An operating permit modification: Permit #MO-_____ Reason: _____

1.1 Is the appropriate fee included with the application (see instructions for appropriate fee)? YES NO

2. FACILITY

NAME		TELEPHONE NUMBER WITH AREA CODE	
<u>Four Seasons Resort WWTF</u>		<u>(417) 739-4441</u>	
ADDRESS (PHYSICAL)	CITY	STATE	ZIP CODE
<u>410 Vacation Lane</u>	<u>Reeds Spring</u>	<u>MO</u>	<u>65737</u>
2.1 Legal description: <u>1/4, 1/4, 1/4 Sec. 31, T23-NR 23-W</u>		County <u>Stone</u>	
2.2 UTM Coordinates Easting (X): <u>458705</u> Northing (Y): <u>4056184</u> For Universal Transverse Mercator (UTM), Zone 15 North referenced to North American Datum 1983 (NAD83)			
2.3 Name of receiving stream: <u>Table Rock Lake</u>			
2.4 Number of outfalls: <u>wastewater outfalls</u> <u>stormwater outfalls</u> <u>instream monitoring sites</u>			

3. OWNER

NAME		EMAIL ADDRESS		TELEPHONE NUMBER WITH AREA CODE	
<u>Edward and Ruth Rose</u>		<u>4seasons@tri-lakes.net</u>		<u>(417) 739-4441</u>	
ADDRESS	CITY	STATE	ZIP CODE		
<u>410 Vacation Lane</u>	<u>Reeds Spring</u>	<u>MO</u>	<u>65737</u>		
3.1 Request review of draft permit prior to public notice? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO					
3.2 Are you a publicly owned treatment works? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO					
3.3 Are you a privately owned treatment works? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO					
3.4 Are you a privately owned treatment facility regulated by the Public Service Commission? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO					

4. CONTINUING AUTHORITY: Permanent organization that will serve as the continuing authority for the operation, maintenance and modernization of the facility.

NAME		EMAIL ADDRESS		TELEPHONE NUMBER WITH AREA CODE	
<u>SAME AS ABOVE</u>					
ADDRESS	CITY	STATE	ZIP CODE		

If the continuing authority is different than the owner, please include a copy of the contract agreement between the two parties and a description of the responsibilities of both parties within the agreement.

5. OPERATOR

NAME		TITLE		CERTIFICATE NUMBER	
<u>ED ROSE</u>				<u>N/A</u>	
EMAIL ADDRESS		TELEPHONE NUMBER WITH AREA CODE			
		<u>417-739-4441</u>			

6. FACILITY CONTACT

NAME		TITLE			
<u>ED ROSE</u>		<u>OWNER</u>			
EMAIL ADDRESS		TELEPHONE NUMBER WITH AREA CODE			
		<u>417-739-4441</u>			
ADDRESS	CITY	STATE	ZIP CODE		

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DEQ/SWRO WATER PROTECTION PROGRAM

8. ADDITIONAL FACILITY INFORMATION	
8.1 Facility SIC code: _____; Discharge SIC code: _____	
8.2 Number of people presently connected or population equivalent (P.E.) _____	Design P.E. <u>38</u>
8.3 Connections to the facility: Number of units presently connected: Homes <u>1</u> Trailers _____ Apartments _____ Other (including industrial) <u>14</u> Number of commercial establishments: _____	
8.4 Design flow: <u>3750</u>	Actual flow: _____
8.5 Will discharge be continuous through the year? <input checked="" type="radio"/> Yes <input type="radio"/> No (If yes, explain.) Discharge will occur during the following months: <u>January, February, March, April, May, June, July, August, September, October, November, December</u> How many days of the week will discharge occur? <u>77</u>	
8.6 Is industrial waste discharged to the facility?	<input type="radio"/> Yes <input checked="" type="radio"/> No
8.7 Does the facility accept or process leachate from landfills?	<input type="radio"/> Yes <input checked="" type="radio"/> No
8.8 Is wastewater land applied? If yes, is Form I attached?	<input type="radio"/> Yes <input checked="" type="radio"/> No <input type="radio"/> Yes <input type="radio"/> No
8.9 Does the facility discharge to a losing stream or sinkhole?	<input type="radio"/> Yes <input checked="" type="radio"/> No
8.10 Has a wasteload allocation study been completed for this facility?	<input type="radio"/> Yes <input checked="" type="radio"/> No
9. LABORATORY CONTROL INFORMATION	
LABORATORY WORK CONDUCTED BY PLANT PERSONNEL	
Lab work conducted outside of plant. <input checked="" type="radio"/> YES <input checked="" type="radio"/> Yes <input checked="" type="radio"/> No	
Push-button or visual methods for simple test such as pH, settleable solids. <input type="radio"/> Yes <input type="radio"/> No	
Additional procedures such as dissolved oxygen, chemical oxygen demand, biological oxygen demand, titrations, solids, volatile content. <input type="radio"/> Yes <input type="radio"/> No	
More advanced determinations such as BOD seeding procedures, fecal coliform, nutrients, total oils, phenols, etc. <input type="radio"/> Yes <input type="radio"/> No	
Highly sophisticated instrumentation, such as atomic absorption and gas chromatograph. <input type="radio"/> Yes <input type="radio"/> No	
10. COLLECTION SYSTEM	
10.1 Length of pipe in the sewer collection system? <u>30,240</u> <input checked="" type="radio"/> Feet or _____ Miles (either unit is appropriate)	
10.2 Does significant infiltration occur in the collection system? <input type="radio"/> Yes <input checked="" type="radio"/> No If yes, briefly explain any steps underway or planned to minimize inflow and infiltration:	
11. BYPASSING	
Does any bypassing occur in the collection system or at the treatment facility? <input checked="" type="radio"/> No	
If yes, explain:	

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DEQ/SWPC WATER PROTECTION PROGRAM

12. SLUDGE HANDLING, USE AND DISPOSAL

12.1 Is the sludge a hazardous waste as defined by 10 CSR 25? Yes No

12.2 Sludge production, including sludge received from others: 0.38 Design dry tons/year _____ Actual dry tons/year

12.3 Capacity of sludge holding structures:
Sludge storage provided: _____ cubic feet; _____ days of storage; _____ average percent solids of sludge;
 No sludge storage is provided. Sludge is stored in lagoon.

12.4 Type of Storage: Holding tank Building
 Basin Lagoon
 Concrete Pad Other (Please describe) Step Tanks

12.5 Sludge Treatment:
 Anaerobic Digester Lagoon Composting
 Storage Tank Aerobic Digester Other (Attach description)
 Lime Stabilization Air or Heat Drying

12.6 Sludge Use or Disposal:
 Land Application Surface Disposal (Sludge Disposal Lagoon, Sludge held for more than two years)
 Contract Hauler Hauled to Another treatment facility
 Incineration Sludge Retained in Wastewater treatment lagoon
 Solid waste landfill

12.7 Person responsible for hauling sludge to disposal facility:
 By applicant By others (complete below)

NAME <u>TILLMAN PUMPING SERVICE</u>		EMAIL ADDRESS	
ADDRESS <u>83 VICTORY LN</u>	CITY <u>REEDS SPRING</u>	STATE <u>MO</u>	ZIP CODE <u>65737</u>
CONTACT PERSON	TELEPHONE NUMBER WITH AREA CODE <u>417-739-1382</u>	PERMIT NO. MO-	

12.8 Sludge use or disposal facility
 By applicant By others (Please complete below.)

NAME <u>TO BE DETERMINED</u>		EMAIL ADDRESS	
ADDRESS	CITY	STATE	ZIP CODE
CONTACT PERSON	TELEPHONE NUMBER WITH AREA CODE	PERMIT NO. MO-	

12.9 Does the sludge or biosolids disposal comply with federal sludge regulations under 40 CFR 503?
 Yes No (Please explain)

13. CERTIFICATION

I certify that I am familiar with the information contained in the application, that to the best of my knowledge and belief such information is true, complete and accurate, and if granted this permit, I agree to abide by the Missouri Clean Water Law and all rules, regulations, orders and decisions, subject to any legitimate appeal available to applicant under the Missouri Clean Water Law.

NAME (TYPE OR PRINT) <u>Edward Rose/Ruth Rose</u>	OFFICIAL TITLE <u>Owners</u>	TELEPHONE NUMBER WITH AREA CODE <u>(417) 739-4441</u>
SIGNATURE <u>Edward Rose / Ruth Rose</u>		DATE SIGNED <u>10/28/14</u>