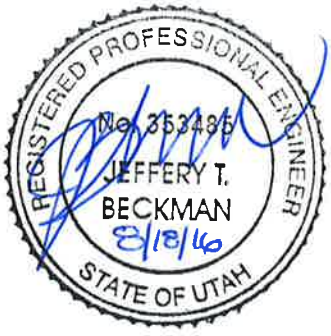
MOAB WATER RECLAMATION FACILITY

LEVEL II ANTI-DEGRADATION REVIEW

City of Moab
217 East Center Street
Moab, UT 84532

Greg Fosse
Lead Operator

Prepared By:
Bowen, Collins & Associates



August 2016

Antidegradation Review Form

Part A: Applicant Information

Facility Name: Moab Water Reclamation Facility

Facility Owner: City of Moab, Utah

Facility Location: 1007 West 400 North Street, Moab, Utah

Form Prepared By: Bowen, Collins & Associates

Outfall Number: 001

Receiving Water: Colorado River

What Are the Designated Uses of the Receiving Water (R317-2-6)?
Domestic Water Supply: 1C
Recreation: 2A - Primary Contact
Aquatic Life: 3B - Warm Water Aquatic Life
Agricultural Water Supply: 4
Great Salt Lake: None

Category of Receiving Water (R317-2-3.2, -3.3, and -3.4): Category 3

UPDES Permit Number (if applicable): UT0020419

Effluent Flow Reviewed: 1.75 MGD peak month daily flow
Typically, this should be the maximum daily discharge at the design capacity of the facility. Exceptions should be noted.

What is the application for? (check all that apply)

☐ A UPDES permit for a new facility, project, or outfall.

☒ A UPDES permit renewal with an expansion or modification of an existing wastewater treatment works.

☐ A UPDES permit renewal requiring limits for a pollutant not covered by the previous permit and/or an increase to existing permit limits.

☐ A UPDES permit renewal with no changes in facility operations.

Part B. Is a Level II ADR required?

This section of the form is intended to help applicants determine if a Level II ADR is required for specific permitted activities. In addition, the Executive Secretary may require a Level II ADR for an activity with the potential for major impact on the quality of waters of the state (R317-2-3.5a.1).

B1. The receiving water or downstream water is a Class 1C drinking water source.

☒ **Yes** A Level II ADR is required (Proceed to Part C of the Form)

☐ **No** (Proceed to Part B2 of the Form)

B2. The UPDES permit is new or is being renewed and the proposed effluent concentration and loading limits are higher than the concentration and loading limits in the previous permit and any previous antidegradation review(s).

☐ **Yes** (Proceed to Part B3 of the Form)

☐ **No** No Level II ADR is required and there is no need to proceed further with review questions.

B3. Will any pollutants use assimilative capacity of the receiving water, i.e. do the pollutant concentrations in the effluent exceed those in the receiving waters at critical conditions? For most pollutants, effluent concentrations that are higher than the ambient concentrations require an antidegradation review? For a few pollutants such as dissolved oxygen, an antidegradation review is required if the effluent concentrations are less than the ambient concentrations in the receiving water. (Section 3.3.3 of Implementation Guidance)

☐ **Yes** (Proceed to Part B4 of the Form)

☐ **No** No Level II ADR is required and there is no need to proceed further with review questions.

B4. Are water quality impacts of the proposed project temporary and limited (Section 3.3.4 of Implementation Guidance)? Proposed projects that will have temporary and limited effects on water quality can be exempted from a Level II ADR.

☐ **Yes** Identify the reasons used to justify this determination in Part B4.1 and proceed to Part G. No Level II ADR is required.

☐ **No** A Level II ADR is required (Proceed to Part C)

B4.1 Complete this question only if the applicant is requesting a Level II review exclusion for temporary and limited projects (see R317-2-3.5(b)(3) and R317-2-3.5(b)(4)). For projects requesting a temporary and limited exclusion please indicate the factor(s) used to justify this determination (check all that apply and provide details as appropriate) (Section 3.3.4 of Implementation Guidance):

☐ Water quality impacts will be temporary and related exclusively to sediment or turbidity and fish spawning will not be impaired.

Factors to be considered in determining whether water quality impacts will be temporary and limited:

a) The length of time during which water quality will be lowered:
b) The percent change in ambient concentrations of pollutants:
c) Pollutants affected:
d) Likelihood for long-term water quality benefits:
e) Potential for any residual long-term influences on existing uses:
f) Impairment of fish spawning, survival and development of aquatic fauna excluding fish removal efforts:

Additional justification, as needed:

Level II ADR

Part C, D, E, and F of the form constitute the Level II ADR Review. The applicant must provide as much detail as necessary for DWQ to perform the antidegradation review. Questions are provided for the convenience of applicants; however, for more complex permits it may be more effective to provide the required information in a separate report. Applicants that prefer a separate report should record the report name here and proceed to Part G of the form.

Optional Report Name:

Part C. Is the degradation from the project socially and economically necessary to accommodate important social or economic development in the area in which the waters are located?

The applicant must provide as much detail as necessary for DWQ to concur that the project is socially and economically necessary when answering the questions in this section. More information is available in Section 6.2 of the Implementation Guidance.

C1. Describe the social and economic benefits that would be realized through the proposed project, including the number and nature of jobs created and anticipated tax revenues.

See Part C - Attachment.

C2. Describe any environmental benefits to be realized through implementation of the proposed project.

See Part C - Attachment.

C3. Describe any social and economic losses that may result from the project, including impacts to recreation or commercial development.

See Part C - Attachment.

C4. Summarize any supporting information from the affected communities on preserving assimilative capacity to support future growth and development.

See Part C - Attachement.

C5. Please describe any structures or equipment associated with the project that will be placed within or adjacent to the receiving water.

See Part C - Attachment.

Part D. Identify and rank (from increasing to decreasing potential threat to designated uses) the parameters of concern.

Parameters of concern are parameters in the effluent at concentrations greater than ambient concentrations in the receiving water. The applicant is responsible for identifying parameter concentrations in the effluent and DWQ will provide parameter concentrations for the receiving water. More information is available in Section 3.3.3 of the Implementation Guidance.

Parameters of Concern:

Rank	Pollutant	Ambient Concentration	Effluent Concentration
1	See Part D - Attachement		
2			
3			
4			
5			

Pollutants Evaluated that are not Considered Parameters of Concern:

Pollutant	Ambient Concentration	Effluent Concentration	Justification

Part E. Alternative Analysis Requirements of a Level II Antidegradation Review.

Level II ADRs require the applicant to determine whether there are feasible less-degrading alternatives to the proposed project. More information is available in Section 5.5 and 5.6 of the Implementation Guidance.

E1. The UPDES permit is being renewed without any changes to flow or concentrations. Alternative treatment and discharge options including changes to operations and maintenance were considered and compared to the current processes. No economically feasible treatment or discharge alternatives were identified that were not previously considered for any previous antidegradation review(s).

☐ **Yes** (Proceed to Part F)

☒ **No or Does Not Apply** (Proceed to E2)

E2. Attach as an appendix to this form a report that describes the following factors for all alternative treatment options (see 1) a technical description of the treatment process, including construction costs and continued operation and maintenance expenses, 2) the mass and concentration of discharge constituents, and 3) a description of the reliability of the system, including the frequency where recurring operation and maintenance may lead to temporary increases in discharged pollutants. Most of this information is typically available from a Facility Plan, if available.

Report Name: *See Part E - Attachment.*

E3. Describe the proposed method and cost of the baseline treatment alternative. The baseline treatment alternative is the minimum treatment required to meet water quality based effluent limits (WQBEL) as determined by the preliminary or final wasteload analysis (WLA) and any secondary or categorical effluent limits.

E4. Were any of the following alternatives feasible and affordable?

Alternative	Feasible	Reason Not Feasible/Affordable
Pollutant Trading	No	See attachment.
Water Recycling/Reuse	No	See attachment.
Land Application	No	See attachment
Connection to Other Facilities	No	See attachment.
Upgrade to Existing Facility	No	See attachment.
Total Containment	No	See attachment.
Improved O&M of Existing Systems	No	See attachment.
Seasonal or Controlled Discharge	No	See attachment.
New Construction	Yes	See attachment.
No Discharge	No	See attachment.

E5. From the applicant's perspective, what is the preferred treatment option?

New sequencing batch reactor activated sludge wastewater treatment plant construction.

E6. Is the preferred option also the least polluting feasible alternative?

☒ **Yes**

☐ **No**

If no, what were less degrading feasible alternative(s)?

If no, provide a summary of the justification for not selecting the least polluting feasible alternative and if appropriate, provide a more detailed justification as an attachment.

Part F. Optional Information

F1. Does the applicant want to conduct optional public review(s) in addition to the mandatory public review? Level II ADRs are public noticed for a thirty day comment period. More information is available in Section 3.7.1 of the Implementation Guidance.

☒ **No**

☐ **Yes**

F2. Does the project include an optional mitigation plan to compensate for the proposed water quality degradation?

☒ **No**

☐ **Yes**

Report Name: ☐

Part G. Certification of Antidegradation Review

G1. Applicant Certification

The form should be signed by the same responsible person who signed the accompanying permit application or certification.

Based on my inquiry of the person(s) who manage the system or those persons directly responsible for gathering the information, the information in this form and associated documents is, to the best of my knowledge and belief, true, accurate, and complete.

Print Name: Greg Fosse

Signature: Greg Fosse

Date: 7/11/2016

G2. DWQ Approval

To the best of my knowledge, the ADR was conducted in accordance with the rules and regulations outlined in UAC R-317-2-3.

Water Quality Management Section

Print Name: NICHOLAS VON STACKELBERG

Signature: Nicholas von Stackelberg

Date: 8/24/2016

SUPPORTING ATTACHMENTS

PART C – STATEMENT OF SOCIAL, ENVIRONMENTAL AND ECONOMIC IMPORTANCE

C1. Describe the social and economic benefits that would be realized through the proposed project, including the number and nature of jobs created and anticipated tax revenues.

The existing Moab wastewater plant is aged (over 56 years old) and deteriorated, and can no longer provide effective and reliable treatment to meet current discharge permit requirements and supply the required human health and environmental benefits. Both the capacity and condition of the existing plant are inadequate to meet current and future wastewater disposal needs of the community, and the facility must be extensively upgraded or replaced for that purpose.

The nature of the existing single stage, fixed film trickling filter process effectively prevents it from accomplishing biological nutrient removal. Also, portions of the existing plant are no longer operable (anaerobic digesters) and dewatering of raw biosolids is accomplished using an outdoor trailer-mounted temporary belt filter press instead of the old drying beds. This odorous operation is exposed to the environment, and complaints from residents are periodically received by the City.

Moab is experiencing high wastewater loadings to the plant due to significantly increased visitation of nearby national parks and increased outdoor recreational activities in the area including rafting, four-wheeling, motor cycling, biking, hiking, camping, fishing, etc. Moab is the center for these activities with motels, restaurants, gas and food outlets, etc., all of which discharge wastewater to the existing sewer system and treatment plant. Developments supporting the outdoor recreation are rapidly occurring. Septage from pit privies and similar facilities serving the parks and camping areas is also hauled to and disposed of at the plant, which constitutes significant wastewater loading to the facility.

Moab City is highly dependent economically on tourism as its primary source of commercial and employment income and associated tax revenues. The majority of growth in the area is directly related to outdoor recreation, and this trend is expected to continue and increase in the future. Little manufacturing or other industrial growth is anticipated. However, the local Utah State University branch campus is planning a significant expansion in the near future.

All of the current and future domestic sewage treatment and disposal needs for the City and surrounding area and residents must be met and provided for by the Moab wastewater facility. There are no other facilities in the area. The plant must reliably provide both the capacity and level of performance needed to protect human health and the environment for existing and future development, and the existing plant is unable to meet this goal as discussed above. Without this project, future development, commercial

and employment income and tax revenues will be curtailed, and existing effluent discharges will not reliably meet discharge permit standards.

C2. Describe any environmental benefits to be realized through implementation of the proposed project.

See response to C1.

C3. Describe and social or economic losses that may result from the project, including impacts to recreation and commercial development.

No social or economic losses due to the project have been identified, but quite the opposite. The proposed project will provide increased protection of human health and the environment, will improve aesthetic conditions in the area of the existing and new facilities, will support increased recreational and commercial development, and enhance tax revenues for local governments.

C5. Please describe any structures or equipment associated with the project that will be placed within or adjacent to the receiving water.

All of the new treatment plant facilities will be located approximately 1800 feet from the bank of the Colorado River, adjacent to the existing plant site. The outfall for effluent discharge to the river will terminate at the river's edge.

PART D – PARAMETERS OF CONCERN

The Antidegradation Review process requires the identification of the parameters of concern (POCs). POCs are measured characteristics of the discharge that exceed, or potentially exceed ambient concentrations. The list of POCs is ultimately used in the ADR process to select the least degrading project alternative. The following documents were reviewed to identify the Parameters of Concern: existing UPDES Permit, DWQ Wasteload Analysis, and EPA Form 2A that was submitted as part of the permit renewal application. Each of these documents are included in Appendix A.

Upon review of these documents the following POC were identified:

Parameters of Concern

Rank	Pollutant	Ambient Concentration	Effluent Concentration	Source of Values
1	Biochemical Oxygen Demand		25 mg/l	UPDES Permit
2	Total Suspended Solids		25 mg/l	UPDES Permit
3	E-Coli		126 NO./100 mL	UPDES Permit
4	Total Phosphorus		1.0 mg/l (w/o variance) 3.0 mg/l (w/ variance)	With chemical BNR Process
5	Total Nitrogen		10 mg/l	Design Criteria
6	Total Dissolved Solids		400 mg/l > than Culinary	UPDES Permit
7	Ammonia Summer Fall Winter Spring		 75 mg/l 83 mg/l 122 mg/l 121 mg/l	Waste Load Analysis
8	Temperature		27 Degrees Celsius	Waste Load Analysis
9	pH		6.5-9.0	Waste Load Analysis

The following metals were evaluated and determined to not be considered Parameters of Concern. See EPA Form 2A for testing results for these metals.

Parameters of Not of Concern

No.	Parameter	Justification
1	Arsenic	Historical low concentrations in effluent.
2	Cadmium	Historical low concentrations in effluent.
3	Copper	Historical low concentrations in effluent.
4	Cyanide	Historical low concentrations in effluent.
5	Lead	Historical low concentrations in effluent.
6	Mercury	Historical low concentrations in effluent.
7	Molybdenum	Historical low concentrations in effluent.
8	Nickel	Historical low concentrations in effluent.
9	Selenium	Historical low concentrations in effluent.
10	Silver	Historical low concentrations in effluent.
11	Zinc	Historical low concentrations in effluent.

PART E – ALTERNATIVE ANALYSIS REQUIREMENTS OF A LEVEL II ANTIDEGRADATION REVIEW

The following paragraphs provide information regarding Parts E2 and E3.

Note: Much of the following text has been taken from the Facilities Master Plan and Preliminary Engineering Report and edited for this document.

GENERAL

A number of potential wastewater treatment bioreactor types and configurations are available that are capable of providing the treatment capacity and performance required for the new Moab wastewater facility. All of them depend on variations of the oxic suspended growth activated sludge process for BOD_5 and TSS conversion and removal. They also provide anaerobic and anoxic zones with associated equipment in order to accomplish removal of phosphorous and nitrogen compounds to acceptable levels. Fixed film processes (trickling filters, biotowers, etc.) do not provide the necessary environment to grow organisms for this type of nutrient removal and are not considered. Two alternative process configurations were selected for evaluation as given below. Each of the identified processes provide the desired BOD_5, TSS and nutrient removals using the activated sludge process, but the reactor configurations, equipment, process control and other elements differ. Furthermore, there are significant variations in configuration, basins, equipment, control, mixing, pumping, aeration, etc. within each of these categories depending on manufacturer offerings and preferences. The evaluated process alternatives included Oxidation Ditches and Sequencing Batch Reactors.

These alternatives are described further below. Also included is some basic process information for further understanding of how the organic and nutrient contents of the wastewater are converted and removed. This analysis and report does not attempt to identify and select a specific process configuration and/or manufacturer for the recommended process. Rather, the benefits and costs of each (oxidation ditch and sequencing batch reactor) are compared, relying on information provided by vendors, and a representative selection from each category is used for that purpose.

Process alternatives including more conventional activated sludge configurations, combined fixed and suspended growth processes, Aerotor/Biowheel® systems, membrane bioreactors, etc. were given limited consideration. However, these technologies were judged not to provide substantial benefit in terms of cost, performance, maintenance, etc. to warrant inclusion and more detailed evaluation. The processes selected for evaluation are among the most widely used and applied mechanical systems across the United States for municipal wastewater treatment for smaller facilities (5 MGD or less), with hundreds of installations of each over many years. The City can be confident that the selection will provide the performance, cost-effectiveness, operability and low maintenance required for its new wastewater treatment facility.

Basic Process Information

1. Removal of Organic Constituents and Ammonia. As indicated above, variations of the activated sludge process are considered for this evaluation, and the selected version will be implemented for the new Moab WWTP. The basic requirements for the activated

sludge process to convert organic BOD_5 and TSS constituents to biomass and thus remove them from the wastewater are well understood and have been applied and used for nearly 100 years. The biomass, mainly bacteria, use the organic wastewater constituents as a food source. This heterotrophic suspended growth aerobic process requires aeration for oxygen for metabolic activities, mixing, alkalinity, sufficient biomass to adsorb and metabolize the constituents, sufficient hydraulic and solids retention times for the biological reactions to occur, and gravity separation of the biomass from the effluent before discharge. Removal of ammonia, a nitrogen compound and wastewater contaminant, requires additional aeration and solids detention time for the slower growing autotrophic bacteria that convert ammonia to nitrites and nitrates (other nitrogen compounds) via an oxidative process called "nitrification".

2. Removal of Nitrogen Compounds. In order to reduce the total nitrogen content to lower levels, the nitrites and nitrates in the wastewater must be converted to elemental nitrogen gas that can be released into the atmosphere and thus removed. This "denitrification" process is also accomplished biologically by a group of facultative bacteria that use oxygen from the nitrites and nitrates for their metabolic processes instead of dissolved oxygen from aeration. Basins or zones with low dissolved oxygen levels that favor the facultative bacteria are required for this process to occur. Adequate detention times, mixing, and a sufficient organic food source are necessary to obtain acceptable results. This process is essentially added to the above conventional activated process and results in biological nutrient removal (BNR) of the nitrogen compounds. A portion of both the alkalinity and oxygen are returned to the wastewater via this process.

3. Removal of Phosphorus. Phosphorous is removed biologically by yet another process variation which requires essentially zero dissolved oxygen to be present in the wastewater in a separate basin or zone provided with sufficient detention time and mixing. Orthophosphate compounds are released into the wastewater in this anaerobic or fermentation zone which are then taken up by phosphorous accumulating organisms (PAOs) in subsequent aerobic basins. This process is also added to the above activated sludge processes for further BNR treatment of the wastewater. Since the phosphorous remains present in the biomass and is not used up or converted to other compounds, care must be taken to avoid releasing it back into the effluent before discharge.

   It is estimated that the biological phosphorus removal process will reduce the effluent phosphorus levels to 1.0–3.0 mg/l. The Moab WRF will also include facilities required for chemical phosphorus removal to further reduce concentrations in the effluent as needed. Chemical phosphorus removal occurs with the addition of metal salts (usually Ferric Chloride or Alum – aluminum sulfate) that coagulates and precipitates with much of the remaining phosphorus compounds. The coagulated and precipitated phosphorus is then settled and wasted through the solids disposal process. Chemical phosphorus removal will be utilized to reduce the effluent phosphorus to below the Utah DWQ Regulation of 1.0 mg/l.

It should be noted that the City of Moab will be applying for an exception variance from the impending nutrient discharge regulations. The requested exception will be based upon the expected minimal impact on water quality in the Colorado River caused by effluent discharged

from the Moab WRF. The exception variance would eliminate the phosphorus standards from the Moab WFF discharge permit requirements. However, the City believes that it is prudent that the any major wastewater treatment facility upgrade or new construction project be capable of biological nutrient removal, whether or not permit standards require that level of treatment. It is estimated that biological nutrient removal would reduce the phosphorus concentration in the effluent to 1.0-3.0 mg/l.

EVALUATED TREATMENT PROCESSES

Two treatment processes were identified for the Moab Treatment Facility. These processes include Oxidation Ditch and Sequencing Batch Reactors. The following paragraphs briefly describe each of these processes.

Oxidation Ditch

An oxidation ditch (Ox-Ditch) is a modified activated sludge biological treatment process that uses a continuous loop reactor. Oxidation ditches were developed originally in the Netherlands and designed to operate in the extended aeration activated sludge mode which requires longer hydraulic and solids retention times and more oxygen than conventional active sludge systems. These systems were introduced widely in the United States and in Utah specifically, and designed according to extended aeration process parameters. Over time those parameters have migrated toward conventional activated sludge values and loadings, resulting in increased performance.

The Ox-Ditch process may accomplish a certain amount of denitrification internally, but the majority of the denitrification takes place in separate basins or zones where low oxygen (anoxic) conditions exist. Biological phosphorous removal capability is generally provided by use of separate anaerobic basins prior to the Ox-ditch. Separation of biosolids by gravity sedimentation from the effluent to be disinfected and discharged is accomplished in separate clarifiers.

Sequencing Batch Reactor

Sequencing batch reactors (SBR) can operate in either a continuous or semi-continuous batch mode and creates differing reactor conditions sequentially in a single basin (commonly with two or more parallel basins) by a series of fill, anaerobic react, aerobic react, anoxic react, settle and decant/discharge and solids wasting cycles. A holding basin to equalize flows for disinfection is also be provided. Aeration, mixing and inflow are turned on and off during the different periods as required to help create the desired process conditions. The basins are typically square or rectangular, as opposed to looped reactors, and employ extensive common wall construction. However, the basic aerobic, anoxic and anaerobic processes are similar between the two approaches, and the resulting performance results are comparable. Only one SBR type plant has been installed in Utah. Oxidation ditches have found wider use, possibly due moderate land prices and greater availability that favor their larger footprint and other factors. However, sequencing batch reactors represent a suitable and cost-effective alternative that would provide excellent service for Moab.

Common Features

A number of proposed treatment plant features and equipment will be similar or identical for the two process alternatives. Detailed information regarding these facilities including individual

capacities, sizes, performance, materials, etc. will be developed and/or confirmed during the design phase of the work authorized following this study. The items are given in Table 1 below.

Table 1
Wastewater Treatment Plant Features Common to the Alternatives

Facility	Process or Equipment	Comments
Headworks	• Mechanical screens (6 mm) and screenings washing and compacting, conveying and disposal equipment • Mechanical grit removal, classifying, washing, conveying and disposal • Parshall flume with flow measurement and recording • Septage receiving facility	Grit and screenings loaded to a truck or dumpster for landfill disposal
Influent Pumping Station	Non-clog type wastewater pumps with flow matching control operation	
Chemical Addition for P Removal	Aluminum or iron salt storage, metering, injection and mixing	If required
Filtration	Cloth filters	If required
Disinfection	Low pressure high output UV	
Utility Water Pumping Station	High efficiency vertical turbine pumps with filter/strainer	
Biosolids Holding Basin	Coarse bubble aeration for mixing and freshening. Decant capability.	
Biosolids Dewatering Facility	• Polymer storage, dilution, activation, metering, injection and mixing • Biosolids pumping/metering • Mechanical biosolids dewatering • Dewatered biosolids conveying, storage and disposal	Dewatered biosolids loaded to a truck or dumpster for landfill disposal
Standby Power Engine-Generator Set	Diesel powered unit with self-contained fuel tank and outdoor enclosure. 24-hr. capacity.	Capacity to operate essential facilities
Administration Building	Office, small meeting room, control/media room with printer, fax, computer and file storage, restroom, shower.	
Maintenance and Electrical Building	Tools, supplies and parts storage, work area, single vehicle bay, plant electrical center	
Civil/Site Improvements	• Influent sewer, yard piping, utilities • Access roads • Grading, drainage, flood prevention • Low maintenance landscaping • Security fencing, signage	

Several of the facilities listed in the above table require or typically require a building, cover or enclosure to house equipment for purposes of security, odor and noise control, aesthetics and protection of staff and equipment from the elements. For larger plants this is often accomplished using different buildings for each process area and creation of a compound or campus situation. However, for a facility such as the size and capacity of the new Moab WWTP, it is more cost effective to combine these facilities into a limited number of buildings and similar structures, and in so doing also simplify operation and maintenance requirements with the various elements being grouped together and more closely at hand. This consolidation approach will be implemented wherever it can provide reasonable economic and/or operational benefit for the City.

Environmental Evaluation

Construction of new treatment plant facilities on the proposed site requires a NEPA study which has been accomplished. The environmental impact of the two alternatives processes is believed to be equal. A new wastewater treatment plant for Moab will generate a higher quality effluent that has lower concentrations of BOD_5, TSS, chlorine and nitrogen and phosphorous compounds as compared to the existing plant and the current effluent quality.

COMPARISON OF ALTERNATIVES

General

As described above, a number of features and facilities planned for the new Moab WWTP are common to both alternatives and will be provided irrespective of the recommended core wastewater treatment process. These elements will not be included in the examination since their impact is similar and does not sway the outcome. The following Tables 2 and 3 present the items that are considered unique to their respective individual process. Instrumentation, electrical power and controls for equipment are assumed as required and are not specifically listed.

Table 2
Process Elements Unique to the Oxidation Ditch Alternative

Facility	Process or Equipment
Bioreactors	• Anaerobic, anoxic and aerobic basins • Aeration (typically diffusers and blowers or mechanical aerator/mixers) • Mixers for anaerobic and anoxic basins • Recycle pumps (if required)
Secondary Clarifiers	Circular, center feed, peripheral withdrawal, 12 ft. min. SWD, energy dissipating inlets, Stamford baffles, sludge collection/removal mechanisms, scum collection/removal systems and algae prevention systems
RAS/WAS Pumping Station	• Return activated sludge pumps • Waste activated sludge pumps
Blower Building or Enclosure	Blowers (if required, depending on selected aeration technology)

Table 3
Process Elements Unique to the Sequencing Batch Reactor Alternative

Facility	Process or Equipment
Bioreactors	• Common basins for anaerobic, anoxic and aerobic processes • Aeration system • Mixing equipment • Decanting equipment • Sludge removal system • Recycle pumping (if needed) • Transfer pumping (if required)
Equalization Basin	• Single effluent basin to equalize effects of upstream sequencing bioreactor operation on UV disinfection system. Some UV systems may not require equalization and which will be further considered during the design effort. • Transfer pumping (if required)
Blower Building or Enclosure	Blowers (if required, depending on selected aeration technology)

Both Ox-Ditches and SBRs are offered as engineered process packages by a number of manufacturers who include their unique offerings of equipment, control systems, configuration, operating methods and requirements and other features. This is common practice for smaller treatment plants for which a custom designed process likely would be more costly and without significant process performance, operational, efficiency or other advantages. These manufacturers typically have furnished their respective systems for many years, with many installations and have extensive experience with varying treatment goals and requirements. This experience should prove beneficial to Moab regardless of which system is recommended.

Several manufacturers submitted proposals with their recommended processes, configuration and equipment for each alternative. It is not within the scope of this study to consider in depth the various elements of each proposal and the associated advantages and disadvantages within each competing alternative. Rather, the report separates and compares Ox-Ditches and SBRs on a selected representative basis in order to develop a perspective of the general benefits offered by each alternative. This and related information will allow a process recommendation to be made which can be confidently implemented in the upcoming design phase. At that time, differing manufacturer systems and equipment will be evaluated in greater detail for determination of a final selection for design, bidding and construction of the new facility.

Process Loading and Performance Requirements.

Plant capacity and load requirements used for this analysis for the Moab WWTP are shown in Table 4. Influent sampling and analyses will need to be performed to confirm the alkalinity, VFAs, ammonia or TKN and total phosphorous concentration and any other questioned values prior to performing the final design. The plant elevation is 4000 ft. AMSL.

Table 4
Plant Capacity and Load Requirements

Influent Criteria	20-Year Design	50-Year Expansion
Peak Month Ave. Daily Sum. Flow	1.5 mgd	3.0 mgd
Peak Month Ave. Daily Winter Flow	1.2 mgd	2.4 mgd
Peak Hourly Flowrate	3.38 mgd	6.0 mgd
Ave. Annual BOD_5 Concentration	345 mg/l	345 mg/l
Peak Month BOD_5 Daily Load	5,035 ppd	10,070 ppd
Ave. Annual TSS Concentration	325 mg/l	325 mg/l
Peak Month TSS Daily Load	4,743 ppd	9,486 ppd
Min./Ave./Max. Wastewater Temps.	11°/18°/27° C	11°/18°/27° C
Min./Ave./Max pH	7.2/8.0/9.0 Units	7.2/8.0/9.0 Units
Alkalinity	Ample	Ample
VFAs	Ample	Ample
Ammonia	40 mg/l	40 mg/l
Total Phosphorous	8 mg/l	8 mg/l

Projected effluent discharge permit requirements used for this analysis for the Moab WWTP are shown in Table 5. Current and/or projected UPDES permit requirements will need to be confirmed prior to completing the final design.

Table 5
Projected Effluent Discharge Permit Requirements

Parameter	Monthly Ave.	Weekly Ave.	Min.	Max.	Comments
BOD_5 Conc.	25 mg/l	-	-	-	Current Permit
BOD_5 Removal	85%	-	-	-	Current Permit
TSS Conc.	25 mg/l	-	-	-	Current Permit
TSS Removal	85%	-	-	-	Current Permit
E-coli	126/100 ml	158/100 ml	-	-	Current Permit
WET, Acute	-	-	-	LC_{50} >10% Effl.	Current Permit
Oil & Grease	-	-	-	10 mg/l	Current Permit
pH	-	-	6.5 units	9.0 units	Current Permit
TDS	<400 mg/l incr.	-	-	-	Current Permit
TP (avg annual)	3.0 mg/l 1.0 mg/l				(with variance) (w/o variance)
TN	10.0 mg/l		-	-	Assumed Future

Oxidation Ditch

An oxidation ditch proposal from Westech Engineering of Salt Lake City, Utah was used for analysis of this process alternative. Several proposals were provided, and this one is used as a representation from that group. Related information is provided in Table 6 and as follows and based on the capacity and performance requirements shown in Tables 4 and 5.

Table 6
Oxystream® Oxidation Ditch Partial Design Information

Parameter	Values @ 1.5 MGD ADF
Effluent Conc. (mg/l)	
BOD5	10
TSS	10
TN	10
TP	1 (with chemical)
Process Parameters	
SRT (days)	16
MLSS (mg/l)	4000
Yield (lb./lb.)	0.78
AOR (lb. O2/day)	7,475
SOR (lb. O2/day)	13,848
Recycle Rate	4-6 Q
RAS Rate	0.5-1 Q
Mech. Aeration % (lb. O2/hp-hr.)	3.8
Aerobic Volume (MG)	1.558
Anoxic Volume (MG)	0.309
Anaerobic Volume (MG)	0.094
SVI (ml/g)	100 or less
Ave. Clarifier Loading Rate (gpd/sf)	400 or less
Electrical Power (hp)	
Aeration – Required/Provided (4 aerators)	152/300
Mixing	
- Anoxic (2 mixers)	10
- Anaerobic (2 mixers)	2
Pumping	
- RAS (0.5 Q @ 20 ft. TDH)	5
- Recycle	Internal
Clarifier Drives (2 drives)	1
Total	170
Depths (ft.)	
Bioreactors – SWD	14

Parameter	Values @ 1.5 MGD ADF
– Total	15.5
Clarifiers	
– SWD	12
– Total	15.5
Gross Surface Area (sf)	
Bioreactors	22,000
Clarifiers (50 ft. dia.)	4,000
Total	26,000
Concrete Volumes (CY)	
Bioreactors	2,200
Clarifiers	400
Total	2,600
Basic Process Equipment Costs (sales tax incl., not installed)	
Bioreactors	$700,000
Clarifiers	$200,000
Total	$900,000

Sequencing Batch Reactor

A sequencing batch reactor proposal from Aqua-Aerobic Systems, Inc. of Loves Park, IL was used for analysis of this process alternative. Several proposals were provided, and this one was used as a representation from that group. Related information is provided in Table 7 and as follows and based on the capacity and performance requirements shown in Tables 4 and 5.

Table 7
AquaSBR® Sequencing Batch Reactor Partial Design Information

Values	1.5 MGD ADF
Effluent Conc. (mg/l)	
BOD5	<25 (Est. 10)
TSS	<25 (Est. 10)
TN	10
TP	1 (with chemical)
Process Parameters	
SRT (days)	12.7
HRT (days)	0.973
MLSS (mg/l)	4500
Yield (lb./lb.)	0.719
AOR (lb. O2/day)	7,963
Air Flowrate (scfm)	6,350
F/M Ratio (lb./lb.)	0.099
Cycles/Day, Hrs./Cycle	5, 4.8
Electrical Power (hp)	
Aeration Blowers –Req'd./Provided	

Values	1.5 MGD ADF
(2 blowers)	250/375
Mixing (2 mixers)	20
Transfer Pumping (2 pumps)	6
Average Power Used	145
Gross Surface Area (sf)	
Bioreactors (2)	15,000
Equalization Basin	7,500
Total	22,500
Bioreactor & EQ Basin Depth (ft.)	
– SWD	16
– Total	18
Concrete Volumes (CY)	
Bioreactors	1200
Equalization Basin	600
Total	1800
Basic Process Equipment Costs (sales tax incl., not installed)	
Bioreactors	$850,000
Equalization Basin (assumed)	$50,000
Total	$900,000

Treatment Performance Comparison of Alternatives

As discussed previously, both the oxidation ditch and SBR treatment processes are modifications to the activated sludge process. Each process has proven treatment reliability and demonstrated the ability to produced treated effluent that will meet or exceed the established design criteria. The following table summarizes the typical treatment performance for oxidation ditches and SBRs based upon review of manufacturer proposals and available literature. The performance projections were also confirmed during site visits to several treatment facilities utilizing each these technologies.

	Oxidation Ditch		Sequencing Batch Reactor		Design Criteria	
	Effluent	Removal	Effluent	Removal	Effluent	Removal
BOD5	10 mg/l	95%	10 mg/l	95%	25 mg/l	85%
TSS	10 mg/l	95%	10 mg/l	95%	25 mg/l	85%
Total N	10 mg/l		10 mg/l		10 mg/l	
Total P	1 mg/l	(w/ chem)	1 mg/l	(w/ chem)	3 mg/l	(w/ variance)

1) Oxidation ditch performance includes an anaerobic selector.

The oxidation ditch and sequencing batch reactor treatment processes provide similar treated effluent water quality. There is no inherent treatment advantage of one system over the other. However, there are some potential operational advantages to sequencing batch reactors that

would benefit the City of Moab. One of the advantages, includes the flexibility in treating organic spikes in the influent. Moab WRF experiences high organic spikes when septage is discharged into the system. The batch processes allows the operators flexibility in handling these high organic spikes, by modifying reactor aeration time as needed.

Economic Comparison of Alternatives

Both the oxidation ditch and sequencing batch reactor processes will provide the capacity and treatment performance required to meet increasing demands and conform to projected effluent permit requirements. Table 8 contains pertinent information for the two process facilities for side-by-side comparison of size, power and other cost-related parameters.

Table 8
Process Facility Comparison for 1.4 MGD ADF

Parameter	Oxidation Ditch*	Sequencing Batch Reactor**
Total Hydraulic Volume (MG)	2.40	2.41
Max. Basin Depth (ft.)	15.5	18
Gross Area (sf)	26,000	22,500
Lineal Wall Footage (lf)	1,550	850
Concrete Volume (CY)	2,600	1,800
Ave. Power Required (hp)	170	145
Equipment Cost	$900,000	$900,000

*****Includes bioreactors and clarifiers

******Includes bioreactors and EQ basin

In every case, except for basin depth, the SBR process facility appears to exhibit equal or smaller quantities and related costs compared to the Ox-Ditch option. A significant difference shown is the estimated additional cost for reinforced concrete installation for the ox-ditch facilities of 800 CY. This difference is due to the basin configurations, with thinner wall sections due to circular design, etc. Additional costs for excavation, backfill and dewatering for the Ox-Ditch facility would also accrue. Costs for a RAS/WAS pumping station must be added.

Table 9
Estimated Treatment Plant Construction Costs at 1.4 MGD ADF

Facility	Ox-Ditch System	SBR System Cost
Headworks w/ CMU Building	$ 1,230,000	$ 1,230,000
Influent Pump Station	$ 264,000	$ 264,000
SBR Bioreactors	--	$ 2,210,000
Flow EQ Basin	--	$ 530,000
Blower Building (CMU)	--	$ 135,000
Ox-Ditch Bioreactors	$ 2,780,000	--
Secondary Clarifiers	$ 670,000	--
RAS/WAS Pump Station (CMU Bldg.)	$ 279,000	--
UV Disinfection (CMU Building)	$ 405,000	$ 405,000

Utility Water Pump Sta.	$ 142,500	$ 142,500
Biosolids Holding Basin	$ 295,000	$ 295,000
Biosolids Dewatering (CMU Building)	$ 600,000	$ 600,000
Administration Building	$ 187,500	$ 187,500
Maintenance Building	$ 240,000	$ 240,000
Flood Protection	$ 250,000	$ 250,000
Yard Piping, Utilities & Site Improvements	$ 500,000	$ 500,000
Electrical Power & Control System	$ 900,000	$ 900,000
Standby Electrical Generator	$ 100,000	$ 100,000
Demolition of Existing Facilities	$ 150,000	$ 150,000
Totals	$ 8,993,000*	$ 8,139,000*

*Contingencies, engineering, legal, financial, administration, easements, rights of way and property costs are not included.

General cost reducing assumptions that are inherent with the above estimates are as follows.

- Odor control systems not provided
- Turf grass landscaping only
- Concrete curbs, gutters or sidewalks not provided
- Asphalt paving only from main road to Administration Building. All other roads and paths to be gravel.
- Pre-engineered metal canopy for UW pumps
- Pre-engineered metal building(s) for Administration and Maintenance. Plant electrical center included in Maintenance Building. These may all be combined into a single building. UV disinfection building may be changed from CMU to a pre-engineered metal building.
- Engine generator with outdoor enclosure and integral fuel storage
- Submersible type pumping systems are used where applicable
- Intermediate and final pump stations are not required
- Plant security system not provided
- CMU buildings to be colored, smooth face with flat membrane roofs. Headworks and Biosolids Dewatering Buildings may be combined. Blower Building and RAS/WAS Pump Station may be combined.

Typical operation and maintaince costs are similar for both options. The only difference between the two options is power consumption. Power requirements for the ox-ditch process (excluding the RAS/WAS Pump Station) are higher than the SBR system. The power consumption the ox-ditch process alone (excluding common treatment demands) is estimated at 170 Hp continuously. The SBR process is estimated to use 145 Hp continuously.

The following table summarizes the 20-yr life cycle costs for the two options.

Table 10
Present Worth Cost Estimate

	Ox-Ditch System	SBR System
Initial Capital Cost	$ 8,993,000	$ 8,139,000
Common Annual O&M	$ 500,000	$ 500,000
Treatment Power Cost	$ 100,100	$ 85,400
20 Yr Net Present Cost	$20.6 million	$19.5 million
SBR NPV Cost Savings		**$ 1.1 million Savings**

- Based upon 3% inflation and 3% interest.

The SBR system estimated costs result in $854,000 capital savings over the Ox-Ditch system, and $1.1 million savings in 20-year net present worth costs. Based on both capital and operating costs, the SBR process facilities are less expensive than the comparable Ox-Ditch facilities and would be preferred. The spread between the two options is due to the differences in cost of the bioreactors and related facilities including clarifiers, RAS/WAS pump station, flow EQ basin and blower building.

Non-Economic Comparison of Processes

Non-economic factors that can affect selection of the preferred treatment process for the new Moab facility include noise, traffic, odor, appearance, environmental impacts, simplicity and ease of operation, maintenance and repair/replacement requirements and familiarity and wide use in Utah and implementability. The capital and operating cost comparison is shown above.

Table 11 presents the identified non-economic criteria and ratings on a 10-point scale based on judgments regarding how well each facility performs against the other. The higher rated facility receives full credit for the individual factor and the lower rate facility receives a reduced rating. Ties result in the maximum rating for each.

Table 11
Non-Economic Comparison of SBR and Ox-Ditch Systems

Factor	Oxidation Ditch	SBR
Noise	10	10
Traffic	10	10
Odors	10	10
Appearance	10	10
Environmental	10	10
Familiarity and Wide Use in Utah	10	6
Simplicity – Ease of Operation	10	9
Maintenance and Repair Requirements	10	9
Implementability	10	10
Process Flexibility	7	10

Totals Points	97	94

Over half of the factors are rated equal between the two facilities, and the Ox-Ditch system receives the maximum rating in each category. The low rating for the SBR system in "Familiarity and Wide Use in Utah" is due to the fact that only one other similar system is known to exist in the state, but Ox-Ditches have been used extensively for over 30 years, with numerous installations. Lower scores in both the "Simplicity-Ease of Operation" and "Maintenance and Repair/Replacement Requirements" also stem in part from the limited number of installations in Utah and relative uncertainties regarding these issues.

On the basis of the non-economic ratings, the Ox-Ditch treatment facility cwould be preferred, but based on capital and operating costs, the SBR facility is the more desirable option. The net present worth advantage of over $1M for the SBR system argues strongly in favor of that system, but the extensive successful use of Ox-Ditches for many years in Utah gives that technology an edge.

FINAL SELECTION

General

Sequencing batch reactors and oxidation ditches were verified as viable options for meeting the Moab current and future wastewater treatment requirements. The Facilities Master Plan identified conceptual costs and advantages/disadvantages for each biological treatment option. Subsequently, Moab City and BC&A staff visited several treatment facilities that utilized both of these treatment options. Based upon information and impressions from these visits, and the lower estimated construction and long term life cycle costs associated with SBRs, this technology was selected as the biological treatment process for the proposed Moab WWTP.

SBRs accomplish all of the biological treatment for removal of BOD5, TSS, ammonia and nitrogen and phosphorus nutrients in a single pair of reactors that operate in parallel. The SBRs operate in sequential fill, react, settle and decant stages, with the cycles for the two basins offset so that the different stages do not overlap. With all the biological (and physical settling and removal) treatment occurring within single parallel basins, the need for secondary clarifiers is eliminated, and costs for equipment, concrete structures, civil/site improvements and related items are reduced. Operating costs are also lower due to reduced aeration, mixing and pumping requirements.

Proposals were originally submitted by several SBR manufacturers, and that larger field was reduced to two vendors based on their respective experience in designing and furnishing this type of equipment and process, and upon the equipment types and technologies used in their systems. Sanitaire, a Xylem brand, and Aqua-Aerobic Systems, Inc. both submitted second proposals based on updated design, performance, experience and technical requirements. The remaining SBR suppliers were eliminated from further consideration as they did not meet the more stringent requirements.

Evaluation of Proposals

The revised proposals contained process design and sizing calculations for the respective SBR systems, basin layouts and volumes, equipment selections and configurations, technical data, and pricing information. Both round and rectangular or square basins were included in the proposals as requested in the revised RFP. The two SBR processes differ in that the Sanitaire ICEAS (Intermittent Cycle Extended Aeration System) process allows wastewater flows into both of its parallel basins continuously during all cycle stages. The AquaSBR system uses a true batch approach that does not allow flow to enter the basins when they operate in certain stages. For purposes of the evaluation, the processes were considered equivalent in performance since each manufacturer has a large number of successful installations that have operated over many years. Table 12 provides information for comparison from both proposals.

Table 12
Information Summary from SBR Proposals

	Initial Cost[1]		Annual Power Cost		Net Present Worth[2]	
	Square/Rect. Tanks	Round Tanks	Square/Rect. Tanks	Round Tanks	Square/Rect. Tanks	Round Tanks
AquaSBR	$1,655,800	$1,506,300	$110,179	$110,179	$2,919,553	$2,770,053
ICEAS SBR	$1,665,300	$1,447,300	$82,749	$82,749	$2,614,431	$2,396,431

[1]Includes equipment, installation and concrete basins
[2]6% interest for 20 years, PWF = 11.47

The differences in initial costs for the comparable basin configurations between the two vendors was 4% or less. However, power costs for the Sanitaire ICEAS SBR system were lower due to higher aeration efficiencies and reduced blower operating requirements. This difference is also reflected in the net present worth figures that favor the ICEAS system. However, the AquaSBR system offers a labor and time saving maintenance feature and advantage regarding aeration diffuser inspection and replacement tasks which helps offset the power savings of the other system. Both systems use fine bubble EPDM membrane rubber diffusers to distribute air/oxygen into the wastewater. These diffusers foul and age and fail over time and require periodic inspection and cleaning to assure continued efficient operation, and must be replaced on a typical 5-10 year schedule. A recommended inspection interval is 1-2 years.

The Sanitaire ICEAS disk type membrane diffuser system is permanently fixed to the floor of the concrete basin which must be drained for inspections and entered by operators for diffuser cleaning and replacement. However, due to the full floor coverage of the diffusers, a relatively high aeration efficiency is achieved. The AquaSBR fine bubble diffusers are tube type membrane units assembled into panels and installed around the perimeter of the concrete basins. Because they do not provide full floor coverage, aeration efficiency is lower and blower operating requirements and energy usage are greater.

However, the AquaSBR diffuser panels are designed for individual removal from the basins via a mechanical hoist system for inspection, cleaning and replacement. The basins do not require draining and operators are not required to enter them to service the diffusers or address any other maintenance requirements associated with the SBRs. The SBRs continue operating normally as

each panel is removed and replaced. Diffusers in each panel can be easily inspected, cleaned and replaced as needed by operators working from a walkway situated above and around the basin.

Results and Recommendations

The field visits to operating facilities of each vendor were conducted in order to observe and understand the differences, advantages and disadvantages of each system so that City staff could help identify the factors most significant to them in deciding between these two excellent systems.

Ultimately it was determined that the AquaSBR system was preferred due in part to the removable aeration panel system. This feature was important to Moab City personnel who operate with limited human resources and may lack sufficient staffing to dedicate personnel to the periodic task of aerator inspection, cleaning and replacement when this work is done. The removable panels allow a single operator to remove, inspect, repair, replace and reinstall diffusers without taking a basin out of service or entering it. The function can be accomplished periodically, one panel at time, in order to proactively maintain desired aerator function as part of a good preventative maintenance program.

The other primary deciding factor in favor of the Aqua-Aerobic system was their customer service program which was perceived to be superior to that offered by Sanitaire. Operations personnel at both of the AquaSBR plants were highly complementary of the Aqua-Aerobic customer service and indicated that their responsiveness and helpfulness were very important to ongoing operations and maintenance at their respective facilities. This input was provided by operators without prompting by Moab staff or Aqua-Aerobic representatives. It appeared to be a well-organized and staffed formal service department that provided 24-hours/day service and support by qualified process and electrical engineers. Although Sanitaire also offered a similar service, it did not appear to be as well organized or possibly as responsive. Operators at the Sanitaire ICEAS plant that was visited did not offer comment on their customer service.

The following paragraphs provide information regarding Part E4. The following alternatives were evaluated based upon feasibility and affordability:

A. Pollutant Trading

No viable pollutant trading options were identified or evaluated.

B. Water Recycle and Reuse

Moab City does not have infrastructure or other facilities necessary for reuse of treated effluent. These facilities include tertiary treatment processed, effluent storage, distribution systems, and pump stations. Construction of such facilities would be costly and prohibitive

C. Land Application

Potential requirements to store large quantities of effluent over the non-irrigation season related to land application, limited space available in the area for that purpose, impacts on local residents and the judged high cost for construction of those facilities resulted in elimination of this process alternative.

D. Connection to Other Wastewater Treatment Facilities

No other sufficient wastewater treatment facilities exist in Moab, nor within 60 miles in any direction. The Moab WWTP is the sole regional facility for that area.

E. Upgrade to Existing Facility

Upgrades to the existing facility were evaluated as part of the Facilities Master Plan Update. The evaluation determined that upgrades to the existing facilities, necessary to meet future requirements, would be more costly than construction of new facility.

F. Total Containment

Total containment for the wastewater flows from Moab would require even larger storage ponds than for land application discussed above. Limited space, impacts on local residents and potential high costs for this alternative were cause for its elimination.

G. Improved Operation and Maintenance of Existing Treatment Systems

Staff at the Moab WWTP operate that aged facility to meet existing effluent permit standards under current flow and loading conditions that are challenging given the continuing increases in these parameters and the limited capacity and operability of the plant. The condition and process capability of the existing facility are insufficient to meet future capacity and performance requirements; thus improved operation and maintenance was not considered as a viable long-term approach to meeting these requirements. Addition of chemical precipitants was recommended to increase removals of BOD5 and TSS in the short term to help meet discharge permit standards, but is not considered to be a cost-effective long term solution, nor would it help reduce ammonia or other nitrogen compounds.

H. Seasonal or Controlled Discharge Options to Minimize During Critical Water Quality Periods.

No seasonal or controlled discharge options were identified or evaluated. Municipal wastewater flows discharge to treatment facility on a continual basis and which cannot be reasonably limited or regulated.

I. New Construction

Construction of a new treatment facility has been determined as the best alternative for Moab City to meet it current and future wastewater treatment needs. The new facility is the least cost alternative for meeting current and future water quality regulations.

J. No Discharge

Eliminating discharge to the Colorado River would require another discharge options such as land application or water reuse. These other discharge options would require significant additional facilities and have been determined to be too costly.

K. Water Conservation

Water conservation takes place in Moab City by use of low flush toilets and water limiting sinks, showers and similar plumbing devices and appliances. The result of these uses is demonstrated by the higher strength concentrations of wastewater constituents found in the current sewage flows. No additional water conservations measures were identified or evaluated.

L. Alternative Discharge Locations or Alternative Receiving Waters

1. Alternative Discharge Locations. The location of the existing outfall from the WWTP to the Colorado River is situated at the bank of the river approximately 1800 lineal feet from the plant, which is a reasonable, economical and effective outlet for the effluent. A change in this location to another point on the river may be justified on the basis of the condition of the existing line and which may also enhance effluent mixing and dispersion. The existing discharge is located on a side channel that is separated from the main river flow by a permanent, large sandbar island, and mixing and dispersion may be more limited there. A relocated outfall line upstream from the island where the effluent is better exposed to the main flow could improve mixing and dispersion, but would be costly to construct (about 2500 lineal feet) and require additional environmental permitting and easements.

   It should be noted that The Nature Conservancy has contacted the City of Moab in regard to utilization of the treated effluent within the Matheson Wetlands. Moab is not obligated to provide the effluent to the Nature Conservancy. However, the City may consider allowing The Nature Conservancy to utilize the effluent if there are no additional treatment or conveyance expenses to the City. Initial discussions with DWQ has indicated that discharge to the Matheson Wetlands would require lower ammonia limits and more stringent WET testing. Moab will continue to discuss this possibility with The Nature Conservancy; however, there is a significant number of potential contractual aspects that need to be resolved in order to determine if this is a viable discharge location. Some of these contractual aspects that need to be resolved include; effect on water rights ownership, cost of

additional treatment and operations, future discharge flow obligations, increase water quality requirements, etc. Discharge to the Matheson Wetlands does not appear viable at this time due to the many potential contractual and cost unknowns.

2. Alternative Receiving Waters. No other viable receiving waters are known to exist in the area except for local creeks that discharge nearby into the Colorado River. Any discharges to these creeks likely would be required to meet higher effluent quality standards compared to the river, and construction of a 1,750 foot outfall to the nearest creek (Mill Creek) would be costly.

APPENDIX A

PARAMETERS OF CONCERN DOCUMENTS

FILE COPY

STATE OF UTAH
DIVISION OF WATER QUALITY
DEPARTMENT OF ENVIRONMENTAL QUALITY
SALT LAKE CITY, UTAH

UTAH POLLUTANT DISCHARGE ELIMINATION SYSTEM (UPDES) PERMITS

Major Municipal Permit No. **UT0020419**
Biosolids Permit No. **UTL020419**
Storm Water Permit No. **UTR020419**

In compliance with provisions of the Utah *Water Quality Act, Title 19, Chapter 5, Utah Code Annotated ("UCA") 1953, as amended* (the *"Act"*),

MOAB WASTEWATER TREATMENT FACILITY

is hereby authorized to discharge from its wastewater treatment facility to receiving waters named **COLORADO RIVER**,

to dispose of biosolids,

and to discharge storm water,

in accordance with specific limitations, outfalls, and other conditions set forth herein.

This permit shall become effective on January 1, 2012

This permit expires at midnight on September 30, 2016.

Signed this 1st day of November, 2011.

Walter L. Baker, P.E.
Executive Secretary
Utah Water Quality Board

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I. DISCHARGE LIMITATIONS AND REPORTING REQUIREMENTS

A. Description of Discharge Point. The authorization to discharge wastewater provided under this part is limited to those outfalls specifically designated below as discharge locations. Discharges at any location not authorized under a UPDES permit are violations of the *Act* and may be subject to penalties under the *Act*. Knowingly discharging from an unauthorized location or failing to report an unauthorized discharge may be subject to criminal penalties as provided under the *Act*.

Outfall Number	Location of Discharge Outfall
001	Located at latitude 38°34'40" and longitude 109°34'47". The discharge is through a 2000 foot cement pipeline to the Colorado River.

B. Narrative Standard. It shall be unlawful, and a violation of this permit, for the permittee to discharge or place any waste or other substance in such a way as will be or may become offensive such as unnatural deposits, floating debris, oil, scum, or other nuisances such as color, odor or taste, or cause conditions which produce undesirable aquatic life or which produce objectionable tastes in edible aquatic organisms; or result in concentrations or combinations of substances which produce undesirable physiological responses in desirable resident fish, or other desirable aquatic life, or undesirable human health effects, as determined by a bioassay or other tests performed in accordance with standard procedures.

C. Specific Limitations and Self-Monitoring Requirements.

1. Effective immediately, and lasting through the life of this permit, there shall be no acute or chronic toxicity in Outfall 001 as defined in *Part VIII*, and determined by test procedures described in *Part I. C.3.a & b* of this permit.

2. Effective immediately and lasting the duration of this permit, the permittee is authorized to discharge from Outfall 001. Such discharges shall be limited and monitored by the permittee as specified below:

Parameter	Effluent Limitations a/			
	Monthly Average	Weekly Average	Minimum	Maximum
Flow, MGD	1.5	NA	NA	NA
BOD_5, mg/L BOD_5 Min. % Removal	25 85	35 NA	NA NA	NA NA
TSS, mg/L TSS Min. % Removal	25 85	35 NA	NA NA	NA NA
E-Coli, No./100mL	126	158	NA	NA
TRC, mg/L	1.4	NA	NA	1.55
WET, Acute Biomonitoring	NA	NA	NA	LC_{50}> 10% effluent
Oil & Grease, mg/L	NA	NA	NA	10
pH, Standard Units	NA	NA	6.5	9.0
TDS, mg/L e/	<400 increase	NA	NA	NA

NA – Not Applicable

Self-Monitoring and Reporting Requirements a/			
Parameter	Frequency	Sample Type	Units
Total Flow b/ c/	Continuous	Recorder	MGD
BOD_5, Influent d/ Effluent	Weekly Weekly	Composite Composite	mg/L mg/L
TSS, Influent d/ Effluent	Weekly Weekly	Composite Composite	mg/L mg/L
E. Coli	Weekly	Grab	No./100mL
TDS, Culinary Intake d/ Effluent	Quarterly Quarterly	Grab Grab	mg/L mg/L
TRC	Daily	Grab	mg/L
WET, Acute Biomonitoring	Quarterly	Composite	Pass/Fail
Oil & Grease	Monthly	Grab	mg/L
PH	3 x Weekly	Grab	SU
Metals, Influent Effluent	Quarterly Quarterly	Composite Composite	mg/L mg/L
Organic Toxics, Influent Effluent	1st, 3rd and 5th Year 1st, 3rd and 5th Year	Grab Grab	mg/L mg/L

a/ See Definitions, *Part VIII*, for definition of terms.

b/ Flow measurements of influent/effluent volume shall be made in such a manner that the permittee can affirmatively demonstrate that representative values are being obtained.

c/ If the rate of discharge is controlled, the rate and duration of discharge shall be reported.

d/ In addition to monitoring the final discharge, influent samples shall be taken and analyzed for this constituent at the same frequency as required for this constituent in the discharge.

e/ The effluent shall not exceed the culinary water intake by more than 400 mg/L of TDS (*******or the permittee could request 1 ton/day salt loading, or 366 tons/year*******).

3. Acute/Chronic Whole Effluent Toxicity (WET) Testing.

a. *Whole Effluent Testing – Acute Toxicity.* Starting on January 1, 2012, the permittee shall conduct quarterly acute static replacement toxicity tests on a composite sample of the final effluent. The sample shall be collected at outfall 001.

The monitoring frequency for acute tests shall be quarterly unless a sample is found to be acutely toxic during a routine test.. If that occurs, the monitoring frequency shall become weekly (See *Part I.C. 3 c Accelerated Testing*). Samples shall be collected on a two day progression; i.e., if the first sample is on a Monday, during the next sampling period, the sampling shall begin on a Wednesday, etc. If acute toxicity occurs in a test, the permittee shall promptly take all reasonable measures necessary to immediately reduce toxicity

The replacement static acute toxicity tests shall be conducted in general accordance with the procedures set out in the latest revision of *Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms, 5th Edition, (EPA 821/R/02/012), October 2002,* as per *40 CFR 136.3(a) TABLE 1A-LIST OF APPROVED BIOLOGICAL METHODS.* The permittee shall conduct the 48-hour static replacement toxicity test using Ceriodaphnia dubia and the acute 96-hour static replacement toxicity test using Pimephales promelas (fathead minnow). A CO_2 atmosphere may be used (in conjunction with an unmodified test) in order to account for artificial pH drift, as previously authorized by the Executive Secretary.

Acute toxicity occurs when 50 percent or more mortality is observed for either species at any effluent concentration greater then or equal to 100 % effluent (LC_{50} lethal concentration to fifty percent of the population). Mortality in the control must simultaneously be 10 percent or less for the results to be considered valid. If more than 10 percent control mortality occurs, the test shall be repeated until satisfactory control mortality is achieved.

If the permit contains a total residual chlorine limitation greater than 0.20 mg/L, the permittee may request from the Executive Secretary approval to de-chlorinate the sample, or collect the sample prior to chlorination.

Quarterly test results shall be reported along with the Discharge Monitoring Report (DMR) submitted for the end of the reporting calendar quarter e.g., biomonitoring results for the calendar quarter ending March 31 shall be reported with the DMR due April 28, with the remaining biomonitoring

reports submitted with DMRs due each July 28, October 28, and January 28. All test results shall be reported along with the DMR submitted for that reporting period. The format for the report shall be consistent with the EPA Region 8 website under Whole Effluent Toxicity Reporting forms: http://www.epa.gov/region8/water/wet/documents.html

If the results for a minimum of ten consecutive tests indicate no acute toxicity, the permittee may request a reduction in testing frequency and/or reduction to one species. The Executive Secretary may approve, partially approve, or deny the request based on results and other available information. If approval is given, the modification will take place without a public notice.

b. *Accelerated Testing.* When acute toxicity is indicated during routine biomonitoring as specified in this permit, the permittee shall notify the Executive Secretary in writing within five (5) days after becoming aware of the test result. The permittee shall perform an accelerated schedule of biomonitoring to establish whether a pattern of toxicity exists. Accelerated testing will begin within seven (7) days after the permittee becomes aware of the test result. Accelerated testing shall be conducted as specified under *Part I.C.3.c, Pattern of Toxicity*. If the accelerated testing demonstrates no pattern of toxicity, routine monitoring shall be resumed.

c. *Pattern of Toxicity.* A pattern of toxicity is defined by the results of a series of up to five (5) biomonitoring tests pursuant to the accelerated testing requirements using 100 percent effluent on the single species found to be more sensitive, once every week for up to five (5) consecutive weeks.

If two (2) consecutive tests (not including the scheduled quarterly or monthly test which triggered the search for a pattern of toxicity) do not result in acute toxicity, no further accelerated testing will be required and no pattern of toxicity will be found to exist. The permittee will provide written verification to the Executive Secretary within five (5) days, and resume routine monitoring.

A pattern of toxicity is established if one of the following occurs:

(1) If two (2) consecutive test results (not including the scheduled quarterly or monthly test, which triggered the search for a pattern of toxicity) indicate acute toxicity, this constitutes an established pattern of toxicity.

(2) If consecutive tests continue to yield differing results each time, the permittee will be required to conduct up to a maximum of five (5) acute tests (not including the scheduled quarterly or monthly test which triggered the search for a pattern of toxicity). If three out of five test results indicate acute toxicity, this will constitute an established pattern of toxicity.

d. *Preliminary Toxicity Investigation.*

(1) When a pattern of toxicity is detected the permittee will notify the Executive Secretary in writing within five (5) days and begin an evaluation of the possible causes of the toxicity. The permittee will have fifteen (15) working days from demonstration of the pattern to complete a Preliminary Toxicity Investigation (PTI) and submit a written report of the results to the Executive Secretary. The PTI may include, but is not limited to, additional chemical and biological monitoring, examination of pretreatment program records, examination of discharge monitoring reports, a thorough review of the testing protocol, evaluation of treatment processes and chemical use, inspection of material storage and transfer areas to determine if a spill may have occurred, and similar procedures.

(2) If the PTI identifies a probable toxicant and/or a probable source of toxicity the permittee shall submit, as part of its final results written notification of that effect to the Executive Secretary. Within thirty (30) days of completing the PTI the permittee shall submit for approval a control program to control effluent toxicity and shall proceed to implement such a plan within seven (7) days following approval. The control program, as submitted to or revised by the Executive Secretary, may be incorporated into the permit.

(3) If no probable explanation for toxicity is identified in the PTI, the permittee shall notify the Executive Secretary as part of its final report, along with a schedule for conducting a Phase I Toxicity Reduction Evaluation (TRE) (See *Part I.C.3.f, Toxicity Reduction Evaluation*).

(4) If toxicity spontaneously disappears during the PTI, the permittee shall submit written notification to that effect to the Executive Secretary as part of the reporting requirements of paragraph a of this section.

e. *Toxicity Reduction Evaluation (TRE).* If toxicity is detected during the life of this permit and it is determined by the Executive Secretary that a TRE is necessary, the permittee shall be so notified and shall initiate a TRE immediately thereafter. The purpose of the TRE will be to establish the cause of toxicity, locate the source(s) of the toxicity, and control or provide treatment for the toxicity.

A TRE may include but is not limited to one, all, or a combination of the following:

(1) Phase I – Toxicity Characterization

(2) Phase II – Toxicity Identification Procedures

(3) Phase III – Toxicity Control Procedures

(4) Any other appropriate procedures for toxicity source elimination and control.

If the TRE establishes that the toxicity cannot be immediately eliminated, the permittee shall submit a proposed compliance plan to the Executive Secretary. The plan shall include the proposed approach to control toxicity and a proposed compliance schedule for achieving control. If the approach and schedule are acceptable to the Executive Secretary, this permit may be reopened and modified.

If the TRE shows that the toxicity is caused by a toxicant(s) that may be controlled with specific numerical limitations, the permittee may:

(a) Submit an alternative control program for compliance with the numerical requirements.

(b) If necessary, provide a modified biomonitoring protocol, which compensates for the pollutant(s) being controlled numerically.

If acceptable to the Executive Secretary, this permit may be reopened and modified to incorporate any additional numerical limitations, a modified compliance schedule if judged necessary by the Executive Secretary, and/or a modified biomonitoring protocol.

Failure to conduct an adequate TRE, or failure to submit a plan or program as described above, or the submittal of a plan or program judged inadequate by the Executive Secretary, shall be considered a violation of this permit. Upon completion of the TIE/TRE, the permittee shall return to regular whole effluent toxicity monitoring and reporting as specified in the permit.

D. Reporting of Wastewater Monitoring Results. Monitoring results obtained during the previous month shall be summarized for each month and reported on a Discharge Monitoring Report Form (EPA No. 3320-1) or by NetDMR, post-marked or entered into NetDMR no later than the 28th day of the month following the completed reporting period. The first report is due on April 28, 2012. If no discharge occurs during the reporting period, "no discharge" shall be reported. Legible copies of these, and all other reports including whole effluent toxicity (WET) test reports required herein, shall be signed and certified in accordance with the requirements of *Signatory Requirements (see Part VII.G)*, and submitted by NetDMR, or to the Division of Water Quality at the following address:

Department of Environmental Quality
Division of Water Quality
PO Box 144870
Salt Lake City, Utah 84114-4870

II. INDUSTRIAL PRETREATMENT PROGRAM

A. Self-Monitoring and Reporting Requirements.

1. Because the design capacity of this municipal wastewater treatment facility is less than 5 MGD, the permittee will not be required to develop a State-approved industrial pretreatment program at this time. However, in order to determine if development of an industrial pretreatment program is warranted, the permittee shall conduct an **industrial waste survey**, as described in *Part II.B.1*, and submit it to the Division of Water Quality within **sixty (60) calendar days** of the effective date of this permit and shall sample and analyze both the influent and effluent annually, for the following parameters.

Metals Monitoring for Pretreatment Program			
Parameter	**Sample Type**	**Frequency**	**Units**
Total Arsenic	Composite	Quarterly	mg/L
Total Cadmium			
Total Chromium			
Total Copper			
Total Cyanide			
Total Lead			
Total Mercury	Composite/Grab		
Total Molybdenum	Composite		
Total Nickel			
Total Selenium			
Total Silver			
Total Zinc			

The results of these analyses shall be submitted along with the Discharge Monitoring Report (DMR) at the end of that reporting period.

B. Industrial Wastes.

1. The "Industrial Waste Survey" as required by *Part II.A.1.* consists of; identifying each significant industrial user (SIU), determination of the qualitative and quantitative characteristics of each discharge, and appropriate production data. A (SIU) is defined as an industrial user discharging to a publicly-owned treatment works (POTW) that satisfies any of the following: (1) has a process wastewater flow of 25,000 gallons or more per average work day; (2) has a flow greater than five percent of the flow carried by the municipal system receiving the waste; (3) is subject to Categorical Pretreatment Standards, or (4) has a reasonable potential for adversely affecting the POTW's operation or for violating any pretreatment standard or requirement.

2. The permittee must notify the Executive Secretary of any new introductions by new or existing SIUs or any substantial change in pollutants from any major industrial source. Such notice must contain the information described in 1. above

and be forwarded no later than sixty (60) days following the introduction or change.

3. Pretreatment Standards (*40 CFR 403.5*) developed pursuant to *Section 307* of *The Water Quality Act of 1987* require that under no circumstances shall the permittee allow introduction of the following pollutants into the waste treatment system from any source of non-domestic discharge:

   a. Pollutants which create a fire or explosion hazard in the publicly owned treatment works (POTW), including, but not limited to, wastestreams with a closed cup flashpoint of less than 140°F (60°C);

   b. Pollutants, which will cause corrosive structural damage to the POTW, but in no case, discharges with a pH lower than 5.0;

   c. Solid or viscous pollutants in amounts which will cause obstruction to the flow in the POTW resulting in interference;

   d. Any pollutant, including oxygen demanding pollutants (BOD, etc.) released in a discharge at such volume or strength as to cause interference in the POTW;

   e. Heat in amounts, which will inhibit biological activity in the POTW, resulting in interference, but in no case, heat in such quantities that the influent to the sewage treatment works exceeds 104°F (40°C);

   f. Petroleum oil, nonbiodegradable cutting oil, or products of mineral oil origin in amounts that will cause interference or pass through;

   g. Pollutants which result in the presence of toxic gases, vapor, or fumes within the POTW in a quantity that may cause worker health or safety problems; or,

   h. Any trucked or hauled pollutants, except at discharge points designated by the POTW.

   i. Any pollutant that causes pass through or interference at the POTW.

4. In addition to the general and specific limitations expressed above, more specific pretreatment limitations have been and will be promulgated for specific industrial categories under *Section 307* of *the Water Quality Act of 1987 as amended (WQA). (See 40 CFR, Subchapter N, Parts 400* through *500*, for specific information).

5. The permittee shall provide adequate notice to the Executive Secretary and the Division of Water Quality Industrial Pretreatment Coordinator of;

   a. Any new introduction of pollutants into the treatment works from an indirect discharger (i.e., industrial user) which would be subject to *Sections 301* or *306* of the *WQA* if it were directly discharging those pollutants;

b. Any substantial change in the volume or character of pollutants being introduced into the treatment works by a source introducing pollutants into the treatment works at the time of issuance of the permit; and

c. For the purposes of this section, adequate notice shall include information on:

(1) The quality and quantity of effluent to be introduced into such treatment works; and,

(2) Any anticipated impact of the change on the quantity or quality of effluent to be discharged from such publicly owned treatment works.

6. At such time as a specific pretreatment limitation becomes applicable to an industrial user of the permittee, the Executive Secretary may, as appropriate, do the following:

a. Amend the permittee's UPDES discharge permit to specify the additional pollutant(s) and corresponding effluent limitation(s) consistent with the applicable national pretreatment limitation;

b. Require the permittee to specify, by ordinance, contract, or other enforceable means, the type of pollutant(s) and the maximum amount which may be discharged to the permittee's facility for treatment. Such requirement shall be imposed in a manner consistent with the POTW program development requirements of the *General Pretreatment Regulations* at *40 CFR 403*; and/or,

c. Require the permittee to monitor its discharge for any pollutant, which may likely be discharged from the permittee's facility, should the industrial user fail to properly pretreat its waste.

7. The Executive Secretary retains, at all times, the right to take legal action against the industrial user and/or the treatment works, in those cases where a permit violation has occurred because of the failure of an industrial user to discharge at an acceptable level. If the permittee has failed to properly delineate maximum acceptable industrial contributor levels, the Executive Secretary will look primarily to the permittee as the responsible party.

8. If local limits are developed per R317-8-8.5(4)(b) to protect the POTW from pass-through or interference, then the POTW must submit limits to DWQ for review and public notice R317-8-8.5(4)(c).

III. BIOSOLIDS REQUIREMENTS

A. Biosolids Treatment and Disposal.

The authorization to dispose of biosolids provided under this permit is limited to those biosolids produced from the treatment works owned and operated by the permittee. The treatment methods and disposal practices are specifically designated below.

1. Treatment.

   Biosolids produced at the permittee are stabilized in the anaerobic digesters for at least 15 days at a temperature of at least 35° C (95° F). The biosolids are removed from the drying beds and formed into small windrows 3-4 feet high, and 5-6 feet wide, stored on a concrete pad and turned several times during the summer and will be tested for pathogens to meet Class A Standards.

2. Description of Biosolids Disposal Method.

   The Class B biosolids are disposed in the Klondike landfill.

3. Changes in Treatment Systems and Disposal Practices.

   Should the MWTF change their disposal methods or the biosolids generation and handling processes of the plant, the MWTF must notify the Executive Secretary at least 180 days in advance. This includes, but is not limited to, the addition or removal of any biosolids treatment units (e.g., digesters, drying beds, etc.) and/or any other change that would require a major modification of the permit.

   All biosolids land filled must meet the requirements of *40 CFR 258, Utah Administrative Code R315-301-5* and *Section 2.12* of the latest version of the *EPA Region VIII Biosolids Management Handbook.*

B. Specific Limitations and Monitoring Requirements.

All biosolids generated by this facility to be sold or given away to the public shall meet the requirements of *Part III.B.1, 2, 3* and *4* listed below.

1. Vector Attraction Reduction Requirements.

   The MWTF will meet vector attraction reduction through a volatile solids reduction of at least 38%

   There are additional vector attraction reduction alternatives available in *40 CFR 503.33*. If the permittee intends to use one of these alternatives, the Executive

Secretary and the EPA must be informed at least thirty (30) days prior to its use. This change may be made without additional public notice.

2. Self-Monitoring Requirements.

At a minimum, upon the effective date of this permit, vector attraction reduction and paint filter tests requirements shall be monitored according to *40 CFR Part 503.16*.

Minimum Frequency of Monitoring

Amount of Biosolids Disposed Per Year	Monitoring Frequency
> 0 to < 290 DMT	**One Time Per Year**
> 290 to < 1500 DMT	**Four times Per Year**

Sample collection, preservation and analysis shall be performed in a manner consistent with the requirements of *40 CFR Part 503* and/or other criteria specified in this permit.

C. Special Conditions on Biosolids Storage.

For biosolids or material derived from biosolids that are stored in piles for one year or longer, measures shall be taken to ensure that erosion (whether by wind or water) does not occur. Permanent storage of biosolids is prohibited. Biosolids shall not be temporarily stored for more than two years. Written permission to store biosolids for more than two years must be obtained from the Executive Secretary. Storage of biosolids for more than two years will be allowed only if it is determined that significant treatment is occurring.

D. Representative Sampling.

Biosolids samples used to measure compliance with Part *III.B* of this permit shall be collected at locations representative of the quality of biosolids generated at the treatment works and immediately prior to land application.

E. Reporting of Monitoring Results.

1. The MWTF shall provide the results of all monitoring performed in accordance with *Part III.B.* of the permit and information on management practices, and certifications shall be provided no later than February 19 of each year. Each report is for the previous calendar year. If no biosolids were applied to the land during the reporting period, "no biosolids were applied" shall be reported. Legible copies of these, and all other reports required herein, shall be signed and certified in accordance with Record Keeping (see *Part III.G.)*, and submitted to the Utah Division of Water Quality and the EPA at the following addresses:

Original to: Biosolids Coordinator
Utah Division of Water Quality
P. O. Box 144870
Salt Lake City Utah, 84114-4870

Copy to: Biosolids Coordinator, 8P-W-P
U. S. Environmental Protection Agency
Region VIII
1595 Wynkoop Street
Denver, CO 80202-1129

F. Additional Monitoring by the Permittee

If the MWTF monitors any pollutant more frequently than required by this permit, using test procedures approved under *40 CFR Part 503* or as specified in this permit, the results of this monitoring shall be included in the calculation and reporting of the data submitted on the biosolids report form. Such increased frequency shall also be indicated

G. Record Keeping

1. If so notified by the Executive Secretary the MWTF may be required to add additional record keeping if information provided indicates that this is necessary to protect public health and the environment.

2. The MWTF is required to keep the following information for at least 5 years:

   "I certify under the penalty of law, that the vector attraction requirements in *Part III.B.1*, have been met. This determination has been made under my direction and supervision in accordance with the system designed to assure that qualified personnel properly gathered and evaluated the information used to determine that the vector attraction reduction requirements have been met. I am aware that there are significant penalties for false certification including the possibility of imprisonment."

3. Records of monitoring information shall include:

   a. The date, exact place, and time of sampling or measurements;

   b. The initials or name(s) of the individual(s) who performed the sampling or measurements;

   c. The date(s) analyses were performed;

   d. The time(s) analyses were initiated;

   e. The initials or name(s) of individual(s) who performed the analyses;

f. References and written procedures, when available, for the analytical techniques or methods used; and,

g. The results of such analyses, including the bench sheets, instrument readouts, computer disks or tapes, etc., used to determine these results.

4. The MWTF shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit and records of all data used to complete the application for this permit for the life of the permit. Data collected on site, copies of Biosolids Report forms, and a copy of this UPDES biosolids-only permit must be maintained on site during the duration of activity at the permitted location.

H. Twenty-four Hour Notice of Noncompliance Reporting

1. The MWTF shall report any noncompliance including transportation accidents and spills from the transfer of biosolids which may seriously endanger health or the environment as soon as possible, but no later than 24 hours from the time the MWTF first became aware of the circumstances. The report shall be made to the Division of Water Quality at (801) 538-6146 or (801) 536-4123 (24-hour answering machine).

2. A written submission shall also be provided within five days of the time that the MWTF becomes aware of the circumstances. The written submission shall contain:

a. A description of the noncompliance and its cause;

b. The period of noncompliance, including exact dates and times;

c. The estimated time noncompliance is expected to continue if it has not been corrected; and,

d. Steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.

3. The Executive Secretary may waive the written report on a case-by-case basis if the oral report has been received within 24 hours by the Division of Water Quality, by phone, at (801) 538-6146.

4. Reports shall be submitted to the addresses in *Part III.E.1*, Reporting of Monitoring Results..

I. Other Noncompliance Reporting.

Instances of noncompliance not required to be reported within 24 hours shall be reported at the time that monitoring reports for *Part III.B* are submitted. The reports shall contain the information listed in *Part III.F*

IV. STORM WATER REQUIREMENTS.

A. Coverage of This Section. The requirements listed under this section shall apply to storm water discharges. Storm water discharges from the following portions of the facility may be eligible for coverage under this permit: biosolids drying beds, haul or access roads on which transportation of biosolids may occur, grit screen cleaning areas, chemical loading, unloading and storage areas, salt or sand storage areas, vehicle or equipment storage and maintenance areas, or any other wastewater treatment device or system, used in the storage, treatment, recycling, and reclamation of municipal or domestic sewage, including lands dedicated to the disposal of sewage sludge that are located within the confines of the facility that may have a reasonable expectation to contribute to pollutants in a storm water discharge.

B. Prohibition of Non-Storm Water Discharges. Except for discharges identified in *Part I.*, and discharges described below in this paragraph, non-storm water discharges are prohibited. The following non-storm water discharges may be authorized under this permit provided the non-storm water component of the discharge is in compliance with this section; discharges from fire fighting activities; fire hydrant flushing; potable water sources including waterline flushing; drinking fountain water; irrigation drainage and lawn watering; routine external building wash down water where detergents or other compounds have not been used in the process; pavement wash waters where spills or leaks of toxic or hazardous materials (including oils and fuels) have not occurred (unless all spilled material has been removed) and where detergents are not used; air conditioning condensate; uncontaminated compressor condensate; uncontaminated springs; uncontaminated ground water; and foundation or footing drains where flows are not contaminated with process materials such as solvents.

C. Storm Water Pollution Prevention Plan Requirements. The permittee must have (on site) or develop and implement a storm water pollution prevention plan as a condition of this permit.

1. Contents of the Plan. The plan shall include, at a minimum, the following items:

a. *Pollution Prevention Team.* Each plan shall identify a specific individual or individuals within the facility organization as members of a storm water Pollution Prevention Team who are responsible for developing the storm water pollution prevention plan and assisting the facility or plant manager in its implementation, maintenance, and revision. The plan shall clearly identify the responsibilities of each team member. The activities and responsibilities of the team shall address all aspects of the facility's storm water pollution prevention plan.

b. *Description of Potential Pollutant Sources.* Each plan shall provide a description of potential sources which may reasonably be expected to add significant amounts of pollutants to storm water discharges or which may result in the discharge of pollutants during dry weather from separate storm sewers draining the facility. Each plan shall identify all activities and significant materials, which may be reasonably expected to have the potential as a significant pollutant source. Each plan shall include, at a minimum:

(1) *Drainage.* A site map indicating drainage areas and storm water outfalls. For each area of the facility that generates storm water discharges associated with the waste water treatment related activity with a reasonable potential for containing significant amounts of pollutants, a prediction of the direction of flow and an identification of the types of pollutants that are likely to be present in storm water discharges associated with the activity. Factors to consider include the toxicity of the pollutant; quantity of chemicals used, produced or discharged; the likelihood of contact with storm water; and history of significant leaks or spills of toxic or hazardous pollutants. Flows with a significant potential for causing erosion shall be identified. The site map shall include but not be limited to:

(a) Drainage direction and discharge points from all wastewater associated activities including but not limited to grit screen cleaning, bio-solids drying beds and transport, chemical/material loading, unloading and storage areas, vehicle maintenance areas, salt or sand storage areas.

(b) Location of any erosion and sediment control structure or other control measures utilized for reducing pollutants in storm water runoff.

(c) Location of bio-solids drying beds where exposed to precipitation or where the transportation of bio-solids may be spilled onto internal roadways or tracked off site.

(d) Location where grit screen cleaning or other routinely performed industrial activities are located and are exposed to precipitation.

(e) Location of any handling, loading, unloading or storage of chemicals or potential pollutants such as caustics, hydraulic fluids, lubricants, solvents or other petroleum products, or hazardous wastes and where these may be exposed to precipitation.

(f) Locations where any major spills or leaks of toxic or hazardous materials have occurred.

(g) Location of any sand or salt piles.

(h) Location of fueling stations or vehicle and equipment maintenance and cleaning areas that are exposed to precipitation.

(i) Location of receiving streams or other surface water bodies.

(j) Locations of outfalls and the types of discharges contained in the drainage areas of the outfalls.

(2) *Inventory of Exposed Materials*. An inventory of the types of materials handled at the site that potentially may be exposed to precipitation. Such inventory shall include a narrative description of significant materials that have been handled, treated, stored or disposed in a manner to allow exposure to storm water between the time of 3 years prior to the effective date of this permit and the present; method and location of onsite storage or disposal; materials management practices employed to minimize contact of materials with storm water runoff between the time of 3 years prior to the effective date of this permit and the present; the location and a description of existing structural and nonstructural control measures to reduce pollutants in storm water runoff; and a description of any treatment the storm water receives.

(3) *Spills and Leaks*. A list of significant spills and significant leaks of toxic or hazardous pollutants that occurred at areas that are exposed to precipitation or that otherwise drain to a storm water conveyance at the facility after the date of 3 years prior to the effective date of this permit. Such list shall be updated as appropriate during the term of the permit.

(4) *Sampling Data*. A summary of existing discharge sampling data describing pollutants in storm water discharges from the facility, including a summary of sampling data collected during the term of this permit.

(5) *Summary of Potential Pollutant Sources and Risk Assessment*. A narrative description of the potential pollutant sources from the following activities associated with treatment works: access roads/rail lines; loading and unloading operations; outdoor storage activities; material handling sites; outdoor vehicle storage or maintenance sites; significant dust or particulate generating processes; and onsite waste disposal practices. Specific potential pollutants shall be identified where known.

(6) *Measures and Controls*. The permittee shall develop a description of storm water management controls appropriate for the facility, and implement such controls. The appropriateness and priorities of controls in a plan shall reflect identified potential sources of pollutants at the facility. The description of storm water management controls shall address the following minimum components, including a schedule for implementing such controls:

(7) *Good Housekeeping*. All areas that may contribute pollutants to storm waters discharges shall be maintained in a clean, orderly manner. These are practices that would minimize the generation of pollutants at the source or before it would be necessary to employ sediment ponds or other control measures at the discharge outlets. Where applicable, such measures or other equivalent measures would include the following: sweepers and covered storage to minimize dust generation and storm runoff; conservation of vegetation where possible to minimize erosion;

sweeping of haul roads, bio-solids access points, and exits to reduce or eliminate off site tracking; sweeping of sand or salt storage areas to minimize entrainment in storm water runoff; collection, removal, and proper disposal of waste oils and other fluids resulting from vehicle and equipment maintenance; other equivalent measures to address identified potential sources of pollution.

(8) *Preventive Maintenance*. A preventive maintenance program shall involve timely inspection and maintenance of storm water management devices (e.g., cleaning oil/water separators, catch basins) as well as inspecting and testing facility equipment and systems to uncover conditions that could cause breakdowns or failures resulting in discharges of pollutants to surface waters, and ensuring appropriate maintenance of such equipment and systems.

(9) *Spill Prevention and Response Procedures*. Areas where potential spills that can contribute pollutants to storm water discharges can occur, and their accompanying drainage points, shall be identified clearly in the storm water pollution prevention plan. Where appropriate, specifying material handling procedures, storage requirements, and use of equipment such as diversion valves in the plan should be considered. Procedures and equipment for cleaning up spills shall be identified in the plan and made available to the appropriate personnel.

(10) *Inspections*. In addition to the comprehensive site evaluation required under paragraph *(Part IV.C.1.b.(16))* of this section, qualified facility personnel shall be identified to inspect designated equipment and areas of the facility on a periodic basis. The following areas shall be included in all inspections: access roads/rail lines, equipment storage and maintenance areas (both indoor and outdoor areas); fueling; material handling areas, residual treatment, storage, and disposal areas; and wastewater treatment areas. A set of tracking or follow-up procedures shall be used to ensure that appropriate actions are taken in response to the inspections. Records of inspections shall be maintained. The use of a checklist developed by the facility is encouraged.

(11) *Employee Training*. Employee training programs shall inform personnel responsible for implementing activities identified in the storm water pollution prevention plan or otherwise responsible for storm water management at all levels of responsibility of the components and goals of the storm water pollution prevention plan. Training should address topics such as spill response, good housekeeping and material management practices. The pollution prevention plan shall identify how often training will take place, but training should be held at least annually (once per calendar year). Employee training must, at a minimum, address the following areas when applicable to a facility: petroleum product management; process chemical management; spill prevention and control; fueling procedures; general good housekeeping

practices; proper procedures for using fertilizers, herbicides and pesticides.

(12) *Record keeping and Internal Reporting Procedures.* A description of incidents (such as spills, or other discharges), along with other information describing the quality and quantity of storm water discharges shall be included in the plan required under this part. Inspections and maintenance activities shall be documented and records of such activities shall be incorporated into the plan.

(13) *Non-storm Water Discharges.*

(a) *Certification.* The plan shall include a certification that the discharge has been tested or evaluated for the presence of non-storm water discharges. The certification shall include the identification of potential significant sources of non-storm water at the site, a description of the results of any test and/or evaluation for the presence of non-storm water discharges, the evaluation criteria or testing method used, the date of any testing and/or evaluation, and the onsite drainage points that were directly observed during the test. Certifications shall be signed in accordance with *Part VII.G* of this permit.

(b) *Exceptions.* Except for flows from fire fighting activities, sources of non-storm water listed in *Part IV.B.* (Prohibition of Non-storm Water Discharges) of this permit that are combined with storm water discharges associated with industrial activity must be identified in the plan. The plan shall identify and ensure the implementation of appropriate pollution prevention measures for the non-storm water component(s) of the discharge.

(c) *Failure to Certify.* Any facility that is unable to provide the certification required (testing for non-storm water discharges), must notify the *Executive Secretary* within 180 days after the effective date of this permit. If the failure to certify is caused by the inability to perform adequate tests or evaluations, such notification shall describe: the procedure of any test conducted for the presence of non-storm water discharges; the results of such test or other relevant observations; potential sources of non-storm water discharges to the storm sewer; and why adequate tests for such storm sewers were not feasible. Non-storm water discharges to waters of the State, which are not, authorized by a *UPDES* permit are unlawful, and must be terminated.

(14) *Sediment and Erosion Control.* The plan shall identify areas, which, due to topography, activities, or other factors, have a high potential for significant soil erosion, and identify structural, vegetative, and/or stabilization measures to be used to limit erosion.

(15) *Management of Runoff.* The plan shall contain a narrative consideration of the appropriateness of traditional storm water management practices (practices other than those which control the generation or source(s) of pollutants) used to divert, infiltrate, reuse, or otherwise manage storm water runoff in a manner that reduces pollutants in storm water discharges from the site. The plan shall provide that measures that the permittee determines to be reasonable and appropriate shall be implemented and maintained. The potential of various sources at the facility to contribute pollutants to storm water discharges associated with industrial activity *Part IV.C.1.b* (Description of Potential Pollutant Sources) of this permit] shall be considered when determining reasonable and appropriate measures. Appropriate measures or other equivalent measures may include: vegetative swales and practices, reuse of collected storm water (such as for a process or as an irrigation source), inlet controls (such as oil/water separators), snow management activities, infiltration devices, wet detention/retention devices and discharging storm water through the waste water facility for treatment.

(16) *Comprehensive Site Compliance Evaluation.* Qualified personnel shall conduct site compliance evaluations at appropriate intervals specified in the plan, but in no case less than once a year. Such evaluations shall provide:

(a) Areas contributing to a storm water discharge associated with industrial activity shall be visually inspected for evidence of, or the potential for, pollutants entering the drainage system. Measures to reduce pollutant loadings shall be evaluated to determine whether they are adequate and properly implemented in accordance with the terms of the permit or whether additional control measures are needed. Structural storm water management measures, sediment and erosion control measures, and other structural pollution prevention measures identified in the plan shall be observed to ensure that they are operating correctly. A visual inspection of equipment needed to implement the plan, such as spill response equipment, shall be made.

(b) Based on the results of the evaluation, the description of potential pollutant sources identified in the plan in accordance with *Part IV.C.1.b* (Description of Potential Pollutant Sources) of this section and pollution prevention measures and controls identified in the plan in accordance with *Part IV.C.1.b.(6)* (Measures and Controls) of this section shall be revised as appropriate within 2 weeks of such evaluation and shall provide for implementation of any changes to the plan in a timely manner, but in no case more than 12 weeks after the evaluation.

(c) A report summarizing the scope of the evaluation, personnel making the evaluation, the date(s) of the evaluation, major observations relating to the implementation of the storm water pollution

prevention plan, and actions taken in accordance with paragraph *i.* (above) shall be made and retained as part of the storm water pollution prevention plan for at least 3 years after the date of the evaluation. The report shall identify any incidents of noncompliance. Where a report does not identify any incidents of noncompliance, the report shall contain a certification that the facility is in compliance with the storm water pollution prevention plan and this permit. The report shall be signed in accordance with *Part VII.G* (Signatory Requirements) of this permit.

(17) *Deadlines for Plan Preparation and Compliance.* The permittee shall prepare and implement a plan in compliance with the provisions of this section within 270 days of the effective date of this permit. If the permittee already has a plan, it shall be revised according to *Part IV.C.1.b.(16)*, Comprehensive Site Evaluation.

(18) *Keeping Plans Current.* The permittee shall amend the plan whenever there is a change in design, construction, operation, or maintenance, that has a significant effect on the potential for the discharge of pollutants to the waters of the state or if the storm water pollution prevention plan proves to be ineffective in eliminating or significantly minimizing pollutants from sources identified by the plan, or in otherwise achieving the general objective of controlling pollutants in storm water discharges associated with the activities at the facility.

D. Monitoring and Reporting Requirements.

1. Quarterly Visual Examination of Storm Water Quality. Facilities shall perform and document a visual examination of a storm water discharge associated with industrial activity from each outfall, except discharges exempted below. The examination must be made at least once in each of the following designated periods during daylight hours unless there is insufficient rainfall or snow melt to produce a runoff event: January through March; April through June; July through September; and October through December.

   a. *Sample and Data Collection.* Examinations shall be made of samples collected within the first 30 minutes (or as soon thereafter as practical, but not to exceed 1 hour) of when the runoff or snowmelt begins discharging. The examinations shall document observations of color, odor, clarity, floating solids, settled solids, suspended solids, foam, oil sheen, and other obvious indicators of storm water pollution. The examination must be conducted in a well lit area. No analytical tests are required to be performed on the samples. All such samples shall be collected from the discharge resulting from a storm event that is greater than 0.1 inches in magnitude and that occurs at least 72 hours from the previously measurable (greater than 0.1 inch rainfall) storm event. Where practicable, the same individual should carry out the collection and examination of discharges for entire permit term.

b. *Visual Storm Water Discharge Examination Reports.* Visual examination reports must be maintained onsite in the pollution prevention plan. The report shall include the examination date and time, examination personnel, the nature of the discharge (i.e., runoff or snow melt), visual quality of the storm water discharge (including observations of color, odor, clarity, floating solids, settled solids, suspended solids, foam, oil sheen, and other obvious indicators of storm water pollution), and probable sources of any observed storm water contamination.

c. *Representative Discharge.* When the permittee has two or more outfalls that, based on a consideration of industrial activity, significant materials, and management practices and activities within the area drained by the outfall, the permittee reasonably believes discharge substantially identical effluents, the permittee may collect a sample of effluent of one of such outfalls and report that the observation data also applies to the substantially identical outfall(s) provided that the permittee includes in the storm water pollution prevention plan a description of the location of the outfalls and explains in detail why the outfalls are expected to discharge substantially identical effluents. In addition, for each outfall that the permittee believes is representative, an estimate of the size of the drainage area (in square feet) and an estimate of the runoff coefficient of the drainage area [e.g., low (under 40 percent), medium (40 to 65 percent), or high (above 65 percent)] shall be provided in the plan.

d. *Adverse Conditions.* When a discharger is unable to collect samples over the course of the visual examination period as a result of adverse climatic conditions, the discharger must document the reason for not performing the visual examination and retain this documentation onsite with the results of the visual examination. Adverse weather conditions, which may prohibit the collection of samples, include weather conditions that create dangerous conditions for personnel (such as local flooding, high winds, hurricane, tornadoes, electrical storms, etc.) or otherwise make the collection of a sample impracticable (drought, extended frozen conditions, etc.).

e. *Inactive and Unstaffed Site.* When a discharger is unable to conduct visual storm water examinations at an inactive and unstaffed site, the operator of the facility may exercise a waiver of the monitoring requirement as long as the facility remains inactive and unstaffed. The facility must maintain a certification with the pollution prevention plan stating that the site is inactive and unstaffed so that performing visual examinations during a qualifying event is not feasible.

V. MONITORING, RECORDING & GENERAL REPORTING REQUIREMENTS

A. Representative Sampling. Samples taken in compliance with the monitoring requirements established under *Part I* shall be collected from the effluent stream prior to discharge into the receiving waters. Samples and measurements shall be representative of the volume and nature of the monitored discharge. Samples of biosolids shall be collected at a location representative of the quality of biosolids immediately prior to the use-disposal practice.

B. Monitoring Procedures. Monitoring must be conducted according to test procedures approved under *Utah Administrative Code ("UAC") R317-2-10 and 40CFR Part 503*, unless other test procedures have been specified in this permit.

C. Penalties for Tampering. The *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 months per violation, or by both.

D. Compliance Schedules. Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any Compliance Schedule of this permit shall be submitted no later than 14 days following each schedule date.

E. Additional Monitoring by the Permittee. If the permittee monitors any parameter more frequently than required by this permit, using test procedures approved under *UAC R317-2-10* and *40 CFR 503* or as specified in this permit, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the DMR or the Biosolids Report Form. Such increased frequency shall also be indicated. Only those parameters required by the permit need to be reported.

F. Records Contents. Records of monitoring information shall include:

1. The date, exact place, and time of sampling or measurements:
2. The individual(s) who performed the sampling or measurements;
3. The date(s) and time(s) analyses were performed;
4. The individual(s) who performed the analyses;
5. The analytical techniques or methods used; and,
6. The results of such analyses.

G. Retention of Records. The permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least five years from the date of the sample, measurement, report or application. This period may be extended by request of the

Executive Secretary at any time. A copy of this UPDES permit must be maintained on site during the duration of activity at the permitted location

H. Twenty-four Hour Notice of Noncompliance Reporting.

1. The permittee shall (orally) report any noncompliance including transportation accidents, spills, and uncontrolled runoff from biosolids transfer or land application sites which may seriously endanger health or environment, as soon as possible, but no later than twenty-four (24) hours from the time the permittee first became aware of circumstances. The report shall be made to the Division of Water Quality, (801) 536-4300, or 24-hour answering service (801) 536-4123.

2. The following occurrences of noncompliance shall be reported by telephone (801) 536-4123 as soon as possible but no later than 24 hours from the time the permittee becomes aware of the circumstances:

   a. Any noncompliance which may endanger health or the environment;

   b. Any unanticipated bypass, which exceeds any effluent limitation in the permit (See *Part VI.G, Bypass of Treatment Facilities.)*;

   c. Any upset which exceeds any effluent limitation in the permit (See *Part VI.H, Upset Conditions.*);

   d. Violation of a maximum daily discharge limitation for any of the pollutants listed in the permit; or,

   e. Violation of any of the Table 3 metals limits, the pathogen limits, the vector attraction reduction limits or the management practices for biosolids that have been sold or given away.

3. A written submission shall also be provided within five days of the time that the permittee becomes aware of the circumstances. The written submission shall contain:

   a. A description of the noncompliance and its cause;

   b. The period of noncompliance, including exact dates and times;

   c. The estimated time noncompliance is expected to continue if it has not been corrected;

   d. Steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance; and,

   e. Steps taken, if any, to mitigate the adverse impacts on the environment and human health during the noncompliance period.

4. The Executive Secretary may waive the written report on a case-by-case basis if the oral report has been received within 24 hours by the Division of Water Quality, (801) 538-6146.

5. Reports shall be submitted to the addresses in *Part I.D, Reporting of Monitoring Results*.

I. Other Noncompliance Reporting. Instances of noncompliance not required to be reported within 24 hours shall be reported at the time that monitoring reports for *Part I.D* are submitted. The reports shall contain the information listed in *Part V.H.3*

J. Inspection and Entry The permittee shall allow the Executive Secretary, or an authorized representative, upon the presentation of credentials and other documents as may be required by law, to:

1. Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of the permit;

2. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;

3. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit, including but not limited to, biosolids treatment, collection, storage facilities or area, transport vehicles and containers, and land application sites;

4. Sample or monitor at reasonable times, for the purpose of assuring permit compliance or as otherwise authorized by the *Act*, any substances or parameters at any location, including, but not limited to, digested biosolids before dewatering, dewatered biosolids, biosolids transfer or staging areas, any ground or surface waters at the land application sites or biosolids, soils, or vegetation on the land application sites; and,

5. The permittee shall make the necessary arrangements with the landowner or leaseholder to obtain permission or clearance, the Executive Secretary, or authorized representative, upon the presentation of credentials and other documents as may be required by law, will be permitted to enter without delay for the purposes of performing their responsibilities.

VI. COMPLIANCE RESPONSIBILITIES

A. Duty to Comply. The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Act and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application. The permittee shall give advance notice to the Executive Secretary of any planned changes in the permitted facility or activity, which may result in noncompliance with permit requirements.

B. Penalties for Violations of Permit Conditions. The *Act* provides that any person who violates a permit condition implementing provisions of the *Act* is subject to a civil penalty not to exceed $10,000 per day of such violation. Any person who willfully or negligently violates permit conditions or the Act is subject to a fine not exceeding $25,000 per day of violation. Any person convicted under *UCA 19-5-115(2)* a second time shall be punished by a fine not exceeding $50,000 per day. Except as provided at *Part VI.G, Bypass of Treatment Facilities* and *Part VI.H, Upset Conditions*, nothing in this permit shall be construed to relieve the permittee of the civil or criminal penalties for noncompliance.

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

D. Duty to Mitigate. The permittee shall take all reasonable steps to minimize or prevent any discharge in violation of this permit, which has a reasonable likelihood of adversely affecting human health or the environment. The permittee shall also take all reasonable steps to minimize or prevent any land application in violation of this permit.

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

F. Removed Substances. Collected screening, grit, solids, sludge, or other pollutants removed in the course of treatment shall be disposed of in such a manner so as to prevent any pollutant from entering any waters of the state or creating a health hazard. Sludge/digester supernatant and filter backwash

shall not directly enter either the final effluent or waters of the state by any other direct route.

G. Bypass of Treatment Facilities.

1. Bypass Not Exceeding Limitations. The permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to paragraph 2 and 3 of this section.

2. Prohibition of Bypass.

   a. Bypass is prohibited, and the Executive Secretary may take enforcement action against a permittee for bypass, unless:

      (1) Bypass was unavoidable to prevent loss of human life, personal injury, or severe property damage;

      (2) There were no feasible alternatives to bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate backup equipment should have been installed in the exercise of reasonable engineering judgement to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance, and

      (3) The permittee submitted notices as required under *section VI.G.3.*

   b. The executive Secretary may approve an anticipated bypass, after considering its adverse effects, if the Executive Secretary determines that it will meet the three conditions listed in *sections VI.G.2.a (1), (2) and (3).*

3. Notice.

   a. *Anticipated bypass.* Except as provided above in *section VI.G.2* and below in *section VI.G.3.b*, if the permittee knows in advance of the need for a bypass, it shall submit prior notice, at least ninety days before the date of bypass. The prior notice shall include the following unless otherwise waived by the Executive Secretary:

      (1) Evaluation of alternative to bypass, including cost-benefit analysis containing an assessment of anticipated resource damages:

(2) A specific bypass plan describing the work to be performed including scheduled dates and times. The permittee must notify the Executive Secretary in advance of any changes to the bypass schedule;

(3) Description of specific measures to be taken to minimize environmental and public health impacts;

(4) A notification plan sufficient to alert all downstream users, the public and others reasonably expected to be impacted by the bypass;

(5) A water quality assessment plan to include sufficient monitoring of the receiving water before, during and following the bypass to enable evaluation of public health risks and environmental impacts; and,

(6) Any additional information requested by the Executive Secretary.

b. *Emergency Bypass*. Where ninety days advance notice is not possible, the permittee must notify the Executive Secretary, and the Director of the Department of Natural Resources, as soon as it becomes aware of the need to bypass and provide to the Executive Secretary the information in *section VI.G.3.a.(1) through (6)* to the extent practicable.

c. *Unanticipated bypass*. The permittee shall submit notice of an unanticipated bypass to the Executive Secretary as required under *Part IV.H*, Twenty Four Hour Reporting. The permittee shall also immediately notify the Director of the Department of Natural Resources, the public and downstream users and shall implement measures to minimize impacts to public health and environment to the extent practicable.

H. Upset Conditions.

1. Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with technology based permit effluent limitations if the requirements of paragraph 2 of this section are met. Executive Secretary's administrative determination regarding a claim of upset cannot be judiciously challenged by the permittee until such time as an action is initiated for noncompliance.

2. Conditions necessary for a demonstration of upset. A permittee who wishes to establish the affirmative defense of upset shall demonstrate,

through properly signed, contemporaneous operating logs, or other relevant evidence that:

a. An upset occurred and that the permittee can identify the cause(s) of the upset;

b. The permitted facility was at the time being properly operated;

c. The permittee submitted notice of the upset as required under *Part V.H, Twenty-four Hour Notice of Noncompliance Reporting*; and,

d. The permittee complied with any remedial measures required under *Part VI.D, Duty to Mitigate.*

3. Burden of proof. In any enforcement proceeding, the permittee seeking to establish the occurrence of an upset has the burden of proof.

VII. GENERAL REQUIREMENTS

A. Planned Changes. The permittee shall give notice to the Executive Secretary as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is required only when the alteration or addition could significantly change the nature or increase the quantity of parameters discharged or pollutant sold or given away. This notification applies to pollutants, which are not subject to effluent limitations in the permit. In addition, if there are any planned substantial changes to the permittee's existing sludge facilities or their manner of operation or to current sludge management practices of storage and disposal, the permittee shall give notice to the Executive Secretary of any planned changes at least 30 days prior to their implementation.

B. Anticipated Noncompliance. The permittee shall give advance notice to the Executive Secretary of any planned changes in the permitted facility or activity, which may result in noncompliance with permit requirements.

C. Permit Actions. This permit may be modified, revoked and reissued, or terminated for cause. 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.

D. Duty to Reapply. If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee shall apply for and obtain a new permit. The application shall be submitted at least 180 days before the expiration date of this permit.

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

F. Other Information. When the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or any report to the Executive Secretary, it shall promptly submit such facts or information.

G. Signatory Requirements. All applications, reports or information submitted to the Executive Secretary shall be signed and certified.

1. All permit applications shall be signed by either a principal executive officer or ranking elected official.

2. All reports required by the permit and other information requested by the Executive Secretary shall be signed by a person described above or by a duly authorized representative of that person. A person is a duly authorized representative only if:

   a. The authorization is made in writing by a person described above and submitted to the Executive Secretary, and,

   b. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility, such as the position of plant manager, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters. A duly authorized representative may thus be either a named individual or any individual occupying a named position.

3. Changes to authorization. If an authorization under *paragraph VII.G.2* is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of *paragraph VII.G.2.* must be submitted to the Executive Secretary prior to or together with any reports, information, or applications to be signed by an authorized representative.

4. Certification. Any person signing a document under this section shall make the following certification:

   "I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

H. Penalties for Falsification of Reports. The *Act* provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or noncompliance shall, upon conviction be punished by a fine of not more than

$10,000.00 per violation, or by imprisonment for not more than six months per violation, or by both.

I. Availability of Reports. Except for data determined to be confidential under *UAC R317-8-3.2*, all reports prepared in accordance with the terms of this permit shall be available for public inspection at the office of Executive Secretary. As required by the *Act*, permit applications, permits and effluent data shall not be considered confidential.

J. Oil and Hazardous Substance Liability. Nothing in this permit shall be construed to preclude the permittee of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties to which the permittee is or may be subject under the *Act*.

K. Property Rights. The issuance of this permit does not convey any property rights of any sort, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations.

L. 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.

M. Transfers. This permit may be automatically transferred to a new permittee if:

1. The current permittee notifies the Executive Secretary at least 20 days in advance of the proposed transfer date;

2. The notice includes a written agreement between the existing and new permittee's containing a specific date for transfer of permit responsibility, coverage, and liability between them; and,

3. The Executive Secretary does not notify the existing permittee and the proposed new permittee of his or her intent to modify, or revoke and reissue the permit. If this notice is not received, the transfer is effective on the date specified in the agreement mentioned in paragraph *2* above.

N. State or Federal 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 law or regulation under authority preserved by *UCA 19-5-117* and *Section 510* of the *Act* or any applicable Federal or State transportation

regulations, such as but not limited to the Department of Transportation regulations.

O. Water Quality - Reopener Provision. This permit may be reopened and modified (following proper administrative procedures) to include the appropriate effluent limitations and compliance schedule, if necessary, if one or more of the following events occurs:

1. Water Quality Standards for the receiving water(s) to which the permittee discharges are modified in such a manner as to require different effluent limits than contained in this permit.

2. A final wasteload allocation is developed and approved by the State and/or EPA for incorporation in this permit.

3. Revisions to the current CWA § 208 areawide treatment management plans or promulgations/revisions to TMDLs (40 CFR 130.7) approved by the EPA and adopted by DWQ which calls for different effluent limitations than contained in this permit.

P. Biosolids – Reopener Provision. This permit may be reopened and modified (following proper administrative procedures) to include the appropriate biosolids limitations (and compliance schedule, if necessary), management practices, other appropriate requirements to protect public health and the environment, or if there have been substantial changes (or such changes are planned) in biosolids use or disposal practices; applicable management practices or numerical limitations for pollutants in biosolids have been promulgated which are more stringent than the requirements in this permit; and/or it has been determined that the permittees biosolids use or land application practices do not comply with existing applicable state of federal regulations.

Q. Toxicity Limitation - Reopener Provision. This permit may be reopened and modified (following proper administrative procedures) to include, whole effluent toxicity (WET) limitations, a compliance date, a compliance schedule, a change in the whole effluent toxicity (biomonitoring) protocol, additional or modified numerical limitations, or any other conditions related to the control of toxicants if one or more of the following events occur;

1. Toxicity is detected, as per *Part I.C.3.b* of this permit, during the duration of this permit.

2. The TRE results indicate that compliance with the toxic limits will require an implementation schedule past the date for compliance and the Executive Secretary agrees with the conclusion.

3. The TRE results indicate that the toxicant(s) represent pollutant(s) that may be controlled with specific numerical limits, and the Executive Secretary agrees that numerical controls are the most appropriate course of action.

4. Following the implementation of numerical control(s) of toxicant(s), the Executive Secretary agrees that a modified biomonitoring protocol is necessary to compensate for those toxicant that are controlled numerically.

5. The TRE reveals other unique conditions or characteristics, which in the opinion of the permit issuing authority justify the incorporation of unanticipated special conditions in the permit.

R. Storm Water-Reopener Provision. At any time during the duration (life) of this permit, this permit may be reopened and modified (following proper administrative procedures) as per *UAC R317.8*, to include, any applicable storm water provisions and requirements, a storm water pollution prevention plan, a compliance schedule, a compliance date, monitoring and/or reporting requirements, or any other conditions related to the control of storm water discharges to "waters-of-State".

VIII. DEFINITIONS

A. Wastewater.

1. The "7-day (and weekly) average", other than for e-coli bacteria, fecal coliform bacteria, and total coliform bacteria, is the arithmetic average of all samples collected during a consecutive 7-day period or calendar week, whichever is applicable. Geometric means shall be calculated for e-coli bacteria, fecal coliform bacteria, and total coliform bacteria. The 7-day and weekly averages are applicable only to those effluent characteristics for which there are 7-day average effluent limitations. The calendar week, which begins on Sunday and ends on Saturday, shall be used for purposes of reporting self-monitoring data on discharge monitoring report forms. Weekly averages shall be calculated for all calendar weeks with Saturdays in the month. If a calendar week overlaps two months (i.e., the Sunday is in one month and the Saturday in the following month), the weekly average calculated for that calendar week shall be included in the data for the month that contains Saturday.

2. The "30-day (and monthly) average," other than for e-coli bacteria, fecal coliform bacteria and total coliform bacteria, is the arithmetic average of all samples collected during a consecutive 30-day period or calendar month, whichever is applicable. Geometric means shall be calculated for e-coli bacteria, fecal coliform bacteria and total coliform bacteria. The calendar month shall be used for purposes of reporting self-monitoring data on discharge monitoring report forms.

3. "Act," means the *Utah Water Quality Act.*

4. "Acute toxicity" occurs when 50 percent or more mortality is observed for either test species at any effluent concentration (lethal concentration or "LC_{50}").

5. "Bypass," means the diversion of waste streams from any portion of a treatment facility.

6. "Chronic toxicity" occurs when the survival, growth, or reproduction for either test species exposed to a specific percent effluent dilution is significantly less (at the 95 percent confidence level) than the survival, growth, or reproduction of the control specimens.

7. "IC_{25}" is the concentration of toxicant (given in % effluent) that would cause a 25% reduction in mean young per female, or a 25% reduction in overall growth for the test population.

8. "Composite Samples" shall be flow proportioned. The composite sample shall, as a minimum, contain at least four (4) samples collected over the compositing period. Unless otherwise specified, the time between the collection of the first sample and the last sample shall not be less than six (6) hours nor more than 24 hours. Acceptable methods for preparation of composite samples are as follows:

    a. Constant time interval between samples, sample volume proportional to flow rate at time of sampling;

    b. Constant time interval between samples, sample volume proportional to total flow (volume) since last sample. For the first sample, the flow rate at the time the sample was collected may be used;

    c. Constant sample volume, time interval between samples proportional to flow (i.e., sample taken every "X" gallons of flow); and,

    d. Continuous sample volume, with sample collection rate proportional to flow rate.

9. "CWA," means *The Federal Water Pollution Control Act*, as amended, by *The Clean Water Act of 1987.*

10. "Daily Maximum" (Daily Max.) is the maximum value allowable in any single sample or instantaneous measurement.

11. "EPA," means the United States Environmental Protection Agency.

12. "Executive Secretary," means Executive Secretary of the Utah Water Quality Board.

13. A "grab" sample, for monitoring requirements, is defined as a single "dip and take" sample collected at a representative point in the discharge stream.

14. An "instantaneous" measurement, for monitoring requirements, is defined as a single reading, observation, or measurement.

15. "Severe Property Damage," means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe

property damage does not mean economic loss caused by delays in production.

16. "Upset," means an exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventative maintenance, or careless or improper operation.

B. Biosolids.

1. "Biosolids," means any material or material derived from sewage solids that have been biologically treated.

2. "Dry Weight-Basis," means 100 percent solids (i.e. zero percent moisture).

3. "Land Application" is the spraying or spreading of biosolids onto the land surface; the injection of biosolids below the land surface; or the incorporation of biosolids into the land so that the biosolids can either condition the soil or fertilize crops or vegetation grown in the soil. Land application includes distribution and marketing (i.e. the selling or giving away of the biosolids).

4. "Pathogen," means an organism that is capable of producing an infection or disease in a susceptible host.

5. "Pollutant" for the purposes of this permit is an organic substance, an inorganic substance, a combination of organic and inorganic substances, or pathogenic organisms that after discharge and upon exposure, ingestion, inhalation, or assimilation into an organism either directly from the environment or indirectly by ingestion through the food-chain, could on the basis of information available to the Administrator of EPA, cause death, disease, behavioral abnormalities, cancer, genetic mutations, physiological malfunctions (including malfunction in reproduction), or physical deformations in either organisms or offspring of the organisms.

6. "Runoff" is rainwater, leachate, or other liquid that drains over any part of a land surface and runs off the land surface.

7. "Similar Container" is either an open or closed receptacle. This includes, but is not limited to, a bucket, a box, a carton, and a vehicle or trailer with a load capacity of one metric ton or less.

8. "Total Solids" are the materials in the biosolids that remain as a residue if the biosolids are dried at 103° or 105° Celsius.

9. "Treatment Works" are either Federally owned, publicly owned, or privately owned devices or systems used to treat (including recycling and reclamation) either domestic sewage or a combination of domestic sewage and industrial waste or liquid manure.

10. "Vector Attraction" is the characteristic of biosolids that attracts rodents, flies mosquito's or other organisms capable of transporting infectious agents.

11. "Animals" for the purpose of this permit are domestic livestock.

12. "Annual Whole Sludge Application Rate" is the amount of sewage sludge (dry-weight basis) that can be applied to a unit area of land during a cropping cycle.

13. "Agronomic Rate is the whole sludge application rate (dry-weight basis) designed to: (1) provide the amount of nitrogen needed by the crop or vegetation grown on the land; and (2) minimize the amount of nitrogen in the sewage sludge that passes below the root zone of the crop or vegetation grown on the land to the ground water.

14. "Annual Pollutant Loading Rate" is the maximum amount of a pollutant (dry-weight basis) that can be applied to a unit area of land during a 365-day period.

15. "Application Site or Land Application Site" means all contiguous areas of a users' property intended for sludge application.

16. "Cumulative Pollutant Loading Rate" is the maximum amount of an inorganic pollutant (dry-weight basis) that can be applied to a unit area of land.

17. "Grit and Screenings" are sand, gravel, cinders, other materials with a high specific gravity and relatively large materials such as rags generated during preliminary treatment of domestic sewage at a treatment works and shall be disposed of according to *40 CFR 258*.

18. "High Potential for Public Contact Site" is land with a high potential for contact by the public. This includes, but is not limited to, public parks, ball fields, cemeteries, plant nurseries, turf farms, and golf courses.

19. "Low Potential for Public Contact Site" is the land with a low potential for contact by the public. This includes, but is not limited to, farms, ranches, reclamation areas, and other lands which are private lands, restricted public lands, or lands which are not generally accessible to or used by the public.

20. "Monthly Average" is the arithmetic mean of all measurements taken during the month.

21. "Volatile Solids" is the amount of the total solids in sewage sludge lost when the sludge is combusted at 550 degrees Celsius for 15-20 minutes in the presence of excess air.

C. Storm Water.

1. "Best Management Practices" ("BMPs") means schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of waters of the State. BMPs also include treatment requirements, operating procedures, and practices to control facility site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.

2. "Coal pile runoff" means the rainfall runoff from or through any coal storage pile.

3. "Co-located industrial activity" means when a facility has industrial activities being conducted onsite that are described under more than one of the coverage sections of *Appendix II* in the General Multi-Sector Permit for Storm Water Discharges Associated with Industrial Activity. Facilities with co-located industrial activities shall comply with all applicable monitoring and pollution prevention plan requirements of each section in which a co-located industrial activity is described.

4. "Commercial Treatment and Disposal Facilities" means facilities that receive, on a commercial basis, any produced hazardous waste (not their own) and treat or dispose of those wastes as a service to the generators. Such facilities treating and/or disposing exclusively residential hazardous wastes are not included in this definition.

5. "Landfill" means an area of land or an excavation in which wastes are placed for permanent disposal, and that is not a land application unit, surface impoundment, injection well, or waste pile.

6. "Land application unit" means an area where wastes are applied onto or incorporated into the soil surface (excluding manure spreading operations) for treatment or disposal.

7. "Municipal separate storm sewer system" (large and/or medium) means all municipal separate storm sewers that are either:

   a. Located in an incorporated place (city) with a population of 100,000 or more as determined by the latest Decennial Census by the Bureau of Census (at the issuance date of this permit, Salt Lake City is the only city in Utah that falls in this category); or

   b. Located in the counties with unincorporated urbanized populations of 100,000 or more, except municipal separate storm sewers that are located in the incorporated places, townships or towns within such counties (at the issuance date of this permit Salt Lake County is the only county that falls in this category); or

   c. Owned or operated by a municipality other than those described in paragraph *a.* or *b.* (above) and that are designated by the *Executive Secretary* as part of the large or medium municipal separate storm sewer system.

8. "NOI" means "notice of intent", it is an application form that is used to obtain coverage under the General Multi-Sector Permit for Storm Water Discharges Associated with Industrial Activity.

9. "NOT" means "notice of termination", it is a form used to terminate coverage under the General Multi-Sector Permit for Storm Water Discharges Associated with Industrial Activity.

10. "Point source" means any discernible, confined, and discrete conveyance, including but not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, landfill leachate collection system, vessel or other floating craft from which pollutants are or may be discharged. This term does not include return flows from irrigated agriculture or agricultural storm water runoff.

11. "Section 313 water priority chemical" means a chemical or chemical categories that:

    a. Are listed at *40 CFR 372.65* pursuant to *Section 313* of the *Emergency Planning and Community Right-to-Know Act* (*EPCRA*) (also known as *Title III of the Superfund Amendments and Reauthorization Act* (*SARA*) of 1986);

    b. Are present at or above threshold levels at a facility subject to *EPCRA Section 313* reporting requirements; and

    c. Meet at least one of the following criteria:

        (1) Are listed in *Appendix D* of *40 CFR Part 122* on either Table II (organic priority pollutants), Table III (certain metals, cyanides, and phenols) or Table V (certain toxic pollutants and hazardous substances);

        (2) Are listed as a hazardous substance pursuant to *Section 311(b)(2)(A)* of the *CWA* at *40 CFR 116.4*; or

        (3) Are pollutants for which EPA has published acute or chronic water quality criteria. See *Appendix III* of this permit. This appendix was revised based on final rulemaking EPA published in the *Federal Register* November 30, 1994.

12. "Significant materials" includes, but is not limited to: raw materials; fuels; materials such as solvents, detergents, and plastic pellets; finished materials such as metallic products; raw materials used in food processing or production; hazardous substances designated under *Section 101(14)* of *CERCLA*; any chemical the facility is required to report pursuant to *EPCRA Section 313*; fertilizers; pesticides; and waste products such as ashes, slag and sludge that have the potential to be released with storm water discharges.

13. "Significant spills" includes, but is not limited to: releases of oil or hazardous substances in excess of reportable quantities under *Section 311 of the Clean Water Act* (see *40 CFR 110.10* and *CFR 117.21*) or *Section 102* of *CERCLA* (see *40 CFR 302.4*).

14. "Storm water" means storm water runoff, snowmelt runoff, and surface runoff and drainage.

15. "SWDMR" means "storm water discharge monitoring report", a report of the results of storm water monitoring required by the permit. The Division of Water Quality provides the storm water discharge monitoring report form.

16. "Storm water associated with industrial activity" (*UAC R317-8-3.8(6)(c) & (d)*) means the discharge from any conveyance that is used for collecting and conveying storm water and that is directly related to manufacturing, processing or raw materials storage areas at an industrial plant. The term does not include discharges from facilities or activities excluded from the *UPDES* program. For the categories of industries identified in paragraphs *(a)* through *(j)* of this definition, the term includes, but is not limited to, storm water discharges from industrial plant yards; immediate access roads and rail lines used or traveled by carriers of raw materials, manufactured products, waste material, or by-products used or created by the facility; material handling sites; refuse sites; sites used for the application or disposal of process waste waters (as defined in *40 CFR Part 401*); sites used for the storage and maintenance of material handling equipment; sites used for residual treatment, storage, or disposal; shipping and receiving areas; manufacturing buildings; storage areas (including tank farms) for raw materials, and intermediate and finished products; and areas where industrial activity has taken place in the past and significant materials remain and are exposed to storm water. For the categories of industries identified in paragraph *(k)* of this definition, the term includes only storm water discharges from all areas (except access roads and rail lines) listed in the previous sentence where material handling equipment or activities, raw materials, intermediate products, final products, waste materials, by-products, or industrial machinery are exposed to storm water. For the purposes of this paragraph, material handling activities include the storage, loading and unloading, transportation, or conveyance of any raw material, intermediate product, finished product, by-product or waste product. The term excludes areas located on plant lands separate from the plant's industrial activities, such as office buildings and accompanying parking lots as long as the drainage from the excluded areas is not mixed with storm water drained from the above described areas. Industrial facilities (including industrial facilities that are Federally, State, or municipally owned or operated that meet the description of the facilities listed in paragraphs *(a)* to *(k)* of this definition) include those facilities designated under *UAC R317-8-3.8(1)(a)5.* The following categories of facilities are considered to be engaging in "industrial activity" for purposes of this subsection:

    a. Facilities subject to storm water effluent limitations guidelines, new source performance standards, or toxic pollutant effluent standards

under *40 CFR Subchapter N* (except facilities with toxic pollutant effluent standards that are exempted under category (k) of this definition);

b. Facilities classified as Standard Industrial Classifications 24 (except 2434), 26 (except 265 and 267), 28 (except 283 and 285), 29, 311, 32 (except 323), 33, 3441, 373;

c. Facilities classified as Standard Industrial Classifications 10 through 14 (mineral industry) including active or inactive mining operations (except for areas of coal mining operations no longer meeting the definition of a reclamation area under *40 CFR 434.11(l)* because the performance bond issued to the facility by the appropriate SMCRA authority has been released, or except for areas of non-coal mining operations that have been released from applicable State or Federal reclamation requirements after December 17, 1990) and oil and gas exploration, production, processing, or treatment operations, or transmission facilities that discharge storm water contaminated by contact with or that has come into contact with, any overburden, raw material, intermediate products, finished products, byproducts or waste products located on the site of such operations; inactive mining operations are mining sites that are not being actively mined, but that have an identifiable owner/operator;

d. Hazardous waste treatment, storage, or disposal facilities, including those that are operating under interim status or a permit under Subtitle C of RCRA;

e. Landfills, land application sites, and open dumps that have received any industrial wastes (waste that is received from any of the facilities described under this subsection) including those that are subject to regulation under *Subtitle D* of *RCRA*;

f. Facilities involved in the recycling of materials, including metal scrapyards, battery reclaimers, salvage yards, and automobile junkyards, including but limited to those classified as Standard Industrial Classification 5015 and 5093;

g. Steam electric power generating facilities, including coal handling sites;

h. Transportation facilities classified as Standard Industrial Classifications 40, 41, 42 (except 4221-25), 43, 44, 45 and 5171 that have vehicle maintenance shops, equipment cleaning operations, or

airport deicing operations. Only those portions of the facility that are either involved in vehicle maintenance (including vehicle rehabilitation, mechanical repairs, painting, fueling, and lubrication), equipment cleaning operations, airport deicing operations, or that are otherwise identified under paragraphs (a) to (g) or (I) to (k) of this subsection are associated with industrial activity;

i. Treatment works treating domestic sewage or any other sewage sludge or wastewater treatment device or system, used in the storage treatment, recycling, and reclamation of municipal or domestic sewage, including land dedicated to the disposal of sewage sludge that are located within the confines of the facility, with a design flow of 1.0 mgd or more, or required to have an approved pretreatment program under *40 CFR Part 403*. Not included are farm lands, domestic gardens or lands used for sludge management where sludge is beneficially reused and that are not physically located in the confines of the facility, or areas that are in compliance with *40 CFR Part 503*;

j. Construction activity including clearing, grading and excavation activities except:. operations that result in the disturbance of less than 5 acres of total land area that are not part of a larger common plan of development or sale;

k. Facilities under Standard Industrial Classifications 20, 21, 22, 23, 2434, 25, 265, 267, 27, 283, 285, 30, 31 (except 311), 323, 34 (except 3441), 35, 36, 37 (except 373), 38, 39, 4221-25, (and that are not otherwise included within categories (a) to (j))

17. "Waste pile" means any non-containerized accumulation of solid, non-flowing waste that is used for treatment or storage.

Utah Division of Water Quality
ADDENDUM
Statement of Basis
Wasteload Analysis for Treatment Plant Upgrade - PRELIMINARY

Date: **July 28, 2015**

Facility: **Moab POTW**
UPDES No. UT0020419

Receiving water: **Colorado River (1C, 2A, 3B, 4)**

This addendum summarizes the wasteload analysis that was performed to determine water quality based effluent limits (WQBEL) for this discharge. Wasteload analyses are performed to determine point source effluent limitations necessary to maintain designated beneficial uses by evaluating projected effects of discharge concentrations on in-stream water quality. The wasteload analysis also takes into account downstream designated uses (UAC R317-2-8). Projected concentrations are compared to numeric water quality standards to determine acceptability. The numeric criteria in this wasteload analysis may be modified by narrative criteria and other conditions determined by staff of the Division of Water Quality.

Discharge
Outfall 001: Located at latitude 38°34'40" and longitude 109°34'47". The discharge is through a 2,000-lineal-foot, 18-inch diameter reinforced concrete pipeline to the Colorado River.

The design flow for the treatment plant is 1.75 MGD maximum monthly average and 3.38 MGD maximum daily discharge, as provided by the permittee. The design discharge was used for this wasteload analysis.

Data obtained from 2004-2014 for sampling site 4956550 Moab WWTP was used to characterize the temperature, pH and hardness of the effluent.

Receiving Water
The receiving water for the discharge is the Colorado River, which per UAC R317-2-13.1 has designated uses of 1C, 2A, 3B, and 4.

- *Class 1C - Protected for domestic purposes with prior treatment by treatment processes as required by the Utah Division of Drinking Water.*

- *Class 2A - Protected for frequent primary contact recreation where there is a high likelihood of ingestion of water or a high degree of bodily contact with the water. Examples include, but are not limited to, swimming, rafting, kayaking, diving, and water skiing.*

- *Class 3B - Protected for warm water species of game fish and other warm water aquatic life, including the necessary aquatic organisms in their food chain.*

- *Class 4 - Protected for agricultural uses including irrigation of crops and stock watering.*

The critical flow for the wasteload analysis was considered the lowest stream flow for seven consecutive days with a ten year return frequency (7Q10). Flow records from USGS stream gage # 09180500 - COLORADO RIVER NEAR CISCO, UT, for the period 1913 – 2010 was obtained. The 7Q10 was calculated using the EPA computer software DFLOW V3.1b.

7Q10 Flow (Annual) = 1,220 cfs

Data obtained from 2004-2014 for sampling site 4957000 Colorado River at US191 Crossing Near Moab was used to characterize background water quality conditions.

Mixing Zone

The allowable mixing zone is 15 minutes of travel time for acute conditions, not to exceed 50% of stream width, and 2,500 feet for chronic conditions, per UAC R317-2-5. Water quality standards must be met at the end of the mixing zone. Individual mixing zones may be further limited or disallowed in consideration of the following factors in the area affected by the discharge: Zone of passage for migrating fish or other species (including access to tributaries).

Mill Creek confluence with the Colorado River is approximately 1,400 feet downstream of the Moab POTW outfall pipe. Therefore, in consideration of potential fish migration concerns between Mill Creek and Colorado River, the acute mixing zone is limited to 1,400 feet (calculated to be 10.2 minutes travel time).

Dilution Factor

The EPA Region 8 stream mixing zone analysis (STREAMIX1, 1994), was used to determine the plume width and mixed flow rate for both acute and chronic conditions. A rectangular channel with a width of 300 feet, channel slope of 0.001 feet/feet, and roughness coefficient of 0.030 was assumed for channel geometry. Mannings equation was used to solve for the flow depth (1.8 feet) and velocity for the 7Q10 flow.

Table 1: Summary of plume characteristics at mixing zone boundary.

Criteria	Distance to End of Mixing Zone (feet)	Plume Width		Flow	Dilution Factor
		feet	% of River	cfs	
Acute	1,400	35.4	11.6	142	62:1
Chronic	2,500	49.1	16.2	198	86:1

Parameters of Concern

The potential parameters of concern for the discharge/receiving water identified were total dissolved solids (TDS), total suspended solids (TSS), and ammonia, as determined in consultation with the UPDES Permit Writer.

TMDL

The Colorado River from Green River confluence to Moab was listed as impaired for selenium according to the 2010 303(d) list. The receiving water does not have an approved TMDL for any parameters.

WET Limits

The percent of effluent in the receiving water in a fully mixed condition, and acute and chronic dilution in a not fully mixed condition are calculated in the WLA in order to generate WET limits. The LC_{50} (lethal concentration, 50%) percent effluent for acute toxicity and the IC_{25} (inhibition concentration, 25%) percent effluent for chronic toxicity, as determined by the WET test, needs to be below the WET limits, as determined by the WLA. The WET limit for LC_{50} is typically 100% effluent and does not need to be determined by the WLA.

Table 2: WET Limits for IC_{25}

Season	Percent Effluent
Annual	1.4%

Effluent Limits

Effluent limits for pollutants were determined using a mass balance mixing analysis (UDWQ 2012). The mass balance analysis is summarized in Appendix A.

The water quality standard for chronic ammonia toxicity is dependent on temperature and pH, and the water quality standard for acute ammonia toxicity is dependent on pH. The analysis to determine the ammonia criteria is summarized in Appendix B.

Due to the high dilution factor, secondary standards for BOD_5 were considered sufficiently protective to meet instream criteria for DO.

Table 3: Water Quality Based Effluent Limits Summary

Effluent Constituent	Acute			Chronic		
	Standard	Limit	Averaging Period	Standard	Limit	Averaging Period
Flow (MGD)		3.38	1 day		1.75	30 days
Ammonia (mg/L)						
Summer (Jul-Sep)	2.9	210		1.1	75	
Fall (Oct-Dec)	1.3	94	1 hour	1.2	83	30 days
Winter (Jan-Mar)	3.0	218		1.7	122	
Spring (Apr-Jun)	2.5	180		1.7	121	
BOD_5 (mg/L)	N/A	35	7 days	N/A	25	30 days
Dissolved Oxygen (mg/L)	3.0	5.0	Minimum	5.0	5.0	30 days

Antidegradation Level I Review

The objective of the Level I ADR is to ensure the protection of existing uses, defined as the beneficial uses attained in the receiving water on or after November 28, 1975. No evidence is known that the existing uses deviate from the designated beneficial uses for the receiving water. Therefore, the beneficial uses will be protected if the discharge remains below the WQBELs presented in this wasteload.

The pollutant concentration and load from the facility is being increased under the proposed treatment plant upgrade; therefore, a Level II Antidegradation Review (ADR) is required for this discharge.

Prepared by: Nicholas von Stackelberg, P.E.
Standards and Technical Services Section

Documents:

WLA Document: *moab_potw_upgrade_wla_2015.docx*
Analysis: *moab_potw_upgrade_wla_2015.xlsx*

References:

Utah Wasteload Analysis Procedures Version 1.0. 2012. Utah Division of Water Quality.

WASTELOAD ANALYSIS [WLA] Date: 7/28/2015

Appendix A: Mass Balance Mixing Analysis for Conservative Constituents

Discharging Facility:	Moab WWTP		
UPDES No:	UT-0020419		
Permit Flow [MGD]:	3.38	Annual	Max. Daily
	1.75	Annual	Max. Monthly
Receiving Water:	Colorado River		
Stream Classification:	1C, 2B, 3B, 4		
Stream Flows [cfs]:	1220	Summer	Critical Low Flow
	197	Chronic	
	142	Acute	
Fully Mixed:	NO		
Acute River Width:	11.6%	Plume Model Used	
Chronic River Width:	16.2%	Plume Model Used	

Modeling Information

A simple mixing analysis was used to determine the effluent limits.

All model numerical inputs, intermediate calculations, outputs and graphs are available for discussion, inspection and copy at the Division of Water Quality.

Effluent Limitations

Current State water quality standards are required to be met under a variety of conditions including in-stream flows targeted to the 7-day, 10-year low flow (R317-2-9).

Other conditions used in the modeling effort reflect the environmental conditions expected at low stream flows.

Effluent Limitations for Protection of Drinking Water (Class 1C Waters)

No dilution in unnamed irrigation ditch.

		Maximum Concentration		
Dissolved Metals (ug/L)		**Standard**	**Background**	**Limit**
	Arsenic	10.0	1.30	246
	Barium	1000	140.60	24,275
	Beryllium	4.0	2.68	39.7
	Cadmium	10.0	0.10	278
	Chromium	50.0	2.00	1,350
	Lead	15.0	0.20	416
	Mercury	2.0	0.2	51
	Selenium	50.0	2.20	1,345
	Silver	50.0	0.5	1,391

		Maximum Concentration		
Inorganics (mg/L)		**Standard**	**Background**	**Limit**
	Bromate	0.01	0.007	0.10
	Chlorite	1.0	0.67	9.9
	Fluoride	1.4	0.94	13.9
	Nitrate	10.0	0.51	267

	Maximum Concentration		
Radiological (pCi/L)	**Standard**	**Background**	**Limit**
Gross Alpha	15.0	10.1	149
Gross Beta	4.0	2.7	39.7
Strontium 90	8.0	5.4	79
Tritium	20000	13400	198749
Uranium	30.0	20.1	298

Bacteriological	**Standard**
E. coli (30 Day Geometric Mean)	206 (#/100 mL)
E. coli (Maximum)	668 (#/100 mL)

Effluent Limitations for Protection of Recreation (Class 2B Waters)

Physical

Parameter	**Maximum Concentration**
pH Minimum	6.5
pH Maximum	9.0
Turbidity Increase (NTU)	10.0

Bacteriological	**Standard**
E. coli (30 Day Geometric Mean)	206 (#/100 mL)
E. coli (Maximum)	668 (#/100 mL)

Effluent Limitations for Protection of Aquatic Wildlife (Assumed Class 3B Waters)

Temperature (deg C)	**Maximum**
Instantaneous	27.0
Change	4.0

pH	**Concentration**
Minimum	6.5
Maximum	9.0

Dissolved Oxygen (mg/L)	**Standard**	**Limit**
Instantaneous Minimum	5.0	5.0
7-day Average Minimum	6.0	6.0
30-day Average Minimum	5.5	5.5

BOD5 (mg/L)	**Standard**	**Limit**
7-day Average	N/A	35.0
30-day Average	N/A	25.0

Ammonia-Total (mg/L)

	Chronic (30-day ave)			Acute (1-hour ave)		
Season	**Standard**	**Background**	**Limit**	**Standard**	**Background**	**Limit**
Summer	1.1	0.07	75.2	2.9	0.07	210.2
Fall	1.2	0.07	83.2	1.3	0.07	94.3
Winter	1.7	0.07	121.8	3.0	0.07	218.5
Spring	1.7	0.07	121.4	2.5	0.07	180.2

Inorganics	**Chronic Standard (4 Day Average)**	**Acute Standard (1 Hour Average)**
Parameter	**Standard**	**Standard**
Phenol (mg/L)		0.010
Hydrogen Sulfide (Undissociated) [mg/L]		0.002

Metals-Total Recoverable

	Chronic (4-day ave)			Acute (1-hour ave)		
Parameter	**Standard[1]**	**Background**	**Limit**	**Standard[1]**	**Background**	**Limit**
Aluminum (µg/L)	N/A[3]	19.0	N/A	750	19.0	20,548
Arsenic (µg/L)	150	1.3	10,994	340	1.3	9,513
Cadmium (µg/L)	0.6	0.10	34.8	6.5	0.10	180
Chromium III (µg/L)	11.0	2.0	667	16.0	2.0	395
Chromium VI (µg/L)	199	2.0	14,602	1534	2.0	43,014
Copper (µg/L)	25.2	2.7	1,663	42.0	2.7	1,106
Cyanide (µg/L)[2]	5.2	3.5	130	22.0	3.5	523
Iron (µg/L)				1000	27.0	27,352
Lead (µg/L)	9.1	0.2	659	234	0.2	6,564
Mercury (µg/L)[2]	0.012	0.008	0.301	2.4	0.008	67.2
Nickel (µg/L)	145	5.0	10,327	1302	5.0	36,432
Selenium (µg/L)[4]	4.6	2.2	4.6	18.4	2.2	18.4
Silver (µg/L)				25.7	0.5	709
Tributylin (µg/L)[2]	0.072	0.048	1.8	0.46	0.048	11.61
Zinc (µg/L)	329	17.0	23,086	326	17.0	8,705

1: Based upon a hardness of 335 mg/l as CaCO3

2: Background concentration assumed 67% of chronic standard

3: Where the pH is equal to or greater than 7.0 and the hardness is equal to or greater than 50 ppm as $CaC0_3$ in the receiving water after mixing, the 87 ug/L chronic criterion (expressed as total recoverable) will not apply, and aluminum will be regulated based on compliance with the 750 ug/L acute aluminum criterion (expressed as total recoverable).

4: Due to impairment, limit is same as standard.

Organics [Pesticides]

	Chronic (4-day ave)		Acute (1-hour ave)	
Parameter	**Standard**	**Limit**	**Standard**	**Limit**
Aldrin (µg/L)			1.5	1.5
Chlordane (µg/L)	0.0043	0.0043	1.2	1.2
DDT, DDE (µg/L)	0.001	0.001	0.55	0.55
Diazinon (µg/L)	0.17	0.17	0.17	0.17
Dieldrin (µg/L)	0.0056	0.0056	0.24	0.24
Endosulfan, a & b (µg/L)	0.056	0.056	0.11	0.11
Endrin (µg/L)	0.036	0.036	0.086	0.086
Heptachlor & H. epoxide (µg/L)	0.0038	0.0038	0.26	0.26
Lindane (µg/L)	0.08	0.08	1.0	1.0
Methoxychlor (µg/L)			0.03	0.03
Mirex (µg/L)			0.001	0.001
Nonylphenol (µg/L)	6.6	6.6	28.0	28.0
Parathion (µg/L)	0.0130	0.0130	0.066	0.066
PCB's (µg/L)	0.014	0.014		
Pentachlorophenol (µg/L)	15.0	15.0	19.0	19.0
Toxephene (µg/L)	0.0002	0.0002	0.73	0.73

Radiological	**Maximum Concentration**
Parameter	**Standard**
Gross Alpha (pCi/L)	15

Effluent Limitation for Protection of Agriculture (Class 4 Waters)

		Maximum Concentration	
Parameter	**Standard**	**Background**	**Limit**
Total Dissolved Solids (mg/L)	1200	634	16,529
Boron (µg/L)	750	81.5	302,004
Arsenic, Dissolved (µg/L)	100	1.3	44,578
Cadmium, Dissolved (µg/L)	10	0.1	4,471
Chromium, Dissolved (µg/L)	100	2.0	44,263
Copper, Dissolved (µg/L)	200	2.7	89,112
Lead, Dissolved (µg/L)	100	0.2	45,074
Selenium, Dissolved (µg/L)	50	2.2	21,591
Gross Alpha (pCi/L)	15	10.1	2,246

Appenix B: Freshwater total ammonia criteria based on Title R317-2-14 Utah Administrative Code
Acute Conditions

INPUT				
	Summer	Fall	Winter	Spring
pH:	8.6	9.0	8.5	8.6
Beneficial use classification:	3B	3B	3B	3B

OUTPUT				
Total ammonia nitrogen criteria (mg N/L):				
Acute:	2.912	1.345	3.025	2.507

Appendix B: Freshwater total ammonia criteria based on Title R317-2-14 Utah Administrative Code
Chronic Conditions

INPUT	Summer	Fall	Winter	Spring
Temperature (deg C):	22.9	9.1	4.5	14.2
pH:	8.2	8.4	8.2	8.2
Are fish early life stages present?	Yes	Yes	Yes	Yes

OUTPUT				
Total ammonia nitrogen criteria (mg N/L):				
Chronic - Fish Early Life Stages Present:	1.086	1.195	1.717	1.711
Chronic - Fish Early Life Stages Absent:	1.086	1.694	2.788	1.751

FACILITY NAME AND PERMIT NUMBER:

Form Approved 1/14/99
OMB Number 2040-0086

FORM 2A NPDES

NPDES FORM 2A APPLICATION OVERVIEW

APPLICATION OVERVIEW

Form 2A has been developed in a modular format and consists of a "Basic Application Information" packet and a "Supplemental Application Information" packet. The Basic Application Information packet is divided into two parts. All applicants must complete Parts A and C. Applicants with a design flow greater than or equal to 0.1 mgd must also complete Part B. Some applicants must also complete the Supplemental Application Information packet. The following items explain which parts of Form 2A you must complete.

BASIC APPLICATION INFORMATION:

A. **Basic Application Information for all Applicants.** All applicants must complete questions A.1 through A.8. A treatment works that discharges effluent to surface waters of the United States must also answer questions A.9 through A.12.

B. **Additional Application Information for Applicants with a Design Flow ≥ 0.1 mgd.** All treatment works that have design flows greater than or equal to 0.1 million gallons per day must complete questions B.1 through B.6.

C. **Certification.** All applicants must complete Part C (Certification).

SUPPLEMENTAL APPLICATION INFORMATION:

D. **Expanded Effluent Testing Data.** A treatment works that discharges effluent to surface waters of the United States and meets one or more of the following criteria must complete Part D (Expanded Effluent Testing Data):

1. Has a design flow rate greater than or equal to 1 mgd,
2. Is required to have a pretreatment program (or has one in place), or
3. Is otherwise required by the permitting authority to provide the information.

E. **Toxicity Testing Data.** A treatment works that meets one or more of the following criteria must complete Part E (Toxicity Testing Data):

1. Has a design flow rate greater than or equal to 1 mgd,
2. Is required to have a pretreatment program (or has one in place), or
3. Is otherwise required by the permitting authority to submit results of toxicity testing.

F. **Industrial User Discharges and RCRA/CERCLA Wastes.** A treatment works that accepts process wastewater from any significant industrial users (SIUs) or receives RCRA or CERCLA wastes must complete Part F (Industrial User Discharges and RCRA/CERCLA Wastes). SIUs are defined as:

1. All industrial users subject to Categorical Pretreatment Standards under 40 Code of Federal Regulations (CFR) 403.6 and 40 CFR Chapter I, Subchapter N (see instructions); and
2. Any other industrial user that:
   a. Discharges an average of 25,000 gallons per day or more of process wastewater to the treatment works (with certain exclusions); or
   b. Contributes a process wastestream that makes up 5 percent or more of the average dry weather hydraulic or organic capacity of the treatment plant; or
   c. Is designated as an SIU by the control authority.

G. **Combined Sewer Systems.** A treatment works that has a combined sewer system must complete Part G (Combined Sewer Systems).

ALL APPLICANTS MUST COMPLETE PART C (CERTIFICATION)

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BASIC APPLICATION INFORMATION

PART A. BASIC APPLICATION INFORMATION FOR ALL APPLICANTS:

All treatment works must complete questions A.1 through A.8 of this Basic Application Information packet.

A.1. Facility Information.

Facility name: Moab Wastewater Treatment Plant

Mailing Address: 217 East Center Street
Moab, Utah 84532

Contact person: Greg Fosse

Title: Lead Operator

Telephone number: (435) 259-5577

Facility Address (not P.O. Box): 1070 West 400 North
Moab, UT

A.2. Applicant Information. If the applicant is different from the above, provide the following:

Applicant name:

Mailing Address:

Contact person:

Title:

Telephone number:

Is the applicant the owner or operator (or both) of the treatment works?

✓ owner ✓ operator

Indicate whether correspondence regarding this permit should be directed to the facility or the applicant.

✓ facility _____ applicant

A.3. Existing Environmental Permits. Provide the permit number of any existing environmental permits that have been issued to the treatment works (include state-issued permits).

NPDES	UT0020419	PSD	
UIC		Other	
RCRA		Other	

A.4. Collection System Information. Provide information on municipalities and areas served by the facility. Provide the name and population of each entity and, if known, provide information on the type of collection system (combined vs. separate) and its ownership (municipal, private, etc.).

Name	Population Served	Type of Collection System	Ownership
Moab City	5,200	Seperate	Municipal
GWSSA	4,000	Seperate	District

Total population served Approx 9,200

A.5. Indian Country.

a. Is the treatment works located in Indian Country?

_____ Yes ✓ No

b. Does the treatment works discharge to a receiving water that is either in Indian Country or that is upstream from (and eventually flows through) Indian Country?

_____ Yes ✓ No

A.6. Flow. Indicate the design flow rate of the treatment plant (i.e., the wastewater flow rate that the plant was built to handle). Also provide the average daily flow rate and maximum daily flow rate for each of the last three years. Each year's data must be based on a 12-month time period with the 12th month of "this year" occurring no more than three months prior to this application submittal.

a. Design flow rate 1.50 mgd

	2013 Two Years Ago	2014 Last Year	2015 This Year	
b. Annual average daily flow rate	0.97	1.01	0.99	mgd
c. Maximum daily flow rate	1.23	1.25	1.23	mgd

A.7. Collection System. Indicate the type(s) of collection system(s) used by the treatment plant. Check all that apply. Also estimate the percent contribution (by miles) of each.

✓	Separate sanitary sewer	_____ %
_____	Combined storm and sanitary sewer	_____ %

A.8. Discharges and Other Disposal Methods.

a. Does the treatment works discharge effluent to waters of the U.S.? ✓ Yes _____ No

If yes, list how many of each of the following types of discharge points the treatment works uses:

i. Discharges of treated effluent 100%

ii. Discharges of untreated or partially treated effluent _____

iii. Combined sewer overflow points _____

iv. Constructed emergency overflows (prior to the headworks) _____

v. Other _____ _____

b. Does the treatment works discharge effluent to basins, ponds, or other surface impoundments that do not have outlets for discharge to waters of the U.S.? _____ Yes ✓ No

If yes, provide the following for each surface impoundment:

Location: _____

Annual average daily volume discharged to surface impoundment(s) _____ mgd

Is discharge _____ continuous or _____ intermittent?

c. Does the treatment works land-apply treated wastewater? _____ Yes ✓ No

If yes, provide the following for each land application site:

Location: _____

Number of acres: _____

Annual average daily volume applied to site: _____ Mgd

Is land application _____ continuous or _____ intermittent?

d. Does the treatment works discharge or transport treated or untreated wastewater to another treatment works? _____ Yes ✓ No

If yes, describe the mean(s) by which the wastewater from the treatment works is discharged or transported to the other treatment works (e.g., tank truck, pipe).

If transport is by a party other than the applicant, provide:

Transporter name:

Mailing Address:

Contact person:

Title:

Telephone number:

For each treatment works that receives this discharge, provide the following:

Name:

Mailing Address:

Contact person:

Title:

Telephone number:

If known, provide the NPDES permit number of the treatment works that receives this discharge.

Provide the average daily flow rate from the treatment works into the receiving facility. mgd

e. Does the treatment works discharge or dispose of its wastewater in a manner not included in A.8.a through A.8.d above (e.g., underground percolation, well injection)? Yes ✓ No

If yes, provide the following for each disposal method:

Description of method (including location and size of site(s) if applicable):

Annual daily volume disposed of by this method:

Is disposal through this method continuous or intermittent?

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WASTEWATER DISCHARGES:

If you answered "yes" to question A.8.a, complete questions A.9 through A.12 **once for each outfall** (including bypass points) through which effluent is discharged. Do not include information on combined sewer overflows in this section. **If you answered "no" to question A.8.a**, go to Part B, "Additional Application Information for Applicants with a Design Flow Greater than or Equal to 0.1 mgd."

A.9. Description of Outfall.

a. Outfall number 001

b. Location

Moab City (City or town, if applicable)	84532 (Zip Code)
Grand County (County)	UT (State)
38°34'40" (Latitude)	109°34'47" (Longitude)

c. Distance from shore (if applicable) _____ ft.

d. Depth below surface (if applicable) _____ ft.

e. Average daily flow rate 1.00 mgd

f. Does this outfall have either an intermittent or a periodic discharge? _____ Yes ✓ No (go to A.9.g.)

If yes, provide the following information:

Number of times per year discharge occurs: _____

Average duration of each discharge: _____

Average flow per discharge: _____ mgd

Months in which discharge occurs: _____

g. Is outfall equipped with a diffuser? _____ Yes ✓ No

A.10. Description of Receiving Waters.

a. Name of receiving water Colorado River

b. Name of watershed (if known) _____

United States Soil Conservation Service 14-digit watershed code (if known): _____

c. Name of State Management/River Basin (if known): _____

United States Geological Survey 8-digit hydrologic cataloging unit code (if known): _____

d. Critical low flow of receiving stream (if applicable):
acute _____ cfs chronic _____ cfs

e. Total hardness of receiving stream at critical low flow (if applicable): _____ mg/l of $CaCO_3$

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A.11. Description of Treatment.

a. What levels of treatment are provided? Check all that apply.

✓ Primary ✓ Secondary

____ Advanced ____ Other. Describe: ____

b. Indicate the following removal rates (as applicable):

Design BOD_5 removal or Design $CBOD_5$ removal	85.00	%
Design SS removal	85.00	%
Design P removal	0.00	%
Design N removal	0.00	%
Other ____		%

c. What type of disinfection is used for the effluent from this outfall? If disinfection varies by season, please describe.

Chlorine Gas

If disinfection is by chlorination, is dechlorination used for this outfall? ____ Yes ✓ No

d. Does the treatment plant have post aeration? ____ Yes ✓ No

A.12. Effluent Testing Information. All Applicants that discharge to waters of the US must provide effluent testing data for the following parameters. Provide the indicated effluent testing required by the permitting authority for each outfall through which effluent is discharged. Do not include information on combined sewer overflows in this section. All information reported must be based on data collected through analysis conducted using 40 CFR Part 136 methods. In addition, this data must comply with QA/QC requirements of 40 CFR Part 136 and other appropriate QA/QC requirements for standard methods for analytes not addressed by 40 CFR Part 136. At a minimum, effluent testing data must be based on at least three samples and must be no more than four and one-half years apart.

Outfall number: ____

PARAMETER	MAXIMUM DAILY VALUE		AVERAGE DAILY VALUE		
	Value	Units	Value	Units	Number of Samples
pH (Minimum)	6.77	s.u.			
pH (Maximum)	8.27	s.u.			
Flow Rate	1.25	mgd	0.98	mgd	1,461.00
Temperature (Winter)		n/a			
Temperature (Summer)		n/a			

* For pH please report a minimum and a maximum daily value

POLLUTANT		MAXIMUM DAILY DISCHARGE		AVERAGE DAILY DISCHARGE			ANALYTICAL METHOD	ML / MDL
		Conc.	Units	Conc.	Units	Number of Samples		
CONVENTIONAL AND NONCONVENTIONAL COMPOUNDS.								
BIOCHEMICAL OXYGEN	BOD-5	54.00	mg/l	24.92	mg/l	204.00	SM 5210 B	5
DEMAND (Report one)	CBOD-5							
FECAL COLIFORM		3,100.00	org/100 ml	261.00	org/100 ml	189.00	SM 9223 BQT	1
TOTAL SUSPENDED SOLIDS (TSS)		56.00	mg/l	19.14	mg/l	190.00	SM 2540 D	3

END OF PART A.
REFER TO THE APPLICATION OVERVIEW TO DETERMINE WHICH OTHER PARTS OF FORM 2A YOU MUST COMPLETE

BASIC APPLICATION INFORMATION

PART B. ADDITIONAL APPLICATION INFORMATION FOR APPLICANTS WITH A DESIGN FLOW GREATER THAN OR EQUAL TO 0.1 MGD (100,000 gallons per day).

All applicants with a design flow rate ≥ 0.1 mgd must answer questions B.1 through B.6. All others go to Part C (Certification).

B.1. Inflow and Infiltration. Estimate the average number of gallons per day that flow into the treatment works from inflow and/or infiltration.

100,000.00 gpd

Briefly explain any steps underway or planned to minimize inflow and infiltration.

Ongoing inspection of pipelines.

B.2. Topographic Map. Attach to this application a topographic map of the area extending at least one mile beyond facility property boundaries. This map must show the outline of the facility and the following information. (You may submit more than one map if one map does not show the entire area.)

a. The area surrounding the treatment plant, including all unit processes. SEE APPENDIX A - FIGURES

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

c. Each well where wastewater from the treatment plant is injected underground.

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

e. Any areas where the sewage sludge produced by the treatment works is stored, treated, or disposed.

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

B.3. Process Flow Diagram or Schematic. Provide a diagram showing the processes of the treatment plant, including all bypass piping and all backup power sources or redundancy in the system. Also provide a water balance showing all treatment units, including disinfection (e.g, chlorination and dechlorination). The water balance must show daily average flow rates at influent and discharge points and approximate daily flow rates between treatment units. Include a brief narrative description of the diagram.

SEE APPENDIX A - FIGURES

B.4. Operation/Maintenance Performed by Contractor(s).

Are any operational or maintenance aspects (related to wastewater treatment and effluent quality) of the treatment works the responsibility of a contractor? ____Yes ✓ No

If yes, list the name, address, telephone number, and status of each contractor and describe the contractor's responsibilities (attach additional pages if necessary).

Name: _____

Mailing Address: _____

_____

Telephone Number: _____

Responsibilities of Contractor: _____

B.5. Scheduled Improvements and Schedules of Implementation. Provide information on any uncompleted implementation schedule or uncompleted plans for improvements that will affect the wastewater treatment, effluent quality, or design capacity of the treatment works. If the treatment works has several different implementation schedules or is planning several improvements, submit separate responses to question B.5 for each. (If none, go to question B.6.)

a. List the outfall number (assigned in question A.9) for each outfall that is covered by this implementation schedule.

001

b. Indicate whether the planned improvements or implementation schedule are required by local, State, or Federal agencies.

____Yes ✓ No

c If the answer to B.5.b is "Yes," briefly describe, including new maximum daily inflow rate (if applicable).

_____

d. Provide dates imposed by any compliance schedule or any actual dates of completion for the implementation steps listed below, as applicable. For improvements planned independently of local, State, or Federal agencies, indicate planned or actual completion dates, as applicable. Indicate dates as accurately as possible.

	Schedule	Actual Completion
Implementation Stage	MM / DD / YYYY	MM / DD / YYYY
– Begin construction	10 / 15 / 2015	___/ ___/ _____
– End construction	6 / 15 / 2017	___/ ___/ _____
– Begin discharge	6 / 30 / 2018	___/ ___/ _____
– Attain operational level	___/ ___/ _____	___/ ___/ _____

e. Have appropriate permits/clearances concerning other Federal/State requirements been obtained? ____Yes ✓ No

Describe briefly: Construction of a new 1.75 mgd Treatment Facility

_____

B.6. EFFLUENT TESTING DATA (GREATER THAN O.1 MGD ONLY).

Applicants that discharge to waters of the US must provide effluent testing data for the following parameters. Provide the indicated effluent testing required by the permitting authority for each outfall through which effluent is discharged. Do not include information on combined sewer overflows in this section. All information reported must be based on data collected through analysis conducted using 40 CFR Part 136 methods. In addition, this data must comply with QA/QC requirements of 40 CFR Part 136 and other appropriate QA/QC requirements for standard methods for analytes not addressed by 40 CFR Part 136. At a minimum, effluent testing data must be based on at least three pollutant scans and must be no more than four and one-half years old.

Outfall Number: 001

POLLUTANT	MAXIMUM DAILY DISCHARGE		AVERAGE DAILY DISCHARGE			ANALYTICAL METHOD	ML / MDL
	Conc.	Units	Conc.	Units	Number of Samples		
CONVENTIONAL AND NONCONVENTIONAL COMPOUNDS.							
AMMONIA (as N)	48.80	mg/l	26.80	mg/l	6.00	E350.1	0.1
CHLORINE (TOTAL RESIDUAL, TRC)	1.60	mg/l	1.02	mg/l	1,343.00		
DISSOLVED OXYGEN		n/a					
TOTAL KJELDAHL NITROGEN (TKN)	27.70	mg/l	24.30	mg/l	6.00	E351.2	
NITRATE PLUS NITRITE NITROGEN	6.70	mg/l	4.40	mg/l	6.00	E353.2	0.1
OIL and GREASE	19.00	mg/l	5.20	mg/l	18.00	EPA 1664A	5
PHOSPHORUS (Total)	6.20	mg/l	4.40	mg/l	6.00	SM4500-P-F	0.5
TOTAL DISSOLVED SOLIDS (TDS)	496.00	mg/l	389.00	mg/l	16.00	SM 2540 C	20
OTHER							

END OF PART B.
REFER TO THE APPLICATION OVERVIEW TO DETERMINE WHICH OTHER PARTS OF FORM 2A YOU MUST COMPLETE

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BASIC APPLICATION INFORMATION

PART C. CERTIFICATION

All applicants must complete the Certification Section. Refer to instructions to determine who is an officer for the purposes of this certification. All applicants must complete all applicable sections of Form 2A, as explained in the Application Overview. Indicate below which parts of Form 2A you have completed and are submitting. By signing this certification statement, applicants confirm that they have reviewed Form 2A and have completed all sections that apply to the facility for which this application is submitted.

Indicate which parts of Form 2A you have completed and are submitting:

_____ Basic Application Information packet

Supplemental Application Information packet:

✓ Part D (Expanded Effluent Testing Data)

✓ Part E (Toxicity Testing: Biomonitoring Data)

_____ Part F (Industrial User Discharges and RCRA/CERCLA Wastes)

_____ Part G (Combined Sewer Systems)

ALL APPLICANTS MUST COMPLETE THE FOLLOWING CERTIFICATION.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Name and official title _____

Signature _____

Telephone number _____

Date signed _____

Upon request of the permitting authority, you must submit any other information necessary to assess wastewater treatment practices at the treatment works or identify appropriate permitting requirements.

SEND COMPLETED FORMS TO:

FACILITY NAME AND PERMIT NUMBER:

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SUPPLEMENTAL APPLICATION INFORMATION

PART D. EXPANDED EFFLUENT TESTING DATA

Refer to the directions on the cover page to determine whether this section applies to the treatment works.

Effluent Testing: 1.0 mgd and Pretreatment Treatment Works. If the treatment works has a design flow greater than or equal to 1.0 mgd or it has (or is required to have) a pretreatment program, or is otherwise required by the permitting authority to provide the data, then provide effluent testing data for the following pollutants. Provide the indicated effluent testing information and any other information required by the permitting authority for each outfall through which effluent is discharged. Do not include information on combined sewer overflows in this section. All information reported must be based on data collected through analyses conducted using 40 CFR Part 136 methods. In addition, these data must comply with QA/QC requirements of 40 CFR Part 136 and other appropriate QA/QC requirements for standard methods for analytes not addressed by 40 CFR Part 136. Indicate in the blank rows provided below any data you may have on pollutants not specifically listed in this form. At a minimum, effluent testing data must be based on at least three pollutant scans and must be no more than four and one-half years old.

Outfall number: 001 (Complete once for each outfall discharging effluent to waters of the United States.)

POLLUTANT	MAXIMUM DAILY DISCHARGE				AVERAGE DAILY DISCHARGE					ANALYTICAL METHOD	ML/ MDL
	Conc.	Units	Mass	Units	Conc.	Units	Mass	Units	Number of Samples		
METALS (TOTAL RECOVERABLE), CYANIDE, PHENOLS, AND HARDNESS.											
ANTIMONY	na										
ARSENIC	.0011	mg/l			.0003	mg/l			16	EPA 200.8	.0006
BERYLLIUM	na										
CADMIUM	0	mg/l			0	mg/l			16	EPA 200.8	.00018
CHROMIUM	.0012	mg/l			.0002	mg/l			16	EPA 200.7	.0005
COPPER	.0349	mg/l			.0224	mg/l			16	EPA 200.8	.0008
LEAD	.0007	mg/l			.0002	mg/l			16	EPA 200.8	.0004
MERCURY	0	mg/l			0	mg/l			16	EPA 245.1	.00015
NICKEL	.0410	mg/l			.0044	mg/l			16	EPA 200.8	.0008
SELENIUM	.0014	mg/l			.0004	mg/l			16	EPA 200.8	.0008
SILVER	0	mg/l			0	mg/l			16	EPA 200.8	.0004
THALLIUM	na										
ZINC	.0922	mg/l			.0649	mg/l			16	EPA 200.8	.005
CYANIDE	.042	mg/l			.0159	mg/l			16	EPA 335.4	.005
TOTAL PHENOLIC COMPOUNDS	na										
HARDNESS (AS $CaCO_3$)											
Use this space (or a separate sheet) to provide information on other metals requested by the permit writer.											
Molybdenum	.0332	mg/l			.0032	mg/l			16	EPA 200.7	.02

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Outfall number: _____ (Complete once for each outfall discharging effluent to waters of the United States.)

POLLUTANT	MAXIMUM DAILY DISCHARGE				AVERAGE DAILY DISCHARGE					ANALYTICAL METHOD	ML/ MDL
	Conc.	Units	Mass	Units	Conc.	Units	Mass	Units	Number of Samples		
VOLATILE ORGANIC COMPOUNDS.											
ACROLEIN	0	ug/l			0	ug/l			3	EPA 624	5
ACRYLONITRILE	0	ug/l			0	ug/l			3	EPA 624	10
BENZENE	0	ug/l			0	ug/l			3	EPA 624	2
BROMOFORM	0	ug/l			0	ug/l			3	EPA 624	2
CARBON TETRACHLORIDE	0	ug/l			0	ug/l			3	EPA 624	2
CLOROBENZENE	0	ug/l			0	ug/l			3	EPA 624	2
CHLORODIBROMO-METHANE	NA										
CHLOROETHANE	0	ug/l			0	ug/l			3	EPA 624	2
2-CHLORO-ETHYLVINYL ETHER	0	ug/l			0	ug/l			3	EPA 624	5
CHLOROFORM	0	ug/l			0	ug/l			3	EPA 624	2
DICHLOROBROMO-METHANE	0	ug/l			0	ug/l			3	EPA 624	2
1,1-DICHLOROETHANE	0	ug/l			0	ug/l			3	EPA 624	2
1,2-DICHLOROETHANE	0	ug/l			0	ug/l			3	EPA 624	2
TRANS-1,2-DICHLORO-ETHYLENE	NA										
1,1-DICHLOROETHYLENE	NA										
1,2-DICHLOROPROPANE	0	ug/l			0	ug/l			3	EPA 624	2
1,3-DICHLORO-PROPYLENE	NA										
ETHYLBENZENE	0	ug/l			0	ug/l			3	EPA 624	2
METHYL BROMIDE	NA										
METHYL CHLORIDE	0	ug/l			0	ug/l			3	EPA 624	2
METHYLENE CHLORIDE	NA										
1,1,2,2-TETRACHLORO-ETHANE	0	ug/l			0	ug/l			3	EPA 624	2
TETRACHLORO-ETHYLENE	0	ug/l			0	ug/l			3	EPA 624	2
TOLUENE	3.78	ug/l			1.26	ug/l			3	EPA 624	2

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Outfall number: _____ (Complete once for each outfall discharging effluent to waters of the United States.)

POLLUTANT	MAXIMUM DAILY DISCHARGE				AVERAGE DAILY DISCHARGE					ANALYTICAL METHOD	ML/ MDL
	Conc.	Units	Mass	Units	Conc.	Units	Mass	Units	Number of Samples		
1,1,1-TRICHLOROETHANE	0	ug/l			0	ug/l			3	EPA 624	2
1,1,2-TRICHLOROETHANE	0	ug/l			0	ug/l			3	EPA 624	2
TRICHLORETHYLENE	0	ug/l			0	ug/l			3	EPA 624	2
VINYL CHLORIDE	0	ug/l			0	ug/l			3	EPA 624	1
Use this space (or a separate sheet) to provide information on other volatile organic compounds requested by the permit writer.											
ACID-EXTRACTABLE COMPOUNDS											
P-CHLORO-M-CRESOL	NA										
2-CHLOROPHENOL	0	ug/l			0	ug/l			3	EPA 625	10
2,4-DICHLOROPHENOL	0	ug/l			0	ug/l			3	EPA 625	10
2,4-DIMETHYLPHENOL	0	ug/l			0	ug/l			3	EPA 625	10
4,6-DINITRO-O-CRESOL	NA										
2,4-DINITROPHENOL	0	ug/l			0	ug/l			3	EPA 625	10
2-NITROPHENOL	0	ug/l			0	ug/l			3	EPA 625	10
4-NITROPHENOL	0	ug/l			0	ug/l			3	EPA 625	10
PENTACHLOROPHENOL	0	ug/l			0	ug/l			3	EPA 625	10
PHENOL	0	ug/l			0	ug/l			3	EPA 625	10
2,4,6-TRICHLOROPHENOL	0	ug/l			0	ug/l			3	EPA 625	10
Use this space (or a separate sheet) to provide information on other acid-extractable compounds requested by the permit writer.											
BASE-NEUTRAL COMPOUNDS.											
ACENAPHTHENE	0	ug/l			0	ug/l			3	EPA 625	10
ACENAPHTHYLENE	0	ug/l			0	ug/l			3	EPA 625	10
ANTHRACENE	0	ug/l			0	ug/l			3	EPA 625	10
BENZIDINE	0	ug/l			0	ug/l			3	EPA 625	10
BENZO(A)ANTHRACENE	0	ug/l			0	ug/l			3	EPA 625	10
BENZO(A)PYRENE	0	ug/l			0	ug/l			3	EPA 625	10

FACILITY NAME AND PERMIT NUMBER:

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Outfall number: _____ (Complete once for each outfall discharging effluent to waters of the United States.)

POLLUTANT	MAXIMUM DAILY DISCHARGE				AVERAGE DAILY DISCHARGE					ANALYTICAL METHOD	ML/ MDL
	Conc.	Units	Mass	Units	Conc.	Units	Mass	Units	Number of Samples		
3,4 BENZO-FLUORANTHENE	0	ug/l			0	ug/l			3	EPA 625	10
BENZO(GHI)PERYLENE	0	ug/l			0	ug/l			3	EPA 625	10
BENZO(K)FLUORANTHENE	0	ug/l			0	ug/l			3	EPA 625	10
BIS (2-CHLOROETHOXY) METHANE	0	ug/l			0	ug/l			3	EPA 625	10
BIS (2-CHLOROETHYL)-ETHER	0	ug/l			0	ug/l			3	EPA 625	10
BIS (2-CHLOROISO-PROPYL) ETHER	0	ug/l			0	ug/l			3	EPA 625	10
BIS (2-ETHYLHEXYL) PHTHALATE	11.7	ug/l			3.9	ug/l			3	EPA 625	10
4-BROMOPHENYL PHENYL ETHER	0	ug/l			0	ug/l			3	EPA 625	10
BUTYL BENZYL PHTHALATE	0	ug/l			0	ug/l			3	EPA 625	10
2-CHLORONAPHTHALENE	0	ug/l			0	ug/l			3	EPA 625	10
4-CHLORPHENYL PHENYL ETHER	0	ug/l			0	ug/l			3	EPA 625	10
CHRYSENE	0	ug/l			0	ug/l			3	EPA 625	10
DI-N-BUTYL PHTHALATE	0	ug/l			0	ug/l			3	EPA 625	10
DI-N-OCTYL PHTHALATE	0	ug/l			0	ug/l			3	EPA 625	10
DIBENZO(A,H) ANTHRACENE	0	ug/l			0	ug/l			3	EPA 625	10
1,2-DICHLOROBENZENE	0	ug/l			0	ug/l			3	EPA 625	10
1,3-DICHLOROBENZENE	0	ug/l			0	ug/l			3	EPA 625	10
1,4-DICHLOROBENZENE	0	ug/l			0	ug/l			3	EPA 625	10
3,3-DICHLOROBENZIDINE	0	ug/l			0	ug/l			3	EPA 625	10
DIETHYL PHTHALATE	0	ug/l			0	ug/l			3	EPA 625	10
DIMETHYL PHTHALATE	0	ug/l			0	ug/l			3	EPA 625	10
2,4-DINITROTOLUENE	0	ug/l			0	ug/l			3	EPA 625	10
2,6-DINITROTOLUENE	0	ug/l			0	ug/l			3	EPA 625	10
1,2-DIPHENYLHYDRAZINE	NA										

FACILITY NAME AND PERMIT NUMBER:

Form Approved 1/14/99
OMB Number 2040-0086

Outfall number: _____ (Complete once for each outfall discharging effluent to waters of the United States.)

POLLUTANT	MAXIMUM DAILY DISCHARGE				AVERAGE DAILY DISCHARGE					ANALYTICAL METHOD	ML/ MDL
	Conc.	Units	Mass	Units	Conc.	Units	Mass	Units	Number of Samples		
FLUORANTHENE	0	ug/l			0	ug/l			3	EPA 625	10
FLUORENE	0	ug/l			0	ug/l			3	EPA 625	10
HEXACHLOROBENZENE	0	ug/l			0	ug/l			3	EPA 625	10
HEXACHLOROBUTADIENE	0	ug/l			0	ug/l			3	EPA 625	10
HEXACHLOROCYCLO-PENTADIENE	0	ug/l			0	ug/l			3	EPA 625	10
HEXACHLOROETHANE	0	ug/l			0	ug/l			3	EPA 625	10
INDENO(1,2,3-CD)PYRENE	0	ug/l			0	ug/l			3	EPA 625	10
ISOPHORONE	0	ug/l			0	ug/l			3	EPA 625	10
NAPHTHALENE	0	ug/l			0	ug/l			3	EPA 625	10
NITROBENZENE	0	ug/l			0	ug/l			3	625.00	10
N-NITROSODI-N-PROPYLAMINE	0	ug/l			0	ug/l			3	EPA 625	10
N-NITROSODI- METHYLAMINE	0	ug/l			0	ug/l			3	EPA 625	10
N-NITROSODI-PHENYLAMINE	0	ug/l			0	ug/l			3	EPA 625	10
PHENANTHRENE	0	ug/l			0	ug/l			3	EPA 625	10
PYRENE	0	ug/l			0	ug/l			3	EPA 625	10
1,2,4-TRICHLOROBENZENE	0	ug/l			0	ug.l			3	EPA 625	10
Use this space (or a separate sheet) to provide information on other base-neutral compounds requested by the permit writer.											
Use this space (or a separate sheet) to provide information on other pollutants (e.g., pesticides) requested by the permit writer.											

END OF PART D.
REFER TO THE APPLICATION OVERVIEW TO DETERMINE WHICH OTHER PARTS OF FORM 2A YOU MUST COMPLETE

SUPPLEMENTAL APPLICATION INFORMATION

PART E. TOXICITY TESTING DATA

POTWs meeting one or more of the following criteria must provide the results of whole effluent toxicity tests for acute or chronic toxicity for each of the facility's discharge points: 1) POTWs with a design flow rate greater than or equal to 1.0 mgd; 2) POTWs with a pretreatment program (or those that are required to have one under 40 CFR Part 403); or 3) POTWs required by the permitting authority to submit data for these parameters.

- At a minimum, these results must include quarterly testing for a 12-month period within the past 1 year using multiple species (minimum of two species), or the results from four tests performed at least annually in the four and one-half years prior to the application, provided the results show no appreciable toxicity, and testing for acute and/or chronic toxicity, depending on the range of receiving water dilution. Do not include information on combined sewer overflows in this section. All information reported must be based on data collected through analysis conducted using 40 CFR Part 136 methods. In addition, this data must comply with QA/QC requirements of 40 CFR Part 136 and other appropriate QA/QC requirements for standard methods for analytes not addressed by 40 CFR Part 136.
- In addition, submit the results of any other whole effluent toxicity tests from the past four and one-half years. If a whole effluent toxicity test conducted during the past four and one-half years revealed toxicity, provide any information on the cause of the toxicity or any results of a toxicity reduction evaluation, if one was conducted.
- If you have already submitted any of the information requested in Part E, you need not submit it again. Rather, provide the information requested in question E.4 for previously submitted information. If EPA methods were not used, report the reasons for using alternate methods. If test summaries are available that contain all of the information requested below, they may be submitted in place of Part E.

If no biomonitoring data is required, do not complete Part E. Refer to the Application Overview for directions on which other sections of the form to complete.

E.1. Required Tests. SEE APPENDIX B - TOXICITY TESTING DATA

Indicate the number of whole effluent toxicity tests conducted in the past four and one-half years.

____chronic ____acute

E.2. Individual Test Data. Complete the following chart for each whole effluent toxicity test conducted in the last four and one-half years. Allow one column per test (where each species constitutes a test). Copy this page if more than three tests are being reported.

	Test number:_____	Test number:_____	Test number:_____
a. Test information.			
Test species & test method number			
Age at initiation of test			
Outfall number			
Dates sample collected			
Date test started			
Duration			
b. Give toxicity test methods followed.			
Manual title			
Edition number and year of publication			
Page number(s)			
c. Give the sample collection method(s) used. For multiple grab samples, indicate the number of grab samples used.			
24-Hour composite			
Grab			
d. Indicate where the sample was taken in relation to disinfection. (Check all that apply for each)			
Before disinfection			
After disinfection			
After dechlorination			

	Test number:_____	Test number:_____	Test number:_____
e. Describe the point in the treatment process at which the sample was collected.			
Sample was collected:			
f. For each test, include whether the test was intended to assess chronic toxicity, acute toxicity, or both.			
Chronic toxicity			
Acute toxicity			
g. Provide the type of test performed.			
Static			
Static-renewal			
Flow-through			
h. Source of dilution water. If laboratory water, specify type; if receiving water, specify source.			
Laboratory water			
Receiving water			
i. Type of dilution water. It salt water, specify “natural” or type of artificial sea salts or brine used.			
Fresh water			
Salt water			
j. Give the percentage effluent used for all concentrations in the test series.			
k. Parameters measured during the test. (State whether parameter meets test method specifications)			
pH			
Salinity			
Temperature			
Ammonia			
Dissolved oxygen			
l. Test Results.			
Acute:			
Percent survival in 100% effluent	%	%	%
LC_{50}			
95% C.I.	%	%	%
Control percent survival	%	%	%
Other (describe)			

Chronic:			
NOEC	%	%	%
IC_{25}	%	%	%
Control percent survival	%	%	%
Other (describe)			
m. Quality Control/Quality Assurance.			
Is reference toxicant data available?			
Was reference toxicant test within acceptable bounds?			
What date was reference toxicant test run (MM/DD/YYYY)?			
Other (describe)			

E.3. Toxicity Reduction Evaluation. Is the treatment works involved in a Toxicity Reduction Evaluation?

____Yes____No If yes, describe: _____

_____

_____

E.4. Summary of Submitted Biomonitoring Test Information. If you have submitted biomonitoring test information, or information regarding the cause of toxicity, within the past four and one-half years, provide the dates the information was submitted to the permitting authority and a summary of the results.

Date submitted: _____ (MM/DD/YYYY)

Summary of results: (see instructions)

_____

_____

END OF PART E.
REFER TO THE APPLICATION OVERVIEW TO DETERMINE WHICH OTHER PARTS OF FORM 2A YOU MUST COMPLETE.

SUPPLEMENTAL APPLICATION INFORMATION

PART F. INDUSTRIAL USER DISCHARGES AND RCRA/CERCLA WASTES N/A

All treatment works receiving discharges from significant industrial users or which receive RCRA, CERCLA, or other remedial wastes must complete Part F.

GENERAL INFORMATION:

F.1. Pretreatment Program. Does the treatment works have, or is it subject to, an approved pretreatment program?

____Yes____No

F.2. Number of Significant Industrial Users (SIUs) and Categorical Industrial Users (CIUs). Provide the number of each of the following types of industrial users that discharge to the treatment works.

a. Number of non-categorical SIUs. _____

b. Number of CIUs. _____

SIGNIFICANT INDUSTRIAL USER INFORMATION:

Supply the following information for each SIU. If more than one SIU discharges to the treatment works, copy questions F.3 through F.8 and provide the information requested for each SIU.

F.3. Significant Industrial User Information. Provide the name and address of each SIU discharging to the treatment works. Submit additional pages as necessary.

Name: _____

Mailing Address: _____

_____

F.4. Industrial Processes. Describe all of the industrial processes that affect or contribute to the SIU's discharge.

_____

F.5. Principal Product(s) and Raw Material(s). Describe all of the principal processes and raw materials that affect or contribute to the SIU's discharge.

Principal product(s): _____

Raw material(s): _____

F.6. Flow Rate.

a. Process wastewater flow rate. Indicate the average daily volume of process wastewater discharged into the collection system in gallons per day (gpd) and whether the discharge is continuous or intermittent.

_____ gpd (_____continuous or _____intermittent)

b. Non-process wastewater flow rate. Indicate the average daily volume of non-process wastewater flow discharged into the collection system in gallons per day (gpd) and whether the discharge is continuous or intermittent.

_____ gpd (_____continuous or _____intermittent)

F.7. Pretreatment Standards. Indicate whether the SIU is subject to the following:

a. Local limits ____Yes ____No

b. Categorical pretreatment standards ____Yes ____No

If subject to categorical pretreatment standards, which category and subcategory?

_____

F.8. Problems at the Treatment Works Attributed to Waste Discharged by the SIU. Has the SIU caused or contributed to any problems (e.g., upsets, interference) at the treatment works in the past three years?

____Yes____No If yes, describe each episode.

_____

_____

RCRA HAZARDOUS WASTE RECEIVED BY TRUCK, RAIL, OR DEDICATED PIPELINE:

F.9. RCRA Waste. Does the treatment works receive or has it in the past three years received RCRA hazardous waste by truck, rail, or dedicated pipe? ____Yes ___No (go to F.12.)

F.10. Waste Transport. Method by which RCRA waste is received (check all that apply):

_____Truck _____Rail _____Dedicated Pipe

F.11. Waste Description. Give EPA hazardous waste number and amount (volume or mass, specify units).

EPA Hazardous Waste Number	Amount	Units
_____	_____	_____
_____	_____	_____
_____	_____	_____

CERCLA (SUPERFUND) WASTEWATER, RCRA REMEDIATION/CORRECTIVE ACTION WASTEWATER, AND OTHER REMEDIAL ACTIVITY WASTEWATER:

F.12. Remediation Waste. Does the treatment works currently (or has it been notified that it will) receive waste from remedial activities?

____Yes (complete F.13 through F.15.) ____No

Provide a list of sites and the requested information (F.13 - F.15.) for each current and future site.

F.13. Waste Origin. Describe the site and type of facility at which the CERCLA/RCRA/or other remedial waste originates (or is expected to originate in the next five years).

_____

_____

_____

F.14. Pollutants. List the hazardous constituents that are received (or are expected to be received). Include data on volume and concentration, if known. (Attach additional sheets if necessary).

_____

_____

F.15. Waste Treatment.

a. Is this waste treated (or will it be treated) prior to entering the treatment works?

____Yes ____No

If yes, describe the treatment (provide information about the removal efficiency):

_____

_____

b. Is the discharge (or will the discharge be) continuous or intermittent?

____Continuous ____Intermittent If intermittent, describe discharge schedule.

_____

END OF PART F.
REFER TO THE APPLICATION OVERVIEW TO DETERMINE WHICH OTHER PARTS OF FORM 2A YOU MUST COMPLETE

SUPPLEMENTAL APPLICATION INFORMATION

PART G. COMBINED SEWER SYSTEMS N/A

If the treatment works has a combined sewer system, complete Part G.

G.1. System Map. Provide a map indicating the following: (may be included with Basic Application Information)

a. All CSO discharge points.

b. Sensitive use areas potentially affected by CSOs (e.g., beaches, drinking water supplies, shellfish beds, sensitive aquatic ecosystems, and outstanding natural resource waters).

c. Waters that support threatened and endangered species potentially affected by CSOs.

G.2. System Diagram. Provide a diagram, either in the map provided in G.1. or on a separate drawing, of the combined sewer collection system that includes the following information:

a. Locations of major sewer trunk lines, both combined and separate sanitary.

b. Locations of points where separate sanitary sewers feed into the combined sewer system.

c. Locations of in-line and off-line storage structures.

d. Locations of flow-regulating devices.

e. Locations of pump stations.

CSO OUTFALLS:

Complete questions G.3 through G.6 once for each CSO discharge point.

G.3. Description of Outfall.

a. Outfall number _____

b. Location

_____
(City or town, if applicable) (Zip Code)

_____
(County) (State)

_____
(Latitude) (Longitude)

c. Distance from shore (if applicable) _____ft.

d. Depth below surface (if applicable) _____ft.

e. Which of the following were monitored during the last year for this CSO?

____Rainfall ____CSO pollutant concentrations ____CSO frequency

____CSO flow volume ____Receiving water quality

f. How many storm events were monitored during the last year? _____

G.4. CSO Events.

a. Give the number of CSO events in the last year.

_____ events (___ actual or ___ approx.)

b. Give the average duration per CSO event.

_____ hours (____ actual or ____ approx.)

c. Give the average volume per CSO event.

_____ million gallons (_____ actual or _____ approx.)

d. Give the minimum rainfall that caused a CSO event in the last year.

_____ inches of rainfall

G.5. Description of Receiving Waters.

a. Name of receiving water: _____

b. Name of watershed/river/stream system:_____

United States Soil Conservation Service 14-digit watershed code (if known): _____

c. Name of State Management/River Basin: _____

United States Geological Survey 8-digit hydrologic cataloging unit code (if known): _____

G.6. CSO Operations.

Describe any known water quality impacts on the receiving water caused by this CSO (e.g., permanent or intermittent beach closings, permanent or intermittent shell fish bed closings, fish kills, fish advisories, other recreational loss, or violation of any applicable State water quality standard).

_____

_____

END OF PART G.
REFER TO THE APPLICATION OVERVIEW TO DETERMINE WHICH OTHER PARTS OF FORM 2A YOU MUST COMPLETE.

Additional information, if provided, will appear on the following pages.

Moab ADR Comments

2 messages

Daniel Griffin <dgriffin@utah.gov> Thu, Aug 4, 2016 at 2:17 PM
To: rdavidson@moabcity.org, Jeff Beckman <jbeckman@bowencollins.com>
Cc: William Damery <wdamery@utah.gov>, Skyler Davies <sdavies@utah.gov>, Nicholas Von Stackelberg <nvonstackelberg@utah.gov>

Rebecca, Jeff,

We received the Level II ADR a couple weeks ago, and I managed to get the comments back quickly. Here are the comments we had on it. They look rather

1. Part A: Category of receiving water should be 3.
2. Page 6, A-13 and A-15: Explanation of conformance to TBPEL and planned request for variance needs to be reworded. Should describe how the facility plans to meet 1.0 mg/L TP limit, state that a variance will be requested and discuss the anticipated effluent concentration if a variance is granted. Delete "Preliminary discussions with State DWQ regulators indicated that this exception likely would be granted."
3. Pg 14 says SBR Total P = 3 mg/L (w/chem)- I thought it could get to 1 mg/L (w/chem) and 3 mg/L w/ out chem
4. Pg 15 talks about the differences in concrete being due to common wall construction. I didn't see this in the preliminary design, I thought the decreased concrete was due to circular basins.
5. Pg 17 Table 10 why is the cost different here from the opinion of probable cost in the preliminary engineering report, and the facilities master plan?
6. Page 19: The evaluation of Aqua SBR vs. ICEAS SBR is beyond the detail required for the ADR, but is okay to include.
7. Page 22: Discharge of a portion of the effluent to the Matheson Wetlands should be discussed under Alternative Receiving Waters.
8. Appendix A See applicable comments from facilities master plan comments previously sent.
9. Overall Needs to have QA/QC done on it (for example: page 18 first sentence of paragraph before final selection has "Ox-Ditch treatment facility would be preferred", document in appendix A has two section 2s, page A-16 goes from 6.2.4 to 3.6. there is a ' at the beginning of the last paragraph on A-34, some chapter headings in Appendix A say "FACILITIES MASTER PLAN UPDATE" others say "PRELIMINARY ENGINEERING REPORT").

Comments 5 and 8 involve items related to the facilities master plan included in Appendix A. The best option might be to remove the Facilities Master Plan from the ADR. You defend your choice in the Part D Attachment, and including the plan seems to just add a little confusion.

If you wish to run the changes by us before formally submitting them, email them to me, and I will copy everyone and get there feedback.

Thanks
Dan

--
Daniel Griffin, P. E.
Daniel Griffin P.E. | Environmental Engineer | UPDES Surface Water Section
801.536.4387 (office) | 801.536.4301 (fax)

Jeff Beckman <jbeckman@bowencollins.com> Thu, Aug 4, 2016 at 2:22 PM
To: Daniel Griffin <dgriffin@utah.gov>, "rdavidson@moabcity.org" <rdavidson@moabcity.org>
Cc: William Damery <wdamery@utah.gov>, Skyler Davies <sdavies@utah.gov>, Nicholas Von Stackelberg <nvonstackelberg@utah.gov>

Dan,

Thank you for your quick turnaround. We will address these comments an get a revised version to you soon.

Thanks again.

Jeff

From: Daniel Griffin [mailto:dgriffin@utah.gov]
Sent: Thursday, August 04, 2016 2:18 PM
To: rdavidson@moabcity.org; Jeff Beckman <jbeckman@bowencollins.com>
Cc: William Damery <wdamery@utah.gov>; Skyler Davies <sdavies@utah.gov>; Nicholas Von Stackelberg <nvonstackelberg@utah.gov>
Subject: Moab ADR Comments

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If you wish to run the changes by us before formally submitting them, email them to me, and I will copy everyone and get there feedback.

Thanks

Dan

--

Daniel Griffin, P. E.

Daniel Griffin P.E. | Environmental Engineer | UPDES Surface Water Section

801.536.4387 (office) | 801.536.4301 (fax)