February 26, 2020

FINDING OF NO SIGNIFICANT IMPACT

TO ALL INTERESTED GOVERNMENTAL AGENCIES AND PUBLIC GROUPS

As required by state and federal rules for determining whether an Environmental Impact Statement is necessary, an environmental review has been performed on the proposed action below:

Project	Big Sky Sewer District #363 – Water Resource Recovery Facility Improvements Project
Location	Big Sky, Montana
Project Number	C301288
Total Cost	$24,400,000

Big Sky Sewer District #363, through its 2019 Preliminary Engineering Report (PER), identified the need to make improvements to the existing sequencing batch reactor treatment faciltiy. The existing system is approximately 20-years old, is at times pushed past the design capacity and is not producing the consistent effluent quality desired for the reuse alternatives the District uses. Several additional reuse/disposal alternatives are being considered to enhance the District's ability to discharge or reuse effluent in all seasons of the year. Those reuse/disposal alternatives are future projects being evaluated.

The District has determined a preferred alternative would be to construct a Membrane Bioreactor (MBR) treatment facility and construct a clear well for finished water to enhance treatment quality for existing and future reuse practices.

The proposed project consists of new pretreatment screening and grit removal, retrofit of basins into biological selector basins and construction of a new building to house the membrane separators. In addition the new clear well, biosolids handling and disinfection facilities will be upgraded.

These improvements including administration, engineering and construction, are estimated to cost approximately $24,400,000. The proposed improvements are anticipated to be funded through use of $6,000,000 in District funds, $250,000 in resort tax funds, a low interest loan from the Montana Water Pollution Control State Revolving Fund (SRF) program estimated at $17,700,000. The district has also received a commitment from the SRF program of $350,000 in principal forgiveness upon completion of the upgrades.

Federal and State grant/loan programs will fund the project. Environmentally sensitive characteristics such as wetlands, floodplains, threatened or endangered species, and historical sites are not expected to be adversely impacted because of the proposed project. Public participation during the planning process demonstrated support for the selected alternative. No significant long-term environmental impacts were identified. An environmental assessment (EA), which describes the project and analyzes the impacts in more detail, is available for public

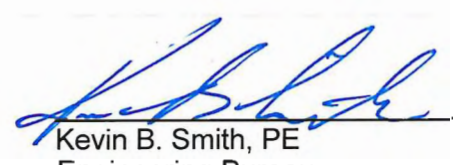
scrutiny on the DEQ web site http://deq.mt.gov/Public/ea and at the following locations:

Department of Environmental Quality
1520 East Sixth Avenue
P.O. Box 200901
Helena, MT 59620-0901
tcampbell@mt.gov

Big Sky Sewer District #363
P.O. Box 160670
Big Sky, MT 59716

Comments on the EA may be submitted to the Department of Environmental Quality at the above address. After evaluating comments received, the department will revise the environmental assessment or determine if an environmental impact statement is necessary. If no substantive comments are received during the comment period, or if substantive comments are received and evaluated and the environmental impacts are still determined to be non-significant, the agency will make a final decision. No administrative action will be taken on the project for at least 30 calendar days after release of the Finding of No Significant Impact.

Sincerely,



Kevin B. Smith, PE
Engineering Bureau
Water Quality Division
Montana Department of Environmental Quality

BIG SKY COUNTY WATER AND SEWER DISTRICT 363
WATER RESOURCE RECOVERY FACILITY (WRRF) IMPROVEMENTS PROJECT

ENVIRONMENTAL ASSESSMENT

I. COVER SHEET

A. PROJECT IDENTIFICATION

Applicant:	Big Sky County Water and Sewer District 363
Address:	P.O. Box 160670 Big Sky, MT 59716
Project Number:	DEQ, WPCSRF Project # C301288

B. CONTACT PERSON

Name:	Ron Edwards, General Manager
Address:	P.O. Box 160670 Big Sky, MT 59716
Telephone:	(406) 580-2575

C. ABSTRACT

The Big Sky County Water and Sewer District 363 (District) through its October 2019 Preliminary Engineering Report (PER), has identified the need to construct a new Water Resource Recovery Facility (WRRF). The District currently owns and operates a water reclamation facility (WRF) using sequencing batch reactor (SBR) technology originally constructed in 1998. The existing facility consists of two influent channels with basket screens, a vortex grit removal system, a two-basin SBR followed by tertiary treatment and disinfection with effluent stored in three large lined earthen basins. The tertiary process consists of coagulation, flocculation, sedimentation and filtration using a multi-media filter. Solids are removed from the SBRs, treated with two aerobic digesters, and then composted with wood chips to generate Class A biosolid used by local homeowners and others as a garden and landscape soil conditioner.

The existing treatment facility is at capacity and does not consistently allow the District to produce reclaimed effluent of the quality needed for reuse activities under consideration. The District currently reclaims all effluent, which is then used for irrigation of three golf courses and adjacent greenways at an agronomic application rate. Because the District utilizes all WRF effluent for agronomic irrigation projects, they are not required to and do not currently hold a discharge permit. The District irrigate under a DEQ-approved Management Plan where both the hydraulic and nutrient application rates are stipulated. Additional reuse alternatives are being considered so the District can continue this "zero-liquid discharge" approach if possible. Because the District continues to grow and hopes to achieve improved treatment they are proposing to construct a new WRRF to improve the quality of effluent and allow for expected growth. The District is also looking at additional reuse and disposal options to reduce storage requirements and reduce reliance on third-party agreements.

The District recently acquired additional land that added approximately 130 feet to the west side of the WRF property. This property acquisition was necessary to construct the proposed WRRF upgrades.

The proposed project will include a new headworks building with influent flow channel, fine screen and grit removal system; conversion of the SBR basins into nutrient removal process tanks, complete with new aeration, mixing and control equipment, membrane bioreactor (MBR) facility, site & yard piping, access improvements, reuse and effluent storage piping modifications, including a new clear-well for the high-pressure reuse pump station; and new instrumentation and control system upgrades.

Cost estimates and funding alternatives for the project are discussed in detail within the PER. These improvements including administration, engineering and construction, are estimated to cost approximately $24,400,000. The proposed improvements are anticipated to be funded through use of $6,000,000 in District funds, $250,000 in resort tax funds, a low interest loan from the Montana Water Pollution Control State Revolving Fund (SRF) program estimated at $17,700,000. The district has also received a commitment from the SRF program of $350,000 in principal forgiveness upon completion of the upgrades.

The District serves approximately 5,655 Single Family Equivalents (SFEs) as of 2017. The District is obligated to serve 10,678 SFEs at Ultimate Build-Out (UBO) of its service area, when its Lone Moose Meadows and Spanish Peaks obligations are converted to SFEs. With grant funds, the proposed project is estimated to increase the sewer rates for the average residential customer from $53.08 to $67.74 per month.

Environmentally sensitive characteristics such as wetlands, floodplains, threatened or endangered species and historic sites are not expected to be adversely impacted due to the proposed project. Additional environmental impacts related to land use, water quality, air quality, public health, energy, noise, growth, and sludge disposal were also assessed. No significant long-term environmental impacts were identified.

Under Montana law, (75-6-112, MCA), no person may construct, extend, or use a public sewage system until the DEQ has reviewed and approved the plans and specifications for the project. Under the Montana Water Pollution Control State Revolving Fund Act, the DEQ may loan money to municipalities for construction of public sewage systems.

The DEQ, Engineering Bureau, has prepared this Environmental Assessment to satisfy the requirements of the Montana Environmental Policy Act (MEPA) and the National Environmental Policy Act (NEPA).

D. COMMENT PERIOD

Thirty (30) calendar days

II. PURPOSE OF AND NEED FOR ACTION

The Big Sky County Water and Sewer District currently operates a 20-year old SBR facility designed to treat an average daily flow of 1.08 million gallons per day (MGD). Current average daily flows are 0.91 MGD with the maximum monthly flow rate being approximately 1.4 MGD. While this facility has met the District's needs to date, the District has continued to grow and the capacity of the two treatment trains are pushed to the limit during wet-weather and spring run-off conditions. This results in having to process colder than normal raw wastewater faster than would

occur under normal flow conditions, resulting in elevated nitrogen, biological oxygen demand and total suspended solids leaving the treatment facility. While these slightly elevated levels of measured pollutants do not pose a risk to the irrigated areas, and the disinfection step is protective of public health, the elevated nitrogen compounds do pose a surface water risk. Also, contracted irrigators using the reclaimed water have complained the water has a strong musty odor and is objectionable, especially when it has been stored and algae growth has occurred prior to delivery.

The District is generating wastewater flows and mass loads that are encroaching upon the existing WRF's rated treatment capacity. The updated facility must have the capacity to treat flows and loads from the identified and obligated 10,678 single-family homes.

The current effluent reuse system is heavily reliant on third-party agreements and single points of failure that present a risk to the reliable operation of the WRF. Diversification of the District's effluent reuse "portfolio" is needed to provide reliable, redundant, and secure reuse capacity. Additionally, direct discharge to the mainstem of the Gallatin River is desired by the District to provide, at minimum, a backup means of discharging effluent, so that effluent can be discharged in the event of a failure of the District's primary reuse pipelines; and so that the District and its reuse partners can periodically drain, inspect, and repair any of the large effluent storage reservoirs as needed. Therefore, the treatment system needs to generate effluent of sufficient quality to pursue and obtain a direct discharge permit to the Gallatin.

Upgrades proposed to the facility will allow the District to produce effluent of a significantly higher quality. Also planned within the project is a large enclosed clear well/pumping tank to allow delivery of chlorinated production water to secondary users without effluent having been stored outside where algae can propagate and cause water quality to degrade.

An October 2019 PER, completed by the district's engineer AE_2S, considered waste loads from existing sources and future loads expected within a 20-year planning period.

III. ALTERNATIVES INCLUDING THE PROPOSED ACTION

The PER considered secondary/tertiary treatment alternatives for their ability to treat the projected flows and loads of the District at build-out, while also meeting effluent water quality requirements for future disposal/reuse alternatives. Pretreatment (i.e. screening and grit removal) alternatives were evaluated based on the needs of the secondary/tertiary treatment alternatives. Biosolids alternatives were considered based on the tertiary process and the impact it would have on the solids handling options. The No Action alternative was considered for treatment, pretreatment and biosolids processes and dismissed.

A. Secondary/Tertiary Treatment Alternatives Evaluated

Two distinct secondary/tertiary treatment alternatives and three subversions along with a "No Action" alternative were evaluated in the 2019 PER. Each of these alternatives would require the construction of a new building to house the membrane filters, equipment and electrical controls. The three alternatives included:

NA No Action
A-1 Membrane Bioreactor (MBR) System
A-2 Aerobic Granular Sludge with Ultrafiltration (AGS/UF) Systems
A-2A AGS with Polymeric Membrane Filtration
A-2B AGS with Ceramic Membrane Filtration

A-2C AGS with CLEARAS Algae-Based Advanced Biological Nutrient Recovery

NA The "no action" alternative would result in continued use of the district's SBR treatment approach and land application, leading to future treatment capacity non-compliance, and would likely contribute to impairments within local surface waters. It may also result in failure to meet contractual obligations for the District with respect to secondary users. For this reason, the "no action" alternative was not further considered.

A-1 Membrane Bioreactor (MBR) System

This alternative involves retrofitting the existing treatment tanks into biological nutrient removal configuration (consisting of anaerobic, anoxic and aerobic zones) and construction of a new membrane filtration facility downstream with post-anoxic and reaeration zones. Effluent from the aerobic zone of the retrofitted tanks would be conveyed through new underground piping to the post-anoxic zone, followed by a reaeration tank and then membrane tanks.

Two biological treatment trains would be utilized, similar to the existing Sequencing Batch Reactor configuration, to provide redundancy and operational flexibility. Influent wastewater will be screened and de-gritted, and then flow by gravity through the biological treatment process and then to the membrane facility.

The membrane system and equipment components would be installed in a new facility near the existing facility entrance. The new membrane system building would contain the post-anoxic tank, re-aeration tank, membrane tanks, membrane equipment pumps, blowers, chemical cleaning systems, and supplemental carbon and aluminum-based coagulant storage and feed systems. An aluminum-based coagulant will be provided ahead of the membrane tanks to coagulate phosphorus that remains after optimization of biological phosphorus removal.

Because this type of system could result in meeting treatment objectives and offers a competitive cost, it was considered viable and was further evaluated.

A-2 Aerobic Granular Sludge with Ultrafiltration (AGS/UF) Systems

Alternative A-2 consists of upgrading the existing Aqua-Aerobics System, Inc. SBR treatment process to an AGS Technology process and integrating UF membrane system downstream to further improve effluent water quality. The existing SBR basins would be retrofitted with the new AGS equipment. A pre-equalization tank would be constructed upstream of the biological treatment system to act as a buffer to store influent between feed cycles to the SBR basins.

Granular sludge offers several benefits including simultaneous nitrification/denitrification and phosphorus removal, high settling velocities which allow for increased hydraulic loads, high biomass retention and reduced energy demand. Aerobic, anoxic, and anaerobic reactions can occur on and within granules within a single basin, so these systems do not utilize the sequential anaerobic/anoxic/aerobic processes utilized for nutrient removal in the conventional activated sludge process.

Ultrafiltration (UF) membrane treatment downstream of the AGS process, similar to the membranes used in alternative A-1 above, would also be used to improve treatment performance, including providing a location for chemical coagulation of phosphorus. UF

polymeric membranes are commonly comprised of hollow-fiber membranes which contain long narrow tubes and are bundled (potted) together. They provide consistent effluent water quality and remove particles larger than approximately 0.01 µm. The following UF membrane options were considered:

• Alternative A-2A would utilize polymeric membranes for ultrafiltration.

• Alternative A-2B would utilize ceramic membranes for ultrafiltration. The benefits claimed by ceramic system suppliers include elimination of fiber breakage, higher flux rates, chemical resistance for better CIP performance, and significantly longer equipment life.

• Alternative A-2C would integrate the CLEARAS Advanced Biological Nutrient Recovery (ABNR) system downstream of the AGS system to further improve effluent water quality. The CLEARAS system incorporates a polymeric ultrafiltration membrane in its algal-based treatment process, so a separate, standalone ultrafiltration membrane system would not be necessary with this AGS/CLEARAS approach. Initial review indicated that this technology does not yet have a proven track record to justify installation at the Big Sky WRRF. It appears that the process performance would be dependent on a very consistent feed quality with nitrogen predominantly in the ammonia form. It also had a significantly greater capital cost than Alternatives A-1, A-2A, and A-2B. The high-risk, high-cost factors led to its removal from additional consideration.

B. Pre-treatment Alternatives Considered

Each secondary/tertiary alternative evaluated results in the same pre-treatment screening modifications. Replacement of the existing in-channel 6-mm helical screens with new 6-mm perforated plate screening equipment with integrated washer/compactors to better exclude hair and small fibers is pre-requisite to the membranes. Also, a new Headworks Building would be constructed to house the screens and grit separation systems because the existing pre-treatment facility and influent channels are not adequate to house this needed equipment.

Because this type of pre-treatment system could result in meeting treatment objectives and offer competitive costs, it is considered viable and included in the evaluation.

C. Solids Handling and Treatment Alternatives Considered

For each of the above considered secondary/tertiary treatment system alternative enhancements to solids handling are necessary and similar, consisting of:

- Replacing the existing mixing/aeration system in both existing digesters with a jet mixing/aeration system;
- Modify the existing digester gallery by adding a below-ground vault for two jet mixing pumps;
- Construct a thickening building with one gravity belt thickener, filtrate treatment system, polymer feed system and related components; and,
- Operate one existing digester as un-thickened WAS storage and the other digester for thickened aerobic digestion.

Because these solids handling improvements would result in meeting treatment objectives and offer competitive costs, they are considered viable and included in the evaluation.

IV. COST COMPARISON - PRESENT WORTH ANALYSIS

A present worth (or life-cycle) analysis is a means of comparing alternatives in present day dollars and can be used to determine the most cost-effective alternative(s). An alternative with low initial capital cost may not be the most cost-efficient project if high monthly operation and maintenance costs occur over the life of the alternative. An interest rate of 4.0% over the 20-year planning period was used in the analysis.

The engineer developed a cost analysis to compare the three, full treatment (pre-treatment, treatment and tertiary treatment) alternatives, which included a capital cost analysis (Table 1) paired with an Operations, Maintenance and Replacement (OM&R) cost analysis (Table 2) for each alternative. Table 3 develops the Opinion of Net Present Worth (NPW) for each alternative. Then used a Kepner-Tregoe Analysis (Table 4), which is a weighted analysis to rank the alternatives.

Table 1 Engineer's Opinion of Capital Costs

Description	Membrane Bioreactor	AGS – Polymeric UF	AGS – Ceramic UF
Total Project Cost	$24,500,000	$24,165,000	$24,500,000

OM&R costs for the secondary-tertiary treatment alternatives are presented in Table 2.

Table 2 Engineer's Opinion of OM&R Costs – Secondary/Tertiary Alternatives

Description	MBR	AGS/Polymeric UF	AGS/Ceramic UF
Annual Power Cost	$215,200	$149,400	$165,800
Annual Chemical Cost	$224,600	$269,800	$266,000
Annual Labor Cost	$400,000	$400,000	$400,000
Annual Membrane and Diffuser Replacement Cost	$142,700	$102,000	$28,200
Annual Total	$982,500	$921,200	$860,000
20-year NPW	$19,650,000	$18,424,000	$17,200,000

A summary of the capital and annual OM&R costs are shown in Table 3.

Table 3 Capital and OM&R Costs

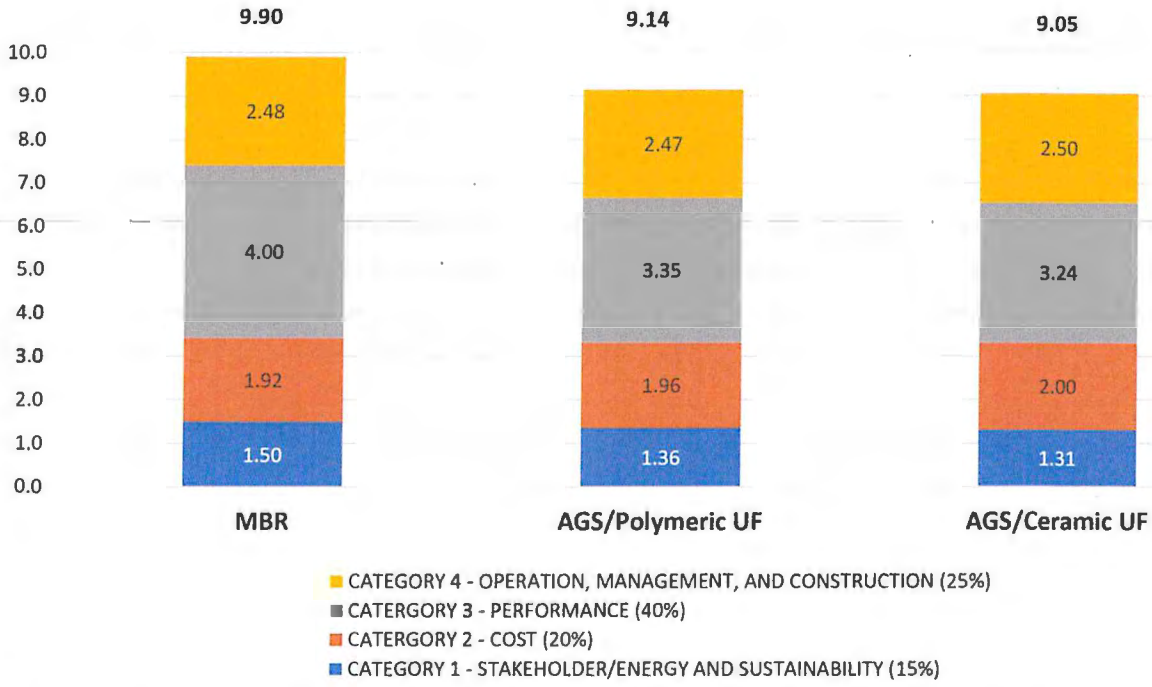
	Membrane Bioreactor	AGS/Polymeric UF	AGS/Ceramic UF
Engineer's Opinion of Total Project Costs	$24,500,000	$24,165,000	$24,500,000
Annual OM&R Costs	$982,500	$921,200	$860,000

V. RANKING AND SELECTION OF PREFERRED ALTERNATIVE

Stakeholder acceptance, performance, operations, maintenance, construction considerations and cost were all considered within the PER. Each alternative considered was ranked against these benchmarks. The cost differential between the alternatives was found to be relatively minor (less than 10-percent difference) compared to the overall accuracy of the cost opinions at this conceptual design stage. This placed more impetus on other factors for selection. A Kepnar-Tregoe (KT) analysis was conducted to evaluate non-cost factors and is presented in Table 4.

Table 4 Kepner-Tregoe Analysis

	Membrane Bioreactor	AGS/Polymeric UF	AGS/Ceramic UF
Weighted Value	9.90	9.14	9.05



As shown in Table 4, the MBR alternative scored a substantially higher total weighted KT value. The primary differences found between the MBR alternative and the AGS based alternatives centered on performance, as described below:

1. MBRs have a relatively long and successful track record for wastewater treatment where stringent discharge limits are in place.
2. The post-anoxic zone upstream of the membrane tanks provides a second opportunity to achieve full denitrification of the effluent. This capability does not exist with the AGS process.
3. Generally, multiple-stage plug flow reactor configurations with segregated anaerobic/anoxic/aerobic environments, such as the MBR, are believed to provide better nutrient removal potential than configurations where nutrient removal processes are all occurring in a single reactor.
4. MBR treatment has shown synergistic treatment performance for pathogens and dissolved organics, including many contaminants of concern. This is believed to be because of increased contact between microbial populations and contaminants near the membrane interface, with increased opportunities for adsorption, dissolution,

particle exclusion and predation.

5. Based on a lack of data, the AGS process has yet to be proven capable of achieving very low total nitrogen and total phosphorus concentrations, especially in very cold environments such as Big Sky.

Each of the ranked alternatives could meet the target discharge criteria with good operational practice. However, the MBR alternative provides a significant advantage with respect to pathogen, nitrogen and phosphorus removal capability. Since MBR's costs are similar to the AGS-UF alternatives, but have more favorable performance and a proven track record, the District has chosen to move forward with MBR technology for the WRRF Upgrade and Expansion.

Figure 3 at the end of this report provides a schematic for the selected alternatives. Based on a Technical Memorandum prepared by the engineer on May 9, 2019, which updates the PER, the District proposes to pursue MBR wastewater treatment technology and design the upgrades necessary for a complete facility upgrade and expansion. The WRRF Phase 1 Improvements proposed consist of the following:

- New Headworks Building with fine screens and grit removal system
- Conversion of existing SBR basins into biological nutrient removal (BNR, meaning Anaerobic, pre-Anoxic, Aeration, Post-Anoxic and Reaeration zones), process tanks, complete with new aeration, mixing and controls equipment.
- Membrane Bioreactor (MBR) Facility
- Site/Yard piping
- Site work, including access improvements
- Reuse and effluent storage piping modifications (including a new Clear Well for the High-Pressure Reuse Pump Station)
- Instrumentation and Control / SCADA System Upgrades

The proposed improvements will have a moderate economic impact on the Big Sky community. The District is in the process of adopting a new water and sewer rate schedule that provides for differences between identified user classes. The existing and adjusted sewer rate structure is shown in Table 5 below:

Table 5: District Rate Structure

Parameter	Existing Charge	Adjusted Charge
Fixed Charge, per Quarter	$80.64	$88.71
Residential/Condo Volumetric Charge, per Thousand Gallons	$6.55	$7.21
Commercial/Other Volumetric Charge, per Thousand Gallons	$6.55	$7.86

The total project estimate is $24,400,000, which includes construction, engineering, bonding and administration costs associated with the project.

The financial impact of this project on the system users is shown in Table 6. Based on EPA guidance for project affordability, the proposed project will result in a monthly cost per household that is 0.97% of the monthly median household income, and therefore, is not expected to cause economic hardship on household income.

Table 6: Project Affordability	
Monthly Sewer Rate[1]	$51.20 (based on 1,000 gal/mo usage)
Monthly Median Household Income (mMHI)[2]	$5,283
User rate as a percentage of mMHI	0.97 %

1 Based on May 2016 Uniform Application for Montana Public Facility Projects
2 Based on 2017 US Dept. of Commerce US Census Bureau data for Big Sky, MT

VI. AFFECTED ENVIRONMENT

A. PLANNING AREA/MAPS

The Big Sky County Water and Sewer District 363 is located approximately 44 miles south of Bozeman Montana off of US Highway 191 (See Figure 1). The service area boundary and planning area are shown in Figure 2.

The project includes construction of a membrane bioreactor treatment facility to perform a high degree of wastewater treatment prior to reuse on area irrigation sites and possible future reuse alternatives. Figure 3 illustrates the proposed WRRF improvements. Construction documents, meeting state approval are expected to be complete and ready for bidding in 2021. Construction will take approximately 500 days and is planned to begin in 2021.

B. FLOW PROJECTIONS

The flow values used by the engineer were based on measured flows at the existing treatment facility. As of 2017, the average flow was measured at 0.426 MGD with a peak day flow reaching nearly double that volume at 0.728 MGD. From data collected between 2013 and 2017, a growth rate of 8.5% per year was documented. The District anticipates ultimate build-out at 10,678 single family equivalents (SFEs) and this combined with a peak occupancy during winter ski season were used to develop design values to predict the average daily 20-year design flow of 0.908 MGD and the peak day flow of 1.8 MGD.

C. NATURAL FEATURES

The Big Sky County Water and Sewer District 363 is located approximately 44 miles south of Bozeman Montana off of US Highway 191. Topography to the north and south of the base community consists of steep mountainous forest, while to the west and east it consists of small stream valley areas with heavy recreational property development.
As described by Thomson (2016), consistent with the details from Kellogg and Williams (2006), and from a review of the web-based mapping tool developed by the Montana Bureau of Mines and Geology (2007), there are over ten different geologic units found within the Big Sky area. For the purposes of this screening evaluation, the geologic units have been generalized from youngest/shallowest to oldest/deepest as follows:

- Alluvial Sand and Gravel. Quaternary (Holocene)-aged sand and gravel deposits from stream channels and floodplains. Some thin silt and clay layers are interbedded with sand and gravel. This unit fully covers the Meadow Village basin and may be up to 70 feet thick.

- Shale, Sandstone, and other Cretaceous-age units. These units are folded, faulted, and discontinuous, but in the Big Sky area generally underlie the alluvial unit and are several hundred feet thick.
- Basement Rock. Gneiss and schist, total depth/thickness unknown.

The climate of the area is well known for its winter and summer recreation opportunities due to the proximity of Big Sky ski area. Big Sky historically receives an average of 20 inches of precipitation per year. The growing season is generally 90 days or less between frosts. Average annual snowfall is approximately 144 inches per year based on data from the Western Regional Climate Center database.

Construction of the proposed project will occur within the footprint of the existing treatment facility, with exception of the new pre-treatment building and equipment, which is proposed on acquired property just west of the existing treatment facility. The subsurface conditions at this location are comprised of predominantly clayey gravel with sand containing sporadic and relatively thin zones of lean clay or clayey sand throughout. Clay zones are not prevalent at this location, but clay pockets and lenses, some of significant thickness, are in the planned construction area. The potential for clay at the bearing elevation will be addressed by designing all foundations using 2,000 pounds per square foot (psf) bearing value. This will allow for simplified construction with no anticipated need to over-excavate and remove clay deposits, when encountered. Importation of bedding materials and topsoil may be necessary.

Shallow groundwater within the service area is, at least seasonally, very close to the surface. Based from the Geotechnical Report contained in the PER, the existing wastewater treatment facility has groundwater elevations near the site ranging from approximately 17 to 28 feet below the ground surface. Provisions for groundwater control will be included in the contract documents. The new facilities will be constructed at depths similar to existing structures that have worked in the present location for many years. It is possible that excavations related to completing this treatment facility upgrade will require dewatering during construction. A dewatering permit will need to be secured in advance of this work that will include best management practices to protect groundwater and surface water resources.

The study area is located within the West Fork Gallatin River Basin. Major surface waters include the West Fork Gallatin River, the South Fork of the West Fork Gallatin and its many tributaries within the study area. The primary source of drinking water for the Big Sky County Water and Sewer District 363 are groundwater wells located throughout the upper basin. Water quality in the West Fork Gallatin River and feeder streams within the District Boundary are impaired with respect to nutrients and the resultant algae blooms that occur seasonally.

The West Fork Gallatin River flows east from the District and enters the Main Fork of the Gallatin River approximately 1.5 miles east of the treatment plant location.

VII. ENVIRONMENTAL IMPACTS OF PROPOSED PROJECT

A. DIRECT AND INDIRECT ENVIRONMENTAL IMPACTS

1. Land Use

The Big Sky County Water and Sewer District (District) sewer-shed is very unique.

The core is primarily comprised of condominiums, resorts and second homes, along with a commercial service area that supports what has historically been a strongly seasonal tourism pattern. This has begun to shift towards a more typical, year-round community in recent years, but the transition is incomplete. Vacant lands within the District consist of a mix of forest land and private pasture and park lands. Vegetation in riparian zones along the West Fork Gallatin typically consists of aspens, willows, alders and dogwoods with an understory of numerous forbs and grasses. Coniferous forest is scattered throughout the study area. Native species common to these areas are Juniper, lodge pole pine, and Douglas-fir, with an understory of grasses and shrubs.

The Web Soil Survey tool on the National Resource Conservation Service (NRCS) website identified Bridger-Libeg, stony complex as the predominant soil type at the treatment plant site with Beehive-Mooseflat complex soils along the stream course adjacent to the treatment plant site. None of the soil types are prime farmland. The areas were previously disturbed when the existing lagoons and treatment facility were built. No farming practices are currently used on this District-owned property and no "prime farmlands" will be taken out of service because of this project.

Existing land use within the current sewer service area includes residential homes, commercial businesses, institutional facilities, parks and vacant lots.

The new WRF will be constructed within the footprint of the existing lagoon and treatment plant based facility on property owned by the Big Sky County Water and Sewer District 363.

2. Floodplains

Federal Emergency Management Agency (FEMA) floodplain maps show the existence of 100-year floodplain along the West Fork Gallatin River adjacent to the treatment facility and lagoon complex. This floodplain is a narrow (100 to 500-foot) strip that parallels the stream channel. Floodplains associated with smaller tributary streams are restricted to or closely follow the permanent stream channels. Narrow floodplains also exist along the shores of the South Fork of the West Fork Gallatin River to the south of the project site. No work within or impacts to floodplains will occur with respect to the project. The DNRC reviewed the proposed project and their comments are summarized at the end of this report.

3. Wetlands

There are no identified wetlands on the property to be used for the construction of this new WRRF. The water-holding ponds that exist on the District-owned property are lined manmade structures. No impacts to wetlands are anticipated. The US Army Corps of Engineers has been contacted with respect to wetland jurisdiction and indicated that any work anticipated within wetland or stream areas must be permitted in advance of any construction activities. Their comments are summarized at the end of this report. All required permits from State and Federal agencies will be obtained prior to commencing construction.

4. Cultural Resources & Historic Sites

The State Historic Preservation Office (SHPO) reviewed the proposed project.

Because of the low likelihood cultural properties will be impacted due to the site having been previously disturbed, SHPO advised that a cultural resource inventory was not needed. In the event cultural resources are discovered during work, SHPO asked to be contacted for guidance in that event. SHPO comments are summarized at the end of this report.

5. Fish and Wildlife

Wildlife in the Big Sky area consists of deer, elk, black and grizzly bear, wolves, coyote, rabbit, mice and other small mammals, ducks and various reptiles and amphibians. Endangered species within the search area include the grizzly bear, gray wolf and the bald eagle. Species of concern within the search area included the Fisher, Canada lynx, Wolverine, Bull Trout, Northern Goshawk, Great Blue Heron, Pileated Woodpecker and others. A search of the Montana Sage Grouse Program's website reflected no general or connecting sage grouse areas within the vicinity of Big Sky. Therefore, compliance with Executive Orders 12-2015 and 21-2015 are met.

Disturbed areas will be revegetated after construction activities. Because all work with be performed on the existing WRRF campus on previously disturbed area, no direct impacts are anticipated. The Montana Fish, Wildlife and Parks and the US Fish and Wildlife agencies reviewed the project and their comments are summarized at the end of this report.

6. Wild and Scenic Rivers Act

No designated Wild and Scenic Rivers will be impacted by the project.

7. Water Quality

The proposed water reclamation facility is a more efficient and enhanced treatment process that will consistently improve the quality of water processed for irrigation and other effluent reuse from the Big Sky Sewer District system. The proposed membrane bioreactor in conjunction with continued best management practices (BMPs) at irrigation sites will prevent water quality standards violations by providing pathogen and nitrogen removal and improved treatment for removal of conventional pollutants.

The Gallatin River mainstem is currently classified as B-1 and its tributaries are classified B-2 under [ARM 17.30.608(1)(a)(iv)]. Class B-1 and B-2 waters are maintained suitable for drinking, culinary, and food processing purposes after conventional treatment; bathing, swimming and recreation; growth and propagation of salmonid fishes and associated aquatic life, waterfowl and furbearers; and agricultural and industrial water supply. The Upper Gallatin River is listed on the 2018 State 303(d) list as fully supporting these beneficial uses. The West Fork Gallatin River is listed as fully supporting drinking water and agricultural uses, but is listed as only partially supporting aquatic life and primary contact recreation. A Total Maximum Daily Load (TMDL) has been developed for the "West Fork Gallatin River". Impairments listed in the TMDL include sediments due to bank erosion and runoff from property development activities; nutrients (total nitrogen) from on-site septic systems, property development and irrigation of the Meadow Village golf course with reclaimed effluent and use of supplemental fertilizer on turf grass

adjacent to the stream segment; and bacteria from on-site septic systems, property development and waterfowl are contributing to the impairment with respect to *E.coli* bacteria.

The recommended strategies for reducing residential and recreational nitrogen inputs include applying BMPs to developed lands that will reduce groundwater infiltration of soluble nitrogen, and encourage building and development practices that incorporate water quality planning and pollutant mitigation. Since the development of the TMDL, the Big Sky Water and Sewer District has undertaken management planning and implemented nutrient management and treatment optimization efforts to significantly reduce the concentration of nutrients leaving the treatment facility. The proposed project will further enhance these efforts and be another significant step in reducing nutrient loads estimated to reach the West Fork Gallatin. Further investigation into wastewater-derived nitrogen sources in the West Fork and South Fork West Fork Gallatin rivers is recommended in order to refine source assessment findings and inform restoration and mitigation planning.

The primary purpose of the project is to improve reclaimed water quality and continue with existing reuse practices and expand reuse alternatives. The proposed improvements will result in the Big Sky Sewer District being able to continue to meet State Non Degradation requirements in that over-all nutrient loads being discharged from the facility will be reduced and the irrigation projects currently supplied will fully utilize the effluent and nutrients.

8. Biosolids Generation and Handling

Currently the Big Sky Sewer District WRF generates sludge from the sequencing batch reactor basins that is further treated within aerobic digesters and then dewatered using a belt filter press. The dewatered solids are then mixed with sawdust and wood chip waste and further processed in containerized composting vessels. A Class A (best quality) compost results from this process which is safe to use as a gardening or landscaping compost. The proposed WRRF will treat solids in a similar fashion. Wasted sludge will be pumped from the bioreactor basins to the aerobic digesters and then once treated transferred to the existing belt filter press and composting facility. The District will continue to compost and produce the same Class A biosolids product.

9. Air Quality

Short-term negative impacts on air quality are expected to occur during construction from heavy equipment in the form of dust and exhaust fumes. Proper construction practices will minimize this problem. Project specifications will require dust control. Removal of sludge within the existing lagoons, which will need to be completed will likely result in short-term odor issues, but best management practices should result in minimizing these odors. In the long-term, odor control associated with the new treatment facility will be an improvement over existing conditions.

10. Public Health

Public health protection is safeguarded by the proposed project. The proposed wastewater treatment facility will reduce the pathogen and nitrogen risk associated with District reuse practices, thereby reducing the potential public exposure and risk

associated with runoff to surface water. The advanced level of treatment provided by the proposed project will reduce the levels of pathogens and nutrients within the reclaimed effluent, thus reducing acute aquatic life and public health risks.

11. Energy

The proposed treatment facility is estimated to use approximately the same power as the existing facility. Any increase in power consumption would most likely be the result of growth and increased wastewater flows. The aeration, pumping equipment, UV lamps and mixing equipment necessary at the treatment facility will be the most energy-intensive components. The plant will be constructed with energy saving components such as variable speed drives and low wattage light fixtures to the maximum extent possible. Pumping equipment, blowers and controls will be designed to consider energy usage and use more efficient devices where appropriate.

12. Noise

Short-term impacts from excessive noise levels may occur during construction activities. The construction period will be limited to normal daytime hours to avoid early morning or late evening construction disturbances. The back-up generator will be housed within a building near the treatment site to protect the generator and controls and muffled to reduce noise. The aeration blowers are the only other equipment that can generate excessive noise levels. The blowers will be housed in a building and muffled to ensure they are operated with reduced noise impact as well. Therefore, no significant long-term impacts from noise should occur.

13. Environmental Justice

Environmental Justice Executive Order 12898: The proposed project will not result in disproportionately high or adverse human health or environmental effects on minority or low-income populations. The economic impact will ultimately affect all users of the system proportionate to the taxable value of the system if a general obligation bond were used to secure a loan for the cost of the project. Otherwise users will all pay nearly the same amount, or pay based upon the size of water service line to the respective property. No disproportionate effects among any portion of the community is expected.

14. Growth

Improvements to the WRF will be a positive feature for the community and are necessary to improve effluent quality and allow for increased capacity. The proposed improvements are designed to increase system treatment capacity to meet 20-year growth expectations.

The growth estimates used to determine the capacity of the new WRRF are from the current Big Sky County Water and Sewer District 363 growth plan. The District serves approximately 5,655 Single Family Equivalents (SFEs) from 2017 data. The District is obligated to serve 10,678 SFEs at Ultimate Build-Out (UBO) of its service area, when its Lone Moose Meadows and Spanish Peaks obligations are converted to SFEs.

15. Cumulative Effects

Construction of the proposed wastewater treatment facility would allow for growth within the designated sewer service area via infill of lots that are not currently connected. The number of these lots is addressed in the "Growth" discussion above. Growth impacts could include: increased air emissions from additional traffic, increased water consumption, and possible loss of rural land uses, but as indicated above, these impacts are expected to be minimal. Additionally, the improvements to the wastewater treatment system may result in minor secondary impacts that are associated with growth in the district. The anticipated increase in population and development in the district may result in secondary impacts that include impacts to: housing, fire and police services, solid waste, transportation and utilities.

16. Visual Impacts

The wastewater treatment system improvements will include addition of a new headworks building and membrane bioreactor building. Also, the treatment facility will include a new effluent pipeline under the West Fork Gallatin River to a below grade concrete basin and that will be used to support the delivery of reclaimed water to Spanish Peaks and Yellowstone Club via the existing high-pressure force mains. The existing storage lagoons will be retained and used to hold reclaimed water that irrigates the Meadow Village golf course and grounds. The improvements will take place on the district-owned WRF property or within existing easements.

B. UNAVOIDABLE ADVERSE IMPACTS

Short-term construction-related impacts (i.e., noise, odor, dust, traffic disruption, etc.) will occur, but should be minimized through proper construction management and communication with businesses and homeowners. Energy consumption during construction and to support aeration and mixing equipment and pumping cannot be avoided. Solids handling will occur on a day-to-day basis in an improved manner with respect to the existing operations, which should improve odor control if solids are handled properly. Odors issues associated with the day-to-day operations are not expected to increase over current operations.

VIII. PUBLIC PARTICIPATION

Public meetings for this project have occurred as shown in Table 8 below:

Table 8: BSWSD Board Meeting and Community Engagement Summary

Meeting Date	Information Discussed
June 19, 2018	Capital Improvements Plan Projects Wastewater Capacity Wastewater Irrigation Systems
July 17, 2018	Capital Improvements Plan Projects WRF Upgrade Storage Capacity
August 21, 2018	Capital Improvements Plan Projects WRF Upgrade Disposal Capacity
August 28, 2018	MT DEQ Meeting DEQ Disposal Permitting Requirements
September 18, 2018	Rate Consulting Services WRF Upgrade Disposal
October 16, 2018	WRF Upgrade Report

November 20, 2018	WRF Upgrade
November 27, 2018	WRF Upgrade Report Presentation
December 19, 2018	WRF Upgrade and Expansion

Each of these meetings, with the exception of the August 28,2018 one, took place at District Board hearings. All meetings were noticed on the District website and posted at District headquarters, which allowed for good public attendance to learn about the proposed project and to offer input.

Public agencies of interest or jurisdiction with respect to project permits, easements and encroachments have been contacted and have been supportive of the proposed project. Permitting agencies will be further contacted with project applications as needed to secure appropriate authorizations for the work prior to any construction activity.

IX. AGENCY ACTION, APPLICABLE REGULATIONS AND PERMITTING AUTHORITIES

All proposed improvements will be designed to meet state standards in accordance with Circular DEQ-2, and will be constructed using standard construction methods. Best management practices will be implemented to minimize or eliminate pollutants during construction. No additional permits will be required from the State Revolving Fund (SRF) section of DEQ for this project after the review of the submitted plans and specifications. However, coverage under the storm water general discharge permit and groundwater dewatering discharge permit, if necessary, must be obtained from the DEQ Water Protection Bureau prior to the beginning of construction. A 124 Permit from the Department of Fish, Wildlife and Parks, a 404 Permit from the U.S. Corps of Engineers, and a 318 Authorization from the Department of Environment Quality will be obtained for any work that occurs in a streambed or (jurisdictional) wetlands, should it become necessary.

X. RECOMMENDATION FOR FURTHER ENVIRONMENTAL ANALYSIS

[ ] EIS [ ] More Detailed EA [X] No Further Analysis

Rationale for Recommendation: Through this EA, the DEQ has verified that none of the adverse impacts of the proposed Big Sky County Water and Sewer District 363 wastewater treatment project are significant. Therefore, an environmental impact statement is not required. The environmental review was conducted in accordance with the Administrative Rules of Montana (ARM) 17.4.607, 17.4.608, 17.4.609, and 17.4.610. The EA is the appropriate level of analysis because none of the adverse effects of the impacts are significant.

XI. REFERENCE DOCUMENTS

The following documents have been utilized in the environmental review of this project and are considered to be part of the project file:

1. Wastewater Preliminary Engineering Report (PER), Big Sky County Water and Sewer District 363, October 2019, prepared by AE2S.
2. Uniform Application for Montana Public Facility Projects dated, November 19, 2019, prepared by Big Sky County Water and Sewer District 363.

XII. AGENCIES CONSULTED

The following agencies have been contacted in regard to the proposed construction of this project:

1. The U.S. Fish and Wildlife Service reviewed the proposed project and replied that "Based on the confined nature and location of this proposed work in an existing developed municipal setting, we do not anticipate its implementation would result in adverse effects to listed, proposed, or candidate threatened or endangered species, or listed or proposed critical habitat".

2. Department of Natural Resources and Conservation (DNRC) reviewed the proposed project and determined that the project is not located in a designated 100-year floodplain and that the project will not have an impact on the 100-year floodplain for this area.

3. The Montana Historical Society's State Historic Preservation Office (SHPO) reviewed the proposed project. According to their records, there have been no previously recorded sites within the designated search locales. Based on the previous disturbance in the area they feel there is low likelihood cultural properties will be impacted. However, should cultural materials be inadvertently discovered during the project, SHPO must be contacted and the site investigated.

4. The U.S. Department of the Army Corps of Engineers (USCOE) reviewed the proposed project and because no fill material will be placed either temporarily or permanently in waters of the U.S., no USCOE permit will be required.

5. The Montana Department of Fish, Wildlife and Parks in a February 11, 2020 response; stated "The area is used by Bighorn Sheep, Elk, Moose and Mule Deer, FWP would appreciate any effort to use fencing that would represent low entanglement hazard, most likely exclusionary fences." "Beyond this concern, it is a small footprint of no habitat concern for any of the above listed species." Site fencing will be maintained to prevent conflicts of concern.

6. The Montana Natural Heritage Program database was searched regarding the proposed project and identified the following species of concern within the project area;
    - (3) mammals (Little Brown Myotis bat, Townsends Big Eared Bat and the Uinta Ground Squirrel);
    - (7) birds (Bald Eagle, Boreal Owl, Clark's Nutcracker, Golden Eagle, Great Blue Heron, Peregrine Falcon and Sagebrush Sparrow); and
    - (1) amphibian (Western Toad).

    Also, (2) plant species of concern were identified as existing within the project area. Those included Slender Indian Paintbrush and High Northern Buttercup.

    Impacts to these plants and animals are expected to be non-significant for a variety of reasons, including:
    - Construction is contained within a very small, previously disturbed area,
    - The project site is within a previously disturbed footprint of the existing wastewater treatment facility and immediately adjacent to other already developed areas within District,
    - Riparian species of concern were not identified with respect to the stream

crossing proposed, and

- The construction will not result in new open water areas which could attract the bird species of concern,

EA Prepared by:

Terry Campbell, P.E. — Date: 2/26/2020

EA Reviewed by:

Michele Marsh, P.E. — Date: 2/26/2020

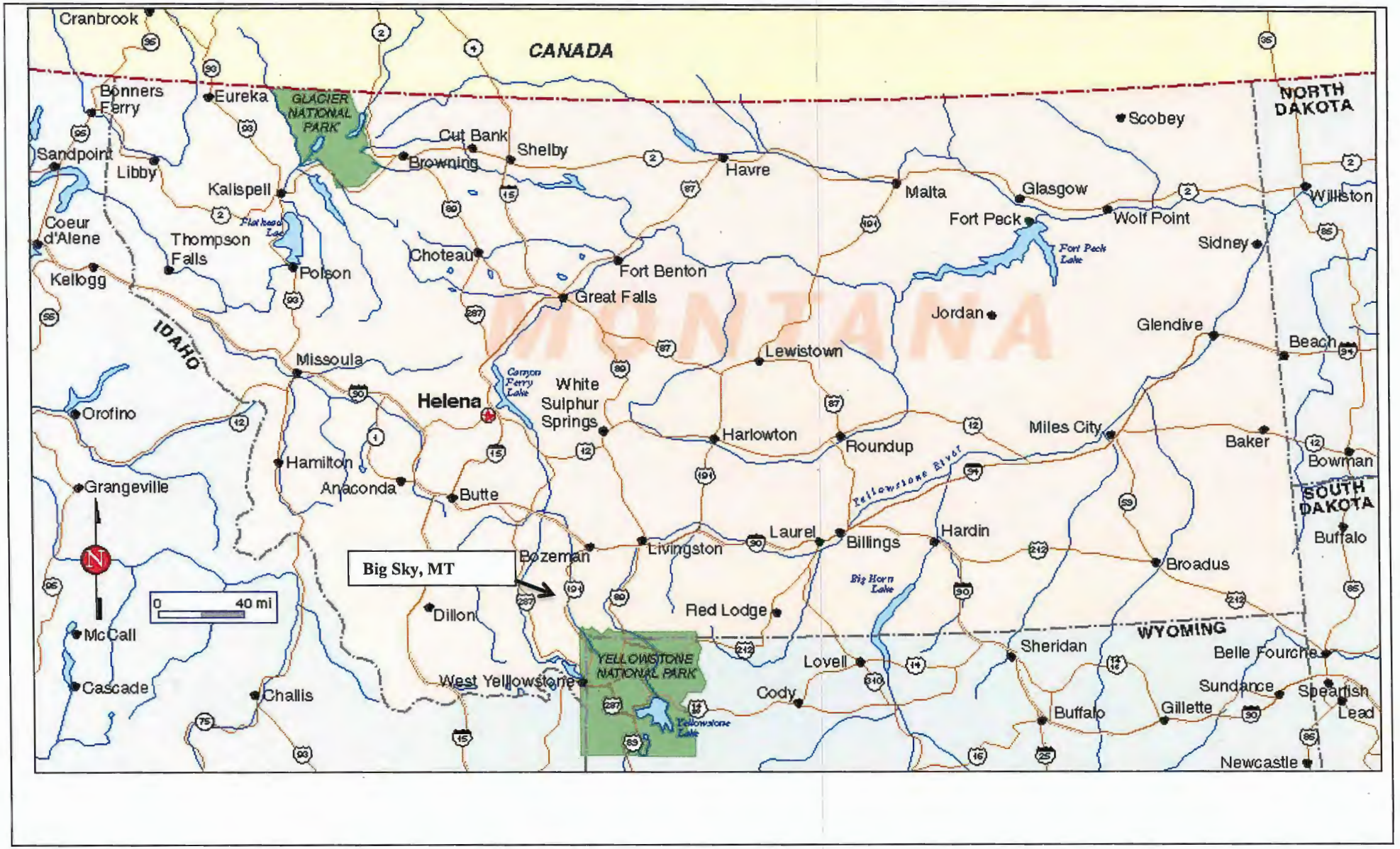


Figure 1 - Project Location Map

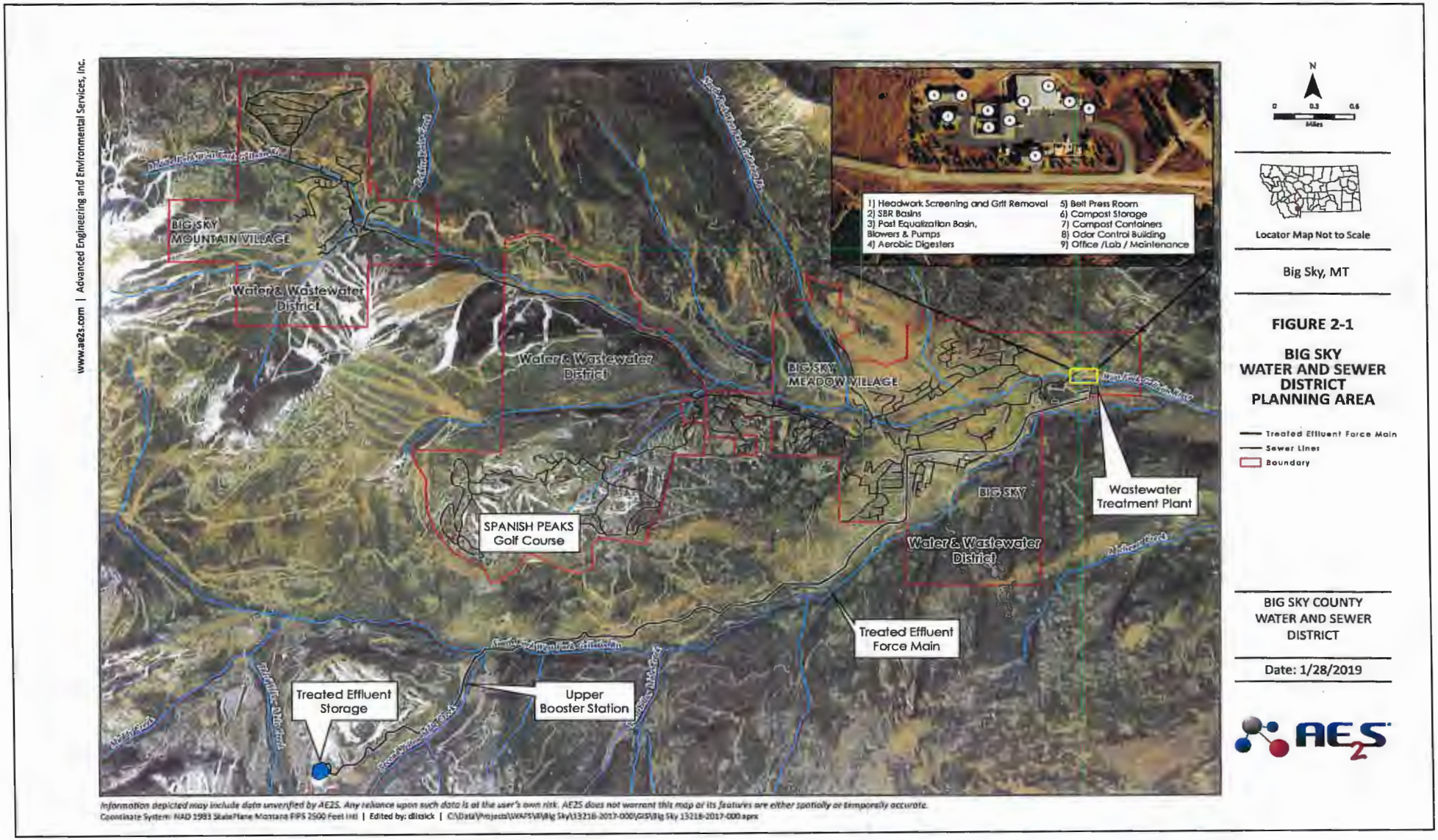


Figure 2 – District Planning Area

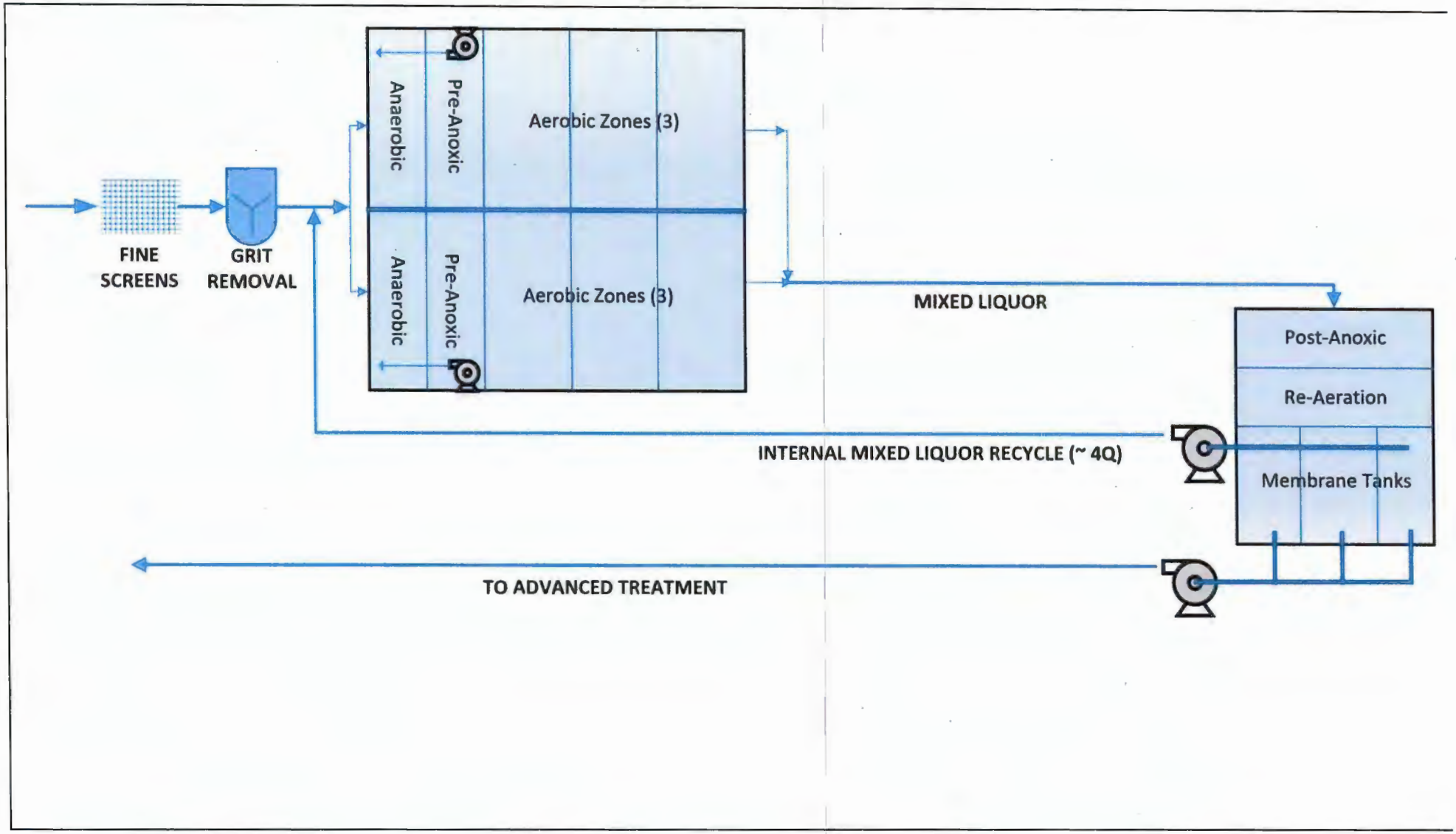


Figure 3 Schematic of Proposed WRRF Improvements