DRAFT PROGRAMMATIC ENVIRONMENAL ASSESSMENT
Certificate of Subdivision Approval or Letter of Approval under the Sanitation in Subdivision Act of Montana and Public Water Supply Act of Montana to install and operate a Water Well and its Associated Facilities

Subdivisions and Public Water Supply Programs
Engineering Bureau
Water Quality Division
Montana Department of Environmental Quality

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1. PURPOSE AND NEED FOR PROPOSED ACTION

1.1 AUTHORIZING ACTION

Under the Montana Environmental Policy Act (MEPA), 75-1-102, Montana Code Annotated (MCA), Montana agencies are required to prepare an environmental review for state actions that may have an impact on the human environment. The Proposed Action is considered to be a state action that may have an impact on the human environment and, therefore, the Department of Environmental Quality (DEQ) must prepare an environmental assessment (EA). This EA will examine the Proposed Action and alternatives to the Proposed Action and disclose potential impacts that may result from the Proposed Action and alternative actions. DEQ will determine the need for additional environmental review based on consideration of the criteria set forth in Administrative Rules of Montana (ARM) 17.4.608.

1.2 DESCRIPTION OF DEQ REGULATORY OVERSIGHT

DEQ implements the Sanitation in Subdivisions Act of Montana, overseeing the development of Subdivisions and associated facilities (76-4-101, *et seq.,* MCA). DEQ also implements the Public Water Supply Act of Montana, which oversees the protection, maintenance, quality, and potability of water for public water supplies and domestic uses (75-6-101, *et seq*., MCA).

1.3 PROPOSED ACTION

In the proposed development, one or more wells would be drilled, tested, and installed, along with any associated facilities, which may include a building housing any pressure tanks, valves, sampling taps, treatment equipment, pumping facility building (or well house), water mains, water storage, underground water storage, and water service connections. The Montana Department of Natural Resources Conservation (DNRC) is the primary authority for well drilling in Montana. Well installation activities mentioned in this EA assume compliance with the well drillers' rules in ARM 36.21. The installation and operation of a well and its facilities is commonly associated with a larger development project that consists of several other permits and approvals. This EA only analyzes and discloses the impacts of the installation and operation of a well and its associated facilities, which are regulated and approved by the Subdivisions Program and Public Water Supply (PWS) Program. Any other permits or approvals that may be associated with a greater project are cited below in Section 1.5. All information in this EA is based on the Proposed Action application, discussions with the applicant, analysis of aerial photography, topographic maps, and other research tools cited in Section 7 References.

Wells: All wells in Montana must be built in accordance with the minimum construction standards outlined in ARM 36.21, subchapter 6 (administered by DNRC) as effective at the time of well construction. For public water supplies (community or non-community) and multiple-user wells, DEQ adopts more stringent or specific standards as required by Circulars DEQ-1 (community wells), DEQ-3 (non-community wells), and DEQ-20 (multiple-user wells).

When choosing a water source to develop for an individual or shared well, the applicant shall demonstrate to the reviewing authority that there would be enough water available and that the water provided to consumers meets the minimum water quantity requirements in Circular DEQ-20, 2.1.1.

If proposing a multiple-user well, the applicant must provide Average Day Demand, Maximum Day Demand, and Peak Instantaneous Demand calculations for existing and proposed water sources, and if water sources cannot meet Peak Instantaneous Demand, they must include adequate water storage (DEQ-20 3.2.1). The applicant may be asked to identify or create a homeowners' association, county water district, or other administrative entity responsible for operation, maintenance, and fee collection (ARM 17.36.122(2)). If multiple water systems are proposed for a subdivision, they must be interconnected, unless it's impractical or poses environmental or public health concerns (DEQ-20, 3.1). The applicant must submit an operation and maintenance plan for the multiple-user water systems (ARM 17.36.122(2)). All wells must be constructed by a licensed water well contractor in accordance with the relevant regulations (ARM Title 36, Chapter 21). The reviewing authority may require additional construction or yield testing to ensure an adequate water supply within a particular subdivision (Circular DEQ-20, 3.2.1).

Public water systems must show they also have the required water quality and capacity to meet the water demand (DEQ-1, 3.2.1 and 3.2.2; and DEQ-3, 3.2.1 and 3.2.2). The ownership of public water supply systems must be held by an individual, a limited liability company, a corporation, a city, town, local government entity, or other political subdivision of the state, or a federal agency in accordance with Title 75, Chapter 6, MCA. Community water systems must have a minimum of two sources (DEQ-1, 3.2.1.2). Non-community water systems need only one source (well) (DEQ-3, 3.2). Information on the management, operation, maintenance, and financing of the system must be submitted as per DEQ Circular 1, Appendix A. The department is granted authority in 75-6-104(2)(f), MCA, to ensure the technical, financial and managerial viability of proposed public water supply systems as necessary to ensure the capability of the system to meet the requirements of Title 75, chapter 6, part 1, MCA.

Facilities: The installation and operation of a well, both non-public and public, must include the facilities necessary to properly operate the well and distribute the water. These facilities may include a building housing any pressure tanks, valves, sampling taps, treatment equipment, pumping facility building (or well house), water mains, water storage, underground water storage, and water service connections. Public and multiple-user pumping facilities must be designed and located so that the proposed site will meet the requirements for sanitary protection of water quality, hydraulics of the system, and protection against interruption of service by fire, flood, freezing, or any other hazard (DEQ-1, 3.2.7.9 and 6; and DEQ-3, 3.2.5.6 and 3.2.7; DEQ-20, 3.2.7 and 3.2.8).

Pumping facility buildings (well houses) house the equipment needed to provide water to the distribution system. This can include, but is not limited to valves for water flow control, pressure tanks, booster pumps, well controlling equipment, sampling taps, chlorination tanks, and injection pumps (for public wells only), water treatment equipment such as filtration, water softeners, ion exchange resin tanks, or reverse osmosis units, and water storage tanks (DEQ-1, 4, 6, and 7; DEQ-3, 2.1, 3.4, 4, 6, and 7; DEQ-20, 3.4.5, 3.4.6, and 3.4.7). The pumping facility buildings typically range in size from approximately 16 square feet to over 1,000 square feet in size, depending on the size and amount of equipment needed. Small pumping facilities often fit within an existing or proposed structure, such as a mechanical room in a residence.

Treatment for water quality contaminants that exceed maximum contaminant levels (MCLs) for drinking water (ARM Title 17, Chapter 38, Subchapter 2) are required for both public and non-public wells (DEQ-1, 4 and DEQ-3, 4). Residual wastes such as spent cartridges, backwash, brine, or reject water from treatment systems must be disposed. Typically, this is either by removal of the filtering cartridge or by discharge of

the residual wastewater to a wastewater treatment and disposal system, including subsurface (septic) systems if approved to do so (DEQ-1, 9 and DEQ-3, 9, DEQ-20, 2.3 and 3.3).

Water storage tanks are required when water demand for the system is greater than what the well pump(s) can supply. Tank basin dimensions typically range up to approximately 15,000 to 30,000 gallons and may be installed no deeper than 10 feet below ground, including some tanks that may only be buried just below the surface and require access points directly above them (DEQ 1, Chapter 7). Both of these tanks can be made of fiberglass, concrete, steel, or polyethylene and are built either on the ground, partially buried, or completely buried (DEQ-1, 7.0 and 7.0.2; DEQ-3, 7.0; DEQ-16; DEQ-20, 5.2 and 5.3). Tanks that are not buried (see Figure 3) or housed within a building are outside the scope of this document. Tanks must be suitable for potable water use and must be disinfected before use. Chlorine is used for disinfection, and water must be dechlorinated before being disposed of (DEQ-1, 7.0.17; DEQ-3, 7.2 and 7.3; DEQ-16). Water storage tanks require excavation if buried. An excavation area is made to fit the size of the tank and at a depth of several inches to several feet deep, depending upon the depth of bury and manufacturers' installation recommendations. Gravel is added to the bottom of the excavation for a gravel base (usually 4 to 12 inches of gravel) with the tank being placed on top and backfilled per manufacturer recommendations or as outlined in the Montana Public Works Standard Specifications (MPWSS), 7th edition, April 2021, Sections 02221 and 02600.

Water mains and water distribution systems must be designed to maintain treated water quality through sizing distribution mains, providing for design of multidirectional flow, adequate valving for distribution system control, maintaining adequate system pressure, minimizing water age (keeping fresh water moving through system and preventing stagnant water), and adequate flushing provisions (DEQ-1, 8; DEQ-3, 8; DEQ-20, 3.4.8). For multiple-user and public water mains, the mains must be tested, flushed, and disinfected before use (DEQ-20, 3.4.8; DEQ-1, 8.7.6 and 8.7.7; and DEQ-3, 8.3.3 and 8.3.4). A Disinfected Water & Hydrostatic Testing permit may be required for the discharged water.

Construction of water mains generally consists of clearing an area of vegetation and excavation of a trench approximately 2 to 4 feet wide and 6 feet deep. Crushed rock or gravel is added to the trench to provide bedding for the pipe, with the pipe laid onto the gravel bed and then covered with additional gravel to a depth of approximately 6 inches over the top of the pipe. The trench is then backfilled to the ground surface by either native soil (removed during trench excavation) or with imported fill, such as pit run gravels (MPWSS, 7th edition, April 2021, Sections 02221 and 02600).

Figure 1: Image of Drill Rig

Figure 2: Image of Well Head

Figure 3: Underground Water Tanks

Figure 4: Well and Pumping Facilities Building

Figure Sources include: National Storage Tanks, DEQ Subdivision Program, Geoprobe Systems (See References sections)

Assumptions: When considering the impacts of a water supply well, pumping facilities building, water main, water connection, and water tank, the EA focuses on the impacts of drilling a single well and the required facilities for that singular well depending on how many consumers it would serve. However, in some cases, the project may involve drilling multiple wells. Also, not all the facilities included in this EA would be included in every application. While most of the impacts of drilling a well are similar, regardless of the number of wells, it's essential to consider potential increased drawdown impacts on the aquifer, which may need to be addressed on a case-by-case basis.

The pumping facilities building focuses on a single building or room within a building used for housing pumps, water treatment equipment, water storage tanks, and their associated controls and piping. Not every water system would need additional pumps, water treatment, or storage. The needs of the water system depend upon the amount of water used (water demand), the pressure needed to get the water to each service connection (pumping need), the quality of the water from the well (treatment need), and the quantity of water produced by the well (water storage need during peak times).

Furthermore, the EA specifies a disturbance area of up to a maximum of five acres to construct and operate the Proposed Action. Therefore, the EA is designed to cover the Proposed Actions within that specific area. Any Proposed Actions outside this coverage area would necessitate a supplemental EA to extend coverage beyond five acres of disturbance.

Proposed Action	
General Overview	A project applicant has requested construction of one or more wells, along with any associated facilities, within the state of Montana. The project's Proposed Action is the construction and testing of one of the following types of wells: - Individual Well (1 connection/1 well) - Shared Well (2 connections/1 well) - Multiple-user Well (3-14 connections/water system) - Public Well (15 connections or more *or* 25 people per day/water system) The EA will address the drilling, construction, and testing of wells, along with the installation of all associated facilities in conjunction with residential and commercial subdivisions and municipal facilities in Montana. For subdivisions, the EA will focus on the impacts to the lots supplied by the proposed well and associated facilities, excluding construction and impacts related to the subdivision as a whole, as these fall under county actions such as zoning, platting, and planning, when applicable. Wells supplying developments outside the Sanitation in Subdivisions Act (Title 76, Chapter 4, MCA) or the Public Water Supply Act (Title 75, Chapter 6, MCA), stock wells, and geothermal wells are not included in this programmatic EA. Any lot that falls under ARM 17.36.123 must be connected to a public water supply, if available. The drilling and construction of individual, shared, multiple-user, and public wells are subject to ARM 36.21, subchapter 6, Construction Standards. All wells must be drilled, constructed, and tested by drillers licensed by the Montana Board of Water Well Contractors, under the auspices of the DNRC. Furthermore, wells and their associated facilities to be reviewed under this programmatic EA must comply with applicable sections of DEQ Circular 20 for individual, shared, or multiple-user wells, and DEQ Circulars 1 (community) or 3 (non-community) for public wells as in force at the time of application. Drilling, construction, and testing of a well is a short-term activity and generally disturbs only a minimal amount of ground. Any buildings constructed could remain after construction for the operation of wells and associated facilities. When drilling a well, several steps are involved. These may include clearing and leveling a small work area, no larger than 1 acre, constructing a pit for mixing and storing bentonite drilling fluids (mud pit), and stockpiling drill

	cuttings (soil or rock removed from the borehole by drilling). Construction and drilling of the well may involve welding, cutting, drilling, and grinding well casing, screen, centralizers, and caps. Additionally, sand pack and/or grout may be mixed and pumped into the annular space between the well casing and the borehole as needed. Minor excavation may be required to install and connect the pitless adaptor. Testing a well includes installing a temporary pump or airline and pumping the well at a constant rate for a specified time, typically between an hour and 24 hours as required by DNRC and/or DEQ (DEQ-1, 3.2.4; DEQ-3, 3.2.4 and DEQ-20, 2.1.1(b) and 3.2.4). Water discharged from the pump must be directed some distance away from the well to prevent recharging during the test. The amount of water discharged may be relatively large, depending upon the duration of the test and the capacity of the well. For instance, a continuous pump test of a public water supply well at 100 gallons per minute for 24 hours would be a total of 144,000 gallons of water discharged. Once drilling, construction, and testing are complete, drill cuttings and any remaining bentonite mud are spread out evenly on the surface. The ground around the well is contoured to slope slightly away from the well to direct runoff away from the well casing. Treatment for a water supply is based on the test results from water quality analysis testing. Samples for water quality testing are collected and analyzed at the conclusion of the test pumping procedure prior to disinfecting the well. For public systems, sample results for the constituents of ARM 17.38.216 are submitted to DEQ for review and approval to demonstrate compliance with ARM Title 17, Chapter 38, Subchapter 2, prior to placing the well into service. Compliance may require treatment, based on testing results (DEQ-1, 3.2.2.2 and DEQ-3, 3.2.2.2). Multiple-User wells must be tested for nitrate/nitrite, total dissolved solids or conductivity, and pH at a minimum. DEQ may not approve a proposed water supply system if there is evidence that, after approved treatment, the concentration of any water quality constituent exceeds the maximum contaminant levels established in ARM Title 17, chapter 38, subchapter 2 (DEQ-20, 3.2.2). Construction and installation of pumping facility buildings occurs after construction of the well. A pad for the building is constructed by clearing and leveling an area of ground. Any pipelines that are required to be installed under the building are installed by digging a trench, installing the pipe, and backfilling with suitable soil. A concrete pad is often placed after installing any required utilities under the building and the rest of the structure (walls and roof) are constructed. Once the building is erected, equipment is brought into the building and secured. The equipment can be tanks, treatment vessels, additional above ground piping with valves and sample ports, and

	other appurtenances as required, such as pressure gauges, pressure relief valves, and well controllers. Any piping is tested for leaks and then disinfected and flushed before being used. An underground water storage tank, if required by the water system, is installed by excavation of an area large enough and deep enough to fit the tank into the ground. Tank basin dimensions typically range up to approximately 15,000 to 30,000 gallons and may be installed no deeper than 10 feet below ground, including some tanks that may only be buried just below the surface and require access points directly above them (DEQ 1, Chapter 7). The tank is placed into the ground with any required piping for drainage and water connections, and then backfilled with earth until covered. The ground surface is restored, save for any access hatch lids, overflows, or vents which would protrude above the ground. Once the tank is completed, it is filled with water to test that it is free of leaks, then disinfected with chlorine. The tank is then flushed and ready for use. Water mains and service connections are installed by clearing and trenching the pipe into the ground and backfilling with soil. Just before backfilling, the pipelines are tested, flushed, and disinfected before use. After backfilling, the ground surface revegetates and there is little visual evidence of the buried pipeline. The pipeline would only need to be unearthed if there was a problem, such as the pipe breaking or needing repair.
Duration & Hours of Operation	***Construction:*** - Individual Well: 1-7 Days - Shared Well: 1-7 Days - Multiple-User Well: 1-7 Days - Public Well: 1-7 Days <u>Wells:</u> The duration of well construction is similar regardless of the population served and the type of well (individual, shared, multiple-user, or public). The depth of the well and the geological materials to be penetrated determine the construction duration. Unforeseen complications may extend the construction timeline. Typically, drilling and constructing the well takes 1 to 7 days. After drilling, some wells need to be tested to assess aquifer properties and confirm long-term water availability. The testing period may range from 2 to 7 days, depending on the nature of the test. <u>Facilities:</u> The duration of installing all the associated facilities could take one construction season, up to 6 months. Unforeseen complications such as material, supply chain, weather, or workforce may extend the construction timeline. ***Operation:***

	The duration of operation for a well, regardless of the population it serves and its classification (individual, shared, multiple-user, or public), is similar. The well would be equipped with a submersible pump that operates on demand. The pump may switch on at any time, although peak hours typically align with average household water usage cycles, with most water consumption occurring in the morning and evening. Some associated facilities to the well (e.g. pumping and treatment) would only operate when the well was producing water. However, other associated facilities to the well (e.g. storage and conveyance) may operate irrespective of when the well is producing water.
Construction Equipment	- Backhoe - Boom truck - Cement truck - Dozer - Dump truck - Excavator - Front end loader - Light duty passenger trucks - Pipe truck - Skid steer - Truck mounted drill rig (Figure 3) - Water truck
Personnel Onsite	***Construction:*** Personnel for completing the construction of a well would range from 2-3 workers onsite for well drilling and 1-10 personnel for completing construction of associated facilities. ***Operation:*** Personnel for operation is infrequent at Individual, Shared, and Multiple-User wells. One worker may be called for occasional maintenance or testing of the well and its facilities. Public Water Systems have certified operators. Depending upon the size and complexity of the system one operator would be onsite periodically for sampling and maintenance as required.
Location and Analysis Area	The estimated area of disturbance during construction would be no larger than five acres. After construction is completed, the remaining disturbance is minor, as most of the Proposed Action operates below ground and would be reclaimed above ground. Wells: The location of proposed well locations or approved drilling areas for the proposed water source must be

	shown on the lot layout, indicating the location of any proposed or existing drainfields or mixing zones (defined in DEQ 4) within 100 feet of the perimeter of the subdivision or parcel. Furthermore, a vicinity map must be provided in the application that illustrates locations of any potential sources of contamination within 100 feet or any wastewater lagoons within 1,000 feet of the proposed well or well drilling area. For individual and shared wells, the reviewing authority may require that all potential sources of contamination be shown in accordance with DEQ Circular PWS-6 (DEQ-20, 2.1.4). A PWS-6 report is required to be prepared for community public wells (DEQ-1, 1.1.7.2), non-community wells (DEQ-3, 1.1.6), and multiple-user wells (DEQ-20, 3.2). For wells subject to Sanitation Act review, each existing and proposed drinking water well must be centered within a well isolation zone. Each proposed well isolation zone, as defined in ARM 17.36.101, must be located wholly within the boundaries of a lot, unless the criteria listed in ARM 17.36.122(6) are to be met. The minimum setback distances set out in ARM 17.36.323 must be maintained for all new and existing water sources. A sewage mixing zone cannot be approved if it would intercept the zone of influence of an existing or proposed drinking water well pursuant to ARM Title 17, chapter 30, subchapter 5. In accordance with ARM 17.36.323, a new well cannot be located within 100 feet of a drainfield or mixing zone, unless a waiver or Source Specific Well Isolation zone is granted. The reviewing authority may require greater than a 100-foot horizontal separation between a well and surface water if there is a potential that the well may be influenced by contaminants in the surface water. The applicant must provide all documentation necessary to evaluate surface water influence risk. In determining the appropriate separation between a water source and surface water, the reviewing authority may consider factors such as well location, well construction, aquifer material, hydraulic connection between the aquifer and watercourse, and other evidence of the potential for surface water contamination. The reviewing authority may also require that the proposed water source be tested for surface water influence using DEQ Circular PWS-5 as a guide. For lots of two acres in size or less, the applicant shall physically identify the proposed well location or well drilling area by staking or other acceptable means of identification. For lots greater than two acres in size, the reviewing authority may require the applicant to physically identify the well location (DEQ-20 1.4.2 (f)). Facilities: Pumping facility buildings and any water storage tanks that supply water to the distribution system would be located either near the well or near or within the buildings that would be served by the water system. Pumps that pump directly into water main transmission lines and distribution systems are called booster stations or booster pumps. Booster pumps may be located anywhere in the system to increase the pressure in the pipeline. Booster pump stations are usually located at a distance from the main pump facilities, as in hilly topography, where pressure zones are required. Site selection would be evaluated from a topographic survey and flood plain analysis to determine if there are any flooding probabilities of the proposed pump or tank site. The site must not be subject to flooding. Major planning factors to consider are: availability of electric power, roadway access for maintenance and operation purposes, security, and adverse impact, if any, upon surrounding occupancies.

	Water mains must be located at least 10 feet away (measured from side of pipe to side of pipe) from any existing or proposed sewer or storm pipe, septic tank, or subsurface drainfield and at least 18 inches above or below buried sewer or storm drainage pipes (DEQ-1, 8.8; DEQ-3, 8.4; and DEQ-20, 3.4.8).
For each of the following resource areas, the applicant is required to comply with all applicable local, county, state, and federal requirements: • **Air Quality** • **Water Quality** • **Solid Waste** • **Cultural Resources** • **Hazardous Substances**	

Cumulative Impact Considerations	
Past Actions	Past actions could range from commercial or industrial to agricultural to remediation to recreational. Typically, applicants provide past actions in the application. DEQ staff carefully review the location and records for potential cumulative impacts. Past actions will be identified on a case-by-case basis upon receipt of application.
Present Actions	A present cumulative action is considered as any state action that has been both applied for and approved. DEQ has conducted the necessary research regarding Present Cumulative Impact Considerations. Present actions by local, state, federal, or tribal agency jurisdiction, regulated projects will be identified on a case-by-case basis upon receipt of application.
Related Future Actions	A related future action would be any state action that has been applied for but not yet approved by any entity. DEQ or the applicant will conduct the necessary research regarding related future actions. Future actions will be identified on a case-by-case basis upon receipt of application.

1.4 PURPOSE, NEED, AND BENEFITS

DEQ's purpose in conducting this environmental review is to act upon any Subdivision or PWS applications that include the installation of a well and its associated facilities which may include a well house, water storage tanks and water mains and connections. DEQ's action on the proposed application is governed by § 76-4-104, *et seq.*, and 75-6-101, *et seq.*, MCA. Montana Code Annotated (MCA) and the Administrative Rules of Montana (ARM) 17.36.101, *et seq.* This EA covers Proposed Actions across the entire State of Montana, within the limitations of this EA, and covers the drilling, construction, testing, and operation of private, shared, multiple-user, and public wells and the associated facilities. Construction of water wells is defined in ARM 36.21.634(16). Drilling and testing are addressed under the Board of Water Well Contractor Rules (36.21.635(2)). Specifically, ARM 36.21.664 outlines minimum requirements for yield and drawdown testing of new wells. Depending upon the type of well and determination by the reviewing authority, required testing ranges from a one-hour air test to a full aquifer test of 24 hours or more, including recovery monitoring and observation wells.

A new well is not considered complete until it is logged (ARM 36.21.667), cased (ARM 36.21.641A), developed (ARM 36.21.653), tested (ARM 36.21.664), disinfected (ARM 36.21.662), and capped (ARM 36.21.661).

Completed wells must be, at a minimum, connected to a water service line to deliver water for use. In addition, wells used for a public water supply must be tested for yield and water quality. Public Water systems must be treated if water quality does not meet ARM 17, Chapter 38, Subchapter 2 requirements (DEQ-1, 3.2.2 and DEQ-3, 3.2.2). Multiple-user wells also must be tested and treated if they do not meet water quality requirements (DEQ-20, 3.2.2).

The equipment, piping and water mains must be installed, leak tested and disinfected before being used to supply drinking water to ensure there is no contaminants in the system (DEQ-1, 8.7.6 and 8.7.7; DEQ-3, 8.3.3 and 8.3.4; and DEQ-20, 2.1.1, 2.1.2 and 3.4.8(c)). Water mains must be designed to be large

enough to convey the water supply at the required pressures, made of materials suitable for potable water and installed deep enough to prevent freezing. Water mains also need to have valves, air and vacuum relief valves, and flushing hydrants to allow for cleaning and maintenance of the pipelines (DEQ-1, 8.2; DEQ-3, 8; DEQ-20, 3.4.8). Booster pumps may be needed to maintain operating pressures in the water system (DEQ-1, 6; DEQ-3, 6; and DEQ-20, 3.4). Water storage tanks are needed when the wells supplying water to the water system cannot keep up with peak water demands (DEQ-1, 3.2.1.1; DEQ-3, 3.2.1.1; and DEQ-20, 3.2.1).

A water supply system is considered to be complete when it can deliver water from the well to the water user that meets the quality and quantity requirements of DEQ (DEQ-1, 3.2; DEQ-3, 3.0; and DEQ-20, 3.2).

The applicant's purpose and need, as expressed to DEQ by a subdivision or public water system application submittal, is to drill, construct, and use water well(s) and associated facilities under the requirements of 76-4-104, *et seq*., MCA and 75-6-101, *et seq*., MCA.

1.5 OTHER GOVERNMENTAL AGENCIES AND PROGRAMS WITH JURSIDICTION:

The Proposed Action may be located on private or public land. All applicable local, state, tribal, and federal rules must be adhered to. Other governmental agencies that may have overlapping or additional jurisdiction will be assessed on a case-by-case basis upon receiving an application. Some additional permits or approvals may be necessary. These permits or approvals may include but are not limited to: General Storm Water Construction Permit (MPDES) for over one acre of disturbance; Construction Dewatering General Permit (CDGP) for construction dewatering that discharges to streams, creeks, or other water bodies; Disinfected Water & Hydrostatic Testing Permit for discharge to state waters after treatment resulting from hydrostatic testing or disinfecting with water containing chlorine; 401 Water Quality Certification (Utility crossings of streams); 310 permit for disturbance of perennial streams; SPA 124 permit for disturbance of stream habitat; 318 permit for Temporary Turbidity discharge for construction activities; and water rights permit from DNRC/tribal water board. These additional permits are not provided by the Subdivisions or PWS programs.

2. AFFECTED ENVIRONMENT AND IMPACT BY RESOURCE

2.1 EVALUATION AND SUMMARY OF POTENTIAL IMPACTS

The impact analysis will identify and evaluate direct and secondary impacts to the physical environment and human population in the area to be affected by the Proposed Action. *Direct impacts* occur at the same time and place as the action that causes the impact. *Secondary impacts* are "a further impact to the human environment that may be stimulated, induced by, or otherwise result from a direct impact of the action." ARM 17.4.603(18). Where impacts would occur, the impacts will be described in this analysis.

Cumulative impacts are the collective impacts on the human environment within the borders of Montana of the Proposed Action when considered in conjunction with other past and present actions related to the Proposed Action by location and generic type. Related future actions must also be considered when these actions are under concurrent consideration by any state agency through pre-impact statement studies, separate impact statement evaluation, or Proposed Action processing procedures. ARM 17.4.603(7); 75-1-220, MCA (4).

- The duration is quantified as follows:
- **Short-term**: Short-term impacts are defined as those impacts that would not last longer than the

installation and construction, including a pump test, of the Proposed Action.

- **Long-term**: Long-term impacts are impacts that would remain or occur following construction and development, during operation.

The intensity of the impacts is measured using the following:

- **No impact**: There would be no change from current conditions.
- **Negligible**: An adverse or beneficial effect would occur but would be at the lowest levels of detection.
- **Minor**: The effect would be noticeable but would be relatively small and would not affect the function or integrity of the resource.
- **Moderate**: The effect would be easily identifiable and would change the function or integrity of the resource.
- **Major**: The effect would alter the resource.

GEOLOGY AND SOIL QUALITY, STABILITY, AND MOISTURE

To best evaluate accurate impacts on geology or soil quality, the United States Department of Agriculture's Web Soils Survey (WSS) or other authoritative sources would need to be consulted for each project based on its proposed location.

Direct Impacts

Wells: The construction and drilling of a well could cause up to one acre of land disturbance, and sediment erosion could transport sediment to nearby surface water through stormwater. It is important to note that compliance with local, county, state, and federal erosion control and sediment transport requirements is not just recommended but mandatory. A well borehole could be up to two feet in diameter and depth of the well would vary based on encountering suitable water. Geological impacts would vary depending on the site's geology. The applicant must adhere to all regulations. In a few isolated areas, a borehole could encounter karst conditions, which may include underground caverns and voids. Contamination of groundwater in karst systems could have widespread effects, emphasizing the importance of regulatory compliance. Additionally, regulations require the contractor for the Proposed Action to grade ground surfaces surrounding finished wells to ensure proper drainage, which may slightly alter existing local drainage patterns (ARM 36.21.647). Typically, site grading around a finished well is performed by the contractor as part of the installation of the pipeline from the well to the development.

Facilities: The installation of water mains and distribution system piping requires the disturbance and excavation of soil. The installation of water storage tanks may require excavation if partially or totally buried. Disturbance of up to five acres of land could occur and would require general construction permitting for potential storm water discharges of turbid water. Stockpiled soil can also contribute to sediment being picked up by storm water and transported to another location. Trenches excavated for pipe can be deep enough to encounter groundwater and may need to be dewatered to allow for pipe installation. The water resulting from dewatering can have high turbidity which may require a Construction Dewatering Permit from DEQ Water Protection Bureau.

Site development for a pumping facility building or water storage tank would depend upon a site soils analysis showing adequate support for foundations or possible ground water problems and a grading and drainage plan of the area showing that runoff away from the structures can be obtained.

Water mains and distribution systems may potentially destabilize slopes, damage vegetation, and

encourage erosion. The installation of buried water lines may require slope stability and soil suitability analyses.

There would be moderate and short-term impacts from the disturbance to the topography and geology during construction from leveling and excavation for an underground water tank installation. After the initial construction is complete, no new disturbances would be anticipated with the operation of the facility.

Secondary Impacts

Wells: Minor secondary impacts to topography, geology, stability, and moisture from the drilling and construction of the well would be expected as this project would result in the casing head or pitless unit extending at least 18 inches above the finished ground surface, in compliance with ARM 36.21.647. These impacts would occur during construction and drilling. Secondary impacts are expected to be minor and long-term.

Facilities: Minor secondary impacts to topography, geology, stability, and moisture from digging and laying piping may occur. Analyses and practices discussed under direct impacts would minimize secondary impacts by identifying potential damage and allowing proactive implementation of Best Management Practices (BMPs) to control erosion and sediment transport. Secondary impacts are expected to be minor and short term, with little or no visible impact once construction is complete and vegetation is re-established.

Minor secondary impacts and moderate and long-term impacts to topography, geology, stability, and moisture would be expected due to the installation and operation of a water tank as it would result in a new underground structure with backfill.

Cumulative Impacts

Wells: After the initial construction and drilling, there may be minor cumulative impacts from future projects. For example, drilling and constructing multiple wells in a given area could result in minor, long-term impacts on the topography as described above.

Facilities: Areas disturbed by trenching and excavations have minor cumulative impacts, as the ground surface is restored after construction activities. Pumping facility buildings would remain after construction, including any roadways, parking, and fencing needed for the facility. These long-term impacts are the same as would be for any constructed building or house.

WATER QUALITY, QUANTITY, AND DISTRIBUTION

Are important surface or groundwater resources present? Is there potential for violation of ambient water quality standards, drinking water maximum contaminant levels, or degradation of water quality?

Characterize the precipitation, nearby surface water, wetlands and riparian areas, and groundwater in the project area, as well as water source for the project.

Direct Impacts

Wells: Wells must be placed at a safe distance from surface water and other possible sources of contamination, as outlined in ARM 17.36.323. There is a risk of sediment being transported offsite by stormwater during drilling, construction, and testing. The regulations in ARM 36.21, subchapter 6 are

designed to safeguard groundwater from potential well-related contamination.

Facilities: Soil disturbances and storm water runoff during construction are regulated under the Montana Pollution Discharge Elimination System (MPDES) Authorization. The applicant would be required to follow all permit stipulations under the MPDES General Permit for Storm Water Discharge during construction of the water system facilities, preventing water quality impacts from soil disturbances and storm water runoff during construction.

Stockpiled soil from trenching and land disturbance can contribute to sediment being picked up by storm water and transported to a stream, creek, or other water body. Trenches excavated for pipe can be deep enough to encounter groundwater and may need to be dewatered to allow for pipe installation. The water resulting from dewatering can have high turbidity, and care must be taken to not discharge this turbid water directly into streams, creeks, or other water bodies.

Residuals from water treatment systems discharged to septic systems cannot exceed groundwater discharge limit. Some discharges to drainfields require an MPDES permit to ensure discharge limits are not exceeded.

Secondary Impacts

Wells: There is a potential for some alteration of gradients, potentiometric pressures, and flow regimes in an aquifer due to the installation and long-term use of wells. The flow regime in an aquifer or portion of an aquifer is a quasi-equilibrium between recharge and discharge, controlled by the physical properties of the aquifer and the distance and hydraulic (potentiometric) pressure between recharge and discharge areas. The addition of recharge (drainfields) or discharge (wells) points would alter that equilibrium slightly. In most cases, the difference is imperceptible on the scale of the aquifer.

Some aquifers in Montana contain naturally elevated concentrations of potentially harmful substances, such as arsenic, selenium, and fluoride. Long-term consumption of water containing concentrations above the Human Health Standards (HHS) listed in Circular DEQ-7 may increase health risks. Public water wells are subject to DEQ authority under Public Water Supply Law (Title 75, subchapter 6), which ensures drinking water quality meets the minimum standards. The water quality of wells not subject to the Public Water Supply Law are the responsibility of the well owner.

Facilities: There may be minor impacts from storm water generation by impervious surfaces. Runoff from impervious surfaces such as roadways and buildings are discharged to vegetated areas or storm water management facilities.

Cumulative Impacts

Wells: All wells within a given aquifer contribute to the cumulative stress on the aquifer as well owners use their wells. Yield and drawdown tests outlined in ARM 36.21.664 are intended to verify that a well does not have an undue impact on the aquifer. DEQ reviews neighboring well logs and other available data to ensure there is an adequate water source for the Proposed Actions. The review distance for a water availability study can be variable, depending upon the conditions. A confined aquifer would require a wider radius than an unconfined aquifer, a fractured bedrock aquifer would require a wider radius, and a heavily appropriated aquifer would need a more expansive review than one with few wells. A water

right from the DNRC may be required for beneficial use of the well, and if the well did not qualify for an exemption to the permitting process, a more detailed water use, and aquifer analysis may be required. Surface water, geology, faults, and slope must all be considered too. After the initial construction and drilling is completed, minor cumulative impacts are anticipated.

Facilities: Cumulative impacts to the site include minor increase in runoff from any impervious building or roadway, which is mitigated by discharge to native vegetation or storm water management facilities (retention ponds, swales, and drainage ditches).

AIR QUALITY

The Clean Air Act requires EPA to set National Ambient Air Quality Standards for pollutants. Primary standards protect the health of "sensitive" populations such as asthmatics, children, and the elderly. Secondary standards protect against decreased visibility and damage to animals, crops, vegetation, and buildings. This project is required to abide by the federal standards. This project may result in minimal fugitive dust. The operator would be expected to maintain compliance with Montana's Air Quality Act (Title 75, chapter 2, MCA) regarding the need to take reasonable precautions to control airborne particulate matter. DEQ would characterize the nearest Class I airshed to a Proposed Action upon receipt of an application.

Direct Impacts

Wells: During the project, construction and drilling activities such as stripping topsoil, leveling the site, and drilling operations may lead to short-term adverse impacts. These activities involve the use of diesel-powered equipment, which can result in the production and dispersion of dust particulates. This includes implementing BMPs to limit the impact of particulate matter. BMPs that may be used for mitigation involve minimizing the area of disturbance, applying water on access roads if necessary, and restricting unnecessary travel on access roads.

Facilities: The construction and installation of a pumping facilities buildings, water mains, and water connections may result in short-term adverse impacts. These activities involve the use of diesel-powered equipment, which can result in the production and dispersion of dust particulates. The BMPs used to mitigate impacts from well installation may also be used for facility installation.

Secondary Impacts

Wells: Dust may be produced during mobilization and demobilization along existing roads to and from the project area. However, this impact would be mitigated through BMPs such as speed management, limiting unnecessary travel, and water application.

Facilities: Dust and vehicle exhaust may be produced by the water operator visiting the pump facility building for maintenance and associated operating duties. It is expected to be less than three trips to the site per week.

Cumulative Impacts

Wells: Minimal cumulative impacts are expected to air quality as the impacts would be from exhaust from mobile sources or on-road vehicles as described in the Proposed Action for less than 7 days per project. Cumulative impacts from construction activity would be short-term and minor.

Facilities: Minimal cumulative impacts are expected on air quality as travel to and from the site by the water operator (expected to be less than three trips per week).

VEGETATION COVER, QUANTITY AND QUALITY

The land cover in the project area and any findings from searching the Montana Natural Heritage Program (MTNHP) must be characterized. The MTNHP compiles an online report to classify plant Species of Concern and Potential Concern in the state, employing a standardized ranking system to denote global (range-wide) and state status. Species are assigned numeric ranks ranging from 1 (highest risk, greatest concern) to 5 (demonstrably secure), reflecting the relative degree of risk to the species' viability, based upon available information. Species of Concern are native taxa that are at risk due to declining population trends, threats to their habitats, restricted distribution, and/or other factors. Designation as a Montana Species of Concern or Potential Species of Concern is based on the Montana Status Rank and is not a statutory or regulatory classification.

Direct Impacts

Wells: The direct impact of a new well would be minor. Ground disturbance would be less than one acre due to soil disturbance and potential minor loss of vegetation. Overall, the impacts would be contained to the construction site. The direct impact of the Proposed Action on the vegetative communities are expected to be long-term and minor. DEQ staff would check MTNHP for each project site to identify any potential impacts on plant species of concern or rare plants within the analysis area of the Proposed Action.

Facilities: When installing facilities, the disturbance could be up to five acres during construction and should be less during operation. Direct impacts to rare vegetation or cover types are not anticipated. Long-term adverse direct impacts to rare vegetation or cover types and the general vegetative community are not expected given the location and absence of rare vegetation and cover types. Direct impacts to the vegetative communities from the proposed permit activities are expected to be long-term and minor. The installation of a pump house or piping would mainly affect the construction site. The anticipated direct impact of these activities on the plant life is expected to be minimal and of a long-term nature. DEQ staff would conduct checks with MTNHP for each project site to assess potential impacts on plant species of concern or rare plants within the project's analysis area.

Secondary Impacts

Wells: The secondary impacts are expected to be minor, primarily due to soil disturbance and potential loss of vegetation from increased traffic, which could make surrounding areas more susceptible to the propagation of noxious weed infestations. Surface soil disturbance could allow for the establishment of weeds. These impacts are anticipated to be reflected during the construction phase. Secondary impacts on the vegetative communities from the Proposed Action are expected to be long-term and minor.

Facilities: The secondary impacts of the Proposed Action are expected to be minimal. This is mainly due to soil disturbance and potential loss of vegetation resulting from increased traffic, which could lead to a higher susceptibility to the spread of noxious weed infestations in the surrounding areas. Surface soil disturbance may enable weed establishment. These impacts are expected to be evident during the construction phase but contained in the proposed construction area. Long-term and minor secondary impacts on the vegetative communities from the Proposed Action are anticipated.

Cumulative Impacts

Wells: Minor and short-term cumulative impacts would be anticipated due to the construction of the Proposed Action. The disturbance area is limited due to the small scale of the Proposed Action, and the impacts that could occur to vegetation would be during the construction phase of the project. As regrowth is assumed possible, the impacts would be minor.

Facilities: The cumulative impacts like weed growth or permanent harm to vegetation due to the Proposed Action are expected to be minimal. The site once constructed would have minimal additional disturbances to the ground and vegetation as the disturbance area would be reclaimed with local vegetation.

TERRESTRIAL, AVIAN, AND AQUATIC LIFE AND HABITATS

Is there substantial use of the area by important wildlife, birds, or fish? Characterize wildlife in the area. *Are any federally listed threatened or endangered species or identified habitat present? Any wetlands? Species of special concern? Impacts related to the Montana Sage Grouse Executive Order?*

Montana Animal Species of Concern are native Montana animals that are considered to be "at risk" due to declining population trends, threats to their habitats, and/or restricted distribution and are reported jointly between the MTNHP and Montana Department of Fish, Wildlife, and Parks (MFWP). Designation as a Montana Species of Concern or Potential Species of Concern is based on the Montana Status Rank and is not a statutory or regulatory classification.

The United States Fish and Wildlife Service (USFWS) reports federally endangered species defined in the Endangered Species Act (ESA). DEQ Staff will conduct a search on MTNHP upon receipt of application to review any potential impacts to wildlife within the proposed disturbance area.

The Montana Sage Grouse Habitat Conservation Program (SGHCP) works to sustain viable sage grouse populations and conserve habitat. Applicants are required to submit a development project application through SGHCP if the prospective site is in core, general, connectivity habitats, or BLM priority areas. If the proposed site is located in one of these areas, the approved plan would be provided as an attachment to the application.

The mapping tools on the MTNHP's website must be consulted to determine potential species of concern.

Direct Impacts

Wells: The impacts on terrestrial, avian, and aquatic life habitats from the Proposed Action would be negligible and short-term due to the low levels of impact and the small area of disturbance of approximately one acre. Construction and drilling of the Proposed Action may cause temporary disruption to wildlife in the immediate vicinity. However, no long-term adverse effects on biological resources in the area are expected. The duration of the Proposed Action would be seven days or less, and the impact of less than one acre would not adversely affect wildlife. The majority of the Proposed Action would take place in areas of existing human activity. DEQ staff would check MTNHP for each project site to identify any potential impacts to wildlife species of concern within the analysis area of the Proposed Action.

While there may be some disturbance, the scope of the project would allow terrestrial, avian, and aquatic wildlife to travel through the proposed disturbance area. The direct impacts are expected to be short-term and minor.

Facilities: The Proposed Action is expected to have minimal and short-term impacts on wildlife habitats. Construction and excavation may cause temporary disruption to wildlife, but no long-term adverse effects

are expected. DEQ staff would check MTNHP for each project site to identify any potential impacts to wildlife species of concern within the analysis area of the Proposed Action.

Secondary Impacts

Wells: Some secondary impacts could potentially result from improper routing of pumping test discharge but is not expected. Discharge from an aquifer test must be routed far enough from the well to eliminate recharge effects and designed to minimize erosion and disturbance of aquatic habitats (ARM 36.21.637). Secondary impacts are expected to be short-term and minor.

Facilities: No secondary impacts to terrestrial, avian, and aquatic life and habitats stimulated or induced by the direct impacts analyzed above would be expected.

Cumulative Impacts

Wells: No cumulative impacts to terrestrial, avian, and aquatic life and habitats stimulated or induced by the direct impacts analyzed above would be expected.

Facilities: No cumulative impacts to terrestrial, avian, and aquatic life and habitats stimulated or induced by the direct impacts analyzed above would be expected.

HISTORY, CULTURE, AND ARCHEOLOGICAL UNIQUENESS

The Montana Cultural Resource Database under State Historic Preservation Offices (SHPO) indicates where there are both inventoried and historical sites present within state area. SHPO's archeological resource file search for the area would be conducted by DEQ staff. The report results are in the project administrative record.

It is SHPO's position that any structure over fifty years of age is considered historic and is potentially eligible for listing on the National Register of Historic Places. If any structures are within the area of potential effect and are over fifty years old, SHPO may recommend that they be recorded, and a determination of their eligibility be made prior to any disturbance taking place. As long as there would be no disturbance or alteration to structures over fifty years of age, SHPO could determine that there is a low likelihood that cultural properties would be impacted and a recommendation for a cultural resource inventory could be unwarranted at this time. However, should structures need to be altered or if cultural materials were to be inadvertently discovered during this project, SHPO and DEQ are to be contacted, and the site investigated.

Direct Impacts

Wells: The Proposed Action should not widely impact the cultural uniqueness of the proposed project disturbance area. For the Proposed Action, a search would be conducted on the Montana SHPO Database in order to identify any potential historical or archaeological sites. Sites located on County, State, Tribal, or Federal land must consult with SHPO as appropriate prior to disturbing the soil.

Facilities: The Proposed Action should not adversely impact the cultural uniqueness of the project disturbance area. Before beginning the project, search the Montana SHPO Database for potential historical or archaeological sites. Sites on County, State, Tribal, or Federal land must consult with SHPO or THPO before disturbing the soil.

Secondary Impacts

Wells: Before proceeding with the project, it is essential to conduct a search on the Montana SHPO Database to identify any potential historical or archaeological sites in the area. If no sites are found, no secondary impacts on historical and archaeological sites are expected from the Proposed Action.

Facilities: Before proceeding with the project, it is essential to conduct a search on the Montana SHPO Database to identify any potential historical or archaeological sites in the area. If no sites are found, no secondary impacts on historical and archaeological sites are expected from the Proposed Action.

Cumulative Impacts

Wells: No cumulative impacts to historical and archaeological sites are expected.

Facilities: No cumulative impacts on historical and archaeological sites are expected.

DEMANDS ON HUMAN RESOURCES OR ENVIRONMENTAL RESOURCES OF LAND, WATER, AIR, OR ENERGY

Some land, water, and energy resources may be required for the Proposed Project. Nearby activities that could affect the Proposed Action would be analyzed and disclosed on a case-by-case basis upon receipt of an application.

Direct Impacts

Wells: Potential impacts to water resources may include temporary drawdown of the potentiometric surface of an aquifer which in turn may result from aquifer testing over a 1- to 7-day period. The duration would depend on the aquifer's transmissivity, which is the subject of the test. Regular operation of the well may induce a cone of depression around the well in an unconfined water table. The dimensions of a cone of depression would vary with hydrogeologic variables such as transmissivity, permeability, and gradient.

Facilities: A pumping facility building would require power for lighting, security, heating and cooling, communications, and operation of any equipment housed within. Pumps and some treatment processes would require power to operate.

Secondary Impacts

Wells: Installation of a well would increase the total demand for the groundwater resource in the target aquifer. Secondary impacts would be long-term and minor.

Facilities: Secondary impacts would be for the equipment housed inside the pumping facility building, which would require a small demand of ongoing power for the life of the water system. Emergency generators and their fuel (such as propane) would be needed on site to provide emergency power for water systems needing reliability, such as those for residential communities (DEQ-1, 3.2.1.3).

Cumulative Impacts

Wells: Installation of a new well adds to cumulative withdrawals from the aquifer. As more wells are installed in the immediate area, cumulative drawdown should be considered. A DNRC water right may be required for beneficial use of the well, and if the well did not qualify for an exemption to the permitting process a more detailed water use, and aquifer analysis may be required.

Facilities: No cumulative impacts on human or environmental resources are expected.

HUMAN HEALTH AND SAFETY

The applicant would be required to adhere to all applicable state and federal safety laws. The Occupational Safety and Health Administration (OSHA) has developed rules and guidelines to reduce the risks associated with this type of labor. Few, if any, members of the public would be in immediate proximity to the project during construction or operations.

Direct Impacts

Wells: Impacts to human health and safety of the Proposed Action are mitigated by adherence to OSHA rules and guidelines. No direct risks to human health and safety are expected from the Proposed Action.

Facilities: Impacts to human health and safety of the Proposed Action are mitigated by adherence to OSHA rules and guidelines. Temporary fencing and barricades are used to protect the public from entering the construction area, and the use of trench boxes if excavating deeply prevents injury to workers. No direct risks to human health and safety are expected from the Proposed Action.

Secondary Impacts

Wells: Secondary impacts to human health and safety would be short-term and negligible as impacts to human health and safety would be largely mitigated by adherence to OSHA guidelines. Any potential minor impacts would occur during the construction and drilling phases of the Proposed Action as it includes the use of construction equipment.

Facilities: Secondary impacts to human health and safety would be short-term and negligible as impacts to human health and safety would be largely mitigated by adherence to OSHA guidelines. Any potential minor impacts would occur during the construction and trenching phase of the Proposed Action as it includes the use of construction equipment.

Cumulative Impacts

Wells: No cumulative impacts to human health and safety would be expected.

Facilities: No cumulative impacts on human health and safety would be expected.

AESTHETICS

The project area would be temporarily visible to those passing by during the construction activities, which could last between 1 to 7 days, but there would be no permanent change to topography or the viewshed. Noise associated with the project may be heard by receptors located in an area where sound related to the project has not been fully diminished by distance or another sound-dampening feature.

Direct Impacts

Wells: The Proposed Action may be temporarily visible to or heard by the surrounding area and to receptors located at observation points that are unobstructed by topography or forested vegetation. Aesthetic impacts from drilling activities would not be excessive to receptors in the area. Noise would be generated during drilling. The maximum amount of time the Proposed Action could take would be up to seven days. The wellhead could be between 6 and 8 inches in diameter and a minimum of eighteen inches above the ground and, in most cases, no higher than two feet above the ground. In certain cases, a finished well may be located in a chain link fenced area to avoid unwanted tapering with the water supply as depicted in Figure 4.

Figure 2 depicts what most permanent well heads may look like after construction. Coloring may vary along with its base, which is commonly a small concrete pad surrounding the head (not pictured in Figure 2).

Some construction and drilling may occur after dark, either throughout the night or during the evening. There may be artificial area lighting within the five acres or less area of disturbance, generally contained to the area of drilling. The disturbance would be short-term and minor.

Facilities: A pumping facility building may be constructed for multiple-user or public wells, to contain monitoring equipment, filtration, chemical treatment, and distribution equipment. The building would need lighting for security and safety, and space to park one or more vehicles for operator access. One or more large water storage tanks may also be needed. All underground facilities would be reclaimed aboveground and would have no expected aesthetic impacts.

Secondary Impacts

Wells: Minor secondary impacts to area aesthetics would be expected from the Proposed Action as only a well head would remain visible during operation.

Facilities: Pumping facility buildings may have lighting or fencing for security purposes, which may cause minor impacts to aesthetics. Some minor piping, such as a vent pipe, or an access hatch to an underground storage tank may be visible at the ground surface.

Cumulative Impacts

Wells: No cumulative impacts to area aesthetics would be expected from the Proposed Action.

Facilities: No cumulative impacts to area aesthetics would be expected from the Proposed Action.

SOCIOECONOMICS

Included in this section are the following: industrial, commercial and agricultural activities and production; quantity and distribution of employment; local and state tax base and tax revenues; demand for government services; locally adopted environmental plans and goals; access to and quality of recreational and wilderness activities; density and distribution of population and housing; social structures and mores; and other appropriate social and economic circumstances.

Proposed projects may be subject to any plans or rules set forth by local government such as the city or county. Proposed land use is described in the application. When applicable, local permits and approvals are provided with the application.

Direct Impacts

Wells: No additional permanent jobs are expected to be created by the activity. The duration of well drilling would be up to seven days. Once completion of the well, the workers would leave the area. Each well would require at least one driller and one assistant, however larger projects may require additional personnel. Some additional commerce can be expected in local restaurants, stores, and lodging in some cases for a short duration of time.

Facilities: Some additional jobs may be created from the Proposed Action as a construction crew of 1-10 personnel would be necessary to complete the project for up to six months. Some temporary traffic may be generated, as it would be limited to the construction phase. Some additional commerce can be expected in local restaurants, stores, and lodging in some cases during this time.

Secondary Impacts

Wells: The presence of a well on the subject property may increase property values, possibly just the subject property or potentially surrounding properties, in some cases, leading to minor potential revenue from property taxes. Secondary impacts are expected to be minor and long-term.

Facilities: Working facilities associated with a well may increase property values, possibly just the subject property or potentially surrounding properties, and in some cases may generate revenue from property taxes. Secondary impacts are expected to be minor and long-term.

Cumulative Impacts

Wells: No cumulative impacts are expected as a result of the Proposed Action.

Facilities: No cumulative impacts are expected as a result of the Proposed Action.

PRIVATE PROPERTY IMPACTS

Are we regulating the use of private property under a regulatory statute adopted pursuant to the police power of the state? (Property management, grants of financial assistance, and the exercise of the power of eminent domain are not within this category). If not, no further analysis is required. Does the proposed regulatory action restrict the use of the regulated person's private property? If not, no further analysis is required. Does the agency have Legal discretion to impose or not impose the proposed restriction or discretion as to how the restriction will be imposed? If not, no further analysis is required. If so, the agency must determine if there are alternatives that would reduce, minimize or eliminate the restriction on the use of private property, and analyze such alternatives.

The Proposed Action could take place on public land (including public wells that could be installed on municipal, state, or federal properties) or private land owned by the applicant. DEQ's approval of the Proposed Action would affect the applicant's real property. DEQ has determined, however, that the Proposed Action conditions are reasonably necessary to ensure compliance with applicable requirements under the Sanitation in Subdivisions Act and the Public Water Supply Act. Therefore, DEQ's approval of the well construction would not have private property-taking or -damaging implications.

Montana's Private Property Assessment Act, Section 2-10-101, *et seq.*, MCA establishes an orderly and consistent process that better enables state agencies to evaluate if Proposed Actions has taking or damaging implications under the existing "Takings Clauses" of the United States and Montana Constitutions, as those clauses are interpreted and applied by the United States and Montana Supreme Courts.

Section 2-10-104, MCA required Montana's Attorney General to develop guidelines, including a checklist, to assist state agencies in identifying and evaluating proposed agency actions that may result in the taking or damaging of private property. In turn, Section 2-10-105(1) and (2), MCA set out a process for each State Agency to evaluate whether a State action may result in an unconstitutional taking of private property.

GREENHOUSE GAS ASSESSMENT

The analysis area for this resource is limited to the activities regulated by the issuance of a Certificate of Approval (COSA) or letter of approval which is construction and operation of the Proposed Action. The construction equipment would mainly be diesel fuel. DEQ assumed the equipment during drilling operations and construction of the associated facilities could operate up to 10 hours per day and last up to 7 days. This includes all of the equipment as listed in "Construction Equipment" in the Proposed Action Table within 100 miles of the Proposed Action. The maximum total fuel consumption to be approximately

3,990 gallons of diesel per project. This assumes brand new construction and no existing infrastructure exists at this site. The amount of fuel utilized at the Proposed Action may be impacted by several factors including seasonal weather impediments and equipment malfunctions. The assumptions used for fuel consumption were estimated by professional agency expertise. DEQ overestimated the gallons per hour as drillers could have techniques to use less diesel per well. Some applications may have a shorter construction timeframe due to other infrastructure in the vicinity of the Proposed Action and would of course have a much smaller consumption level of diesel fuel.

For the purpose of this analysis, DEQ has defined greenhouse gas emissions as the following gas species: carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), and many species of fluorinated compounds. The range of fluorinated compounds includes numerous chemicals which are used in many household and industrial products. Other pollutants can have some properties that also are similar to those mentioned above, but the EPA has clearly identified the species above as the primary GHGs. Water vapor is also technically a greenhouse gas, but its properties are controlled by the temperature and pressure within the atmosphere, and it is not considered an anthropogenic species.

The combustion of diesel fuel at the site would release GHGs primarily being carbon dioxide (CO_2), nitrous oxide (N_2O), and much smaller concentrations of uncombusted fuel components including methane (CH_4) and other volatile organic compounds (VOCs).

DEQ has calculated GHG emissions using the EPA Simplified GHG Calculator (May 2023 Version), for the purpose of totaling GHG emissions. This tool totals carbon dioxide (CO_2), nitrous oxide (N_2O), and methane (CH_4) and reports the total as CO_2 equivalent (CO_2e) in metric tons CO_2e. The calculations in this tool are widely accepted to represent reliable calculation approaches for developing a GHG inventory. The calculations in this tool are widely accepted to represent reliable calculation approaches for developing a GHG inventory. DEQ has determined EPA's Scope 1 GHG impacts as defined in the Inventory Guidance for Greenhouse Gas Emissions are appropriate under MEPA for this Proposed Action. Scope 1 emissions are defined as direct GHG emissions that occur from sources that are controlled or owned by the organization (EPA Center for Corporate Climate Leadership). DEQ's review of Scope 1 emissions is consistent with the agency not evaluating downstream effects of other types of impacts.

Direct Impacts

The construction and operation of the Proposed Action would require the combustion of diesel fuel for the equipment to build and operate. The combustion of diesel fuel would produce exhaust fumes containing GHGs.

DEQ estimates that up to approximately 3,990 gallons of diesel fuel could be utilized per Proposed Action. Each Proposed Action could take a maximum of 7 days to drill and/or build associated facilities as specified in the Proposed Action. Using the Environmental Protection Agency's (EPA) simplified GHG Emissions Calculator for mobile sources, about 40,739.9 kilograms of CO_2e or 41 metric tons of CO_2e could be produced per Proposed Action (DEQ's Subdivisions GHG Well PEA, August 2024). This number can be identified based on DEQ staff's professional opinion of the Proposed Action's complexity and duration.

Secondary Impacts

GHG emissions contribute to changes in atmospheric radiative forcing, resulting in climate change impacts. GHGs act to contain solar energy loss by trapping longer wave radiation emitted from the Earth's surface and act as a positive radiative forcing component (BLM 2021).

Per EPA's website "Climate Change Indicators", the lifetime of carbon dioxide cannot be represented with a single value because the gas is not destroyed over time. The gas instead moves between air, ocean, and land mediums with atmospheric carbon dioxide remaining in the atmosphere for thousands of years, due in part to the very slow process by which carbon is transferred to ocean sediments. Methane remains in the atmosphere for approximately 12 years. Nitrous oxide has the potential to remain in the atmosphere for about 109 years (EPA, Climate Change Indictors). The impacts of climate change throughout the state of Montana include changes in flooding and drought, rising temperatures, and the spread of invasive species (BLM 2021).

Cumulative Impacts

Montana recently used the EPA State Inventory Tool (SIT) to develop a greenhouse gas inventory in conjunction with preparation of a possible grant application for the Community Planning Reduction Grant (CPRG) program. This tool was developed by EPA to help states develop their own greenhouse gas inventories, and this relies upon data already collected by the federal government through various agencies. The inventory specifically deals with carbon dioxide, methane, and nitrous oxide and reports the total as CO_2e. The SIT consists of 11 Excel-based modules with pre-populated data that can be used with default settings or in some cases, allows states to input their own data when the state believes their own data provides a higher level of quality and accuracy. Once each of the 11 modules is filled out, the data from each module is exported into a final "synthesis" module that summarizes all of the data into a single file. Within the synthesis file, several worksheets display the output data in a number of formats such as GHG emissions by sector and GHG emissions by type of greenhouse gas.

DEQ has determined the use of the default data provides a reasonable representation of the greenhouse gas inventory for the various sectors of the state, and the estimated total annual greenhouse gas inventory by year. The SIT data from EPA is currently only updated through the year 2021, as it takes several years to validate and make new data available within revised modules. DEQ maintains a copy of the output results of the SIT.

DEQ has determined that the use of the default data provides a reasonable representation of the GHG inventory for all of the state sectors, and an estimated total annual GHG inventory by year. At present, Montana accounts for 47.77 million metric tons of CO_2e based on the EPA SIT for the year 2021. This project may contribute up to 41 metric tons per year of CO2e. The estimated emission of 41 metric tons of CO2e from this project would contribute 0.0000086% of Montana's annual CO2e emissions.

GHG emissions that would be emitted because of the Proposed Action would add to GHG emissions from other sources. The No Action Alternative would contribute less than the Proposed Action Alternative of GHG emissions.

3. DESCRIPTION OF ALTERNATIVES

3.1 ADDITIONAL ALTERNATIVES CONSIDERED

No Action Alternative: In addition to the Proposed Action, DEQ must also be consider a "no action" alternative. The "no action" alternative would deny the Proposed Action. The applicant would lack the authority to construct a well. Any potential impacts that would result from the well construction would not occur. The no action alternative forms the baseline from which the impacts of the Proposed Action can be measured.

If the applicant demonstrates compliance with all applicable rules and regulations required for approval,

the “no action” alternative would not be appropriate.

No well would be drilled. If an alternative water supply cannot be arranged, a subdivision may not be developed, businesses may not operate, or the public water supply may not have the required capacity.

Other Reasonable Alternative(s): A Reasonable Alternative to a proposed action could be introduced whenever alternatives are reasonably available and prudent to consider and a discussion of how the alternative would be implemented (ARM 17.4.609 (3)). A reasonable alternative would have to meet the same Purpose and Need as the Proposed Action and would incur the same impacts as the Proposed Action.

3.2 CONSULTATION

DEQ engaged in internal and external efforts to identify substantive issues and/or concerns related to the Proposed Action. Internal scoping consisted of internal review of the EA document by DEQ staff.

3.3 NEED FOR FURTHER ANALYSIS AND SIGNIFICANCE OF POTENTIAL IMPACTS

When determining whether the preparation of an environmental impact statement is needed, DEQ is required to consider the seven significance criteria set forth in ARM 17.4.608, which are as follows:

a) The severity, duration, geographic extent, and frequency of the occurrence of the impact;
b) the probability that the impact will occur if the proposed action occurs; or conversely, reasonable assurance in keeping with the potential severity of an impact that the impact will not occur;
c) growth-inducing or growth-inhibiting aspects of the impact, including the relationship or contribution of the impact to cumulative impacts ;
d) the quantity and quality of each environmental resource or value that would be affected, including the uniqueness and fragility of those resources and values;
e) the importance to the state and to society of each environmental resource or value that would be affected;
f) any precedent that would be set as a result of an impact of the proposed action that would commit the department to future actions with significant impacts or a decision in principle about such future actions; and
g) potential conflict with local, state, or federal laws, requirements, or formal plans.

The programmatic EA conducted by DEQ thoroughly evaluated the potential impacts of the Proposed Action on the environment and has determined that there are no significant adverse effects. DEQ's analysis indicates that the Proposed Action would neither promote nor impede growth, nor contribute to cumulative impacts. If any discrepancies are found upon the case-by-case review of impacts from the Proposed Project, they will be appropriately documented and disclosed.

The limited operational area and the use of water for dust control would have minimal impacts on air quality.

Vegetation would experience minimal impact due to the small area affected by the Proposed Action.

Minor impacts to terrestrial, avian, and aquatic life and habitats could occur. During construction, animals may temporarily avoid the project area. However, any displaced animal could easily find

another nearby suitable habitat and return to the project area shortly after the conclusion of the project.

Any unique, endangered, fragile, or limited environmental resources would be carefully evaluated. If such a resource is discovered, SHPO would be notified immediately, and the site would remain untouched until a proper evaluation is conducted.

Wells: The planned activities would have a visible impact on the surrounding view for a short period, typically lasting 1-7 days. This may temporarily alter the local topography and affect the views of nearby residents and visitors. The noise and visual impact would be limited to the specific activities of drilling and reclamation operations. The noise generated by the project may be audible to individuals in the area for a short period.

Facilities: Construction of water mains and connections would have a similar impact to well drilling, with a short period of noise and visual impact. Construction of an operations building, possibly with water storage tanks and fencing, would have a minor long-term impact, as a building and potentially tanks would remain. Compliance with any HOA architectural standards would reduce the visual contrast.

Demands on environmental resources of land, water, air, or energy would be minor.

In the EA document, it has been thoroughly evaluated by the DEQ, and no long-term or significant impacts on any environmental resource associated with the Proposed Action have been identified.

The issuance of a COSA/letter of approval to the applicant does not establish a precedent for DEQ's review of other licenses and/or applications. This includes the level of environmental review, which is determined based on specific criteria outlined in ARM 17.4.608 and the unique circumstances of each case.

DEQ does not anticipate that the applicant's Proposed Action would have any growth-inducing or growth-inhibiting aspects that would conflict with any local, state, or federal laws, requirements, or formal plans. Considering the criteria outlined in ARM 17.4.608, the Proposed Action is not predicted to significantly impact the quality of the human environment. Therefore, preparing an EA is the appropriate level of environmental review under MEPA.

4. PUBLIC INVOLVEMENT

DESCRIPTION OF PUBLIC OUTREACH/NOTICE/COMMENT PERIOD/MEETINGS (planned or already conducted)

DEQ determines if a Proposed Action application falls under a programmatic EA after a careful review of the application materials. Once the determination has been made, the application and programmatic EA are published on Montana DEQ's website for a 10-day public comment period. The programmatic EA will undergo a public comment period from MONTH XX, 2024 to MONTH XX, 2024 and should DEQ receive any comments they would be addressed below.

5. CONCLUSIONS AND FINDINGS

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II. COMMENT SUMMARY AND RESPONSES TO SUBSTANTIVE COMMENTS

Responses to substantive comments.