
APPENDIX J

WASTEWATER SYSTEM CALCULATIONS FOR GREYCLIFF EASTBOUND				
Design Year	Existing (2007)	Projected 10YR (2017)	Projected 20YR (2027)	
Design Wastewater Flow Rate =	3.5	3.5	3.5	gpd/person (Table 12, Montana Rest Area Plan)
AADT =	5,113	7,212	10,174	Vehicles per day
P =	11%	11%	11%	% of traffic stopping at rest area (Table 9, Montana Rest Area Plan)
UV =	1.3	1.3	1.3	Restroom users per vehicle (Table 12, Montana Rest Area Plan)
Wastewater Flow =	2,548	3,639	5,096	Gallons per day (3.5*AADT*P*UV)
Minimum Septic Tank Capacity based on today's standards ⁽¹⁾ =	5,700	8,200	11,500	Gallons (Per DEQ-4, 7.2.10.1)
Soil Classification ⁽²⁾ =	274C-Work clay loam, 4 to 8 % slopes			
Application Rate ⁽³⁾ =	0.3	0.3	0.3	gpd/ft ² (for clay loam, silty clay loam)
Absorption System Size =	8,500	12,100	17,000	ft ² (Wastewater Flow / Application Rate)
# of Laterals =	43	61	85	Based on 2' wide and 100' long trench (Current DEQ standards for maximum trench width and length on gravity systems)
Total Footprint of Drainfield =	29,250	41,850	59,000	ft ² (Based on 100' laterals, 2' wide trench, and 5' spacing b/w trenches)

WASTEWATER SYSTEM CALCULATIONS FOR GREYCLIFF WESTBOUND				
Design Year	Existing (2007)	Projected 10YR (2017)	Projected 20YR (2027)	
Design Wastewater Flow Rate =	3.5	3.5	3.5	gpd/person (Table 12, Montana Rest Area Plan)
AADT =	5,094	7,186	10,136	Vehicles per day
P =	11%	11%	11%	% of traffic stopping at rest area (Table 9, Montana Rest Area Plan)
UV =	1.3	1.3	1.3	Restroom users per vehicle (Table 12, Montana Rest Area Plan)
Wastewater Flow =	2,548	3,609	5,067	Gallons per day (3.5*AADT*P*UV)
Minimum Septic Tank Capacity based on today's standards ⁽¹⁾ =	5,700	8,100	11,400	Gallons (Per DEQ-4, 7.2.10.1)
Soil Classification ⁽²⁾ =	274C-Work clay loam, 4 to 8 % slopes			
Application Rate ⁽³⁾ =	0.3	0.3	0.3	gpd/ft ² (for clay loam, silty clay loam)
Absorption System Size =	8,500	12,000	16,900	ft ² (Wastewater Flow / Application Rate)
# of Laterals =	43	60	85	Based on 2' wide and 100' long trench (Current DEQ standards for maximum trench width and length on gravity systems)
Total Footprint of Drainfield =	29,250	41,500	58,650	ft ² (Based on 100' laterals, 2' wide trench, and 5' spacing b/w trenches)

⁽¹⁾Per DEQ-4, 7.2.10.1 C: For non-residential flows of greater than 1,500 gallons per day, the tank must have a minimum capacity equal to 2.25 times the average daily flow. Per DEQ-4, 7.2.10.1 B: For non-residential flows of less than or equal to 1,500 gallons per day, the tank must have a capacity of at least 2.7 times the design flow.

⁽²⁾Based on NRCS soils information obtained from NRIS.

⁽³⁾Based on DEQ-4, Table 8-2 (Nonresidential Facilities).

WASTEWATER SYSTEM CALCULATIONS FOR GREYCLIFF EASTBOUND (w/ Level II Treatment)						
Design Year	Existing (2007)	Projected 10YR (2017)	Projected 20YR (2027)			
Design Wastewater Flow Rate =	3.5	3.5	3.5			gpd/person (Table 12, Montana Rest Area Plan)
AADT =	5,113	7,212	10,174			Vehicles per day
P =	11%	11%	11%			% of traffic stopping at rest area (Table 9, Montana Rest Area Plan)
UV =	1.3	1.3	1.3			Restroom users per vehicle (Table 12, Montana Rest Area Plan)
Wastewater Flow =	2,548	3,639	5,096			Gallons per day (3.5*AADT*P*UV)
Minimum Septic Tank Capacity based on today's standards ⁽¹⁾ =	5,700	8,200	11,500			Gallons (Per DEQ-4, 7.2.10.1)
Soil Classification ⁽²⁾ =	274C-Work clay loam, 4 to 8 % slopes					
Application Rate ⁽³⁾ =	0.3	0.3	0.3			gpd/ft ² (for clay loam, silty clay loam)
Absorption System Size =	4,200	6,100	8,500			ft ² (Wastewater Flow / Application Rate) x 0.5 (Level 2 Treatment)
# of Laterals =	14	20	28			Based on 3' wide and 100' long trench (Current DEQ standards for maximum trench width and length on dosed systems)
Total Footprint of Drainfield =	9,400	13,833	19,433			ft ² (Based on 100' laterals, 3' wide trench, and 4' spacing b/w trenches)
Proposed Bed System =	8,493	12,131	16,988			ft ²
	92' x 92'	110' x 110'	130' x 130'			Bed system dimensions

WASTEWATER SYSTEM CALCULATIONS FOR GREYCLIFF WESTBOUND (w/ Level II Treatment)						
Design Year	Existing (2007)	Projected 10YR (2017)	Projected 20YR (2027)	Projected 20YR Combined System (2007)	Projected 20YR Combined System (2027)	
Design Wastewater Flow Rate =	3.5	3.5	3.5	3.5	3.5	gpd/person (Table 12, Montana Rest Area Plan)
AADT =	5,094	7,186	10,136	10,207	20,310	Vehicles per day
P =	11%	11%	11%	11%	11%	% of traffic stopping at rest area (Table 9, Montana Rest Area Plan)
UV =	1.3	1.3	1.3	1.3	1.3	Restroom users per vehicle (Table 12, Montana Rest Area Plan)
Wastewater Flow =	2,548	3,609	5,067	5,109	10,165	Gallons per day (3.5*AADT*P*UV)
Minimum Septic Tank Capacity based on today's standards ⁽¹⁾ =	5,700	8,100	11,400	11,500	22,900	Gallons (Per DEQ-4, 7.2.10.1)
Soil Classification ⁽²⁾ =	274C-Work clay loam, 4 to 8 % slopes					
Application Rate ⁽³⁾ =	0.3	0.3	0.3	0.3	0.3	gpd/ft ² (for clay loam, silty clay loam)
Absorption System Size =	4,200	6,000	8,400	8,500	16,900	ft ² (Wastewater Flow / Application Rate) x 0.5 (Level 2 Treatment)
# of Laterals =	14	20	28	28	56	Based on 3' wide and 100' long trench (Current DEQ standards for maximum trench width and length on dosed systems)
Total Footprint of Drainfield =	9,400	13,600	19,200	19,433	39,033	ft ² (Based on 100' laterals, 3' wide trench, and 4' spacing b/w trenches)
Proposed Bed System =	8,494	12,031	16,890	17,029	33,884	ft ²
	92' x 92'	110' x 110'	130' x 130'	130' x 130'	184' x 184'	Bed system dimensions

⁽¹⁾Per DEQ-4, 7.2.10.1 C: For non-residential flows of greater than 1,500 gallons per day, the tank must have a minimum capacity equal to 2.25 times the average daily flow. Per DEQ-4, 7.2.10.1 B: For non-residential flows of less than or equal to 1,500 gallons per day, the tank must have a capacity of at least 2.7 times the design flow.

⁽²⁾Based on NRCS soils information obtained from NRIS.

⁽³⁾Based on DEQ-4, Table 8-2 (Nonresidential Facilities).

WASTEWATER SYSTEM CALCULATIONS FOR CUSTER EASTBOUND				
Design Year	Existing (2007)	Projected 10YR (2017)	Projected 20YR (2027)	
Design Wastewater Flow Rate =	3.5	3.5	3.5	gpd/person (Table 12, Montana Rest Area Plan)
AADT =	1,995	2,814	3,970	Vehicles per day
P =	11%	11%	11%	% of traffic stopping at rest area (Table 9, Montana Rest Area Plan)
UV =	1.3	1.3	1.3	Restroom users per vehicle (Table 12, Montana Rest Area Plan)
Wastewater Flow =	971	1,365	1,973	Gallons per day (3.5*AADT*P*UV)
Minimum Septic Tank Capacity based on today's standards ⁽¹⁾ =	2,600	3,700	4,400	Gallons (Per DEQ-4, 7.2.10.1)
Soil Classification ⁽²⁾ =	285F-Blacksheep, dry-Cabbart, dry-Rock outcrop, complex, 8 to 60 percent slopes			
Application Rate ⁽³⁾ =	0.5	0.5	0.5	gpd/ft ² (for clay loam, silty clay loam)
Absorption System Size =	1,900	2,700	3,900	ft ² (Wastewater Flow / Application Rate)
# of Laterals =	10	14	20	Based on 2' wide and 100' long trench (Current DEQ standards for maximum trench width and length on gravity systems)
Total Footprint of Drainfield =	6,150	8,950	13,150	ft ² (Based on 100' laterals, 2' wide trench, and 5' spacing b/w trenches)

WASTEWATER SYSTEM CALCULATIONS FOR CUSTER WESTBOUND				
Design Year	Existing (2007)	Projected 10YR (2017)	Projected 20YR (2027)	
Design Wastewater Flow Rate =	3.5	3.5	3.5	gpd/person (Table 12, Montana Rest Area Plan)
AADT =	1,995	2,814	3,970	Vehicles per day
P =	11%	11%	11%	% of traffic stopping at rest area (Table 9, Montana Rest Area Plan)
UV =	1.3	1.3	1.3	Restroom users per vehicle (Table 12, Montana Rest Area Plan)
Wastewater Flow =	971	1,365	1,973	Gallons per day (3.5*AADT*P*UV)
Minimum Septic Tank Capacity based on today's standards ⁽¹⁾ =	2,600	3,700	4,400	Gallons (Per DEQ-4, 7.2.10.1)
Soil Classification ⁽²⁾ =	Hs-Hilly, gravelly land			
Application Rate ⁽³⁾ =	0.8	0.8	0.8	gpd/ft ² (for clay loam, silty clay loam)
Absorption System Size =	1,200	1,700	2,500	ft ² (Wastewater Flow / Application Rate)
# of Laterals =	6	9	13	Based on 2' wide and 100' long trench (Current DEQ standards for maximum trench width and length on gravity systems)
Total Footprint of Drainfield =	3,700	5,450	8,250	ft ² (Based on 100' laterals, 2' wide trench, and 5' spacing b/w trenches)

⁽¹⁾Per DEQ-4, 7.2.10.1 C: For non-residential flows of greater than 1,500 gallons per day, the tank must have a minimum capacity equal to 2.25 times the average daily flow. Per DEQ-4, 7.2.10.1 B: For non-residential flows of less than or equal to 1,500 gallons per day, the tank must have a capacity of at least 2.7 times the design flow.

⁽²⁾Based on NRCS soils information obtained from NRIS.

⁽³⁾Based on DEQ-4, Table 8-2 (Nonresidential Facilities).

WASTEWATER SYSTEM CALCULATIONS FOR CUSTER EASTBOUND (w/ Level II Treatment)				
Design Year	Existing (2007)	Projected 10YR (2017)	Projected 20YR (2027)	
Design Wastewater Flow Rate =	3.5	3.5	3.5	gpd/person (Table 12, Montana Rest Area Plan)
AADT =	1,995	2,814	3,970	Vehicles per day
P =	11%	11%	11%	% of traffic stopping at rest area (Table 9, Montana Rest Area Plan)
UV =	1.3	1.3	1.3	Restroom users per vehicle (Table 12, Montana Rest Area Plan)
Wastewater Flow =	971	1,365	1,973	Gallons per day (3.5*AADT*P*UV)
Minimum Septic Tank Capacity based on today's standards ⁽¹⁾ =	2,600	3,700	4,400	Gallons (Per DEQ-4, 7.2.10.1)
Soil Classification ⁽²⁾ =	285F-Blacksheep, dry-Cabbart, dry-Rock outcrop, complex, 8 to 60 percent slopes			
Application Rate ⁽³⁾ =	0.5	0.5	0.5	gpd/ft ² (for clay loam, silty clay loam)
Absorption System Size =	1,000	1,400	2,000	ft ² (Wastewater Flow / Application Rate) x 0.5 (Level 2 Treatment)
# of Laterals =	3	5	7	Based on 3' wide and 100' long trench (Current DEQ standards for maximum trench width and length on dosed systems)
Total Footprint of Drainfield =	1,933	2,867	4,267	ft ² (Based on 100' laterals, 3' wide trench, and 4' spacing b/w trenches)
Proposed Bed System =	1,943	2,731	3,946	ft ²
	44' x 44'	52' x 52'	63' x 63'	Bed system dimensions

WASTEWATER SYSTEM CALCULATIONS FOR CUSTER WESTBOUND (w/ Level II Treatment)				
Design Year	Existing (2007)	Projected 10YR (2017)	Projected 20YR (2027)	
Design Wastewater Flow Rate =	3.5	3.5	3.5	gpd/person (Table 12, Montana Rest Area Plan)
AADT =	1,995	2,814	3,970	Vehicles per day
P =	11%	11%	11%	% of traffic stopping at rest area (Table 9, Montana Rest Area Plan)
UV =	1.3	1.3	1.3	Restroom users per vehicle (Table 12, Montana Rest Area Plan)
Wastewater Flow =	971	1,365	1,973	Gallons per day (3.5*AADT*P*UV)
Minimum Septic Tank Capacity based on today's standards ⁽¹⁾ =	2,600	3,700	4,400	Gallons (Per DEQ-4, 7.2.10.1)
Soil Classification ⁽²⁾ =	Hs-Hilly, gravelly land			
Application Rate ⁽³⁾ =	0.8	0.8	0.8	gpd/ft ² (for clay loam, silty clay loam)
Absorption System Size =	600	900	1,200	ft ² (Wastewater Flow / Application Rate) x 0.5 (Level 2 Treatment)
# of Laterals =	2	3	4	Based on 3' wide and 100' long trench (Current DEQ standards for maximum trench width and length on dosed systems)
Total Footprint of Drainfield =	1,000	1,700	2,400	ft ² (Based on 100' laterals, 3' wide trench, and 4' spacing b/w trenches)
Proposed Bed System =	1,214	1,707	2,466	ft ²
	35' x 35'	41' x 41'	50' x 50'	Bed system dimensions

⁽¹⁾Per DEQ-4, 7.2.10.1 C: For non-residential flows of greater than 1,500 gallons per day, the tank must have a minimum capacity equal to 2.25 times the average daily flow. Per DEQ-4, 7.2.10.1 B: For non-residential flows of less than or equal to 1,500 gallons per day, the tank must have a capacity of at least 2.7 times the design flow.

⁽²⁾Based on NRCS soils information obtained from NRIS.

⁽³⁾Based on DEQ-4, Table 8-2 (Nonresidential Facilities).

WASTEWATER SYSTEM CALCULATIONS FOR HYSHAM EASTBOUND				
Design Year	Existing (2007)	Projected 10YR (2017)	Projected 20YR (2027)	
Design Wastewater Flow Rate =	3.5	3.5	3.5	gpd/person (Table 12, Montana Rest Area Plan)
AADT =	2,265	3,195	4,507	Vehicles per day
P =	11%	11%	11%	% of traffic stopping at rest area (Table 9, Montana Rest Area Plan)
UV =	1.3	1.3	1.3	Restroom users per vehicle (Table 12, Montana Rest Area Plan)
Wastewater Flow =	1,152	1,609	2,275	Gallons per day (3.5*AADT*P*UV)
Minimum Septic Tank Capacity based on today's standards ⁽¹⁾ =	3,100	3,600	5,100	Gallons (Per DEQ-4, 7.2.10.1)
Soil Classification ⁽²⁾ =	MI-McRae-Bainville loams, 8 to 20 % slopes			
Application Rate ⁽³⁾ =	0.8	0.8	0.8	gpd/ft ² (for clay loam, silty clay loam)
Absorption System Size =	1,400	2,000	2,800	ft ² (Wastewater Flow / Application Rate)
# of Laterals =	5	7	9	Based on 3' wide and 100' long trench (Current DEQ standards for maximum trench width and length on dosed systems)
Total Footprint of Drainfield =	2,867	4,267	6,133	ft ² (Based on 100' laterals, 3' wide trench, and 4' spacing b/w trenches)

WASTEWATER SYSTEM CALCULATIONS FOR HYSHAM WESTBOUND				
Design Year	Existing (2007)	Projected 10YR (2017)	Projected 20YR (2027)	
Design Wastewater Flow Rate =	3.5	3.5	3.5	gpd/person (Table 12, Montana Rest Area Plan)
AADT =	2,265	3,195	4,507	Vehicles per day
P =	11%	11%	11%	% of traffic stopping at rest area (Table 9, Montana Rest Area Plan)
UV =	1.3	1.3	1.3	Restroom users per vehicle (Table 12, Montana Rest Area Plan)
Wastewater Flow =	1,152	1,609	2,275	Gallons per day (3.5*AADT*P*UV)
Minimum Septic Tank Capacity based on today's standards ⁽¹⁾ =	3,100	3,600	5,100	Gallons (Per DEQ-4, 7.2.10.1)
Soil Classification ⁽²⁾ =	Mo-McRae and Havre loams, 1 to 4 percent slopes			
Application Rate ⁽³⁾ =	0.8	0.8	0.8	gpd/ft ² (for clay loam, silty clay loam)
Absorption System Size =	1,400	2,000	2,800	ft ² (Wastewater Flow / Application Rate)
# of Laterals =	5	7	9	Based on 3' wide and 100' long trench (Current DEQ standards for maximum trench width and length on dosed systems)
Total Footprint of Drainfield =	2,867	4,267	6,133	ft ² (Based on 100' laterals, 3' wide trench, and 4' spacing b/w trenches)

⁽¹⁾Per DEQ-4, 7.2.10.1 C: For non-residential flows of greater than 1,500 gallons per day, the tank must have a minimum capacity equal to 2.25 times the average daily flow. Per DEQ-4, 7.2.10.1 B: For non-residential flows of less than or equal to 1,500 gallons per day, the tank must have a capacity of at least 2.7 times the design flow.

⁽²⁾Based on NRCS soils information obtained from NRIS.

⁽³⁾Based on results of percolation test for WB site. Soils = sandy gravels.

WASTEWATER SYSTEM CALCULATIONS FOR HYSHAM EASTBOUND (w/ Level II Treatment)						
Design Year	Existing (2007)	Projected 10YR (2017)	Projected 20YR (2027)			
Design Wastewater Flow Rate =	3.5	3.5	3.5			gpd/person (Table 12, Montana Rest Area Plan)
AAADT =	2,265	3,195	4,507			Vehicles per day
P =	11%	11%	11%			% of traffic stopping at rest area (Table 9, Montana Rest Area Plan)
UV =	1.3	1.3	1.3			Restroom users per vehicle (Table 12, Montana Rest Area Plan)
Wastewater Flow =	1,152	1,609	2,275			Gallons per day (3.5*AAADT*P*UV)
Minimum Septic Tank Capacity based on today's standards ⁽¹⁾ =	3,100	3,600	5,100			Gallons (Per DEQ-4, 7.2.10.1)
Soil Classification ⁽²⁾ =	MI-McRae-Bainville loams, 8 to 20 % slopes					
Application Rate ⁽³⁾ =	0.8	0.8	0.8			gpd/ft ² (for clay loam, silty clay loam)
Absorption System Size =	700	1,000	1,400			ft ² (Wastewater Flow / Application Rate) x 0.5 (Level 2 Treatment)
# of Laterals =	2	3	5			Based on 3' wide and 100' long trench (Current DEQ standards for maximum trench width and length on dosed systems)
Total Footprint of Drainfield =	1,233	1,933	2,867			ft ² (Based on 100' laterals, 3' wide trench, and 4' spacing b/w trenches)
Proposed Bed System =	1,440	2,011	2,844			ft ²
	38' x 38'	45' x 45'	53' x 53'			Bed system dimensions

WASTEWATER SYSTEM CALCULATIONS FOR HYSHAM WESTBOUND (w/ Level II Treatment)						
Design Year	Existing (2007)	Projected 10YR (2017)	Projected 20YR (2027)	Projected 20YR Combined System (2007)	Projected 20YR Combined System (2027)	
Design Wastewater Flow Rate =	3.5	3.5	3.5	3.5	3.5	gpd/person (Table 12, Montana Rest Area Plan)
AAADT =	2,265	3,195	4,507	4,530	9,014	Vehicles per day
P =	11%	11%	11%	11%	11%	% of traffic stopping at rest area (Table 9, Montana Rest Area Plan)
UV =	1.3	1.3	1.3	1.3	1.3	Restroom users per vehicle (Table 12, Montana Rest Area Plan)
Wastewater Flow =	1,152	1,609	2,275	2,287	4,550	Gallons per day (3.5*AAADT*P*UV)
Minimum Septic Tank Capacity based on today's standards ⁽¹⁾ =	3,100	3,600	5,100	5,100	10,200	Gallons (Per DEQ-4, 7.2.10.1)
Soil Classification ⁽²⁾ =	Mo-McRae and Havre loams, 1 to 4 percent slopes					
Application Rate ⁽³⁾ =	0.8	0.8	0.8	0.8	0.8	gpd/ft ² (for clay loam, silty clay loam)
Absorption System Size =	700	1,000	1,400	1,400	2,800	ft ² (Wastewater Flow / Application Rate) x 0.5 (Level 2 Treatment)
# of Laterals =	2	3	5	5	9	Based on 3' wide and 100' long trench (Current DEQ standards for maximum trench width and length on dosed systems)
Total Footprint of Drainfield =	1,233	1,933	2,867	2,867	6,133	ft ² (Based on 100' laterals, 3' wide trench, and 4' spacing b/w trenches)
Proposed Bed System =	1,440	2,011	2,844	2,858	5,688	ft ²
	38' x 38'	45' x 45'	53' x 53'	53' x 53'	75' x 75'	Bed system dimensions

⁽¹⁾Per DEQ-4, 7.2.10.1 C: For non-residential flows of greater than 1,500 gallons per day, the tank must have a minimum capacity equal to 2.25 times the average daily flow. Per DEQ-4, 7.2.10.1 B: For non-residential flows of less than or equal to 1,500

⁽²⁾Based on NRCS soils information obtained from NRIS.

⁽³⁾Based on results of percolation test for WB site. Soils = sandy gravels.

WASTEWATER SYSTEM CALCULATIONS FOR HATHAWAY EASTBOUND				
Design Year	Existing (2007)	Projected 10YR (2017)	Projected 20YR (2027)	
Design Wastewater Flow Rate =	3.5	3.5	3.5	gpd/person (Table 12, Montana Rest Area Plan)
AADT =	2,265	3,195	4,507	Vehicles per day
P =	11%	11%	11%	% of traffic stopping at rest area (Table 9, Montana Rest Area Plan)
UV =	1.3	1.3	1.3	Restroom users per vehicle (Table 12, Montana Rest Area Plan)
Wastewater Flow =	1,122	1,609	2,245	Gallons per day (3.5*AADT*P*UV)
Reverse Osmosis Wastewater Flow =	603	603	603	Gallons per day (Sanitary Sewage Disposal Report, March 1995)
Total Wastewater Flow =	1,725	2,212	2,848	Gallons per day
Minimum Septic Tank Capacity based on today's standards ⁽¹⁾ =	3,900	5,000	6,400	Gallons (Per DEQ-4, 7.2.10.1)
Soil Classification ⁽²⁾ =	198-Yamac loam, 2 to 8 % slopes			
Application Rate ⁽³⁾ =	0.8	0.8	0.8	gpd/ft ² (for clay loam, silty clay loam)
Absorption System Size =	2,200	2,800	3,600	ft ² (Wastewater Flow / Application Rate)
# of Laterals =	7	9	12	Based on 3' wide and 100' long trench (Current DEQ standards for maximum trench width and length on dosed systems)
Total Footprint of Drainfield =	4,733	6,133	8,000	ft ² (Based on 100' laterals, 3' wide trench, and 4' spacing b/w trenches)

WASTEWATER SYSTEM CALCULATIONS FOR HATHAWAY WESTBOUND				
Design Year	Existing (2007)	Projected 10YR (2017)	Projected 20YR (2027)	
Design Wastewater Flow Rate =	3.5	3.5	3.5	gpd/person (Table 12, Montana Rest Area Plan)
AADT =	2,265	3,195	4,507	Vehicles per day
P =	11%	11%	11%	% of traffic stopping at rest area (Table 9, Montana Rest Area Plan)
UV =	1.3	1.3	1.3	Restroom users per vehicle (Table 12, Montana Rest Area Plan)
Wastewater Flow =	1,122	1,609	2,245	Gallons per day (3.5*AADT*P*UV)
Reverse Osmosis Wastewater Flow =	603	603	603	Gallons per day (Sanitary Sewage Disposal Report, March 1995)
Total Wastewater Flow =	1,725	2,212	2,848	Gallons per day
Minimum Septic Tank Capacity based on today's standards ⁽¹⁾ =	3,900	5,000	6,400	Gallons (Per DEQ-4, 7.2.10.1)
Soil Classification ⁽²⁾ =	79-Evanston loam, 0 to 4 % slopes			
Application Rate ⁽³⁾ =	0.8	0.8	0.8	gpd/ft ² (for clay loam, silty clay loam)
Absorption System Size =	2,200	2,800	3,600	ft ² (Wastewater Flow / Application Rate)
# of Laterals =	7	9	12	Based on 3' wide and 100' long trench (Current DEQ standards for maximum trench width and length on dosed systems)
Total Footprint of Drainfield =	4,733	6,133	8,000	ft ² (Based on 100' laterals, 3' wide trench, and 4' spacing b/w trenches)

⁽¹⁾Per DEQ-4, 7.2.10.1 C: For non-residential flows of greater than 1,500 gallons per day, the tank must have a minimum capacity equal to 2.25 times the average daily flow. Per DEQ-4, 7.2.10.1 B: For non-residential flows of less than or equal to 1,500 gallons per day, the tank must have a capacity of at least 2.7 times the design flow.

⁽²⁾Based on NRCS soils information obtained from NRIS.

⁽³⁾Based on results of percolation tests conducted in 1995. Refer to Sanitary Sewage Disposal Report, March 1995.

WASTEWATER SYSTEM CALCULATIONS FOR HATHAWAY EASTBOUND (w/ Level II Treatment)				
Design Year	Existing (2007)	Projected 10YR (2017)	Projected 20YR (2027)	
Design Wastewater Flow Rate =	3.5	3.5	3.5	gpd/person (Table 12, Montana Rest Area Plan)
AADT =	2,265	3,195	4,507	Vehicles per day
P =	11%	11%	11%	% of traffic stopping at rest area (Table 9, Montana Rest Area Plan)
UV =	1.3	1.3	1.3	Restroom users per vehicle (Table 12, Montana Rest Area Plan)
Wastewater Flow =	1,122	1,609	2,245	Gallons per day (3.5*AADT*P*UV)
Reverse Osmosis Wastewater Flow =	603	603	603	Gallons per day (Sanitary Sewage Disposal Report, March 1995)
Total Wastewater Flow =	1,725	2,212	2,848	Gallons per day
Minimum Septic Tank Capacity based on today's standards ⁽¹⁾ =	3,900	5,000	6,400	Gallons (Per DEQ-4, 7.2.10.1)
Soil Classification ⁽²⁾ =	198-Yamac loam, 2 to 8 % slopes			
Application Rate ⁽³⁾ =	0.8	0.8	0.8	gpd/ft ² (for clay loam, silty clay loam)
Absorption System Size =	1,100	1,400	1,800	ft ² (Wastewater Flow / Application Rate) x 0.5 (Level 2 Treatment)
# of Laterals =	4	5	6	Based on 3' wide and 100' long trench (Current DEQ standards for maximum trench width and length on dosed systems)
Total Footprint of Drainfield =	2,167	2,867	3,800	ft ² (Based on 100' laterals, 3' wide trench, and 4' spacing b/w trenches)
Proposed Bed System =	2,156	2,011	2,806	ft ²
	46' x 46'	45' x 45'	53' x 53'	Bed system dimensions

WASTEWATER SYSTEM CALCULATIONS FOR HATHAWAY WESTBOUND (w/ Level II Treatment)				
Design Year	Existing (2007)	Projected 10YR (2017)	Projected 20YR (2027)	
Design Wastewater Flow Rate =	3.5	3.5	3.5	gpd/person (Table 12, Montana Rest Area Plan)
AADT =	2,265	3,195	4,507	Vehicles per day
P =	11%	11%	11%	% of traffic stopping at rest area (Table 9, Montana Rest Area Plan)
UV =	1.3	1.3	1.3	Restroom users per vehicle (Table 12, Montana Rest Area Plan)
Wastewater Flow =	1,122	1,609	2,245	Gallons per day (3.5*AADT*P*UV)
Reverse Osmosis Wastewater Flow =	603	603	603	Gallons per day (Sanitary Sewage Disposal Report, March 1995)
Total Wastewater Flow =	1,725	2,212	2,848	Gallons per day
Minimum Septic Tank Capacity based on today's standards ⁽¹⁾ =	3,900	5,000	6,400	Gallons (Per DEQ-4, 7.2.10.1)
Soil Classification ⁽²⁾ =	79-Evanston loam, 0 to 4 % slopes			
Application Rate ⁽³⁾ =	0.8	0.8	0.8	gpd/ft ² (for clay loam, silty clay loam)
Absorption System Size =	1,100	1,400	1,800	ft ² (Wastewater Flow / Application Rate) x 0.5 (Level 2 Treatment)
# of Laterals =	4	5	6	Based on 3' wide and 100' long trench (Current DEQ standards for maximum trench width and length on dosed systems)
Total Footprint of Drainfield =	2,167	2,867	3,800	ft ² (Based on 100' laterals, 3' wide trench, and 4' spacing b/w trenches)
Proposed Bed System =	2,156	2,011	2,806	ft ²
	46' x 46'	45' x 45'	53' x 53'	Bed system dimensions

⁽¹⁾Per DEQ-4, 7.2.10.1 C: For non-residential flows of greater than 1,500 gallons per day, the tank must have a minimum capacity equal to 2.25 times the average daily flow. Per DEQ-4, 7.2.10.1 B: For non-residential flows of less than or equal to 1,500

⁽²⁾Based on NRCS soils information obtained from NRIS.

⁽³⁾Based on results of percolation test for WB site. Soils = sandy gravels.