



**Documents Related to 4.201 [Major New Domestic Water/Wastewater]**

1. Preliminary Review by CDPHE and CDNR
2. Water System Scope of Proposal
3. Demonstration of Need
4. Water Source
5. Loss of Agricultural Productivity
6. Financial Impact Analysis

## Documents Related to 4.201 [Major New Domestic Water/Wastewater]

### 1. Preliminary Review by CDPHE and CDNR:

- a) *Preliminary review and comment on the proposal by the appropriate agency of the Colorado Department of Natural Resources and the Colorado Department of Public Health and Environment within sixty (60) days of the date of submittal of the proposal for review.*

The well permit applications were issued in June of 2023 and are included as Exhibit JJ.

The following documents will be submitted to CDPHE for review and approval:

- i. Site Location Application for lift station(s) – Anticipated submittal date: June 2023
- ii. Construction documents and Basis of Design Report (BDR) for lift station(s) and force main(s) – Anticipated submittal date: February 2024
- iii. BDR and Construction Documents for the water system including water treatment facility, source water (wells) and storage tank – Anticipated submittal date: November 2023

Copies of all CDPHE approvals shall be provided to El Paso County as they are received.

### 2. Water System Scope of Proposal:

- a) *Scope of Proposal:*

*Provide detailed plans of the proposal, including proposed system capacity and service area plans mapped at a scale acceptable to the Department.*

#### Proposed Water System:

The proposed project consists of the water infrastructure necessary to support development within the Grandview Reserve Metropolitan District (GRMD). The water infrastructure applicable to the 1041 includes source water wells, water treatment facilities, water storage tanks and the associated piping. Please reference Exhibit BB for all information regarding Grandview Reserve's water demands. The wells will be Denver Basin wells typically with 2 wells (one Arapahoe and one Laramie Fox Hills) per well site. Exhibit C contains a map of the potential proposed well sites within GRMD. The total number of well sites to be developed will be dependent on well production and the rate of development.

A total of up to 4 water treatment facilities are planned for the project. All water treatment facilities will utilize pressure sand filtration and iron and manganese precipitation to treat raw water from the wells. A flow diagram of the treatment provided is in Appendix II. The capacity of each water treatment facility will be determined by the filings that it will serve. The first water treatment facility will be sized to treat approximately 0.5 MGD with room to

expand to 1.0 MGD. The total treatment capacity needed for full buildout of GRMD is approximately 3.0 MGD. Exhibit C shows the proposed locations of the water treatment facilities.

Once treated at the water treatment facilities, water will be stored in elevated or ground-level tanks. Multiple tanks constructed of steel or concrete will serve the project area. Currently, up to 4 different sites are identified in Exhibit C. The tanks will be sized to store approximately 24 hours of average daily flow and the fire flow requirement. The first tank is anticipated to be approximately 400,000 gallons. The size and number of future tanks will be determined as development progresses. All tanks are anticipated to be above ground water tanks, and if elevated, the maximize height is approximately 175-ft. Total storage capacity for the development at buildout is anticipated to be 1.5-3.0 million gallons. The total storage required will be determined by the building with the largest fire flow requirement. The raw and potable water facilities will be connected by water lines ranging from 4"-18" diameter as depicted in Exhibit C.

Proposed Wastewater System:

The proposed project consists of the wastewater infrastructure necessary to support development within the Grandview Reserve Metropolitan District (GRMD). The wastewater infrastructure applicable to the 1041 includes one or more lift stations and associated force main(s). Treatment will be provided by an existing treatment facility. Depending on the treatment facility as outlined below.

GRMD is proposed to have approximately 3340 single family equivalents (SFE) at buildout. Please reference Exhibit BB for all information regarding Grandview Reserve's wastewater demands.

This report evaluates three alternatives for conveyance and treatment:

- A. Woodmen Hills Metropolitan District (WHMD)
  - Expansion of the treatment facility anticipated to involved the headworks, sludge basin and dewatering facility
  - One lift station is anticipated
- B. Meridian Ranch Metropolitan District (MSMD)
  - Expansion is anticipated to be wet well and pump expansion within the lift station
- C. Cherokee Metropolitan District (CMD)
  - Expansion is not anticipated initially, but future expansion may involve aeration tanks and clarifiers
  - Two lift stations are anticipated

The preferred alternative is Woodmen Hills Metropolitan District.

For all three alternatives, it is anticipated that parallel force mains will be installed as shown in Exhibit C. An 8" – 12" diameter force main will be used to convey flows during the early stages of development. This will ensure that flushing velocities of 3.5 ft/s can be achieved with minimal water added. A second force main will be 12"-16" to convey the remainder of the wastewater flows for full build-out. The gravity lines are anticipated to be 15"-21" in diameter and the exact size will be determined once a design profile is developed, and the minimum slope is known. The force mains and gravity interceptors shall be PVC or HDPE and will vary in length depending on the alternative chosen. The typical lift station (quantified above) will consist of:

- Wet Well/Dry Well Configuration
- Flooded-suction Pumps with redundancy for the largest pump
- Emergency storage
- Electrical Equipment
- Back-up Generator
- Odor Control

#### Alternative A

Wastewater infrastructure will convey flows from GRMD and other surrounding parcels to the Woodmen Hills Metropolitan District (WHMD) Water Reclamation Facility (WRF) for treatment. This alignment will require one lift station that will be located at the corner of Curtis Rd. and Judge Orr Rd. The sanitary sewer alignment is approximately 5.8 miles and is depicted in Exhibit C. The service area of the lift station is defined in Exhibit II. WHMD will determine the exact capacity of the proposed lift station and force main. It is anticipated that the lift station and force main will have a 0.8 – 1.5 MGD average daily flow capacity. The WHMD WRF currently has capacity for 900 SFE from GRMD. WHMD plans to expand the WRF capacity to allow them to accept full build out flows from GRMD. The WHMD WRF expansion is anticipated to involved the headworks, sludge basin and dewatering facility. No pretreatment or equalization storage is required for this alternative. The will-serve letter from WHMD is included in Exhibit CC.

#### Alternative B

Wastewater infrastructure will convey flows from GRMD to the MSMD Falcon Lift Station, where MSMD will facilitate conveyance to and treatment at the CMD WRF. Currently, MSMD has an inter-governmental agreement (IGA) with CMD and owns nearly half the capacity of the plant. This alternative requires one lift station located along Highway 24 at the southeast border of the project site. The proposed lift station would have a capacity of 0.5-0.75 MGD since it would only serve GRMD and not be intended as a regional facility.

The force main alignment will be from GRMD to the intersection of Highway 24 and Judge Orr Rd and will be approximately 4.3 miles. There are two potential routes for the gravity interceptors to flow:

- B1) Judge Orr Rd. to Fort Smith Rd to MSMD 12" gravity main.
- B2) Highway 24 to a MSMD 12" gravity main.

Both gravity mains will need to be paralleled in the future to handle full build-out flows from GRMD. The size of the future parallel mains are anticipated to be 12-18" and will be determined by MSMD and GRMD as built-out progresses.

The sanitary sewer alignment alternatives can be found in Exhibit C. Equalization storage will be included at this lift station and no pretreatment is required for this option. There will be no open lagoons or sludge basins required. All storage will be provided in underground tanks.

#### Alternative C

Wastewater infrastructure will convey flows from GRMD to the Cherokee Metropolitan District (CMD) Water Reclamation Facility (WRF) for treatment as depicted in Exhibit C.

This alternative will require two lift stations. The north lift station will be located at the intersection of Curtis Rd. and Judge Orr Rd and will include equalization storage. There will be no open lagoons or sludge basins required. All storage will be provided in underground tanks. The south lift station will be located north of the intersection of Davis Rd. and Curtis Rd. The second lift station will include pre-treatment as required by CMD to include a bar screen and grit removal equipment. Both lift stations will include odor control. The lift stations and force mains would have a capacity of 0.8 – 1.5 MGD and could provide service to GRMD and potentially to the areas identified in Exhibit II.

The conveyance infrastructure described above will be approximately 10 miles and will deliver the wastewater to the connection point as defined in the CMD IGA. That connection point is on CMD's existing force main running parallel to Hwy 94, approximately at Curtis Road.

- b. *Provide a description of all existing or approved proposed domestic water or sewage treatment systems within the Project area.*

There are no existing or approved proposed water or wastewater treatment systems within the project area. Nearby water treatment facilities are owned by Meridian Service Metropolitan District, Woodmen Hills Metropolitan District and Four Way Ranch Metropolitan District. Nearby wastewater treatment facilities are Woodmen Hills Metropolitan District Water Reclamation Facility and Cherokee Metropolitan District Water Reclamation Facility.

- c. Describe the design capacity of each domestic water or sewage treatment system facility proposed and the distribution or collection network proposed in the Project area.*

The projected maximum daily water demand for full buildout is approximately 3.0 MGD. Up to four water treatment facilities are proposed with a combined capacity matching the projected maximum daily demand. The treatment facilities will have pressure sand filtration and a preliminary process flow diagram is provided in Exhibit Y. As development progresses, the design capacities of each water treatment facility may be adjusted as necessary. The potable water distribution system will be designed to handle fire flows which shall vary throughout the development based on the square footage of buildings proposed.

The projected average daily wastewater flows from GRMD at full buildout is approximately 0.6 MGD. Depending on the alternative chosen, there are different IGA requirements for each. See section 2.a. for a discussion of the requirements.

- d. Describe the excess capacity of each treatment system and distribution or collection network in the affected community or Project area.*

The water treatment and distribution system is not intended to have excess capacity above the 3.0 MGD anticipated to serve full buildout of GRMD. The lift station(s) will be designed to serve full buildout from GRMD and the service area in Exhibit A. (Approximately 1.5 MGD Average Daily Flow). The wastewater conveyance system will be master-planned to allow for future expansion for possible future connections.

- e. Provide an inventory of total commitments already made for current water or sewage services.*

Cherokee Metro District committed to providing 0.5MGD of capacity to Grandview Reserve. The IGA between CMD and GRMD is included as Exhibit AA.

WHMD has committed to providing 900 SFEs (0.15 MGD) of treatment capacity in the existing plant and treatment for full build-out once the WRF expansion is complete.

GRMD has not committed to provided water or wastewater service to any projects except water service to the Grandview Reserve Development.

- f. Describe the operational efficiency of each existing system in the Project area, including the age, state of repair and level of treatment.*

4WRMD has an existing water treatment facility constructed approximately in 2008 and rated for approximately 0.19 MGD. The system includes pressure sand filtration and disinfection. The system is in good condition but was not planned for expansion and the proposed project does not include water service for 4WRMD.

There are two regional water reclamation facilities in the general area of the proposed project. Wastewater treatment for Grandview will be provided by one of them. Their treatment facilities can be described as follows:

1. The WHMD WRF is currently permitted for 1.3 MGD. Current flows to the plant are approximately 0.8-0.9 MGD. A recent upgrade was completed in 2019 which replaced the entire process and equipment with the exceptions of the headworks and disinfection facilities. The WRF is currently meeting its discharge permit and is in good repair. An expansion will be required for WHMD to provide treatment to more than 900 SFE.
2. The CMD WRF was constructed in approximately 2010 and have a permitted rating of 4.8 MGD. CMD is completing a plant upgrade including the addition of a reverse osmosis process to meet the TDS limit in their discharge permit. Current flows to the plant are approximately 2.0 MGD. The WRF is in a good state of repair. An expansion may be required for CMD to provide treatment for more than 0.5 MGD.

*g. Describe the existing water utilization, including the historic yield from rights and use by category such as agricultural, municipal and industrial supply obligations to other systems.*

Grandview Reserve Metro District is a new water district and utilization will be 100% for residential, commercial, and institutional use. The water rights to be used for the project have not previously been used for agricultural purposes.

### 3. Demonstration of Need:

- a) Provide population trends for the Project area, including present population, population growth and growth rates, documenting the sources used.*

This project is located adjacent to new residential growth in the Falcon area. The recently adopted El Paso County Master Plan has marked this area as suburban land use which would include single family housing, multifamily housing, commercial, parks and open space and institutional. The Falcon/Peyton Small Area Master Plan marks this area as proposed Urban Density Development. Refer to census.gov for more information about current population trends in the area. Refer to Exhibit J – District Service Plan for population projections.

- b) Specify the predominant types of developments to be served by the proposed new water and/or sewage systems or extensions thereof.*

Suburban Residential: this will consist primarily of Single-family detached dwellings, but supports single family attached, multifamily, commercial retail, commercial service, parks and open space and institutional uses.

- c) Specify at what percentage of the design capacity the current system is now operating:*

*i. Water treatment system.*

This is a new system designed for the Grandview Reserve Metro District.

*ii. Wastewater treatment system.*

Alternative A:

The WHMD WRF has capacity of 900 SFE for Grandview. The WRF is rated for 1.3 MGD and is currently loaded at approximately 0.8-0.9 MGD. The draft agreement between WHMD and DR Horton requires WHMD to expand their WRF. The expansion is planned to increase the plant rating to approximately 2.5 MGD. This expansion will provide treatment capacity for full build out of Grandview.

Alternative B and C:

The CMD WRF is currently operating at approximately 2.0 MGD and has a permitted rating of 4.8 MGD. The existing CMD force main along Hwy 94 conveys approximately 90-95% of the WRF loading. That force main is sized to convey up to the permitted rating of the WRF. The 0.5 MGD capacity that GRMD has purchased via the IGA is within the 4.8 MGD rating of the WRF. No expansions to the WRF or CMD force main are required for the first 0.5 MGD. As development progresses, GRMD will negotiate for CMD to acquire additional capacity which may require an expansion of CMD infrastructure.

*d) Specify whether present facilities can be upgraded to accommodate adequately the ten-year projected increase needed in treatment and/or hydraulic capacity.*

There are no water systems in the area that are feasible to tie into to provide water to the project due aquifer rights and current allocations at the current time. Grandview will continue to explore connections to adjacent water systems if future conditions allow.

There are no adjacent wastewater gravity tie-in locations to service the project.

Alternative A:

WHMD has committed to provide treatment for 900 SFE in the current WRF. Based on current projections, that will provide treatment for the first 4-7 years of development. An expansion will be necessary to provide treatment for the first 10 years of development. That expansion is required by the draft agreement between WHMD and DR Horton.

Alternative B and C:

Lift Stations will be required to deliver wastewater effluent to the CMD WRF which is currently operating at 2.0 MGD out of the permitted 4.8 MGD capacity (~42%). As such, the CMD WRF will not need to be expanded to provide service for the projected ten-year wastewater loading from this project. An expansion may be necessary to provide treatment for full build out.



#### 4. Water Source:

- a) *Description of the water to be used by the Project and, to the extent identified by the Director in consultation with the applicant, alternatives, including: the source, amount, the quality of such water; the applicant's right to use the water, including adjudicated decrees or determinations and any substitute water supply plans, and applications for decrees or determinations; proposed points of diversion and changes in the points of diversion; the existing uses of the water; adequate proof that adequate water resources have been or can and will be committed to and retained for the Project, and that applicant can and will supply the Project with water of adequate quality, quantity, and dependability; and approval by the respective Designated Ground Water Management District if applicable. If an augmentation or replacement plan for the Project has been decreed or determined or an application for such plan has been filed in the court or with the Ground Water Commission, the applicant must submit a copy of that plan or application.*

The project will use water from Determinations 510-BD and 511-BD. GRMD currently owns 140,000 acre-ft of Arapahoe water under 511-BD and 131,250 acre-ft of LFH water under 510-BD. Both determinations allow for municipal use by GRMD. The Determinations are included in Exhibit T. Both water rights are non-tributary and allow the District to use them to extinction. Well permit applications for the first two wells (LFH-1 and A-1) are anticipated to be submitted in February 2023.

#### 5. Loss of Agricultural Productivity:

Loss of Agricultural Productivity: Grandview Reserve Metropolitan District is a new water district and utilization will be 100% for residential, commercial, and institutional use. The water rights to be used for the project Have not previously been used for agriculture.

- a) *Information on any agricultural water rights in the region converted to provide water for the Project, now or in the future.*

No agricultural water rights were converted to provide water for the Project.

- b) *Information on the amount of irrigated agricultural lands taken out of production, and a description of revegetation plans.*

No agricultural water rights were converted to provide water for the Project.

- c) *Economic consequences of any loss of irrigated agriculture, including loss of tax base, in the region.*

N/A

- d) *Information as to loss of wildlife habitat, loss of topsoil, or noxious weed invasion, as a result of the transfer of water rights and subsequent dry-up of lands.*

No water rights were transferred for this project. All water rights were part of the overall 4 Way Ranch property.

- e) *Information on impacts to agricultural head gates and water delivery systems.*

N/A

## 6. Financial Impact Analysis:

- a) *The financial impact analysis of site selection and construction of major new water and sewage treatment facilities and/or major extension of existing domestic water and sewage treatment systems shall include but need not be limited to the following items:*

*A review and summary of an existing engineering and/or financial feasibility studies, assessed taxable property valuations and all other matters of financial aid and resources in determining the feasibility of the proposed new facility including:*

- i) *Service area and/or boundaries.*

The proposed water infrastructure shall serve all of Grandview Metropolitan District (Districts 1-4) and the proposed wastewater infrastructure shall serve all of GRMD (Districts 1-4) and the areas shown in Exhibit MM For more information, refer to the Grandview Reserve Metro District Service Plan, Exhibit J.

- ii) *Applicable methods of transmitting, storing, treating and delivering water and collecting, transmitting, treating and discharging sewage, including effluent and/or sludge disposal.*

**Water Treatment:** Water treatment will be in the form of a single or multiple treatment facilities utilizing pressure-sand filtration. Ideally, a single centralized facility is easier for operation and maintenance. However, construction of a single facility capable of meeting buildout demands is not always economical in early stages. Therefore, two or more facilities may be constructed as building progresses. Pressure-sand treatment systems are utilized by many other metropolitan districts in the Falcon area. They are typically used to treat secondary contaminant levels in source water (iron and manganese), primarily for aesthetics (taste and odor).

**Storage Facility:** Water storage will have to be sized for the largest demand in the development to meet International Fire Code standards. That fire-flow volume will be added to the Maximum Daily Demand to establish the required water storage volume.

**Distribution/Transmission:** Distribution lines will likely be PVC, adequately sized to convey fire-flows throughout the subdivision. They will be constructed by GRMD. No other districts are planned to provide water or infrastructure for GRMD water system.

The project and subsequent filings will be looped to provide redundancy and reliability of the system.

Collection System: There are currently three alternatives being evaluated for GRMD's wastewater conveyance and treatment: Woodmen Hills Metropolitan District (WHMD), Meridian Service Metropolitan District (MSMD), and Cherokee Metropolitan District (CMD). The WHMD and MSMD alternatives will require 1 lift station and the CMD alternative will require two lift stations.

GRMD is proposed to have approximately 3340 single family equivalents (SFE) at buildout. All development will be served by the wastewater infrastructure in the proposed project.

Wastewater Treatment: Treatment will be provided at either the WHMD or the CMD WRF. The WHMD WRF will need to be expanded to provide treatment for more than 900 SFEs in Grandview. CMD has committed to providing treatment for 0.5 MGD and may need to expand their facility to provide treatment for full build out.

*iii) Estimated construction costs and period of construction of each new or extension facility component.*

It is anticipated that permitting and construction of the new water and wastewater facilities will take 18-24 months.

The Water System treatment and delivery infrastructure is anticipated to be approximately \$60M-\$70M for the full build out. The water system is proposed to be phased and the first phase (0.5 MGD water treatment facility, 2 wells and 400,000 gallon water storage tank) is projected to cost approximately \$10M-\$15M. The proposed project consists of the water infrastructure necessary to support development within the Grandview Reserve Metropolitan District (GRMD). The water infrastructure includes source water wells, water treatment facilities, water storage tanks and the associated piping.

The wells will be Denver Basin wells typically with 2 wells (one Arapahoe and one Laramie Fox Hills) per well site. Exhibit C contains a map of the potential proposed well sites within GRMD. The total number of well sites to be developed will be dependent on well production and the rate of development.

A total of up to 4 water treatment facilities are planned for the project. The capacity of each water treatment facility will be determined by the filings that it will serve. The total treatment capacity needed for full buildout of GRMD is approximately 3.0 MGD. Exhibit C shows the proposed locations of the water treatment facilities.

Once treated at the water treatment facilities, water will be stored in tanks. Multiple tanks will be constructed to serve the project, at up to 4 different sites identified in Exhibit C. The raw and potable water facilities will be connected by water lines ranging from 4"-16" diameter as depicted in Exhibit C.

There are currently three alternatives being evaluated for GRMD's wastewater conveyance and treatment: Woodmen Hills Metropolitan District (WHMD), Meridian Service Metropolitan District (MSMD), and Cherokee Metropolitan District (CMD). Unlike the water system costs which can be phased, the wastewater system costs will be incurred during the first phase of development. The projected costs are as follows: Alternative A – WHMD: The proposed infrastructure required includes gravity conveyance to the lift station, the lift station and force main to the WHMD WRF. Costs for that infrastructure are estimated to be \$8-12 million. Grandview would be responsible for a portion of the cost to expand the WRF. Their current projected cost share is \$12.4 million.

Alternative B – MSMD: The proposed infrastructure for this alternative includes gravity lines to the lift station, lift station and force main. The projected cost for this infrastructure is estimated at \$6-10 million. It is not yet defined if MSMD would need to expand their infrastructure and if Grandview would pay for a portion of the expansion costs.

Alternative C – MSMD: The proposed infrastructure for this alternative includes gravity conveyance, two lift stations and force mains. The total projected cost for this is estimated to be \$22-26 million. If expansion of the WRF is necessary to provide treatment for full build out, Grandview would be responsible for their proportionate share of that expansion cost.

*iv) Assessed valuation of the property to be included within the service area boundaries.*

The current assessed value of the property within the GRMD service area is \$8,610 according to the EPC Assessors GIS site. The projected assessed value of the property at full build out is \$105,013,186. Full build out is projected to be completed by 2036. See the GRMD Service Plan in Exhibit J for more details.

*v) Revenues and operating expenses of the proposed new or extension facility, including but not limited to historical and estimated property taxation, service charges and rates, assessments, connection and tap fees, standby charges and all other anticipated revenues of the proposed new facility.*

The projected mill levy for the District is 60 mills for residential and 45 mills for commercial development. Of those, 10 mills from both residential and commercial will be used for O&M expenses. At buildout, annual O&M revenue from those 10 mills are anticipated to be \$2,427,321. Refer to the Grandview Reserve Metro District Service Plan, Exhibit J for more details.

- vi) Amount and security of the proposed debt and method and estimated cost of debt service.*

The District anticipates issuing bonds to pay for the capital water and wastewater improvements in this 1041 submittal. The initial bond issuance contemplated in the Service Plan is for approximately \$65,025,000. Subsequent bond issues are anticipated. Refer to the Grandview Reserve Metro District Service Plan, Exhibit J for more details.

- vii) Provide the detail of any substantial contract or agreement for revenues or for services to be paid, furnished, or used by or with any person, association, corporation, or governmental body.*

The only substantial contract that has been executed related to the proposed project is the IGA between GRMD and CMD. Under the IGA, CMD committed to provide 0.5 MGD treatment capacity to GRMD. In addition, CMD committed to providing conveyance from the connection point (approximately Hwy 94 and Curtis Road) to the WRF. CMD also committed to making replacement water available to GRMD at the Tamlin Tank in the event that the CMD Replacement Plan is approved. Under the IGA, GRMD is responsible for constructing the infrastructure to convey the wastewater to the connection point. GRMD will own and operate the conveyance infrastructure. The IGA is attached as Exhibit AA.

DR Horton is currently negotiating an agreement with WHMD for wastewater treatment. The draft agreement requires WHMD to provide treatment for 900 SFE in the existing WRF and treatment for full build out once the plant is expanded. WHMD also agreed to make return flows available to Grandview. Grandview is responsible for paying their proportionate share of the plant expansion costs and for constructing the infrastructure to convey their wastewater to the WHMD WRF. Upon completion of construction and acceptance by WHMD, the conveyance infrastructure shall be owned and operated by WHMD.