MEMORANDUM

County of San Benito
Hollister Airport Area Wastewater Treatment Facilities Cost Estimate

Date: June 18, 2021

To: Mike Chambless

From: Kari Wagner, PE
c/o: Louis Lefebvre, PE

Subject: Hollister Airport Area Wastewater Flows

Dear Mr. Chambless:

This technical letter estimates the cost of installing domestic wastewater treatment facilities for anticipated flow generated in the vicinity north of the Hollister Airport outside of City of Hollister's city limits. Facility sizing for this cost estimate is based on a separate technical letter Wallace Group provided to the County of San Benito entitled Hollister Airport Area Wastewater Flow Calculation – Hollister Research Center and dated May 13th, 2021. Additionally, Wallace Group's experience with wastewater facility design and construction within the Central Coast region coupled with equipment vendor relationships provide the basis of developing the cost estimate of the proposed facility.

Cost Estimate and Assumptions

1. Average daily flow (ADF) is 100,000 gal/day
2. Peak hour dry weather flow is 288,000 gal/day (ie 200 gpm)
3. Standard soils and subgrade preparation
    a. no liquifiable soils
    b. no elevated groundwater tables
    c. no rock excavation
4. No influent flow equalization
5. Membrane bioreactor (MBR) treatment technology
    a. Modular in nature accommodating phased increases in flow (ie. growth)
6. Aerated sludge storage only with no dewatering facilities
7. Effluent disposal spray field

Table 1. Cost Estimate for MBR

Line #	Item	Cost ($)
1	100,000 GPD Pre-engineered Package MBR System	$2,100,000
2	Influent Lift Station	$600,000
3	SCADA and Electrical	$750,000
4	Site work (concrete slabs, asphalt, grading, earthwork, fencing)	$300,000
5	Wet/Dry Utilities Connections	$100,000
6	Miscellaneous Appurtenances	$250,000
7	Effluent Spray Field	$50,000
	Subtotal	$4,150,000
5	Construction Contingency (35% of subtotal)	$1,452,500
6	Soft Costs: Engineering, administration, construction management, and inspections (40% of subtotal)	$1,660,000
7	CEQA Permitting (Assumed EIR required)	$1,000,000
	Capital Cost Total	**$8,262,500**
	Estimated Annual O&M Cost	**$300,000**

Note – This cost estimate does not include costs for a sewer collection system. Once a site is located and further evaluation of the facilities to be connected to the wastewater treatment plant are identified, additional costs for the sewer collection system can be provided.

Discussion

The above cost estimate specifies a 'pre-engineered, 100,000 gpd packaged MBR' which is a 'plug and play' option that that is expandable to 200,000 gpd or more and provides disinfected tertiary treated wastewater. Disinfected tertiary treated wastewater is suitable for reuse applications including unrestricted playground/ballfield irrigation, edible and non-edible crop irrigation, and groundwater recharge. The packaged unit arrives on site, it is anchored to a slab and influent and effluent piping are connected. While treatment facilities would be appropriately sized for the approximately 100,000 gpd flow identified, additional units can be added to the packaged system in the future to increase capacity at the wastewater facility. All aspects of the facility should be evaluated during the preliminary engineering phase for initial design flows and future potential flows to ensure that facilities are sized appropriately and/or expansion can be easily accommodated. The wastewater treatment facility, including the treated effluent storage basin, but not including disposal, will require approximately 2 acres. The effluent disposal options are provided below.

The cost estimate provided above assumes the treated water is disposed of via a dedicated spray field. The spray field would require approximately 7 acres of open space to dispose of per 100,000 gpd.

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Alternative Disposal Options

Spray field disposal will provide low-cost disposal for the project, but this disposal method does not provide much beneficial reuse or benefit the groundwater basin or the community. Disinfected MBR effluent has suitable quality for beneficial use such as landscape irrigation, active sports fields, or groundwater recharge. These alternative disposal means require more stringent monitoring and reporting, thus are more expensive. However, the increased operations costs may ultimately be advantageous as the land associated with the disposal can be better utilized. Table 2 provides several options for disposal as well as the advantages and disadvantages of their use.

Summary

The cost estimate shown in Table 1 provides a high-level estimate of the anticipated cost of installing an MBR to treat anticipated flows generated in the north Hollister Airport area. Further evaluation of the site, soil conditions, and other design elements are required to further refine the cost estimate.

The costs shown in Table 2 are relative additional cost compared to the lowest cost alternative (Option 1 – spray field disposal), which is included in the project costs identified in Table 1. Option 5 has the highest construction cost, highest operations cost and is highest risk and therefore not recommended to pursue. Option 4 is less risky than Option 5, but is not aesthetically pleasing, provides no beneficial use to the community, and is fairly land intensive. It does provide benefits to the upper aquifer. Option 4 is also not recommended. Option 3 will require strict water quality monitoring to ensure that the edible crops meet health and safety requirements. This option will require leasing the land to a farmer to maintain the crop. This option is viable, but operationally more challenging and is not recommended. Option 1 provides low construction and long-term operations costs but does not provide any community benefit. Option 2 has a higher construction and long-term operations costs as compared to Option 1 but has a huge community benefit. It is recommended that either Option 1 or Option 2 be further pursued for disposal for the facility.

Table 2. Options for recycled water use

Option #	Description	Pros	Cons	Option Characteristics	Relative Construction Cost/Operational Cost
1	Spray field: Irrigation of non-edible crops (hay/alfalfa) – not for human consumption (assumed for current project)	Low cost to construct and maintain, simplest compliance requirements, offsets groundwater pumping	No groundwater recharge, no direct community/public benefit from recycled use	✓ Beneficial reuse	Low/Low
2	Irrigation of parks and ballfields (eg. soccer complex, ball parks)	Direct community/public benefit, fairly low cost to construct, offsets groundwater pumping	Higher regulatory requirements, potential restrictions on when irrigation can occur, no groundwater recharge	✓ Required fencing ✓ Beneficial reuse ✓ Community Resource ✓ Increased permitting requirements ✓ Increased monitoring requirements	Moderate/Low-Moderate
3	Irrigation of edible crops	Low cost to construct and maintain, offsets groundwater pumping	No groundwater recharge, no direct community/public benefit from recycled use, higher regulatory requirements, requires agreement with farmer	✓ Beneficial reuse ✓ Increased permitting requirements ✓ Increased monitoring requirements	Low/Low-Moderate
4	Groundwater recharge via percolation ponds	Upper aquifer groundwater recharge	Not aesthetically pleasing, large, fenced land requirements, will likely require monitoring wells	✓ Required fencing ✓ Beneficial reuse ✓ Increased permitting requirements ✓ Increased monitoring requirements	Moderate-High/Low
5	Direct injection to aquifer	Lower aquifer groundwater recharge	Cost to construct, difficulty permitting, contamination risk, no direct community/public benefit, increased monitoring and reporting, will likely require monitoring wells	✓ Beneficial reuse ✓ Increased permitting requirements ✓ Increased monitoring requirements	High/High