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5/10/2022	1	Town Council		

FROM:

Sean Condry, P.E., CBO - Public Works and Building Director

SUBJECT:

Water Conservation Efforts Town Wide and Memorial Park Field Renovation Project

RECOMMENDATION

- That Council receive an update on Town water conservation efforts related to the drought and provide direction on future water conservation efforts; and
- That Council provide direction to staff on the Memorial Park field replacement project, and associated water conservation efforts.

BACKGROUND AND DISCUSSION

Water Conservation Efforts

With the low rainfall in the winter of 2020/21 Marin County and (most of California) was in the middle of a severe drought. Marin Municipal Water District (MMWD) as of February 2021 declared initial stages of drought and stated this is the worst drought in over 140 years. On June 8, 2021, the state declared a drought emergency in Marin County. In 2021 MMWD had been requiring that water be reduced district-wide by 40%, with drip irrigation limited to two days per week and spray irrigation to one day per week. However, with the rains in October and December MMWD reservoirs filled up so there has been an incremental approach to modify or reduce some restrictions.

Public Works has been working to reduce the Town's irrigation water usage at Town medians and parks, both through a reduction in spray irrigation, as well as reestablishing wells in Creek Park and Memorial Park that had not been in use since about 2005. The Creek Park well which was only connected to Creek Park is now connected to Town Hall,

Imagination Park and Red Hill Median irrigation systems.

Linking Town Hall, Imagination Park and the Red Hill Median to the Creek Park well required installing new pipes and reconnecting older lines that were out of commission. The two wells at Memorial Park were thoroughly cleaned along with upgrades to the pumping, piping, and control system to improve the amount of water production and backup for domestic use during times of drought. These efforts have resulted in a reduction of MMWD domestic water use by about approximately 80% during the peak of the drought and over 30% for the entire year including non-drought months, see Attachment 1.

Memorial Park

Historically, Memorial Park used approximately 50% of the total domestic water used by the Town in any given year due to the water needs of the 3.2 acres of grass fields, which is similar to water usage for homes with lawns. In the summer months Memorial Park uses 13,000-15,000 gallons a day, seven days a week, which is equivalent to over 400,000 gallons per month. Last summer the fields and picnic area lawns had gone dormant due to the water use reduction to once a week watering while the Town was working on increasing well production. This had been a big concern due to its impact on summer recreation programs including soccer, which has over 750 players enrolled. However, based on feedback from Council and with the use of well and domestic water, the Town was able to water the fields 2-3 times each week.

The Memorial Park fields drainage and irrigation have not been upgraded in approximately 50 years. The fields are undulating with holes and mounds of dirt throughout. The drainage system has needed repair for ages along with a complete replacement of the irrigation system and fields. Last year the Town received a low bid of \$454,360 from Marina Landscaping which the Town was prepared to move forward with; however, a drought was declared, and the project was delayed. Town Council directed staff to look at water conservation for the field replacement project to continue.

The Town hired Tamalpais Environmental Consultants (TEC)'s Aaron O'Brien, landscape architect Peter Arnold, and Siegfried Engineering's Adam Merrill to study and come up with preliminary water savings and costs for various options. Over the past 6 months TEC and the other consultants has investigated various options to reduce overall water usage along with a reduction of domestic water usage. In Attachment 2, the options examined by TEC include:

1. Installing a new irrigation system that would cut total water usage by about 25% (100,000 gallons during summer months) with a cost including new grass fields and drainage of \$750,000.
2. Using recycled water from Las Gallinas Valley Sanitary District which could meet all the needs of Memorial Park coming through the Mt. Tamalpais Cemetery with a cost of \$5 to \$10 million.
3. Recycled water delivery by trucking which could be used during drought in the summer months and would only meet about 50% or 200,000 gallons per month of the demand at a cost of \$40,000/month or approximately \$120,000 for 3 months of water.
4. Local greywater recycling which currently would only provide about 5,000 gallons a month for a cost of about \$50,000.
5. The use of the 2 existing irrigation groundwater wells along with the addition of an existing monitoring well that combined could supply about 90,000 gallons/month for a total cost of about \$55,000.
6. Rainwater Harvesting which could include installing a 20,000 gallons tank up to a 100,000 gallon tank under field one or the lower set of the tennis courts at a cost of \$175,000 to \$300,000, respectively.

The report in Attachment 2 gives a more in-depth overview of the above options. Staff along with the support of the consultants has come up with the recommended combination of options at the end of this report and the approximate water savings. All of the options include new grass fields, grading and irrigation. The options show overall water savings for in gallons and percent and the cost of the option. New irrigation is by far the largest actual water savings over any of the other options (except artificial turf) with an approximate 25% decrease in overall water usage.

The existing wells (Attachment 3) also significantly reduce domestic water use and if all three water wells were used the total domestic water use reduction would be approximately 23%. However, this intensity of use would also deplete the groundwater table. While the groundwater could be replenished if there were sufficient rain there could be a major impact to the groundwater table if a drought was over multiple years. Therefore, if groundwater wells are used staff would

recommend using existing and new groundwater monitoring wells to track the depth to groundwater monthly and annually to monitor the impact to the groundwater table.

One of the biggest water savings would be the use of artificial turf which is recommended in Option 3 for field 1, Attachment 4. The option for artificial turf was initially rejected by the community during the Memorial Park rehabilitation planning stages but this was before the drought. New artificial turf could reduce overall water usage by up to 25%. However, it could still require some watering to keep it clean and maybe reduce its heat during hot days. Another great advantage of artificial turf is the ability to use the field year-round for recreation. The transition at the playing surface between the real grass and the artificial turf may not be ideal and a fence may also be required to keep dogs off the area. While soccer fields could still be provided it would be for U-10 size soccer fields.

Also included in the options are rainwater/stormwater harvesting. The actual water savings using stormwater or rainwater will vary widely based on the size of the tank and when it's raining. If a smaller size 20,000 gallon below ground tank is used, it would be able to help in between rains in the fall through winter months but not much in the summer. A larger 100,000-gallon tank could also be installed at almost double the cost, but it too would only be about one weeks' worth of water in the summer. The larger tank could help significantly in a dry winter/spring season collecting water from a big storm and then using the water for one to two months of irrigation during the transitional months of late Spring when there is the possibility of no rain.

The potential locations for the below-ground tanks are shown on Attachment 3. The 20,000 gallon tank has more versatility due to its size and potential locations could be out of the main field area allowing for the fields to be done first followed by the below-ground tank work. Suitable locations for the 20,000 gallon tank are adjacent to the tennis courts and below the Sunnyhills apartment complex which has numerous downspouts draining directly into the park. The two best locations for the 100,000 gallon below-ground tank would be field one or below the dilapidated tennis courts closer to Sunnyhills Drive. The tennis court needs resurfacing so putting the tank here could also be done in conjunction with resurfacing.

Attachment 5 shows the proposed 100,000 gallon tank below field 1. While this is a great option and has a major storm drain going adjacent to it which could fill the tank, the design time would most likely push the field renovation project into next fall.

In options 2 and 3 greywater systems are also included which are not in option 1 but the above ground 8,000 gallon tank in option 1 could be used for recycled water or greywater. While the water savings from the existing available grey water is minimal at 5,000 gallons per month or 1% of water needed in summer months staff recommends installing a system of piping that is grey water and recycled water ready. This recommendation is based on the potential for future development or remodel of existing multi-unit housing that could incorporate a grey water piping network that could be connected to the Memorial irrigation system in the future. A new above-ground tank and recycled water hookup would also allow for the use of trucked in water from the Las Gallinas Valley Sanitary District during the peak summer months, but this would be an expensive option and not very green.

Summary

While all of the below options are viable, the costs to include below-ground tanks and artificial turf is fairly significant. The below-ground water storage tank options add on 15-30% in cost for the 20,000 gallon tank and 100,000 gallon tank, respectively. The artificial turf option for only field 1 doubles the cost of installing grass, irrigation, and drainage for all three fields but technically has a 10 year payback. Option 1 which includes irrigation replacement, drainage and new fields along with using the existing wells and adding a new storage tank is the least expensive option but is also comparable to option 2 in cost to benefit ratio and it has a below-ground storage tank. All of the various items in these options may be mixed and matched.

Option 1 could be completed this fall with modifications to the existing design and specifications from last year. Option 2 could be completed in phases with the fields being done first along with the drainage, irrigation, and other piping for future rainwater and grey water collection. The 20,000 gallon below-ground tank could be designed and installed following the work in the fields sometime in the following year once the design is complete if authorized by Council.

Option 3 incorporating the artificial turf could be designed and completed this fall without the 100,000 gallon tank below field 1. However, the 100,000 gallon tank could be installed below the lower tennis courts as a phase 2 which would allow more time for design.


The Memorial Park fields and the park itself are highly used recreationally, leisurely and for community events by residents and visitors year-round. Public parks fill an important role for a community gathering space for residents and people who don't have access to private outdoor space. Providing a public field with natural grass is a greener approach to having lawns as opposed to private lawns for residences. A NASA led study in 2005 found that grass lawns in the US cover 63,000 square miles and typically use 50-75% of the domestic water supply. With droughts becoming more frequent and the availability of clean drinking water limited, one way to conserve water would be to not allow grass lawns for private residences but provide shared community outdoor space with grass fields and other amenities.

Memorial Park Domestic Water Reduction

Option 1

Replacement of Existing Field with New Irrigation System and above ground storage tank



	Summer Gal/m	Percent reduction	Cost	Cost per gal/red. Summer	Average Annual use	Cost per gal/red. Annual
Description/Summer Peak	400,000				2,749,897	
New grass fields, grading, irrigation	-100,000	-25%	\$750,000	\$7.50	-687,474	\$1.09
Existing Rehabilitated Wells	-60,000	-15%	\$20,000	\$0.33	-412,485	\$0.05
Add existing Well MW-2B	-30,000	-8%	\$35,000	\$1.17	-206,242	\$0.17
Small 8,000 gallon above ground storage tank with new controls (no stormwater or greywater)			\$120,000			

Total MMWD Water Reduction  **-190,000** **-48%** **\$925,000** **\$4.87** **-1,306,201** **-\$0.71**

Option 2

Replacement of Existing Grass with New Wells and Small Graywater/Stormwater System

	Summer Gal/m	Percent reduction	Cost	Cost per gal/red. Summer	Average Annual use	Cost per gal/red. Annual
Description/Summer Peak	400,000				2,749,897	
New grass fields, grading, irrigation	-100,000	-25%	\$750,000	\$7.50	-687,474	\$1.09
Existing Rehabilitated Wells	-60,000	-15%	\$20,000	\$0.33	-412,485	\$0.05
Add existing Well MW-2B	-30,000	-8%	\$35,000	\$1.17	-206,242	\$0.17
Small stormwater and greywater systems	-5,000	-1%	\$50,000	\$10.00	8,593	-\$5.82
Larger 20,000 gallon below ground storage tank with new controls			\$175,000			

Total MMWD Water Reduction  **-195,000**  **-49%** **\$1,030,000** **\$5.28** **-1,297,608** **-\$0.79**

Option 3**Replacing 2/3 of the Existing Grass Area and adding 40,000 sq. ft of artificial turf.**

	Summer Gal/m	Percent reduction	Cost	Cost per gal/red. Summer	Average Annual use	Cost per gal/red. Annual
Description/Summer Peak	400,000				2,749,897	
New grass fields, grading, irrigation	-100,000	-25%	\$750,000	\$7.50	-687,474	\$1.09
New Artificial Turf	-100,000	-25%	\$800,000	\$8.00	-687,474	\$1.16
Existing Rehabilitated Wells	-60,000	-15%	\$20,000	\$0.33	-412,485	\$0.05
Add existing Well MW-2B	-30,000	-8%	\$35,000	\$1.17	-206,242	\$0.17
Larger stormwater and greywater collection systems	-20,000	-5%	\$125,000	\$6.25	-137,495	\$0.91
Install very large 100,000 gallon below ground storage tank with pumps and controls.			\$300,000			
Total MMWD Water Reduction -310,000 -78% \$2,030,000 \$6.55 -2,131,170 -\$0.95						

FISCAL IMPACT

If Council chooses to proceed with one of the above options, the fiscal impact will be approximately as shown in the Cost column above. However, the selected option will be brought back to Council for ultimate approval and the engineers estimate will be included at that time. Funding for the above options will come from Measure A, Parks which has approximately \$700,000 but any funding above this amount will need to be allocated from the general fund, Measure D or American Rescue Plan Act funds. Staff would like direction from Council on where funds should come from if over existing funds in Measure A, Parks.

CEQA AND CLIMATE ACTION PLAN CONSISTENCY

The Town finds that discussing possible approaches to reducing water consumption in Town at Memorial Park is a preliminary discussion and does not constitute approval of a project. Therefore, conducting a CEQA analysis before the Council chooses a conservation option is premature. (CEQA Guidelines § 15002(e)). If such a discussion of water conservation options is considered a project, it is categorically exempt from the requirement for the preparation of environmental documents under the California Environmental Quality Act (CEQA) Guidelines Section 15301 Class 1, because it involves maintenance of existing public facilities involving negligible or no expansion of use. (14 Cal. Code Regs. § 15301). None of the exceptions listed in CEQA Guidelines section 15300.2 apply in this instance.

The modification of irrigation schedules will address San Anselmo's Climate Action Plan (CAP) 2030, specifically CAP Measure C-2, replace inefficient irrigation systems by reducing overall domestic water usage.