

Commercial  
Site  
Assessment™  
Tier II

Prepared for:

Harmony East  
Condo Assoc.

13674 Brass Parkway  
Rosemount, MN 55068

2021 Season



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Proud Partner of 



Controller Systems	
#1	
#2	

**Commercial Site Assessment™**

Date of Tier II CSA: August 5<sup>th</sup>, 2021  
 Certified Technician: Russ Jundt, CLIA, CIT

Irrigated Acres: System #1: 3.06 acres  
 System #2: ~4.6 acres

Irrigated *ft*<sup>2</sup>: System #1: 133,268 *ft*<sup>2</sup>  
 System #2: ~200,482 *ft*<sup>2</sup>

## Harmony East Condo Assoc Audit Observations

Harmony East has 2 water sources and 2 controllers with 44 zones total.

- **System #1:** Hunter I-Core, 15 zones, Hunter Rain Sensor (bypassed)
  - *Schedule A: Start-10pm, Days- Sun, Mon, Wed, Thur, Sat.*
    - *30 mins rotors, 10 mins sprays*
- **System #2:** Hunter ICC, 29 zones, Hunter Solar Sync (region is wrong)
  - *Schedule: N/A*

### Harmony East general system observations

#### Controller and Sensor:

**Issue #1:** Controller for system one is a basic “set and forget” controller

**Solution #1:** Upgrade controller to a smart controller with a hotspot for weather data. Smart controllers manage water use based on weather data and plant need (evapotranspiration). Reducing overall use and saving water.

**Issue #2:** Controller for system two is a smart controller via use of Hunter Solar Sync. However, the Solar Sync is not setup correctly and is using the wrong region’s weather data. More importantly, the controller display is not functional and apparently (after talking to the irrigation contractor) it hasn’t worked for years. Having no display makes it impossible to see how the controller program is operating the system, nor does it allow anyone to work on the controller or know what is working properly. Because of this, we were not able to do the audit for this controller/system #2.

**Solution #2:** Upgrade controller to a Hunter HCC smart controller with a hotspot for weather data and add new onsite rain sensor. Smart controllers manage water use based on weather data and plant need (evapotranspiration). Reducing overall use and saving water.

**Issue #3:** Rain sensor for system one is under thick trees and will not detect rain in its location.

**Solution #3:** When upgrading controller, install new wireless rain sensor that can be installed in a better location.

## **Harmon East: Zone by Zone (ONLY SYSTEM/CONTROLLER 1)**

**Issue #4:** Of the 277 rotors, 31 of them are either, leaking, broken, or not turning, etc.

**Solution #4:** Replace 31 broken or defective rotors.

**Issue #5:** There are also areas that are lack proper coverage or have heads in unmaintained areas. This may be due to landscape aging/changing, poor design, etc.

**Solution #5:** Move heads for better coverage, add heads where there is a gap in coverage, or cap/eliminate heads that are not needed.

**Issue #6:** There are three zones (2, 9, and 11) with mixed sprinkler types (rotors and sprays) on the same zone. Sprays apply approximately two to three times as much water in their areas as rotors, causing over watering/wasted water.

**Solution #6:** Each of the three zones needs a different solution.

- Zone 2 only has one rotor tied in so we would change the rotor to a spray head and possibly add a head or two if coverage needs them.
- Zone 9 has 10 rotors and 23 sprays so the ideal solution would be to change the rotors to spray heads and convert all nozzles to MP rotary nozzles to maintain proper coverage.
- Zone 11 only has one spray head with 13 rotors, so the easiest solution is to change the spray nozzle to an MP rotary nozzle.

**Issue #7:** The pressure for zones two and three is high and causing fogging/misting from the spray heads. This affect from high pressure is a direct loss of water to the air/evaporation and is a waste of water.

**Solution #7:** Install pressure-regulated heads to reduce water waste due to “misting” from high pressure. I would recommend doing this on head replacements moving forward.

**Issue #8:** On System #1, the discharge pipe connection from the pump is leaking.

**Solution #8:** Clean connection and apply new waterproof tape and/or paste to connection. If threads are the problem, replace the fitting.

## Water Rates:

Meter Reading Interval:  Monthly  Quarterly  Other \_\_\_\_\_

Units Measured As:  1000 gallons  CCF

Converted Units:  1 unit = 1000 gallons

<b>WATER RATES</b>	<b>Irrigation Metered System</b>
Price per unit (per 1,000 gals)	\$3.80
Threshold per quarter	Irrigation Metered System
Sewer Rate per unit (if unmetered):	None

## Historical Water Usage:

### Water Source #1

Year	Annual Water Usage (gallons)	Annual Water Cost*
2020	1,270,000	\$4,826
2021	1,701,000	\$6,464
2 Year Average	1,485,500	\$5,645

### Water Source #2\*\*

Year	Annual Water Usage (gallons)	Annual Water Cost*
2020	1,557,000	\$5,917
2021	1,988,000	\$7,582
2 Year Average	1,772,500	\$6,736

\*Based on current Water Rates for best year to year comparison.

\*\*Water Source #2 is operational, but the controller's display is broken. There is no way to see how the controller is programmed to operate the system. As such, this water usage data is the only information for water source #2 that we were able to document.

## Plant Water Requirement (ET Data):

Plant Material Need: **1,658,524 gallons**

Cost: **\$6,302.39/year**

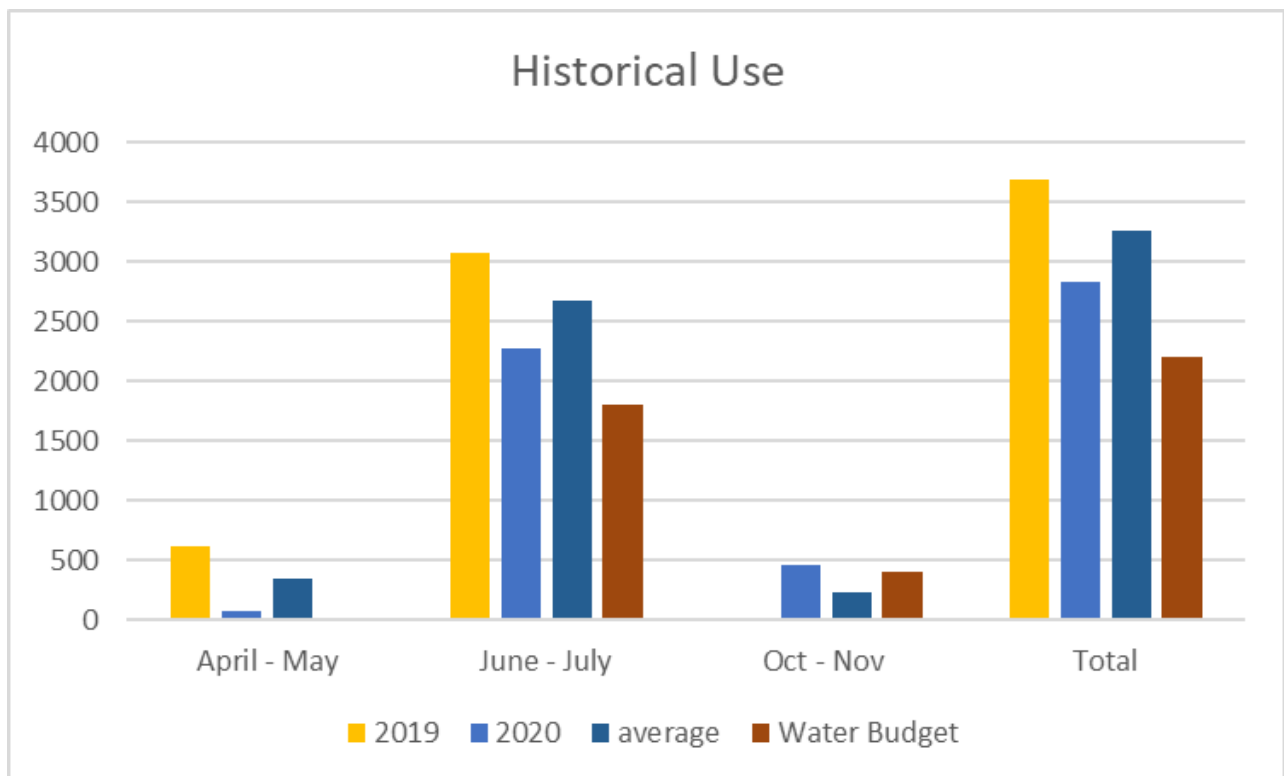
$$Eff \% = \frac{\text{water need}}{\text{water use}}$$

$$Eff \% = \frac{1,658,524}{3,158,000} = 52.52\%$$

EPA Standard = 75% Efficiency

*Eff* = 75% : 2,211,365 gallons used at an annual cost of **\$8,403**

Month	April-May Reading	June-July Reading	Oct-Nov Reading	Total(gal)
2020 Usage	81,000	2,276,000	470,000	<b>2,827,000</b>
2019 Usage	614,000	3,075,000	0	<b>3,689,000</b>
Avg Usage	<b>347,500</b>	<b>2,675,500</b>	<b>235,000</b>	<b>3,158,000</b>
Water Budget	<b>0</b>	<b>1,811,590</b>	<b>399,770</b>	<b>2,211,365</b>



## System Components:

Water Source		Deficiency?	
<b>#1</b>	Location	13674 Brass Parkway, Rosemount, MN 55068	
	Source	City Feed	
	Anti-syphon		
	Brand	Wilkins/Zurn (975XL) RPZ	
	Size	2"	
	Inspection Date	N/A	
	Visual Inspection	Good	
	Deduct Meter		
	Brand	Sensus	
	Size	1.5"	
	Serial Number	57992348	
	Reading	27,977,283 Gallons	
	Visual Inspection	Good	
	Booster Pump		
	Brand	Myers - MFG#7968967	
	Size	2HP	
	Volt/AMP	115/230 Volt 22.6/11.3 AMP	
	Visual Inspection	Top discharge connection leaking	
	Notes:	No Master Valve.	

Water Source		Deficiency?		
<b>#2</b>	Location	13463 Brick Path, Rosemount, MN 55068		
	Source	3" City Feed		
	Anti-syphon			
	Brand	Wilkins/Zurn (975XL) RPZ		
	Size	2"		
	Inspection Date	N/A		
	Visual Inspection	Good		
	Deduct Meter			
	Brand	Sensus		
	Size	1.5"		
	Serial Number	60929283		
	Reading	34,277,877 Gallons		
	Visual Inspection	Good		
	Booster Pump			
	Brand	Flint & Walling		
	Size	1.5 HP		
	Volt/AMP	-		
Visual Inspection	Ok			
Notes:	No Master Valve.			



## Recommend Critical Repairs and Adjustments: Controller #1

Zones																
Head Type	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Total
Total # Rotors	34	1		23	28	31	18	13	10	20	13	9	17	30	30	277
Total # Sprays		45	30						23		1					99
Rotating Nozzles																
Drip																
Mixed Head Types		X							X		X					3
<b>Repairs</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>	<b>11</b>	<b>12</b>	<b>13</b>	<b>14</b>	<b>15</b>	<b>Total</b>
Damaged Rotors	9			2	3	4	4		1	3		1		2	2	31
Damaged 4" Sprays																
Damaged 6" Sprays																
Damaged High Pop Rotor																
Damaged High Pop Spray																
Line Leaks																
Wrong Nozzle r=rotor s=spray									23 S		1 S					24 S
Damaged Spray Head Nozzles																
Raise/Straighten Heads																
<b>Design Improvements</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>	<b>11</b>	<b>12</b>	<b>13</b>	<b>14</b>	<b>15</b>	<b>Total</b>
Move Head for better coverage					1					4			1		2	8
Add Head for better coverage					4 MP 5 R	12 MP	4 MP	4 MP			5 R	2 R	2 R	2 MP	3 R	26 MP 17 R
Cap Head	1															1
Convert Rotors to Spray		1							10							11

## Critical Repairs and Adjustments

Repairs	Price (each)	Count		Total
R1.) Installed 5" rotor (Issue #4)	\$ 65.00	31		\$ 2,015.00
R2.) Controller #2: Hunter HCC (29 zones) (Issue #2)	\$ 1,475.00	1		\$ 1,475.00
R3.) System #1 Pump connection leak fix (Issue #8)	\$ 30.00	1		\$ 30.00
				\$ 3,520.00

## Design Improvements

Design Improvements	Price (each)	Count		Total
D1.) Cap unnecessary heads (Issue #5)	\$ 30.00	1		\$ 30.00
D2.) Add a Head (Issue #5)	\$ 150.00	43		\$ 6,450.00
D3.) Move head for better coverage/out of weeds (Issue #5)	\$ 150.00	8		\$ 1,200.00
D4.) Replace spray nozzle with rotary nozzle (matching precipitation rate) (Issue #6)	\$ 20.00	24		\$ 480.00
				\$ 8,160.00

## Recommended Efficiency Upgrades

System Efficiency and Design Upgrades	Price (each)	Count		Total
U1.) Controller #1: Hunter HPC (15 zones). (Issue #1)	\$ 825.00	1		\$ 825.00
U2.) Install Wireless rain sensor (systems 1 & 2) (Issue #3)	\$ 150.00	2		\$ 300.00
U3.) Hot spots for internet access to get weather data for controllers. (Price depends on provider) (Issue #1 & #2)	\$ 30 for unit & \$ 50 per month (estimated)	2		\$ 60 for unit & \$ 100 per month (estimated)
U4.) Replace remaining heads after repairs with pressure-regulated heads. (Issue #7)	\$ 65.00	75		\$ 4,875.00
				\$ 6,060.00 & \$ 100 per month (estimated)

In summary, completing the recommended critical repairs and upgrades will result in substantially more efficient water usage and healthier plant material.

## **Next Steps:**

- Fix repair issues
- Move heads to a better position
- Change various nozzles and heads for better coverage and distribution
- Cap unneeded heads
- Add heads/change heads in areas that are lacking proper coverage
- Upgrade/replace controllers with smart/weather-based controllers with rain sensors on site
- Address high pressures by installing pressure-regulated heads going forward
- Annually maintain (including adjustments) & monitor property
- Convert open areas, especially hills, to native areas.
- Audit System #2 once controller is replaced