OPEN MEETING

GOLDEN RAIN FOUNDATION of LAGUNA WOODS

REGULAR MEETING
GOLDEN RAIN FOUNDATION LANDSCAPE COMMITTEE*

Wednesday, December 8, 2021 – 1:30 p.m.
BOARD ROOM/VIRTUAL MEETING
Laguna Woods Village
24351 El Toro Road, Laguna Woods, CA

Laguna Woods Village owners/residents are welcome to participate in all open committee meetings and submit comments or questions for hybrid meetings using one of three options

1. Join this meeting in-person in the Community Center Board Room.

2. Join the Zoom meeting at https://zoom.us/j/99225095454. Please "Raise Your Hand" during the agenda item you would like to speak to. If you have an item that is NOT on the agenda, please "Raise Your Hand" during the Member Comments agenda item.

3. Via email to meeting@vmsinc.org any time before the meeting is scheduled to begin or during the meeting. Please use the name GRF Landscape Committee in the subject line of the email. Name and unit number must be included.

NOTICE AND AGENDA

This Meeting May Be Recorded

1. Call to Order
2. Acknowledgment of Media
3. Approval of the Agenda
4. Approval of Meeting Report for September 8, 2021
5. Chair Remarks
6. Department Head Update
    a. Update on Master Control Irrigation System from Mission Architecture and Water Savings Report

Consent:
None

Reports
7. Update on the Creek

Items for Discussion and Consideration

8. Video of Village Landscape Tour
    a. Manny Tafoya; Manager of Nursery, Small Equipment, and Pest Control
9. Member Comments (Items Not on the Agenda)
10. Response to Member Comments

Concluding Business:

11. Committee Member Comments
12. Date of Next Meeting – Wednesday, March 9, 2022 at 1:30 p.m.
13. Adjournment

Juanita Skillman, Chair
Kurt Wiemann, Staff Officer
Eve Morton, Landscape Coordinator
Telephone: 949-268-2565

*A quorum of the GRF Board, or more, may also be present at the meeting.

GOLDEN RAIN FOUNDATION of LAGUNA WOODS

OPEN MEETING

REGULAR MEETING OF THE GOLDEN RAIN FOUNDATION LANDSCAPE COMMITTEE

Wednesday, September 8, 2021 – 1:30 P.M.
VIRTUAL MEETING
Laguna Woods Village Community Center
24351 El Toro Road

REPORT

COMMITTEE MEMBERS PRESENT: Chair - Yvonne Horton, Maggie Blackwell, Lynn Jarrett, Manuel Armendariz, Elsie Addington

COMMITTEE MEMBERS ABSENT: Reza Karimi

OTHERS PRESENT:

ADVISORS PRESENT: None

STAFF PRESENT: Kurt Wiemann, Eve Morton

1. **Call to Order**

   Chair Horton called the meeting to order at 1:30 p.m.

2. **Acknowledgement of Media**

   No press was present.

3. **Approval of the Agenda**

   Director Armendariz made a motion to approve the agenda. The committee was in unanimous support.

4. **Approval of the Meeting Report for June 9, 2021**

   Director Armandariz made a motion to approve the Meeting Report. The committee was in unanimous support.

5. **Committee Chair Remarks**

   Chair Horton remarked about the slopes. She asked Mr. Wiemann if a pre-emergent was put onto slopes. Weeds are up to eight inches already. He stated he will check on that and get back to her.

   She was swimming at pool at CH5 and all plants around the pool there are dead.

She received a complaint that mowing is starting too early at CDS 7. Mr. Wiemann stated that mowing starts at 7:30 a.m. The mowing starting point is rotated so same people are not effected each time in early morning.

6. Department Head Update

None.

Consent:

None.

Reports

7. Update on the Creek

Mr. Wiemann reported on work being done in the creek.

The creek has a higher water level this year and hip waders were needed to go out into the water. Cattails were cleared. A 500-foot buffer zone was set up around a protected turtle who was found there. A bird survey is done prior to the start of any work and no active bird nests were found.

The entire cost of this recent cleanup was almost $37K. That's why we are only able to clean up there once a quarter.

We are working on making a five foot channel down the middle of the creek which would allow us to chemically treat this channel to help with some of the upkeep.This would also help with erosion of the banks.

Chair Horton said the the willows downstream have not been trimmed.Mr. Wiemann will look into that.

Director Armendariz said he read that if you cut cattails a foot below water level, that they will die. Is that accurate? Mr. Wiemann stated that if they were to trim all the cattails below water level, they would eventually die off because they wouldn't get any sun. However, cattails' roots from others on the bank would make them re-grow into the creek.

The permit we have only allows us to cut cattails a foot above the water.

The creek is all on GRF property. The meadows around it are mostly GRF and some United Mutual area. The majority of the slopes out there belong to United Mutual.

Resident at 580-O stated that the creek look like a forest downstream. She was glad that there will be more cattail cutbacks. She is glad that staff is working on a channel.

She learned that getting the cattails is less about restrictions and more about cost.

She doesn't like that Member Comments detail aren't in the Minutes. Who would she talk to about this? President Carpenter said she can speak to Cheryl Silva about Minutes.

Director Blackwell said actions made in a committee are the content in the Minutes. It is not a transcript, like in a courtroom.

7A. Presentation by Vector Control

Lora Young from Vector Control presented some information on Aliso Creek and mosquitos. There are 27 types of mosquitos in OC. We have four main types here. They trap weekly at the Creek and an average amount of mosquitos are trapped, not a larger than normal amount.

Most biting complaints are from a different type of mosquito than found at the creek. These biting type breed in standing water like flower pots, pot saucers, and bird fountains that aren't being maintained. They bite during the day.

There hasn't been a case of West Nile Virus in Village in last five years.

Items for Discussion and Consideration

8. Member Comments (Items Not on the Agenda)

2369-2B: Asked about the weeds in the sidewalks near Gates 5 and 6 on Via Mariposa. Mr. Wiemann reported that staff is currently working on removing the weeds on sidewalks.

None.

9. Response to Member Comments

Above.

Concluding Business:

10. Committee Member Comments

Chair Horton asked if vinegar has been used for weed control. Mr. Wiemann reported "yes" but it is not very effective and very malodorous. He is always looking for new products to come onto the market for weed and rodent control.

Mr. Wiemann said the birth control rodent treatment is not cost effective. We are having some success with it at the stables. It sterilizes the females for 30 days but all females have to ingest it for it to work. That would be incredibly expensive for such a large environment like the Village.

Director Addington asked about the difference between generations of rodenticides. Mr. Wiemann said first generations required more to be ingested for them to work.

Mr. Wiemann reported that they are trimming out dead fruit trees at the garden center and have put in new rules regarding fruit trees there to the keep rodents population down.

11. Date of Next Meeting – Wednesday, December 8 at 1:30 p.m.

12. Adjournment at 2:24 p.m.

Yvonne Horton (Sep 15, 2021 13:42 PDT)

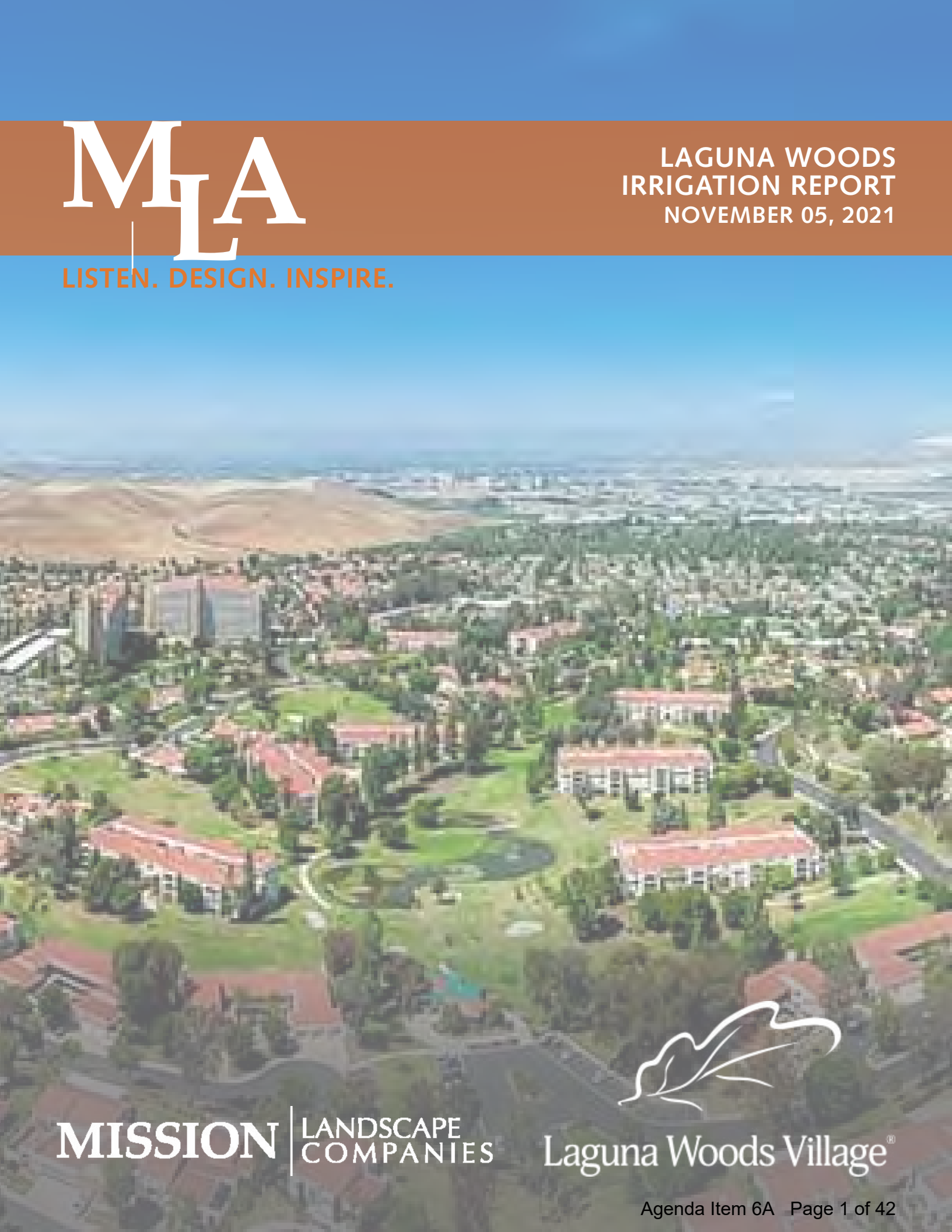
Yvonne Horton, Chair

MLA

LISTEN. DESIGN. INSPIRE.

LAGUNA WOODS IRRIGATION REPORT

NOVEMBER 05, 2021



MISSION | LANDSCAPE COMPANIES

Laguna Woods Village®

TABLE OF CONTENTS

INTRODUCTION
1.0

1.0 - INTRODUCTION

PROJECT INTRODUCTION

Laguna Woods is in need of upgrading the existing irrigation central control system and so is investigating equipment that will aid in the automation and remote control of the system. Based on initial meetings with the Laguna Woods maintenance personnel, we learned of the increasing water fees from the El Toro Water District along with the inefficiency of the current irrigation central control system and that the new upgraded system would preferably be cloud based using cellular technology.

Mission Landscape Architecture (MLA) along with Mission Landscape Maintenance (MLM) was awarded the project to develop a complete set of construction documents for the retrofit/replacement of the existing central control system. The first phase of the project is to provide an analysis of the existing irrigation central control systems, coordinate with maintenance personnel for compatibility with existing system/controls and provide options on how to improve the existing system or to replace it with a new cloud based system utilizing cellular technology.

WHO IS MISSION LANDSCAPE?

MLA and MLM are divisions of Mission Landscape Companies (MLC), which has been in business in Southern California for over forty years. MLC bases their company values on Service, Teamwork, Integrity, Quality and Safety. MLA is a full service landscape architecture design firm with experience in multi-family, residential, office, retail and numerous other sectors. MLM provides landscape maintenance for home owner associations, apartment homes, retail, commercial, and municipal properties from Sacramento to South Orange County.

Further information can be found here: http://missionlandscape.com/

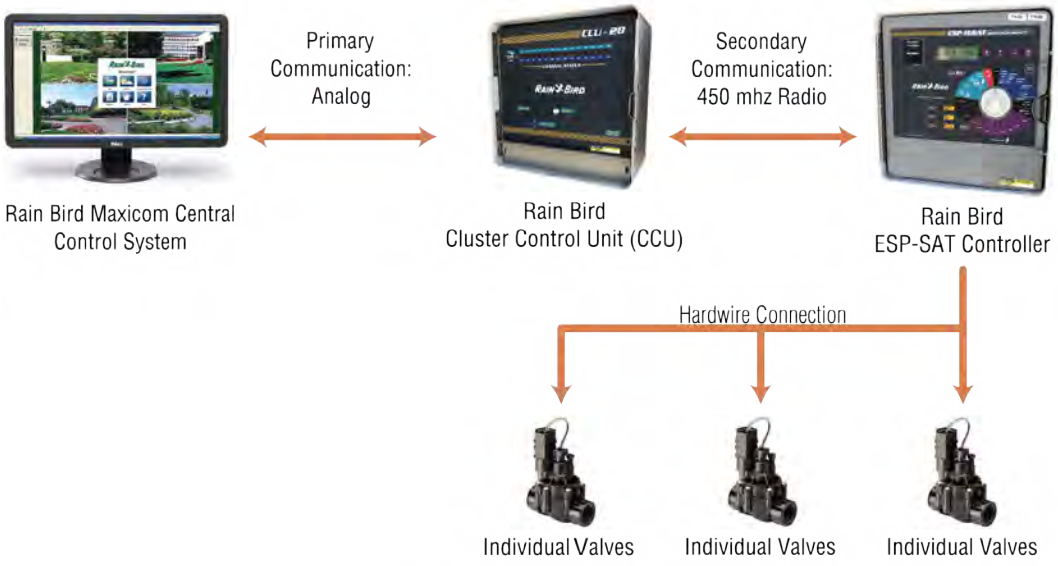
EXISTING CONDITIONS SUMMARY
2.0

2.1 - EXISTING CONDITIONS SUMMARY

EXISTING IRRIGATION CENTRAL CONTROL SYSTEM

The existing central control system which has been in place since 2001 is a Rain Bird Maxicom² (version 4.5) with (31) CCU's (Cluster Control units), (407) remote irrigation controllers (satellites) and (1) weather station. The existing system uses a combination of analog telephone landline and radio repeater systems to control the system remotely. The main computer connects and delivers data schedules to CCU's via analog telephone based on information received from the weather station. This is known as the primary method of communication. The CCU's communicate and deliver schedules to controllers via UHF radio. This is known as the secondary method of communication. The controllers send 24 volt signals to valves (stations) via direct wire connection. There are (407) total controllers with stations ranging from 16 to 40. The system has 10,500 active stations / zones. The project site is about 2.6 square miles.

EXISTING MAXICOM SYSTEM



2.1 - EXISTING CONDITIONS SUMMARY

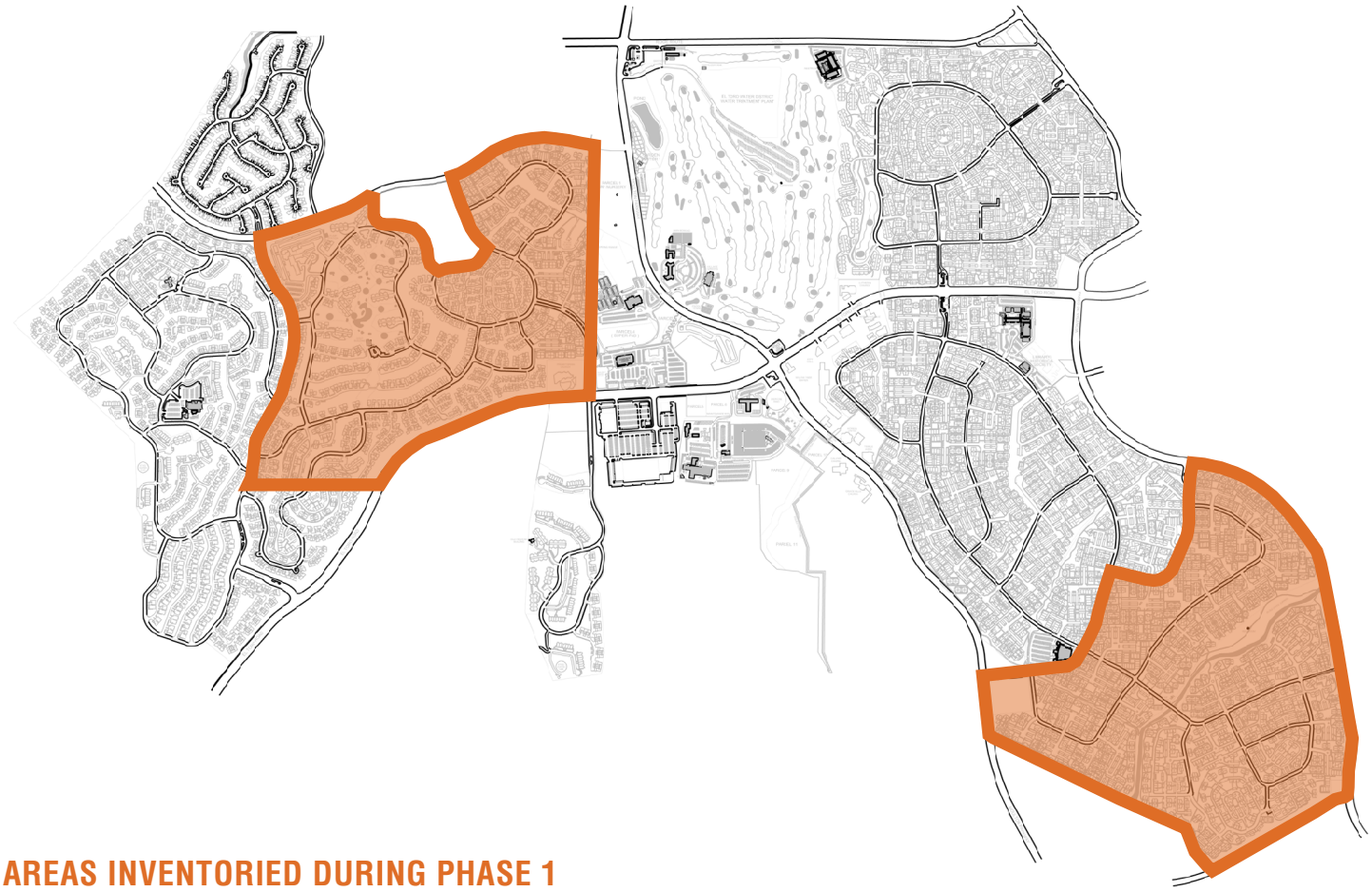
PHASE 1 - EXISTING SYSTEM INVENTORY

MLA has inventoried (100) of the existing (407) irrigation controllers to determine their condition, station size and other pertinent information that will be used when evaluating options for upgrades or replacement. The controllers inventoried range from (10) to (15) years old. The average manufactured lifespan of a controller is (10) to (15) years.

See Appendex B for phase 1 controller inventory spreadsheets

PERTINENT EQUIPMENT

During our inventory and with talking with Laguna Woods maintenance personnel, we learned the existing irrigation system is missing master valves and flow sensors which would help improve the efficient use of water. We recommend the installation of a Hydrometer at the (231) possible water meters (functional irrigation meters & recycled irrigation meters) located within the Third Mutual.



AREAS INVENTORIED DURING PHASE 1

The location of the existing controllers inventoried are within the areas outlined in orange in the site map above.

2.2 - IDENTIFYING THE CONTROLLERS & CCU's

WHERE TO LOOK

All the controllers & CCU's in the community are wall mounted inside an enclosure. They look similar to the below images.

Wall mounted controller

Wall Mounted Controller & CCU

WHAT'S INSIDE A CONTROLLER OR CCU ENCLOSURE

The electronic interface that programs each valve/zone based on the actual site conditions; full sun or shade, tree, shrub or turf zone etcetera...

Inside a CCU Enclosure

Inside a Controller Enclosure

2.3 - THE NEXT STEP:

OUR PROCESS

We have researched numerous irrigation companies along with their central control systems and have narrowed down our search to (2) of the major irrigation companies; HydroPoint & Rain Bird. The HydroPoint option would require a replacement of the entire communication and central control system. The Rain Bird option would be a (2) phase process. Phase 1 being a retrofit of the existing communication's equipment and methods. Phase 2 is a replacement of the entire central control system when the products are available. In the next two sections we will go into more detail about these two options.

3.1 - HYDROPOINT

HYDROPOINT INTRODUCTION

HydroPoint has been in business since 2002 and has a 93% customer retention rate. Hydropoint has two of the top irrigation brands; WeatherTRAK and Baseline. HydroPoint controllers are assembled in the United States (Boise, ID & Petaluma, CA). Their controllers are tested by 25 different agencies for water savings and posted on their website as well as the various agency websites:

https://www.hydropoint.com/weathertrak/resources/research-and-studies/

WeatherTRAK is HydroPoint's line of smart irrigation controllers, flow products and cloud based central management. Their mission statement is: "Eliminate all onsite wastewater" Financial information for HydroPoint is provided in a seperate document.

We met with local HydroPoint representative Charles Zaher to disuss options on how to replace the entire existing centrol control system with a new cloud based centrol control system.

HYDROPOINT CONTACT

Charles Zaher
Regional Vice President
HydroPoint
1720 Corporate Circle
Petaluma, CA 94954
(707) 338-7029
Czaher@hydropoint.com

3.2 - WEATHERTRAK SYSTEM OVERVIEW

HOW IT WORKS

WeatherTRAK (WT) uses a cloud based software called WeatherTRAK Central that provides the user with access to manage all WT controllers installed around their property. WT Central uses daily weather reports from NOAA (National Oceanic & Atmospheric Administration) to communicate with WT controllers via AT&T cellular communication to automatically adjust irrigation run times in accordance with changing weather conditions. The NOAA weather reports sent to each controller are based on 1/2 square mile increments which allows for variable watering times based on the local microclimate. The cellular modem at each controller is a CAT-M modem (4g LTE & 5g). A warranty is included so that if the cellular network advances causing the existing modem to no longer be compatible with the available network, a new modem will be provided. An annual subscription is required (per controller) for the use of WT Central and it will provide: daily weather reports, (4) updates per year to the computer software, unlimited user access to the online portal, and unlimited technical support and training from WeatherTRAK. The recommended replacement controller specification is WeatherTRAK ET Pro 3 (12 – 96 stations).

WT has an optional cellular phone application which allows for remote configuration and management of all the controllers. The app also allows for the creation of a digital map using GPS to help locate controllers, valves, and other irrigation equipment in the field. Notifications & alerts can be customized by the user based on their preferences to receive alerts via text, email, specific days & timeframe, etc. There are (28) report templates to provide data on usage, alerts and various settings. A compliance report is available that would verify that all programming adheres to water agency drought restrictions.

WT offers support to track water rebates. They will provide all necessary available data and prepare the information for Laguna Woods to submit to the water purveyor.

WEATHERTRAK SYSTEM

3.2 - WEATHERTRAK SYSTEM OVERVIEW

HOW TO IMPLEMENT WEATHERTRAK

Remove the (407) existing controllers and install (407) new WT controllers in place. CCU's can be removed as they are not required for this system. Activate controllers by contacting a dedicated customer support agent for the required annual subscription and online access. Log onto weathertrak.net to access the online portal and manage the controllers. No special computer software or program is needed. The existing onsite weather station can remain functioning by cellular connection to incorporate it into the WearTRAK climate center. It can be also be removed or abandoned in place.

WEATHERTRAK PRODUCT INFORMATION LINKS

WeatherTRAK cloud based network

WeatherTRAK controller

4.1 - RAIN BIRD

RAIN BIRD INTRODUCTION

Rain Bird Corporation was founded in 1933 during California's agricultural boom. Rain Bird has produced and offered the industry's broadest range of irrigation products for farms, golf courses, sports arenas, commercial developments and homes in more than 130 countries around the world.

The Rain Bird Mission is to be the global irrigation industry leader by:

- Profitably providing defect-free, high-value products and services that promote the intelligent use of water for worldwide irrigation applications.
- Achieving customer satisfaction by meeting or exceeding expectations.
- Being a responsible employer respected by employees and the community.
- Enabling employees to be the best they can be.

We met with local Rain Bird representatives Doug Callison and Jesus Reynoso to discuss the various options of upgrading the existing Maxicom² communication methods and also options to implement the future Rain Bird cloud based system.

RAIN BIRD CONTACTS

Doug Callison
Rain Bird Corporation
Southern California Region
970 West Sierra Madre Ave.
Azusa, CA 91702
(858) 705-3038
Dcallison@rainbird.com

Jesus Reynosa
Rain Bird Corporation
Southern California Region
970 West Sierra Madre Ave.
Azusa, CA 91702
(909) 586-1795
Jreynoso@rainbird.com

4.2 - RAIN BIRD: PHASE 1 - COMMUNICATIONS OVERVIEW

EXISTING MAXICOM SYSTEM

The existing Rainbird Maxicom² system has (2) forms of communication; primary and secondary. Primary communication is between the Maxicom² system and the (31) CCU's (cluster control units). The secondary form of communication is between the (31) CCU's and the (407) controllers. There are several communication options for both primary and secondary forms.

PRIMARY COMMUNICATION UPGRADE OPTIONS

Primary communication options are: (a) cellular, (b) 900mhz frequency hopping spectrum radio, (c) WiFi and, (d) Ethernet. We do not believe WiFi and Ethernet are viable options as they would each require installing a new hardwire connection from the Maxicom computer to each CCU.

900mhz frequency hopping radio spectrum will change or "hop" over a wide band of frequencies as needed to avoid interference with other nearby radio systems. No radio license, data plan, or yearly subscriptions are required with this option. A site survey would need to be performed to determine if all CCU's are within reach of the Maxicom radio and are not obstructed by buildings or various elements. If any CCU's are blocked, those CCU's will need to communicate via cellular communication.

MLA believes (a) cellular is the most viable option for upgrading primary communications. The Maxicom software communicates via internet to the cellular provider, the cellular provider then uses cell towers to communicate to CCU's via 4GE LTE.

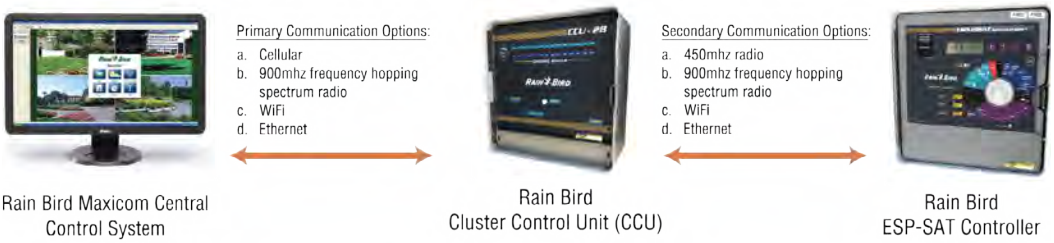
SECONDARY COMMUNICATION UPGRADE OPTIONS

Secondary communication options are: (a) 450mhz licensed band radio (current method) (b) 900mhz frequency hopping spectrum radio and (c) Ethernet. We do not believe Ethernet is a viable option as it would require installing a new hardwire connection from each CCU to each controller. We also feel 900mhz frequency hopping radio spectrum is not a viable option due to equipment and installation costs.

MLA believes improving the already in place option (a) 450mhz radio is the most viable option for secondary communications.

4.2 - RAIN BIRD: PHASE 1 - COMMUNICATIONS OVERVIEW

UPGRADING EXISTING MAXICOM COMMUNICATION SYSTEM



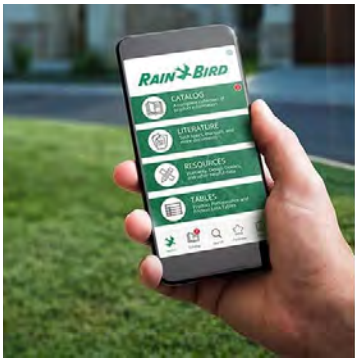
HOW TO IMPLEMENT PRIMARY COMMUNICATIONS VIA CELLUAR

Install Ethernet connection at Maxicom system computer (if not already installed) and install computer software (Com/IP) that allows Maxicom computer to communicate with the CCU's and also recieve NOAA weather reports via the cloud. Install new cellular phone modem and antenna at each CCU. Activate the required 2 year cellular subscription for each CCU.

HOW TO IMPLEMENT SECONDARY COMMUNICATIONS VIA 450 MHz RADIO

A list of radios not working properly would need to be generated internally by Laguna Woods. An irrigation contractor or technical consultant would need to be engaged to review and determine the issues and requirements for replacing radios.

4.3 - RAIN BIRD: PHASE 2 - IQ4-PRO OVERVIEW



HOW IT WORKS

The second phase of the Rain Bird (RB) approach would be to implement the IQ4-Pro central control platform which will be available in the future ± 2 years.

IQ4-pro is available as a cloud based or a PC/desktop based network that provides the user with access to manage all RB controllers installed around their property. The cloud enabled web based service allows users to login and control the irrigation system from any internet connected web-browser device. The PC/desktop version is installed and operated on a single desktop computer. The estimated release date is 2023.

IQ4-Pro is similar to the Maxicom central control system in terms of the equipment and communication methods. IQ4-Pro central control communicates with the IQI's (primary), which function similarly to and will replace the current CCU's. Each IQI will then communicate with up to (28) controllers (secondary).

IQ4-Pro uses daily weather reports from NOAA (National Oceanic & Atmospheric Administration) to communicate with Rain Bird IQI's via cellular communication to automatically adjust irrigation in accordance with the changing weather conditions. The NOAA weather reports sent to each controller are based on 1 square mile increments which allows for variable watering times based on the local microclimate.

PRIMARY COMMUNICATION OPTIONS

Primary communication options are: (a) cellular, (b) fiber optics, (c) WiFi and, (d) Ethernet. We do not believe fiber optics, WiFi and Ethernet are viable options as they would require installing a new hardwire connection from the Maxicom system to each IQI.

MLA believes (a) cellular is the most viable option for primary communications. The Maxicom software communicates via internet to the cellular provider, the cellular provider then uses cell towers to communicate to CCU's via 4GE LTE.

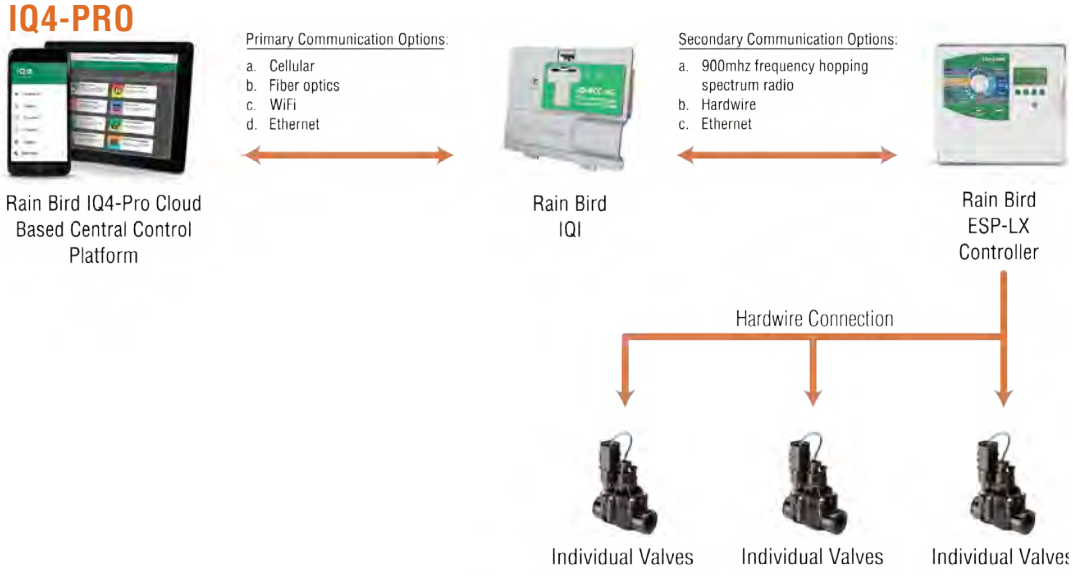
SECONDARY COMMUNICATION OPTIONS

Secondary communication options are: (a) 900mhz frequency hopping spectrum radio (b) hardwire connection and (c) Ethernet. We do not believe a hardwire connection or Ethernet are viable options as it would require installing a new hardwire connection from each CCU to each controller.

MLA believes option (a) 900mhz frequency hopping spectrum radio (described in the previous section) is the most viable option for secondary communications.

4.3 - RAIN BIRD - IQ4-PRO OVERVIEW

IQ4-PRO



HOW TO IMPLEMENT IQ4-PRO

The CCU's will need to be removed and replaced with IQI's as the CCU's are not compatible with the IQ4-Pro. The existing ESP-SAT controllers will need to be removed and replaced with ESP-LX controllers. ESP-LX are the next generation of controllers. The 2-year cellular subscription would need to be activated for primary communications. A site survey would need to be performed to determine the sizing requirements of the radio antennas installed within each IQI & controller for the secondary communications method.

IQ4-PRO PRODUCT INFORMATION LINKS

RAIN BIRD Tech Spec

IQ4 Platform

The IQ4 offers state-of-the-art command and control features in a streamlined use interface. IQ4 provides advanced water management features saving money and time. The IQ4 Platform consists of two options: IQ4-Cloud and IQ4-Desktop.

Applications

All IQ4 versions provide remote programming, management, and monitoring of ESP-LX Series Controllers from the computer in your office. IQ4 is the perfect irrigation control solution for parks departments, school districts, property managers, landscape maintenance contractors, and water managers. IQ4 can manage small single-controller sites as well as large multi-controller sites and supports both ESP-LX Series traditionally-wired and two-wire IVM controllers.

IQ4-Cloud

Cloud-enabled web-based service allowing users to login and control their irrigation system from any internet connected web-browser device. IQ4 is ideal for organizations with multiple irrigation system administrators and/or users that require mobility. Full features of IQ4 can be accessed on any touchscreen devices found in smartphones or tablets. Internet access is required.

IQ4-Desktop

Installed and operated on a single desktop computer. IQ4-Desktop is ideal for organizations with one administrator who can control the system from their computer in their office. The IQ-Desktop software package provides 5-satellite controller capacity. IQ4 software satellite controller capacity can be upgraded in 5-satellite increments with the IQ5SATSWU.

IQ4 Platform Software Features

- Compatible with ESP-LXME, ESP-LXIVM and ESP-LXMEF traditionally-wired and ESP-LXD two-wire decoder controllers
- Site, satellite, and station names
- Programming in seconds, minutes, and hours
- Daily or Monthly Seasonal Adjust % or ET station run time adjustments by site
- Manual Program, Test Program, Station starts
- Detailed logs and reports
- Automated or user initiated satellite Synchronize & Retrieve Logs and Weather Source Retrieve Weather Data communication
- Automated Email Alarm/Warning and Satellite Station Run Time Reports
- Satellite PIN-Code Protection (4-digit PIN-Code required to make programming changes at the satellite)
- Satellite Two-Way Programming (changes made at the satellite can be viewed and accepted in the IQ4 software)
- Copy/Move Satellite Utility (copy or move a satellite to another site)
- Auto-Synchronization of data from IQ to Satellite
- Software uses Irrigation Association terminology and formulas
- ET/Rainfall Weather Sources include:
  - CIMIS Internet Service (California only)
  - Rain Bird WSPROLT Weather Station
  - Rain Bird WSPRO2 Weather Station
- IQ Global Weather Internet Service which provides local weather data including rain fall
- Retrieves minute-by-minute flow logs from flow sensor equipped ESP-LXMEF, ESP-LXIVM and ESP-LXD Satellite Controllers
- Flow Logs vs. Projected Flow Graphical Report (identifies which programs & stations where running at any point in time)
- Actual Flow Totals added to Satellite Station Run Time Report (included in Automated Email Reports)
- User selectable languages include English, Spanish, French, German, Italian and Portuguese

Minimum Requirements for IQ4-Desktop

- Windows 10, Windows 8, Windows 7 Service Pack 1
- Intel I5-540M or equivalent processor
- 8 GB RAM (minimum)
- 10 GB available disk space
- 1024 x 768 pixel screen resolution
- Internet Access
- Chrome (recommended), Edge, or Firefox browser

How to Specify

IQ4 Platform
IQ-Cloud IQ4-Desktop

IQ4-Pro Cloud based network

ROUGH ORDER OF MAGNITUDE
5.0

ROUGH ORDER OF MAGNITUDE LANDSCAPE CONSTRUCTION COST

Based on MLA's report dated: November 05, 2021

PROJECT SUMMARY - BASE ITEMS			TOTAL
HydroPoint - WeatherTrak:			
		Subtotal	*$2,387,576*
		10% Contingency	*$238,758*
		WeatherTRAK (Parts & Labor) TOTAL:	**$2,626,333**
	WeatherTRAK Annual Cellular Subscription Cost:		**$76,516**
Rainbird - Phase 1 - Upgrade existing communications methods:			
		SUB-TOTAL:	$180,158
		10% Contingency	*$18,016*
		Rainbird Phase 1 (Parts & Labor) TOTAL:	**$198,174**
	Phase 1 Annual Cellular subscription Cost:		**$5,580**
Rainbird - Phase 2 - IQ4-Pro:			
		SUB-TOTAL:	$3,648,972
		10% Contingency	*$364,897*
		Rainbird Phase 2 (Parts & Labor) TOTAL:	**$4,013,869**
	Phase 2 Annual Cellular subscription Cost:		**$5,580**

Note: Rain Bird does not have pricing available for IQ-4 Pro, IQI's, or misc equipment needed.

HYDROPOINT / WEATHERTRAK OPTION

DESCRIPTION	QUANTITY	UNIT	UNIT COST		TOTAL
Controller Replacement					
WeatherTRAK ET Pro 3 Controllers (12-42 stations) w/ cold rolled wall mounted enclosure					
18 station	12	EA	$3,380.00		$40,560
24 station	184	EA	$3,774.00		$694,416
36 station	134	EA	$4,560.00		$611,040
42 station	77	EA	$4,954.00		$381,458
(see note 1 below)			*Sub-total:*		*$1,727,474*
			MFR Discount: 10%:		*($172,747)*
			8% Sales tax:		*$124,378*
			20% Contractor mark up:		*$335,821*
			Total:		*$2,014,926*
Installation Labor					
Remove and replace existing controller with new controller: assume (1) man, (1) day, per (1) controller:	407	EA	$450.00		$183,150
Export Data from existing controllers and import data into new controllers (performed by data entry employee) (see note 2 below)	407	EA	$50.00		$20,350
Controller programming - fine tuning data based on site conditions: assume 10 stations per hour with 10,500 total stations (performed by irrigation technical employee) (see note 2 below)	1,050	HR	$100.00		$105,000
Remove existing CCU & Misc. remedial repairs to wall surface	31	EA	$100.00		$3,100
Misc. remedial repairs to wall surface of controllers	407	EA	$150.00		$61,050
			Sub-total:		*$372,650*
			WeatherTRAK (Parts & Labor) TOTAL:		***$2,387,576***
Annual Subscription					
Annual Cellular Subscription (per controller)(access to WeatherTRAK online portal is included with annual cellular subscription)	407	EA	$235.00		$95,645
			Sub-total:		*$95,645*
			MFR Discount: 20%:		*($19,129)*
			Total:		*$76,516*

Notes:

1. Quantity of station count per controller may vary once the remainder of controllers are inventoried. Quantities for station counts are based on percentage of first 100 controllers inventoried.
2. data export/import costs and labor pricing are educated guesses and shown mainly as a placeholder. Once The information exported from an existing controller can be made available, better pricing estimates can be determined.

RAINBIRD - PHASE 1: UPGRADE EXISTING COMMUNICATIONS

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
Upgrade Primary Communications via Cellular				
Hardware				
new cellular modem at each CCU	31	EA	$1,617.00	$50,127
new wall mounted enclosure (to house modem & antenna)	31	EA	$250.00	$7,750
new antenna at each CCU	31	EA	$178.00	$5,518
install ethernet connection at Maxicom computer (if not already installed	1	ALLOW	$1,000.00	$1,000
Download & install computer software (Com/IP) that allows Maxicom computer to communicate via the cloud	1	EA	$200.00	$200
			Sub-total:	**$64,595**
			8% Sales tax:	**$5,168**
			20% Contractor mark up:	**$13,953**
			Hardware Total:	**$83,715**
Installation Labor				
Labor to install enclosure, antenna & radio. assume (1) man, (2) hours, per (1) CCU at $100/hr:	31	EA	$200.00	$6,200
Misc. remedial repairs to wall surface:	31	EA	$100.00	$3,100
			Sub-total:	**$9,300**
Upgrade Secondary Communications via 450 MHz radio				
Hardware				
new 450MHz radio (assume 50 new radios required)	50	EA	$959.00	$47,950
			Sub-total:	**$47,950**
			8% Sales tax:	**$3,836**
			20% Contractor mark up:	**$10,357**
			Hardware Total:	**$62,143**
Installation Labor				
Laguna Woods to generate list of radios not working properly	0	EA	$0.00	$0
Outside consultant to inventory list of radios not working properly to determine fix: assume (1) man, (4) hours, per (1) radio at $100/hr:	50	EA	$400.00	$20,000
Misc. remedial repairs to wall surface:	50	EA	$100.00	$5,000
			Sub-total:	**$25,000**
			Phase 1 (Parts & Labor) TOTAL:	***$180,158***
Annual Subscriptions				
Annual Cellular Subscription (per CCU) (Primary)	31	EA	$180.00	$5,580
FCC radio license (Secondary)(cost to be provided by Laguna Woods)	1	EA	$0.00	$0
			Sub-total:	**$5,580**

RAINBIRD - PHASE 2: IQ4-PRO CENTRAL CONTROL SYSTEM

DESCRIPTION	QUANTITY	UNIT	UNIT COST		TOTAL
IQ4-Pro					
Hardware					
IQI Device (see note 1 below)	31	EA	$13,020.00		$403,620
Controller: ESP LX ME (see note 2 below)	407	EA	$5,300.00		$2,157,100
			Sub-total:		$2,560,720
			8% Sales tax:		$204,858
			20% Contractor mark up:		$512,144
			Hardware Total:		$3,277,722
Installation Labor					
Remove and replace existing CCU with new IQI: assume (1) man, (1) day, per (1) IQI:	31	EA	$450.00		$13,950
Remove and replace existing controller with new controller: assume (1) man, (1) day, per (1) controller:	407	EA	$450.00		$183,150
Export Data from existing controllers and import data into new controllers (performed by data entry employee) (see note 3 below)	407	EA	$50.00		$20,350
Controller programming - fine tuning data based on site conditions: assume 10 stations per hour with 10,500 total stations (performed by irrigation technical employee) (see note 3 below)	1,050	HR	$100.00		$105,000
site survey to determine radio antenna sizing (see note 4 below)	1	ALLOW	$5,000.00		$5,000
Misc. remedial repairs to wall surface by IQI	31	EA	$100.00		$3,100
Misc. remedial repairs to wall surface by controllers	407	EA	$100.00		$40,700
			Sub-total:		$371,250
			Phase 2 (Parts & Labor) TOTAL:		***$3,648,972***
Data Plan / subscription / computer software					
Annual Cellular Subscription (per IQI)	31	EA	$180.00		$5,580
			Sub-total:		$5,580

Notes:

1. IQI Device price listed is based on the price for the currently installed CCU's. IQI Devices have not been released and pricing is not currently available
2. Controller price listed is based on the price for the currently installed ESP-SAT controller. ESP-SAT-LX ME controllers have not been released and pricing is not currently available
3. data export/import costs and labor pricing are educated guesses and shown mainly as a placeholder. Once The information exported from an existing controller can be made available, better pricing estimates can be determined.
4. Site survey allowance is an educated guess

OPTIONAL: RETROFIT OF NEW HYDROMETER

DESCRIPTION	QUANTITY	UNIT	UNIT COST		TOTAL
Retrofitting Flow Sensor & Master Valve					
Hardware					
Netafim 2" Hydrometer	231	EA	$1,750.00		$404,250
WeatherTRAK Flow Link XT+ (connectes Hydrometer using existing valve wires) (see note 1 below)	77	EA	$2,370.00		$182,490
			Sub-total:		$586,740
			8% Sales tax:		$46,939
			20% Contractor mark up:		$117,348
			HARDWARE TOTAL:		$751,027
Installation Labor					
Existing wires made available for use. Assume (1) man, (1) day at $75 and hour	77	EA	$600.00		$46,200
New wires installed for connection. Assume (1) man, (2) days at $75 and hour	77	EA	$1,200.00		$92,400
installing WT Flow Link device to tap into existing controller wires. Assume (1) man, (1.5) days at $75 and hour	77	EA	$900.00		$69,300
(see note 2 below)			*SUB-TOTAL:*		$207,900
			TOTAL:		*$958,927*

Note:
1. Quantities for WT Flow Link device will vary based on actual field conditions. Quantities used are place holders
2. Quantities for installation labor will vary based on actual field conditions. Quantities used are place holders

POTENTIAL WATER SAVINGS
6.0

6.1 - POTENTIAL WATER SAVINGS

See Appendix C

APPENDIX A- PRODUCT INFORMATION
7.0

WeatherTRAK® Central

Mission Control for Your Irrigation Operations

WeatherTRAK Central enables water managers, landscape contractors, and facilities managers to manage one site, or thousands of sites, from anywhere. Program and manage all your controllers, monitor alerts, generate reports, and map all your assets.

Only WeatherTRAK Central provides the power and flexibility that professionals require by delivering superior water savings, maintaining landscape health, and reducing truck rolls and labor required per site.

Users can configure text and email alerts for leaks, flow, and other issues, then schedule when and to whom they should be delivered.

Tools to help you intuitively manage your irrigation system's budgets, compliance, portfolios, site assets, and documents.

WeatherTRAK Mobile enables you to program, test, and troubleshoot your irrigation site while you're out in the field.

REPORTING FOR EVERY NEED OF EVERY ROLE

WeatherTRAK Central makes it easy for contractors, managers, and executives to get the exact data they need to make informed decisions. They can easily drill down and generate reports on irrigation runtimes, efficiency, and budget performance and then export the results to PDF or Excel.

KEY FEATURES

Site & Portfolio Management

- Unlimited saved programming configurations for seasonal changes or historical snapshots
- Track the current status of all the controllers and alerts throughout your entire portfolio
- Event pause for halting irrigation during on-site events
- RainShare™ configures a single rain sensor to pause irrigation across an entire site
- Multiple controller modes - On, Off, Shutdown, Winterize
- Specify user access at the account, site, or controller level
- Create and start manual irrigation sequences
- Configure point-of-connection with Flow K and Offset presets
- Configure schedules and 2 water windows each for up to 8 programs (depending on hardware)
- Create groups of stations across unlimited controllers, enabling programming changes across an entire portfolio in a few clicks
- Remotely check the current operation status and flow rate of a controller
- Customized naming of controllers, programs, and stations
- Automatically learns station flow
- Secure login and enhanced security

24/7 Alert Watch

- Smartphone, text, or email notifications
- Schedule alert windows and do not disturb times
- Organize by severity, type and duration
- Leak alerts - standard, extended, catastrophic, master valve fault
- Flow alerts - mainline, station high flow, low flow, no flow, unexpected usage
- Electrical alerts - valve short, over-current, no-connect
- High depletion alerts ensure plants stay healthy

Document Manager

- Centrally and securely store and share content such as pictures and PDFs in one integrated system
- Add notes to controllers and assets to track maintenance history and changes

Comprehensive Reporting

- Generate PDF and Excel reports
- Schedule automatic delivery of reports via email
- Report across multiple sites or controllers
- Controller settings reports, inventory report, controller change history by user and device, and historical configuration
- Irrigation runtime, measured usage, and estimated usage
- Built-in charts and graphs for easy viewing and analysis

Budget Manager

- Show history of water consumption or dollars compared with user-defined budgets
- Actual budget status based on estimated usage or, if flow sensor installed, measured daily usage
- Monitor multiple budgets at-a-glance and see monthly and yearly % of budget used
- Water Budget Site and Account Reports for executive roll-up
- Simple water bill entry

Compliance and Drought Manager

- Ensure your site operates within allowed water windows
- Updated state-specific U.S. Drought Monitor information and maps
- Creation of site-specific drought response plans
- Multi-site drought restrictions compliance tracking

WeatherTRAK ET Everywhere®

- Site-specific weather data accurate and resolute to 1 square km
- Proven most accurate multi-factor ASCE ET calculation models
- Daily weather delivery to controllers
- Redundant sources of real-time weather data eliminate the need to install or maintain on-site weather stations or additional equipment

WeatherTRAK Scheduling Engine

- Auto Mode enables maximum water savings based on zone details and daily ET
- Station-level adjustments based on plant, soil, slope, sun, sprinkler, precip rate, efficiency, root depth, and target depletion
- Independent station programming and control
- Percent adjust/fine tune by station
- Station-specific automated skip days to work around on-site events
- Five water day modes with up to two water windows
- Tune irrigation needs for sports turf and high desert sites
- Two custom plant types and one custom turf for custom crop coefficients

WeatherTRAK Central Supports

OptiFlow XR, ET Pro3, and LC+ Controllers

The Site Asset Manager enables you to map the precise locations of all your irrigation assets, including:

- WeatherTRAK Controller
- Non-WeatherTRAK Controller
- Valve
- Battery Operated Valve
- Valve Box
- Sprinkler Head
- Air Relief Valve
- Isolation Valve
- Decoder
- Rain Sensor
- Surge Protector
- Splice Box
- Master Valve
- Pump
- Flowlink
- Flow Sensor
- Pond
- Cistern
- Point of Connection
- Backflow Preventer
- Storm Drain
- Hose Bib
- Quick Coupler
- Tree
- Light
- Water Feature
- Swimming Pool
- Custom asset type

Learn more at hydropoint.com/central or call 1 (800) 362-8774 to schedule a demo.

HydroPoint

WeatherTRAK® ET Pro3®

Smart Irrigation, Perfect Landscapes

The WeatherTRAK ET Pro3 smart irrigation controller uses ET Everywhere®, the most precise, high-resolution weather data available, to create specific schedules to maintain your landscape health with the least amount of water possible.

With its proven ability to tune irrigation to your unique landscape and site characteristics, the WeatherTRAK ET Pro3 controller reduces water waste by only irrigating when it is necessary – saving you time, resources, and money.

Get more done in less time with WeatherTRAK Central programming and management

Real-time flow alerts make every site and schedule perform more efficiently

Speed up wet checks, troubleshooting, and installs with WeatherTRAK Mobile

IRRIGATION TUNED BY THE CLOUD

WeatherTRAK algorithms consider factors such as weather, plant type, and soil type to know how much water is available to the plant within the soil. If the plant has enough water, irrigation isn't scheduled. These decisions are automatically planned and constantly optimized.

HydroPoint

ET PRO3 KEY FEATURES

Overview

- 12 to 96 stations - with backlit display and touch interface
- Six station modularity
- Five-year warranty
- Worry-free Wireless Warranty™ covers cellular technology upgrades

Programming Features

- Eight simultaneous programs with five program modes and two start times
- Program all settings at controller, or remotely
- Independent station programming (72 cycles/station) with automated cycle and soak
- User-defined water days and water windows per program to comply with agency regulations
- Built-in WeatherTRAK Scheduling Engine optimizes by plant, soil, sprinkler, sun exposure, and slope data
- Automated daily runtime adjustments using site-specific ET Everywhere weather data
- Percent adjust to enable fine-tuning by station
- Automated skip days based on zone-specific soil moisture depletion
- Specific scheduling for sports turf and high desert sites
- Runtime rationing protects plant health under constricted water windows
- Stacked station manual watering from 1-99 minutes

Integrated Flow Features

- Mainline/catastrophic break detection and shutdown
- Real-time station-specific flow monitoring and control
- Local and remote station-learned flow
- Fault detection, diagnostics, and alerts
- Supports up to four flow sensor inputs and master valve outputs
- Supports normally open or normally closed master valves
- Customizable flow alert thresholds
- Upgradable to OptiFlow® for advanced flow management and multi-controller automatic scheduling
- Supports Data Industrial®, CST, Netafim™ flow sensors and custom "K and offset" values
- Compatible with WeatherTRAK FlowLink®, FlowShare, Flow3, and FlowHD

Hardware Features

- Integrated flow sensor support included
- Dedicated master valve and pump start
- Commercial-grade screw-less wire terminals
- Built-in amp meter for fault protection and diagnostics
- Cellular radio and first year of WeatherTRAK Central service included
- LTE cellular communication for the best coverage and performance
- 32-pin connector for hardware remote like the TRC Commander and Irritrol® ProMax™
- New features and firmware pushed over-the-air using WeatherTRAK Cloud Update
- Share one rain sensor across multiple controllers with RainShare™
- Robust built-in surge protection integrated directly into the controller

Input Power
120 VAC +/- 10%, (60 Hz) or 220 VAC +/- 10%, (60 Hz)

Output Power
24 VAC (60 Hz)
- 1.0 Amp (1000mA) max per station output including a pump start
- 1.0 Amp (1000mA) max per master valve output
- 3.0 Amps (80 VA) total load

Up to 17 terminal outputs energized simultaneously (8 stations, 1 manual, 4 pump starts, 4 master valves).

Consumptive Power
Idle State: 2.5 Watts
Maximum Power Requirements for Irrigation State: 70 Watts

Certifications
EPA WaterSense® Approved, FCC Certified, UL Listed, 100% SWAT-tested

Enclosure Options
Wall Mount Enclosures
- 16 gauge wall mount enclosure available in stainless and powder coated finishes
- Key-hole mounting for wall mount enclosures makes it easy to install
- Easily adapts to a small 14 gauge pedestal, also available in two different finishes

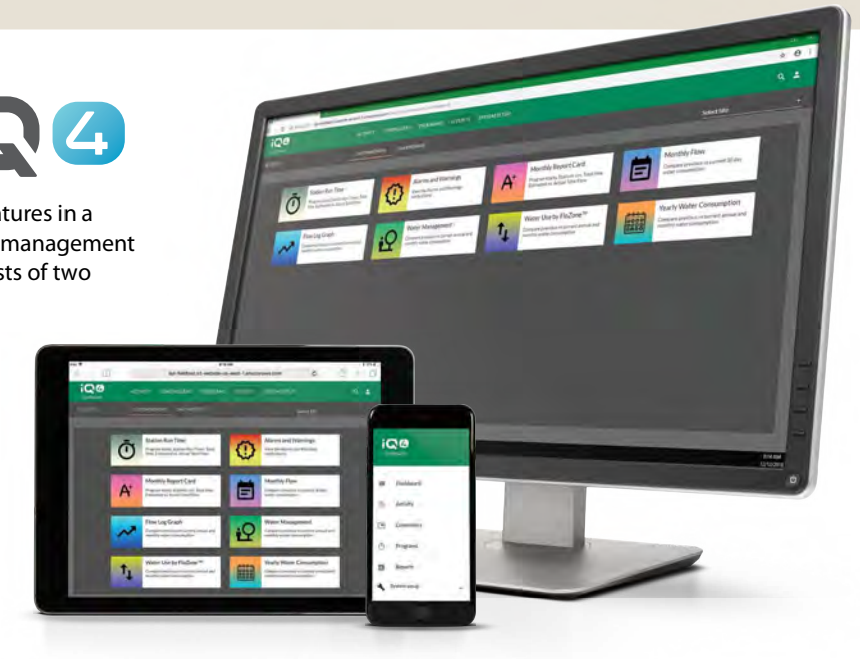
VIT Strong Box Stainless Steel Pedestal Enclosures
Retrofit Chassis for Existing Enclosures
All come with key lock entry
NEMA-3R weather-resistant

STATION COUNT	POINTS OF CONNECTION SUPPORT
12 - 36	1 standard
36 - 48	2 (requires flow key)
72	3 standard
96	4 standard

visit us: hydropoint.com

HydroPoint®

IQ4 Platform



The IQ4 offers state-of-the-art command and control features in a streamlined use interface. IQ4 provides advanced water management features saving money and time. The IQ4 Platform consists of two options: IQ4-Cloud and IQ4-Desktop.

Applications

All IQ4 versions provide remote programming, management, and monitoring of ESP-LX Series Controllers from the computer in your office. IQ4 is the perfect irrigation control solution for parks departments, school districts, property managers, landscape maintenance contractors, and water managers. IQ4 can manage small single-controller sites as well as large multi-controller sites and supports both ESP-LX Series traditionally-wired and two-wire IVM controllers.

IQ4-Cloud

Cloud-enabled web-based service allowing users to login and control their irrigation system from any internet connected web-browser device. IQ4 is ideal for organizations with multiple irrigation system administrators and/or users that require mobility. Full features of IQ4 can be accessed on any touchscreen devices found in smartphones or tablets. Internet access is required.

IQ4-Desktop

Installed and operated on a single desktop computer. IQ4-Desktop is ideal for organizations with one administrator who can control the system from their computer in their office. The IQ-Desktop software package provides 5-satellite controller capacity. IQ4 software satellite controller capacity can be upgraded in 5-satellite increments with the IQ5SATSWU.

IQ4 Platform Software Features

- Compatible with ESP-LXME, ESP-LXIVM and ESP-LXMEF traditionally-wired and ESP-LXD two-wire decoder controllers
- Site, satellite, and station names
- Programming in seconds, minutes, and hours
- Daily or Monthly Seasonal Adjust % or ET station run time adjustments by site
- Manual Program, Test Program, Station starts
- Detailed logs and reports
- Automated or user initiated satellite Synchronize & Retrieve Logs and Weather Source Retrieve Weather Data communication
- Automated Email Alarm/Warning and Satellite Station Run Time Reports
- Satellite PIN-Code Protection (4-digit PIN-Code required to make programming changes at the satellite)
- Satellite Two-Way Programming (changes made at the satellite can be viewed and accepted in the IQ4 software)
- Copy/Move Satellite Utility (copy or move a satellite to another site)
- Auto-Synchronization of data from IQ to Satellite
- Software uses Irrigation Association terminology and formulas
- ET/Rainfall Weather Sources include:
  - CIMIS Internet Service (California only)
  - Rain Bird WSPROLT Weather Station
  - Rain Bird WSPRO2 Weather Station
- IQ Global Weather Internet Service which provides local weather data including rain fall
- Retrieves minute-by-minute flow logs from flow sensor equipped ESP-LXMEF, ESP-LXIVM and ESP-LXD Satellite Controllers
- Flow Logs vs. Projected Flow Graphical Report (identifies which programs & stations where running at any point in time)
- Actual Flow Totals added to Satellite Station Run Time Report (included in Automated Email Reports)
- User selectable languages include English, Spanish, French, German, Italian and Portuguese

Minimum Requirements for IQ4-Desktop

- Windows 10, Windows 8, Windows 7 Service Pack 1
- Intel I5-540M or equivalent processor
- 8 GB RAM (minimum)
- 10 GB available disk space
- 1024 x 768 pixel screen resolution
- Internet Access
- Chrome (recommended), Edge, or Firefox browser

How to Specify

IQ4 Platform

IQ-Cloud **IQ4-Desktop**

Specifications

The irrigation central control system shall be the IQ4 Platform as hereafter specified and as shown on the drawings. The system shall be fully programmable, providing the operator with absolute and full control of the entire control system. The system shall provide a degree of flexibility such that, in effect, anything that could be done at the satellite controller shall be capable of being done at the remote device.

The system shall have a Web Based graphical user interface (GUI) that allows easy programming and graphical depiction of the satellite controller programming.

IQ4 Platform shall have the following features:

Compatibility:

- ESP- LXME & ESP- LXMEF Series traditionally-wired controllers with 1 to 48 station capacity
- ESP-LXD Series Two-wire decoder controllers with 1 to 200 station capacity
- ESP-LXIVM Series IVM controller with 1 to 240 station capacity

Administrative:

- Virtual log-on passwords to administer access privileges to multiple users
- Languages: English, Spanish, French, German, Italian, and Portuguese
- Preferences: User defined date/time, and unit formats
- Grouping: Based on site, landscape and sprinkler type

Hardware Support:

- For interface with software:
  - 4G network Communication Cartridge (NCC) Cartridge
  - Ethernet Cartridge
  - RS 232 Cartridge
- Configuration: Direct, Server and Client
- Up to 149 Client Controllers with sharing of weather sensors and master valves

Software Capabilities:

- Detect Modules
- Cartridge firmware upgrade
- Upload programs to Controller (Synchronize)
- Retrieve Controller Programs (Reverse Synchronize)
- Automatic contact to upload programs to controller after 1 hour of inactivity and retrieve logs from controller outside watering window (Auto-Synchronize)
- Manual Functions:
  - Start program, test program, Auto On/Off, Turn Master Valves On/Off for manual watering, turn Flow manager On/Off and Rain Delay
- Adjustments: Program Adjust and ET adjust
- ET/Rain weather resources:
  - IQ Global Weather
- Group Edit:
  - Site Level, Controller Level, Program Level and Station Level
  - Additional grouping based on landscape type and sprinkler type
- Define Valve Types and Sensor Types
- Flow Watch based on learned flow
  - Diagnose and shut off the source
- User defined Station Priority
- Commencement of watering in next watering window
- User defined Simulstations
- FloManager to reduce overall watering time
- Automatic reporting through emails
- Minute-by-minute flow logs in a graph comparing actual flow and projected flow
- PIN based user access:
  - Two way programing
  - User Access level
  - Complete and partial Lockout
  - 5 PINs per controller
- Flow Logs
  - Minute-by-minute graphical comparing of actual flow and projected flow
  - Actual flow totals in the automated email reports

Rain Bird Corporation
6991 East Southpoint Road
Tuscon, AZ 85756
Phone: (520) 741-6100
Fax: (520) 741-6522

Rain Bird Technical Services
(800) RAINBIRD (1-800-724-6247) (U.S. & Canada)

Rain Bird Corporation
970 West Sierra Madre Avenue
Azusa, CA 91702
Phone: (626) 812-3400
Fax: (626) 812-3411

Specification Hotline
800-458-3005 (U.S. & Canada)

Rain Bird International, Inc.
1000 West Sierra Madre Ave
Azusa, CA 91702
Phone: (626) 963-9311
Fax: (626) 852-7343

The Intelligent Use of Water™
www.rainbird.com

D41773

Appendix C

MISSION LANDSCAPE ARCHITECTURE

DEVELOPMENT
MAINTENANCE
TREE CARE
ENVIRONMENTAL
RESOURCES

December 1, 2021

Kurt Wiemann
Director of Landscape Services
Laguna Woods Village
24351 El Toro Road
Laguna Woods, CA 92654

REGARDING: **Water Analysis Report**

Dear Mr. Wiemann:

We are pleased to submit the attached Water Analysis Report prepared by HydroPoint's Hydro-Analytics Team. The report is based on the total estimated irrigated landscape area of the (592) water meters across all three Mutuals:

- Third Mutual: (43) Irrigation (functional) & (188) Recycled – total 231 meters
- GRF Mutual: (11) Irrigation (functional) & (10) Recycled – total 21 meters
- United Mutual: (4) Irrigation (functional), (18) Recycled & (318) Combination – total 340 meters

The reason that the water use / potential savings is based on the grand total of ALL landscaped areas and not broken down by individual Mutual is that there are (151) water meters that they were unable to match up with an El Toro Water District account number. Please note that these meters and associated landscape areas are included in the potential water savings calculations.

The potential water savings is based on a normalized ET (evapotranspiration) over a (5) year period. The smart controller utilizes the daily weather forecasts along with the local conditions – i.e. Shrub area, turf, slopes, sun / shade etcetera to adjust watering times on a daily basis. This Water Analysis Report does not take into account the use of a master valves and flow sensors associated with individual water meters. An additional (15%) savings of the potential (32%) total savings (as seen in the report) could be realized when a water meter has a master valve and flow sensor that help reduce water loss when there is a main line, lateral line, or equipment break that causes excessive wasted water.

Respectfully submitted,

MISSION LANDSCAPE ARCHITECTURE

Brandon Hanna, RLA
Construction Administration Manager

CC: Robert Merget (LW), Raul Arceo (LW),

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WeatherTRAK®

Water Analysis Report

Laguna Woods Village HOA

SiteOne™ LANDSCAPE SUPPLY

Stronger Together

Survey Date: **12.1.21**

Account Rep: **Charles Zaher**

Prepared by: **Hydro-Analytics Team**

HydroPoint®

Estimated Water Savings

Laguna Woods Village HOA
24351 El Toro Road
Laguna Woods, CA 92637

Estimated Savings Using WeatherTRAK ET Irrigation Controllers:

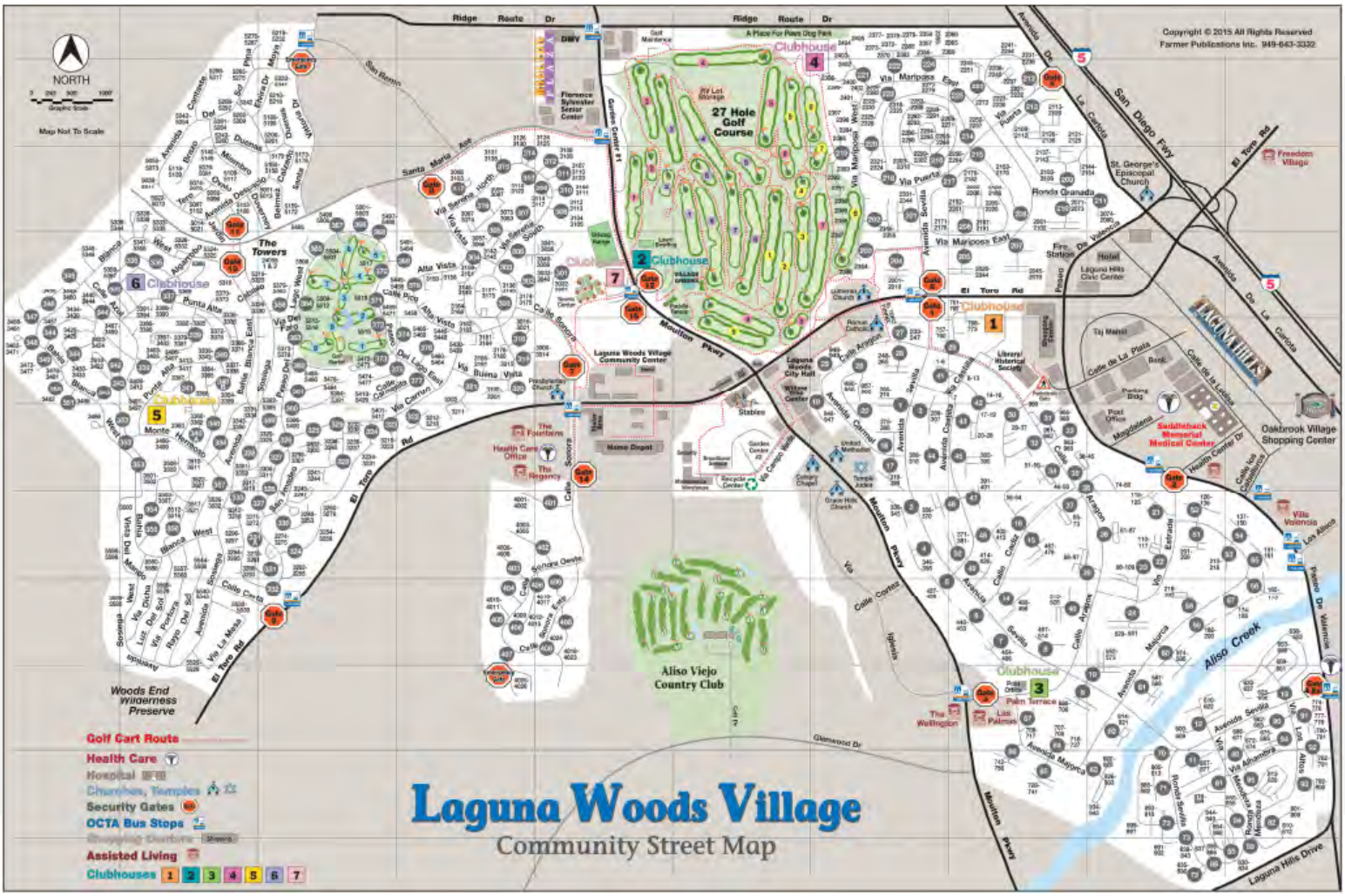
SAVINGS: 32%	Annual	Ten Years
WeatherTRAK Savings	**$873,305**	**$8,733,053**
Environmental Impact, Gallons Saved	**232,447,064**	**2,324,470,639**

Site Details

Estimated Irrigation Landscape Size	**479.7 Acres**
Average Historical Cost of Water	**$2.81/CCF**
Turf/Shrub/Low Water Use Plant Ratio	**65/35/0**
Historical 12 months Water Usage (979,067 CCF)	**$2,754,405**
Projected 12 months Water Usage (668,309 CCF)	**$1,881,100**
WeatherTRAK Savings (310,758 CCF)	**$873,305**

Disclaimer: Estimated savings based on the assumptions. Actual savings may be different from the estimated savings. *Savings are calculated using an acreage estimate, turf/shrub/low water plant ratio, water rate and annual consumption. Acreage and turf/shrub/low water plant ratios are estimated using online mapping tools: Bing and Google Maps. Project consumption is calculated from acreage and daily ET from the WeatherTRAK Climate Center aligned to historical consumption dates.*

Site Map



Source: Laguna Woods Village, 11.23.21

Analysis Assumptions

CONSUMPTION:

Historical consumption was provided as a spreadsheet of detailed bills from the customer. A total of 592 meters from the site were reviewed, comprising 58 Irrigation meters, 216 Recycled meters, and 318 Combined domestic & irrigation meters. Other meters either had no usage, or clear non-irrigation consumption, and were therefore excluded from this analysis. Unit of Measure (UOM), Cost per Unit (CPU), and Monthly billing cycle were verified.

NON-IRRIGATION CONSUMPTION:

Assumptions of monthly non-irrigation usage have been subtracted as follows:
Indoor: 10,000 CCF monthly average constant water use.

PROJECTED COSTS:

Based on monthly average historical rates applied to monthly projected consumption, for an annual average projected CPU of $2.81/CCF. Additional miscellaneous fixed costs unrelated to consumption were identified from the provided data totaling $950,494 for the year analyzed. This assumption has been subtracted from the original historical costs to more accurately estimate the costs directly associated with consumption.

WASTEWATER COSTS:

Periodic wastewater costs unrelated to consumption were identified from the provided data totaling $1,758,475 for the year analyzed. This has been subtracted from the original historical costs to more accurately estimate the costs directly associated with consumption.

IRRIGATION SEASON:

Year-round irrigation is assumed for this site.

ASSUMED TURF TYPE:

65% Cool Season Turf (13,583,280 sq. ft.)

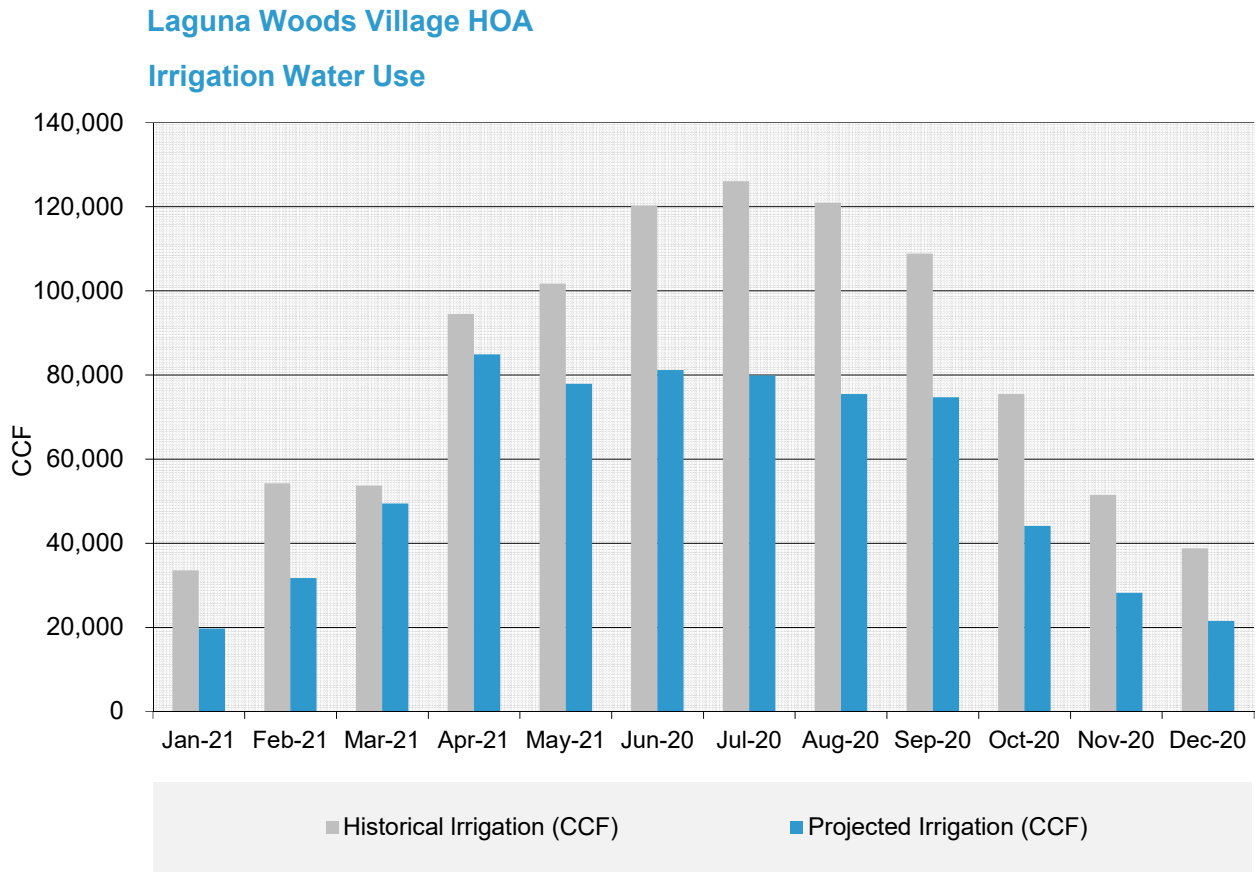
ASSUMED SHRUB/TREE TYPE:

35% Medium Water Shrubs/Trees (7,310,507 sq. ft.)

ASSUMED LOW WATER TYPE:

0% Native Shrubs/Trees (0 sq. ft.)

Historical & Projected Usage Costs



CONSUMPTION Laguna Woods Village HOA	2021 Jan	2021 Feb	2021 Mar	2021 Apr	2021 May	2020 Jun	2020 Jul	2020 Aug	2020 Sep	2020 Oct	2020 Nov	2020 Dec	Totals
All Historical Consumption Subtotal	43,507	64,170	63,705	104,410	111,667	130,242	135,992	130,939	118,793	85,437	61,432	48,773	1,099,067
Non-Irrigation Consumption	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	120,000
Historical Irrigation (CCF)	33,507	54,170	53,705	94,410	101,667	120,242	125,992	120,939	108,793	75,437	51,432	38,773	979,067
Projected Irrigation (CCF)	19,697	31,720	49,401	84,834	77,827	81,128	79,814	75,455	74,632	44,121	28,214	21,466	668,309
Projected Savings (CCF)	**13,810**	**22,450**	**4,304**	**9,576**	**23,840**	**39,114**	**46,178**	**45,484**	**34,161**	**31,316**	**23,218**	**17,307**	**310,758**

COSTS	2021 Jan	2021 Feb	2021 Mar	2021 Apr	2021 May	2020 Jun	2020 Jul	2020 Aug	2020 Sep	2020 Oct	2020 Nov	2020 Dec	Totals
All Historical Costs Subtotal	$347,396	$406,133	$403,370	$525,084	$545,572	$589,631	$606,580	$595,023	$553,657	$468,354	$397,598	$361,831	$5,800,229
Non-Irrigation Costs	$254,237	$254,715	$254,373	$255,713	$255,810	$251,760	$252,013	$252,306	$251,244	$255,070	$254,405	$254,177	$3,045,823
Historical Irrigation Costs	$93,159	$151,417	$148,997	$269,372	$289,762	$337,871	$354,567	$342,717	$302,413	$213,283	$143,193	$107,653	$2,754,405
Projected Irrigation Costs	$54,763	$88,664	$137,057	$242,049	$221,815	$227,964	$224,614	$213,825	$207,455	$124,742	$78,551	$59,601	$1,881,100
Projected Savings ($)	**$38,396**	**$62,753**	**$11,940**	**$27,322**	**$67,947**	**$109,907**	**$129,954**	**$128,892**	**$94,959**	**$88,541**	**$64,642**	**$48,052**	**$873,305**

GOLDEN RAIN FOUNDATION of LAGUNA WOODS

STAFF REPORT

DATE: December 8, 2021

FOR: Landscape Committee

SUBJECT: Aliso Creek Update

RECOMMENDATION:

Receive and File

BACKGROUND:

In 2014, The Golden Rain Foundation of Laguna Woods (GRF) entered into a Streambed Alteration Agreement (Agreement) with the California Department of Fish and Wildlife (CDFW) due to the construction of the pedestrian bridge located in Aliso Park. The creek area is considered a natural riparian habitat and is subject to the regulations put forth by several government agencies, with CDFW being the lead agency. The agreement requires annual biological monitoring of the area directly downstream of the bridge.

The agreement stipulates that the monitoring shall continue for a minimum of five years and shall continue until GRF meets success criteria set forth in the agreement. This year is the seventh year of the monitoring. Once the criteria are met, the biologist monitoring is no longer required; the prescribed maintenance shall continue in perpetuity.

On March 10, 2021, the GRF Landscape Committee approved an unbudgeted operating expense of $13,534 to perform additional cattail clearing within the creek.

DISCUSSION:

Each year, the Landscape Department has several main objectives in Aliso Creek; control weeds, both native and non-native, successfully meet the requirements of the mitigation area, and complete the annual survey of the mitigation area.

Guidelines are set by the regulating agencies governing as to when and how maintenance activities can take place within the limits of the entire creek bed. Staff can remove litter and invasive weeds, by hand, from the banks and adjacent areas year-round.

Work within the creek bed, such as removing native growth such as cattails, can normally only occur outside of the typical native bird nesting season, which occurs annually between February 1 and August 31. Working with wildlife biologists, staff can now remove the cattails on two other occasions during the year. Prior to starting the additional work period, a biologist must first perform a thorough survey of the area, checking for nesting birds and other wildlife. If any wildlife or nests are observed, buffer zones are created in which no work can be performed. Staff can then proceed, under the guidance of biologists, to ensure there is no disturbance of the wildlife.

The annual maintenance within the streambed consists of staff trimming cattails from the creek bed and trimming the branches on the lower third of the native trees along the bank. The cattails cannot be removed completely; cattail trimming is limited to cutting by hand, without disturbing the stream bed, and can only be cut one foot above the waterline. The use of herbicides and plant growth regulators is also prohibited on native plant material.

Subsequent to the March 2021, approval of an unbudgeted operating expense of $13,534 to perform additional cattail clearing within the creek, crews cleared the creek of non-native weeds and cut down cattails in June and August of 2021.

Biologists are scheduled to perform the annual Western Pond Turtle (WPT) survey on December 2nd and 3rd of 2021. Crews will be in the following week to perform cattail trimming and volunteer tree removal, along with non-native plant removal.

In early November 2021, GRF applied to CDFW to modify the current agreement to permit the complete removal of cattails to create a five to eight-foot channel in the center of the creek to increase water flow and decrease storm damage. On November 22, 2021, staff received notice from CDFW that the current agreement could not be modified. Staff is working with the CDFW to find another process to accomplish the creation of the channel.

FINANCIAL ANALYSIS:

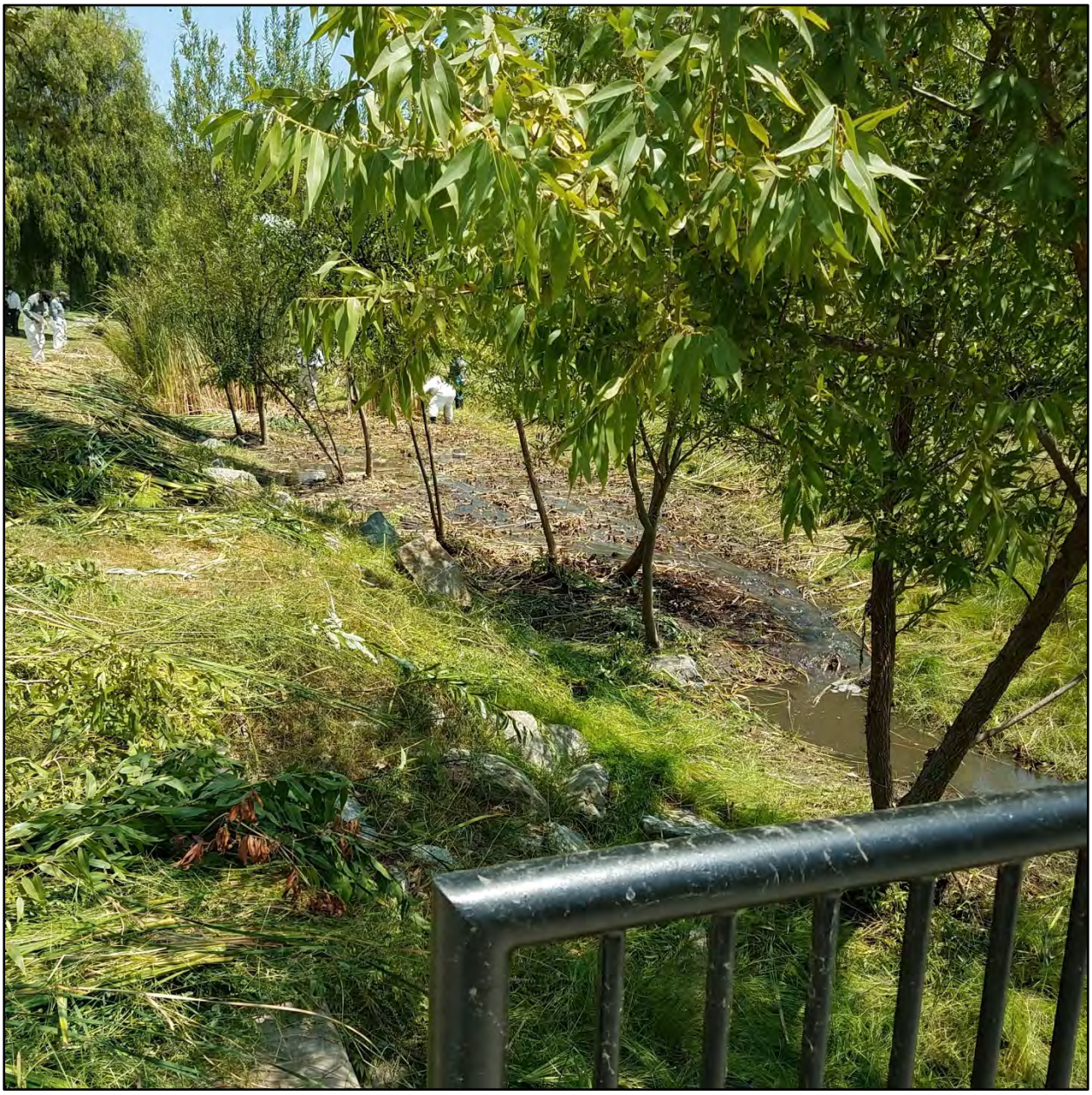
There are no additional funds involved in this report.

Prepared By: Kurt Wiemann, Director of Landscape Services

Reviewed By: Eve Morton, Landscape Coordinator

ATTACHMENT(S)

ATTACHMENT 1: Proposed Amendment to Streambed Alteration Agreement



Proposed Amendment for Aliso Creek Maintenance Agreement

November 12, 2021

Lake and Streambed Alteration Agreement Program
California Department of Fish and Wildlife
South Coast Region 5

SUBJECT: Proposed Amendment to Streambed Alteration Agreement

Chambers Group, on behalf of the Golden Rain Foundation, is seeking guidance and potential amendment of two conditions within the California Department of Fish and Wildlife (CDFW) Streambed Alteration Agreement (Agreement) notification number 1600-2013-0151-R5. The two conditions relate to vegetation removal limitations and methods along an approximately one half mile (appx. 1.72 acres) section of Aliso Creek within the Laguna Woods retirement community.

The two Agreement conditions are as follows:

> **2.11 Native Non-Woody Vegetation.** Native non-woody vegetation (e.g., cattails and sedges) shall be allowed to grow between maintenance activities. If necessary, native non-woody vegetation may be cut to a level at least 1 foot above the water line. However, the ***use of herbicide to inhibit growth or kill cattails or sedges is prohibited.***
>
> **2.15 Herbicide Use Only For Invasive Vegetation.** Herbicide shall be used only for selective treatment of non-native invasive vegetation species identified in the California Exotic Pest Plant Council's database, which is accessible at: http://www.cal-ipc.org/ip/inventory/weedlist.php. ***Herbicide use to kill native vegetation is prohibited.***

Chambers Group is requesting CDFW allow for the use of aquatically-approved herbicide to aid in the thinning and removal of native vegetation, primarily cattail thickets that are degrading water quality, flood control, and habitat values within this portion of the creek.

Cattail Infestation and Habitat Degradation

Portions of the creek are known to support the native southwestern pond turtle (*Actinemys pallida*) (SWPT), designated a Species of Special Concern by the CDFW (IUCN 2020). One individual was observed in 2021 within one of the few pools of open water present in this stretch of the creek (see Attachment A, Site Photograph 1). Key supportive habitat characteristics for the SWPT include open water sites for basking, diversity of foraging opportunities for insects and aquatic plants, suitable water quality, and stable shrub-lined banks for reproduction and overwintering.

Within the Aliso Creek portion of Laguna Woods, Chambers Group estimates dense monoculture thickets of slender cattail (*Typha domingensis*) comprise on average 60 percent coverage of the streambed, often extending bank to bank (see Attachment A, Site Photographs 2 through 5). The average width of the creek throughout this portion is 15 feet. Although cattails can be beneficial in absorbing harmful elements such as excess nitrogen and phosphorus and provide nesting and foraging opportunities for wildlife, an overabundance can become problematic in certain aquatic systems. Within this portion of Aliso Creek, these dense cattail thickets inhibit water flow, restrict natural recruitment of other native plant species, and prevent the formation of natural pools of open water. Dense vegetation can also mean there is a lack of suitable basking sites for SWPT.

The restriction of water flow increases the volume of stagnant water, reduces water quality (through reduced dissolved oxygen and increased toxicity concentrations), and increases breading opportunities for mosquitoes. Stagnant water

triggers ongoing complaints from residents and involvement of Orange County Mosquito and Vector Control (OCMVC) who regularly deposit non-native mosquito fish to minimize mosquito breeding. During heavy precipitation events cattail thickets obstruct water flow causing scouring and flooding events along the banks attributing to public safety concerns, erosion, damage to adjacent residential landscape and infrastructure, and create potential impacts to native wildlife such as SWPT that overwinter within the banks (see Attachment A, Site Photographs 7 through 9).

As cattails have densely entangled subterranean rhizome systems, they reduce opportunity for natural recruitment of other native riparian and emergent marsh vegetation, thereby limiting foraging and nesting opportunities for local wildlife. Native riparian vegetation that would have the ability to increase in density and thus native species diversity with a reduction of cattail biomass include arroyo willow (*Salix lasiolepis*), California wild rose (*Rosa californica*), coast range melic (*Melica imperfecta*), coyote brush (*Baccharis pilularis*), mugwort (*Artemisia douglasiana*), mulefat (*Baccharis salicifola* var. *salicifolia*), purple needlegrass (*Stipa pulchra*), western ragweed (*Ambrosia psilostachya*), waterpepper (*Persicaria lapathifolia*), and yellow nut-grass (*Cyperus esculentus*), among others.

Proposed Agreement Condition Modifications

Chambers Group is seeking concurrence from CDFW that a targeted reduction of cattail thickets could be implemented to improve water quality, flood control, and overall habitat values. Current Agreement Conditions 2.11 and 2.15 restrict the ability to remove or chemically treat native vegetation without exception. In addition, maintenance is limited to hand trimming vegetation 1 foot above the water line. Unfortunately, this maintenance approach has demonstrated to be ineffective at addressing water quality, flood control, and habitat diversity due to the cattails' ability to quickly re-grow after trimming. As maintenance events are limited to hand tool trimming, they are labor intensive, requiring significant human foot traffic and time spent in the creek multiple times a year. Although the Golden Rain Foundation has had a biologist present to monitor crews during maintenance activities, the amount of sediment dislodged during trimming is high and the potential for impacts to young or estivating turtles increases the more times crews access the pools. Chambers Group contends that incorporating a targeted reduction of cattails using aquatically-approved herbicide would improve effectiveness and efficiency of maintenance efforts, reduce the likelihood of impacts to SWPT, improve water quality and flood control, minimize soil disturbance associated with maintenance activities, and improve overall habitat values.

Chambers Group is seeking concurrence that the following supplemental Agreement modifications and maintenance guidelines could be incorporated to address the cattail infestation and habitat degradation within this portion of Aliso Creek:

A. **2.1.1 Native Non-Woody Vegetation.** Native non-woody vegetation (e.g., cattails and sedges) shall be allowed to grow between maintenance activities. If necessary, native non-woody vegetation may be ~~cut to a level at least 1 foot above the water line. However, the use of herbicide to inhibit growth or kill cattails or sedges is prohibited.~~ *chemically treated and removed to promote water quality, flood control, and ecosystem sustainability. Removal efforts will be limited to the center portion of the channel and monitored by a biologist to minimize impacts to nesting birds and southwestern pond turtle.*

B. **2.15 Herbicide Use ~~Only For Invasive Vegetation.~~** Herbicide shall be used ~~only~~ for selective treatment of non-native invasive vegetation species identified in the California ~~Exotic Pest~~ *Invasive* Plant Council's database, which is accessible at: http://www.cal-ipc.org/ip/inventory/weedlist.php. Herbicide use to ~~kill~~ *suppress non-woody* native vegetation ~~is prohibited.~~ *shall be limited to the center portions of the channel to promote water quality, flood control, and ecosystem sustainability. Only aquatically-approved herbicide shall be used and applications shall be monitored by a biologist.*

C. **Supplemental Maintenance Guidelines to Address Cattail Infestations**:

a. Establish and maintain a year-round center channel of open water throughout most of the creek to promote water flow. The primary objective would be to limit the establishment of dense rhizomatous cattail root systems within the center portion that restrict water flow. The width of the open water channel may average approximately 8 feet.
b. Elimination of cattails throughout the entire creek is not permitted. Removal efforts would be limited to dense stands that are determined by a biologist to be degrading water quality, flood control, and overall habitat values.
c. Cattails in general, should be allowed to persist along the banks and along the perimeter of existing pools, particularly pools were southwestern pond turtle has been observed.
d. Crews should cut non-woody native and non-native vegetation to 6 inches above the water line and apply herbicide directly to the exposed plant tissue immediately after cutting, minimizing that which is sprayed directly into water. Cut foliage shall be removed from the creek.
e. Herbicide application will be done in a manner that limits chemical overspray.
f. Chemical application of herbicide should coincide with peak growing season of cattails to maximize effectiveness (spring). However, impacts to breeding wildlife such as nesting birds should be avoided. Pre-construction nesting bird avoidance surveys shall be conducted during nesting season (February 15 through August 31).
g. Chemically treated cattail rhizomes (root systems) shall be left in place to deteriorate naturally over time.
h. A biologist should monitor removal efforts to verify all pertinent permit conditions as well as the Southwestern Pond Turtle Avoidance and Mitigation Plan for Laguna Woods (Endemic Environmental Services, 2020) are followed.

Conclusion

I look forward to discussing the proposed maintenance modifications and potential Agreement changes. Please let me know if you would like to conduct a site visit to discuss this matter further or if you require any additional information.

Sincerely,

Chambers Group, Inc.

Heather Clayton

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ATTACHMENT A – SITE PHOTOGRAPHS

	**Photograph 1.** Photograph depicts one of the few spots of open ponded water within this stretch of Aliso Creek.
	**Photograph 2.** Photograph depicts the near monoculture of cattails within much of the creek. Photograph taken north side of the creek facing south (downstream).
	**Photograph 3.** Photograph depicts the near monoculture of cattails within much of the creek. Photograph taken south side of the creek faceing north (upstream).

Photograph 4.

This photograph depicts the cattails that abut the pedestrian bridge restricting waterflow. Photograph faces northeast (upstream).

Photograph 5.

Photograph depicts dense cattail patch (upstream) north end of the project side near Paseo de Valencia.

Photograph 6.

Photograph depicts dense cattail patch with few native shrubs along the bank. Photograph taken facing southwest of the middle portion of creek.

Photograph 7.

Photograph taken January 2017 following heavy precipitation event. Flooding expanded outside the banks onto sidewalks, residential landscape, and maintenance pathways.

Photograph 8.

Photograph taken January 2017 following heavy precipitation event. Flooding scoured abutments of the pedestrian bridge.

Photograph 9.

Photograph taken January 2017 following heavy precipitation event. Pedestrian bridge, sidewalks, and residential landscape flooded.