Auditor Name: _____ Date: _____

Certifying Organization: _____

Audit Location: _____

① The irrigation audit must be conducted as part of a QWEL workshop or independently supervised by a QWEL certified professional. Calculations must be completed independently. Completed forms must be submitted to the QWEL Professional Certifying Organization through which you are obtaining the QWEL certification.

② Complete site information, evaluation, and basic system tune-up prior to irrigation system testing.
- Only conduct an irrigation audit if the irrigation system is determined to be in good working order.

③ Irrigation System Testing Procedures
- Draw a diagram of the test area including dimensions, head locations, and catch can locations.
- Only conduct an irrigation audit on overhead irrigation systems if the wind speed is 5 mph or less.
- Run zone to be tested and mark spray bodies with flags.
- Place catch cans in zone to be tested.
  - Ensure all cans are of the same size and shape.
  - Use a minimum of 24 catch cans and a number of cans that can be divided by four.
  - Leave a space of about 2 feet between a spray body and a catch can.
  - Layout catch cans in a uniform grid.
  - Space cans approximately 5 – 8 feet on center for fixed and rotary spray sprinklers.
  - Space cans approximately 10 – 20 feet on center for rotors.
- Pull flags before running test as they will obstruct the path of the spray.
- Run the irrigation zone for a sufficient amount of time to collect a minimum volume of water of 20 ml. Typically 5 – 10 min for fixed spray sprinklers and 10 – 30 mins for rotors and rotating sprinklers.
  - If the test area covers more than one station the run time for each station must be adjusted to achieve a matched precipitation rate across the test area.
- Measure and record the amount of water in each catch can.
  - Use ml scale on catch can.
  - If no scale is available pour water into a graduated cylinder with a ml scale.
  - For catch cans with straight sides and a flat bottom the catch can volume can be replaced by the depth of water in inches.
  - Ensure that catch cans are numbered on the diagram so that the location of the measurements is known as this may help to identify issues with the irrigation system.

④ Calculate the low quarter distribution uniformity (DU_{LQ}):

⑤ Calculate the net precipitation rate (PR_{NET}):

⑥ Use the DU_{LQ} and PR_{NET} to determine a basic irrigation schedule for the test area.

Date: _____

Auditor

First Name: _____ Phone Number: _____

Last Name: _____ Email: _____

Test Area

Site Name: _____ Test Area Name: _____

Site Type: _____ Test Area Size: _____ sq ft

Soil Type: _____ Plant Material: _____

Microclimate: _____ Root Depth: _____ inches

Slope: _____ Plant Factor (PF): _____

Time to Runoff: _____ min ETo for 1 Week: _____ inches

Irrigation System

Water Source: _____ Meter Type: _____

Static Pressure: _____ psi Meter Size: _____ inches

Dynamic Pressure: _____ psi Meter Units _____

Irrigation Type: _____ Backflow: _____

Options

Site Type	Microclimate	Water Source	Meter Type	Backflow Device
Residential	Shade	Municipal Well	Dedicated irrigation	Reduced pressure assembly
Commercial	Part shade	Recycled water	Mixed use	Double check valve
	Full sun	Graywater		Anti-siphon valve
Soil Type	Extreme heat	Rain water	Meter Size	(atmospheric breaker)
Sandy			5/8", 1", 1.5", 2",	Pressure vacuum breaker
Loam	Slope	Irrigation Type	3", 4", 5", 6"	None
Silt	Flat	Spray sprinklers		
Clay loam	Slight	Rotating sprinklers	Meter Units	
Clay	Moderate	Rotors	Gallons	
	Steep		CCF	

Auditor Name: _____ Date: _____

Include: test area dimensions, head locations, catch can locations, catch can numbers, north arrow.
Sprinkler = ○
Catch can = ✕

Auditor Name: _____ Date: _____

Check relevant boxes

Priority	High	Low	Fixed
Mixed hydrozone			
Needs mulch			
High pressure			
Low pressure			
Valve malfunciton			
Broken pipes			
Unmatched precipitation rates			
Mixed emission devices			
No head-to-head coverage			
Uneven head spacing			
Excessive overspray			
Broken or missing nozzles			
Tilted heads			
Heads below grade			
Blocked spray			
Leaking seals			
Clogged nozzles			
Low head drainage			
Heads not rotating			

Observations

Auditor Name: _____ Date: _____

Catch Can Number	Catch Can Volume / Depth	Low Quarter
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		
23		
24		
25		
26		
27		
28		
29		
30		
31		
32		
33		
34		
35		
36		
Sum		
Average		

Instructions

- Enter catch can volume (ml) in the second column of the table.
- Enter the depth in inches for cans with straight sides and a flat bottom.
- Identify catch cans in the low quarter and enter the volume (or depth) of these cans in the third column of the table.
- Enter the sum of each column at the bottom of the table.
- Divide the sum of each column by the number of cans in the column to calculate the average for all cans and for the low quarter.
- DU_{LQ}: Divide the average catch volume of the low quarter by the average for all cans. Round to two decimal points.
- PR_{NET}: Multiply the average catch volume of all cans by 3.66, and multiply the test run time (mins) by the catch can throat area (sq in). Divide the first result by the second. Round to two decimal points.

Catch Can Type	Throat Area (sq in)
Cal Poly / ITRC / DWR	16.25
Texas A & M System	16.61
Utah State University	12.94

Catch Can Type: _____

Throat Area: _____ sq in

Test Run Time: _____ min

DU_{LQ} Calculation

$$DU_{LQ} = \frac{\text{Average catch volume of low quarter}}{\text{Average catch volume of all cans}} = \frac{\quad}{\quad} = \quad$$

PR_{NET} Calculation

$$PR_{NET} = \frac{\text{Average volume of all cans} \times 3.66}{\text{Test run time} \times \text{Catch can throat area}} = \frac{\quad \times 3.66}{\quad \times \quad}$$

$$= \quad \text{in / hr}$$

If using cans with straight sides and a flat bottom:

$$PR_{NET} = \frac{\text{Average depth of all cans} \times 60}{\text{Test run time}} = \frac{\quad \times 60}{\quad} = \quad$$

Auditor Name: _____ Date: _____

Plant Water Requirement (PWR) - use ETo for 1 week

PWR = ETo x PF

= _____ x _____ = _____ in / wk

Run Time Multiplier (RTM) - used to adjust time for irrigation system inefficiencies

RTM = $1 \div [0.4 + (0.6 \times DU_{LQ})]$

= $1 \div [0.4 + (0.6 \times$ _____$)]$ = _____

Irrigation Water Requirement (IWR)

IWR = PWR x RTM

= _____ x _____ = _____ in / wk

Weekly Run Time Lower & Upper Boundaries

Lower Boundary = $(PWR \div PR_{NET}) \times 60$

= (_____ ÷ _____) × 60 = _____ min / wk

Upper Boundary = $(IWR \div PR_{NET}) \times 60$

= (_____ ÷ _____) × 60 = _____ min / wk

Daily Run Time

- Weekly run time is a management decision between the lower and upper boundaries
- Number of days to irrigate is a management decision. Use the table for guidance.

Number of Days Per Week to Irrigate (Mature Plants)

Weekly ETo	Cool 0 - 0.5 "	Warm 0.6 - 1.0"	Hot above 1"
Turf	1 - 2 days	2 - 3 days	3 - 7 days
Annuals	2 - 3 days	3 - 5 days	4 - 7 days
Shrubs	Every 2 weeks	Every week	2 - 4 days
Trees	None	Every 2 months	Every month

Daily Run Time = (Weekly Run Time ÷ Number of Days to Irrigate)

= (_____ ÷ _____) = _____ min

Cycles Per Day - round up to the next whole number

Cycles Per Day = (Daily Run Time ÷ Time to Runoff)

= (_____ ÷ _____) = _____

Run Time Per Cycle - round up to the next whole minute.

Run Time Per Cycle = (Daily Run Time ÷ Cycles Per Day)

= (_____ ÷ _____) = _____