Water Managed Sites

Tier 1 Audit Report

March 1, 2025

TIER 1 - IRRIGATION SITE ASSESSMENT AND AUDIT REPORT

OVERVIEW

The following report is a collection of site data, field measurements, observations and maintenance recommendations. Through this data gathering, in compliance with The City of Calgary Water Managed Sites Program and the Water Utility Bylaw 40M2006 – Schedule E – Outdoor Water Use Restrictions, a basic irrigation schedule that will assist the site water manager or property owner in managing overall irrigation usage, can be developed.

Criteria and Requirements are subject to change, following up-to-date City of Calgary Water Managed Sites Program and regularly posted recommendations for Distribution Uniformity (DU) results levels, as per industry standards and Best Management Practices (BMPs). Therefore, the Auditor must obtain and adhere to current City of Calgary criteria and requirements.

Catch Can Audit and DU calculations are based on AI Landscape Irrigation Auditor, Current Edition Handbook recommended audit guidelines.

*For recommended assessment and audit guidelines, visit the Canadian Prairie Chapter of the Irrigation Association (CPCIA) website at: Audit Guidelines

Table of Contents

Tier 1 Water Managed System Qualifying Criteria, Equipment and Hardware Requirements

Tier 1 Qualifying Criteria and Requirements

Public Spaces, Large ICIs and Multi -family Sites including:

i. Sports Fields, Athletic Fields, Schools/Universities and Golf Courses.

ii. Institutional, Commercial, Industrial, Hospitals, Homeowner Associations, Multi -family Condominiums and Townhouses.

*** A Catch Can Audit, and DU Calculations of representative irrigated areas are strictly required under Tier 1.**

*** One catch can audit (min 24 catch cans) per sports field or per every 0.5 Ha of turf areas.**

Equipment and Hardware Requirements

To qualify to be Certified as a Water Managed Site, the irrigation system is required to have the following Equipment and Hardware installed and enabled:

1. Dedicated Water Meter or Totalizer installed at the point of connection.
2. Dedicated Testable Cross Connection Control Assembly installed on the irrigation mainline, downstream from the Water Meter or Totalizer. (**ONLY** DCVA or RP type devices are accepted.)
3. Flow Sensor installed and enabled downstream from the Cross Connection Control Assembly.
4. Electric Master Valve installed upstream from any irrigation emission components.
5. Local Irrigation Interruption Device installed and enabled, such as: Rain Switch and or, Soil Moisture Sensor and or, Weather Station.
6. Automatic Smart Irrigation Controller with near -real time weather and/or soil moisture adjustment and remote management capability.

Irrigation Site and CLIA Information

Irrigation Site Information – Tier 1

Irrigation Site Assessment date (YYYY-MM-DD): _____

Site Type (select all that apply):

- Park
- Playground
- Residential lot
- Green Space
- Commercial/Industrial/Institutional lot
- Golf course
- Sports field
- Other _____

Name of site (if applicable): _____

Name of registered owner of site: _____

Site Address: _____

Certified Landscape Irrigation Auditor (CLIA) Information

CLIA name:

CLIA phone number:

CLIA email:

Name of employer:

Employer's address:

Note: For Irrigation Site Assessment and Audit results, please refer to the Auditor's Observations section.

I Certify the above Irrigation Site has been assessed and audited in accordance with The City of Calgary Water Services Bylaw 40M2006, and the AI Landscape Irrigation Auditor, Current Edition Handbook recommended audit guidelines.

CLIA signature: _____ CLIA/membership expiry date: (yyyy-mm-dd)

The City of Calgary reserves the right to visit audited sites for visual inspection a part of the application review for certification of Water Managed Sites.

Catch Can Audit DU Results

Distribution Uniformity (DU) Results

Audited Area	**Rotors/Rotary** (DU ≥ 0.60 to Pass):________ **Sprays** (DU ≥ 0.50 to Pass):________
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Equipment and Hardware Checklist

Equipment/Hardware	Installed & Enabled	Qty. on Site
Water Meter/Totalizer	☐	
Coss-connection Control	☐	
Flow Meter/Sensor	☐	
Electric Master Valve	☐	
Local Irrigation Interruption Device (one device type required)		
Rain Switch/Rain -Freeze Sensor/Tipping Bucket	☐	
Soil Moisture Sensor	☐	
Weather Station	☐	
Automatic Smart Irrigation Controller with Remote Management Capability (one adjustment type required)		
Near-real Time Weather Adjustment	☐	
Soil Moisture Adjustment	☐	

Notes

Equipment and Hardware Information

Water Meter/Totalizer 1

Meter number:

Meter Type:

Unit of measure:

Size of meter (inches):

Meter location:

Meter reading start of season:

Meter reading end of season:

Water Meter/Totalizer 2

Meter number:

Meter Type:

Unit of measure:

Size of meter (inches):

Meter location:

Meter reading start of season:

Meter reading end of season:

Water Meter/Totalizer 3

Meter number:

Meter Type:

Unit of measure:

Size of meter (inches):

Meter location:

Meter reading start of season:

Meter reading end of season:

Equipment and Hardware Information

Cross Connection Control 1

Type of Assembly:

- DCVA
- RP
- Other _____

Manufacturer:

Model number:

Serial number:

Size (inches):

CCC assembly location:

_____

Date installed: (yyyy-mm-dd)

Last Pass Test Date: (yyyy-mm-dd)

Cross Connection Control 2

Type of Assembly:

- DCVA
- RP
- Other _____

Manufacturer:

Model number:

Serial number:

Size (inches):

CCC assembly location:

_____

Date installed: (yyyy-mm-dd)

Last Pass Test Date: (yyyy-mm-dd)

Equipment and Hardware Information (continued)

Flow Sensor

Manufacturer	Model Number	Size (inches)	Location

Master Valve

Manufacturer	Model Number	Size (inches)	Location

Local Irrigation Interruption Device (Rain Switch / Rain-Freeze Sensor / Tipping Bucket / Weather Station)

Type	Manufacturer and Model Number	Location

Soil Moisture Sensor

Manufacturer	Model Number	Location

Equipment and Hardware Information (continued)

Automatic Smart Irrigation Controller with Remote Management Capability

Manufacturer	Model Number	Location

Manufacturer	Model Number	Location

Manufacturer	Model Number	Location

Pump Information (only if equipped - not required to qualify)

Model	Size (in)	Horse-Power	Operating Pressure (psi)	Maximum Flow (GPM)

Notes

Sprinkler System Review

Abbreviation Key: S = Spray R = Rotor MR = Multi-stream Rotary D = Drip

Controller ID/Name					
Station #					
Sprinkler Type					
Station Flow Rate (gpm)					

Sprinkler System Review Checklist	
☐	No visible or detected broken/kinked/leaking pipes or fittings.
☐	System operating pressure within manufacturer recommended range.
☐	Valves are functioning properly from the controller.
☐	No missing/broken/leaking sprinkler heads.
☐	No low head drainage.
☐	Sprinkler head spacing is even.
☐	No sunken/tilted sprinkler heads.
☐	No mismatched sprinkler heads and nozzles.
☐	No missing/broken/clogged/misaligned nozzles.
☐	No spray pattern deflected of blocked.

Drip/Micro System Review Checklist	
☐	No visible or detected broken/kinked/leaking tubing or fittings.
☐	No missing/clogged/broken emitters.
☐	No missing/clogged/broken micro heads/nozzles.
☐	System operating pressure within manufacturer recommended range.
☐	Filter does not need servicing.

Notes

Catch-Can Test Results

Test Area / Station					
Catch Device Area (A_{CD})		$in.^2$	Test Run Time (t_R)		min

- It is recommended to use a minimum 24 catch devices.
- When the use of 24 or more catch devices is not practical, use multiples of 4 with auditor's discretion.

Catch Can Volumes

#1		#17		#33		#49		#65		#81	
#2		#18		#34		#50		#66		#82	
#3		#19		#35		#51		#67		#83	
#4		#20		#36		#52		#68		#84	
#5		#21		#37		#53		#69		#85	
#6		#22		#38		#54		#70		#86	
#7		#23		#39		#55		#71		#87	
#8		#24		#40		#56		#72		#88	
#9		#25		#41		#57		#73		#89	
#10		#26		#42		#58		#74		#90	
#11		#27		#43		#59		#75		#91	
#12		#28		#44		#60		#76		#92	
#13		#29		#45		#61		#77		#93	
#14		#30		#46		#62		#78		#94	
#15		#31		#47		#63		#79		#95	
#16		#32		#48		#64		#80		#96	

Number Catch Devices		**¼ of Number Catch Devices**	
Total Catch Volume		**Total Low Quarter**	
Average Volume [V_{avg}]		**Average Low Quarter [V_{lq}]**	

Calculate Distribution Uniformity

$$DU_{lq} = \frac{\text{Average low quarter}[V_{lq}]}{\text{Average volume}\ [V_{avg}]} = \frac{\_\_\_\_\_\ mL}{mL} = \_\_\_\_\_$$

Calculate Net Precipitation Rate

$$PR_{net} = \frac{3.66 \times V_{avg}}{t_R \times A_{CD}} = \frac{3.66 \times (\quad mL)}{(\quad min) \times (\quad in.^2)} = \_\_\_\_\_\ in./h$$

Test Area Map

TestArea/Station								
TestRun Time		min	Wind		mph	Pressure		psi
MeterStart			MeterStop			Total		

Controller Run-time Schedule

Irrigation Zone Map

Must include the following:

- POC location
- Controller location
- Sensor location
- Station Areas
- Station Irrigation Type (Spray/Rotor/etc)

Auditor's Observations

Observations: