

Landscape Irrigation Auditor Blank Worksheets

- Catch Device Test
- Controller Data and Controller Settings
- Drip/Micro System Review
- Simple Schedule Worksheet
- Site Conditions Review
- Soil Moisture Irrigation Schedule
- Sprinkler System Review
- Test Area Flow Rate Calculation
- Test Area Map
- Water Source and System Data
- Watering Days Irrigation Schedule

Project Name	<input type="text"/>	Date	<input type="text"/>
Address	<input type="text"/>	Auditor	<input type="text"/>
City, State	<input type="text"/>	Area/Zone/Station	<input type="text"/>

Test Area/Station	<input type="text"/>		
Catch Device Area (A_{CD})	<input type="text"/>	in. ²	Test Run Time (t_R)
			min

Catch Device 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	<input type="text"/>	¼ of Number Catch Devices	<input type="text"/>
Total Catch Volume	<input type="text"/>	Total Low Quarter	<input type="text"/>
Average Volume [V_{avg}]	<input type="text"/>	Average Low Quarter [V_{lq}]	<input type="text"/>

Calculate Distribution Uniformity
$DU_{lq} = \frac{\text{Average low quarter } [V_{lq}]}{\text{Average volume } [V_{avg}]} = \frac{\text{mL}}{\text{mL}} = \underline{\hspace{2cm}}$
Calculate Net Precipitation Rate
$PR_{net} = \frac{3.66 \times V_{avg}}{t_R \times A_{CD}} = \frac{3.66 \times (\text{mL})}{(\text{min}) \times (\text{in.}^2)} = \underline{\hspace{2cm}} \text{ in./h}$

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Manufacturer		Central Control (check one)	
<input type="text"/>	<input type="checkbox"/>	Yes	<input type="checkbox"/>
<input type="text"/>	<input type="checkbox"/>	No	<input type="checkbox"/>
Model Number		Weather Station (check one)	
<input type="text"/>	<input type="checkbox"/>	Yes	<input type="checkbox"/>
<input type="text"/>	<input type="checkbox"/>	No	<input type="checkbox"/>
Stations Being Used		Smart Controller (check one)	
<input type="text"/>	<input type="checkbox"/>	Yes	<input type="checkbox"/>
<input type="text"/>	<input type="checkbox"/>	No	<input type="checkbox"/>
Station Run Time Range (min)			
Minimum	<input type="text"/>	Maximum	<input type="text"/>
Number of Programs		Start Times/Program	
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Calendar Days (check one)			
<input type="checkbox"/>	7 days	<input type="checkbox"/>	14 days
<input type="checkbox"/>	Other (explain)	<input type="text"/>	<input type="text"/>
Irrigation Interval (check options available)			
<input type="checkbox"/>	Daily	<input type="checkbox"/>	Even/Odd
<input type="checkbox"/>	Custom (explain)	<input type="text"/>	<input type="text"/>
Rain delay (maximum days)		Skip Day Period (maximum days)	
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Percent Adjust Options (check applicable)			
<input type="checkbox"/>	Global	<input type="checkbox"/>	By program
<input type="checkbox"/>	By station	<input type="checkbox"/>	By month
<input type="checkbox"/>	Seasonal	<input type="checkbox"/>	
Sensors Installed (make & model)			
Rain	<input type="text"/>	<input type="text"/>	<input type="text"/>
Freeze	<input type="text"/>	<input type="text"/>	<input type="text"/>
Wind	<input type="text"/>	<input type="text"/>	<input type="text"/>
Temperature	<input type="text"/>	<input type="text"/>	<input type="text"/>
Flow	<input type="text"/>	<input type="text"/>	<input type="text"/>
Soil moisture	<input type="text"/>	<input type="text"/>	<input type="text"/>
Tipping bucket	<input type="text"/>	<input type="text"/>	<input type="text"/>
Notes			
<input type="text"/>			

cont. on back

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City, State	<input style="width:95%;" type="text"/>	Page	<input style="width:10%;" type="text"/> of <input style="width:10%;" type="text"/>

Station #			Observed Problems
Plant material			Emission devices
Plant condition			Missing emitters
Microclimate			Clogged emitters
Soil category			Emitters in wrong place
Pressure regulator in place (Y/N)			Broken stakes
Flow rating		gpm	
Pressure setting		psi	Tubing and fittings
Pressure readings			Cut tubing
Beginning		psi	Kinked tubing
Middle		psi	Broken fittings
End		psi	Flush plugs buried
Filter in place (Y/N)			
Filter type			Filter needs servicing
Size (mesh or micron)			
Emitter type			
Flow rate		gph	
Emitter spacing		in.	
Line spacing		in.	
Tubing size (in./mm)			
Air/vacuum relief (Y/N)			
Flush plugs accessible (Y/N)			

Abbreviation Key

Plant Material
CS = Cool season turf
WS = Warm season turf
T = Trees
S = Shrubs
N = Native plants
GC = Ground cover
F = Annual flowers

Microclimate
FS = Full sun all day
PS = Part shade, less than 6 hours of sun per day
SH = Full shade all day
EX = Extreme conditions (parking lots, south-facing glass or wall)

Soil Category
C = Coarse
MC = Moderately coarse
M = Medium
MF = Moderately fine
F = Fine

Plant Condition
LM = Low-maintenance, stressed
TRD = Some stress, but generally good condition
HQ = Majority are vigorously growing

Slope
F = Flat
SI = Slight
Mod = Moderate
Stp = Steep



Simple Schedule Worksheet

Project Name	<input type="text"/>	Date	<input type="text"/>
Address	<input type="text"/>	Auditor	<input type="text"/>
City, State	<input type="text"/>		

Controller ID/Name				
Station #				
	Item Description	Source		Units
A	Target amount of water to apply	management choice		inches
B	Precipitation rate	gross or net		inches per hour
C	Distribution uniformity [DU _{ig}]	audit or estimate		decimal
D	Scheduling multiplier [SM]	table		
Scheduling Parameters				
E	Ideal run time (lower boundary)	$\frac{A \times 60}{B}$		minutes
F	Upper run time boundary	E × D		minutes
G	Recommended run time	management choice		minutes

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City, State	<input style="width: 95%;" type="text"/>	Area/Zone/Station	<input style="width: 95%;" type="text"/>

Plant Water Requirement	Value	Units	Source
A. ET _o reference period			
B. ET _o reference period in days		days	<i>Override value</i>
C. Reference ET [ET _o]		in.	weather data
D. Landscape coefficient [K _L]			(K _T or K _p) × K _d × K _{mc}
1) Turf or plant factor [K _T or K _p]			charts & tables
2) Vegetation density factor [K _d]			charts & tables
3) Microclimate factor [K _{mc}]			charts & tables
E. Landscape ET [ET _L]		in.	C × D
F. Average daily ET _L		in.	E ÷ B
Sprinkler Performance	Value	Units	Source
G. Precipitation rate [PR]		in./h	<i>Override/audit or calculation</i>
H. Distribution uniformity [DU _{ig}]		decimal	<i>Override/audit or estimate</i>
I. Scheduling multiplier [SM]			table or equation
Soil Properties	Value	Units	Source
J. Soil texture category			field observation
K. Available water [AW]		in./in.	<i>Override value/charts</i>
L. Root zone depth		in.	field measurement
M. Plant available water [PAW]		in.	K × L
N. Management allowed depletion [MAD]		decimal	0.5 for landscapes
O. Allowed depletion [AD]		in.	M × N
Scheduling Parameters	Value	Units	Source
P. Irrigation interval		days	O ÷ F [round down]
Q. Water to apply		in.	F × P
R. Lower boundary		min	(Q ÷ G) × 60 [round down]
S. Upper boundary		min	R × I [round up]
T. Selected run time, whole number		min	management decision
U. Determine cycle starts by			
a. Observed time to runoff	Ua.	min	field observation
or b. Site conditions	Ub.	cycles	based on site conditions
1) Soil category			C, MC = 1; M = 2; MF, F = 3
2) Slope			Fl = 0, Sl = 1, Mod = 2, St = 3
3) Compaction			Yes = 1, No = 0
4) Sprinkler type			Spray = 1, Rotor = 0
Scheduling Summary	Value	Units	Source
Water to be applied		in.	Q
Interval		days	P
V. Cycle starts per day			T ÷ Ua [round up] or Ub
Minutes per cycle		min	T ÷ V [round]



Sprinkler System Review

Project Name	<input type="text"/>	Date	<input type="text"/>
Address	<input type="text"/>	Auditor	<input type="text"/>
City, State	<input type="text"/>	Page	<input type="text"/> of <input type="text"/>

Abbreviation Key: S = Spray, fixed nozzle R = Rotor, MSMT nozzles I = Impact X = Needs correction ✓ = Correction completed

Controller ID/Name										
Station #										
Sprinkler type (choose one)										
Station flow		gpm								
High pressure		psi								
Low pressure		psi								
Action Required	X	✓	X	✓	X	✓	X	✓	X	✓
Broken pipes										
Missing/broken heads										
Missing nozzle										
psi adjustment needed										
Clogged nozzle										
Heads not turning										
Arc misalignment										
Low head drainage										
Leaking seals/fittings										
Spray deflected/blocked										
Sunken head										
Tilted heads										
Mismatched heads										
Spray/rotor separation										
Spacing uneven										
Valve malfunction										

Observations on Maintenance Frequency



Test Area Flow Rate Calculation

Project Name	<input type="text"/>	Date	<input type="text"/>
Address	<input type="text"/>	Auditor	<input type="text"/>
City, State	<input type="text"/>	Page	<input type="text"/> of <input type="text"/>

Test Area/Station	<input type="text"/>				
Meter Start	<input type="text"/>	Meter Stop		<input type="text"/>	<input type="text"/>
Total Flow	<input type="text"/>	gal/ft ³	Test Run Time	<input type="text"/>	min
			Flow Rate	<input type="text"/>	gpm

Gross Precipitation Rate	Drip Irrigation Precipitation Rate
$PR = \frac{96.3 \times Q}{\text{Area (ft}^2\text{)}}$	$PR = \frac{1.605 \times Q_{\text{gph}}}{\text{Area (ft}^2\text{)}} \quad \text{or} \quad PR = \frac{231.1 \times Q_{\text{gph}}}{S_{\text{ei}} \times S_{\text{li}}}$

Calculations

Project Name	<input style="width: 95%;" type="text"/>	Date	<input style="width: 95%;" type="text"/>
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Test Area/Station	<input style="width: 98%;" type="text"/>							
Test Run Time	<input style="width: 95%;" type="text"/>	min	Wind	<input style="width: 95%;" type="text"/>	mph	Pressure	<input style="width: 95%;" type="text"/>	psi
Meter Start	<input style="width: 95%;" type="text"/>		Meter Stop	<input style="width: 95%;" type="text"/>		Total	<input style="width: 95%;" type="text"/>	



Water Source and System Data

Project Name	<input type="text"/>	Date	<input type="text"/>
Address	<input type="text"/>	Auditor	<input type="text"/>
City, State	<input type="text"/>	Page	<input type="text"/> of <input type="text"/>

Water Source Data

Water Source (check one)			
<input type="checkbox"/>	Potable	<input type="checkbox"/>	Reclaimed
<input type="checkbox"/>		<input type="checkbox"/>	Well
<input type="checkbox"/>		<input type="checkbox"/>	Pond
<input type="checkbox"/>	Other (explain) <input type="text"/>		
Backflow Device (check one)			
<input type="checkbox"/>	None	<input type="checkbox"/>	RPA
<input type="checkbox"/>		<input type="checkbox"/>	DCV
<input type="checkbox"/>		<input type="checkbox"/>	PVB
<input type="checkbox"/>		<input type="checkbox"/>	AVB
	Size	<input type="text"/>	in.
Pump or Pump Station (check one)			
<input type="checkbox"/>	No	<input type="checkbox"/>	Yes
		Maximum flow	<input type="text"/> gpm
		Pressure	<input type="text"/> psi
Meter (check one)			
<input type="checkbox"/>	No	<input type="checkbox"/>	Yes
		Size	<input type="text"/> in.
		Units (check one)	<input type="checkbox"/> gallons <input type="checkbox"/> cubic feet
		Available pressure	<input type="text"/> psi (during scheduled irrigation window)

General System Information

Water Utility	
Contact person	<input type="text"/>
Phone	<input type="text"/>
Watering restrictions	<input type="text"/>
Landscape Maintenance Co.	
Contact person	<input type="text"/>
Phone	<input type="text"/>
Irrigation Service Co.	
Contact person	<input type="text"/>
Phone	<input type="text"/>
Pump Service Co.	
Contact person	<input type="text"/>
Phone	<input type="text"/>



Watering Days Irrigation Schedule

Project Name	<input style="width: 95%;" type="text"/>	Date	<input style="width: 95%;" type="text"/>
Address	<input style="width: 95%;" type="text"/>	Auditor	<input style="width: 95%;" type="text"/>
City, State	<input style="width: 95%;" type="text"/>	Area/Zone/Station	<input style="width: 95%;" type="text"/>

Plant Water Requirement	Value	Units		Source
A. ET _o reference period				
B. ET _o reference period in days		days		<i>Override value</i>
C. Reference ET [ET _o]		in.		weather data
D. Landscape coefficient [K _L]				(K _T or K _p) × K _d × K _{mc}
1) Turf or plant factor [K _T or K _p]				charts & tables
2) Vegetation density factor [K _d]				charts & tables
3) Microclimate factor [K _{mc}]				charts & tables
E. Landscape ET [ET _L]		in.		C × D
F. Average daily ET _L		in.		E ÷ B
Sprinkler Performance	Value	Units		Source
G. Precipitation rate [PR]		in./h		<i>Override/audit or calculation</i>
H. Distribution uniformity [DU _{ig}]		decimal		<i>Override/audit or estimate</i>
I. Scheduling multiplier [SM]				table or equation
Scheduling Parameters	Value	Units		Source
J. Irrigation interval				watering days
		days		<i>Override value</i>
K. Water to apply		in.		J × F
L. Lower boundary		min		(K ÷ G) × 60 [round down]
M. Upper boundary		min		L × I [round up]
N. Selected run time, whole number		min		management decision
O. Determine cycle starts by				
a. Observed time to runoff	Oa.	min		field observation
or b. Site conditions	Ob.	cycles		based on site conditions
1) Soil category				C, MC = 1; M = 2; MF, F = 3
2) Slope				Fl = 0, Sl = 1, Mod = 2, St = 3
3) Compaction				Yes = 1, No = 0
4) Sprinkler type				Spray = 1, Rotor = 0
Scheduling Summary	Value	Units		Source
Water to be applied		in.		K
Interval		days		J
P. Cycle starts per day				N ÷ Oa [round up] or Ob
Minutes per cycle		min		N ÷ P [round]