Sprinkler Irrigation System
Detailed Evaluation Continuous Move, Large Sprinkler Gun Type

Land user _____ Date _____ Prepared by _____

District _____ County _____Eng job class _____

Irrigation system hardware inventory:

Sprinkler gun make _____, model _____, nozzle type _____

Nozzle: size_____ inches, _____ mm

Manufacturer rated discharge, _____ gpm at _____ psi giving _____ ft wetted diameter

Hose: length, _____ ft, diameter _____ inches

Towpath: spacing _____ ft

Elevation difference between first and last location on towpath (+/-) _____ ft or _____ % slope

Gun: height _____ ft

Mainline: material _____ diameter _____ inches

Field observations:

Crop uniformity _____

Water runoff _____

Erosion _____

System leaks _____

Wind drift _____

Other observations _____

_____

_____

Field data inventory and computations:

Crop _____, root zone depth _____ ft, MAD 1/ _____%, MAD 1/ _____ inches

Soil-water data (typical):

(Show locations of sample on soil map or sketch of field)

Moisture determination method _____

Soil series and surface texture _____

Depth	Texture	AWC (in) 1/	SWD (%) 1/	SWD (in) 1/
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
	Totals	_____		_____

Comments about soils and soil condition:

1/ MAD = Management Allowable depletion, AWC = Available water capacity, SWD = Soil water deficit

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Present irrigation practices:

Typical irrigation duration _____ hr, irrigation frequency _____ days

Typical number of irrigations per year _____

Test:

Start _____, Stop _____, Duration _____ = _____ hour

Atmospheric data;

Wind: Direction: Initial _____, during _____, final _____

Speed (mph): Initial _____, during _____, final _____

Temperature: initial _____ final _____, humidity: _____ low _____ med _____ high

Evaporation container: initial _____, final _____, loss _____ inches

Pressure: _____ psi, at start of test

_____ psi, at end of test

Measured flow into the system _____gpm

Sprinkler travel speed:

at beginning	_____ ft _____ min =	_____ ft/min
at test site	_____ ft _____ min =	_____ ft/min
at terminal end	_____ ft _____ min =	_____ ft/min
average		_____ ft/min

Calculations:

Gross average depth of water applied = $\frac{\text{(gun discharge, gpm) x (1.605)}}{\text{(tow path spacing, ft) x (travel speed, ft/min)}}$

= $\frac{\text{(}\quad\text{gpm) x (1.605)}}{\text{(}\quad\text{ft) x (}\quad\text{ft/min)}}$ = _____ in

Average overlapped catches

System = (sum all catch totals _____ in) = _____ in
(number of totals _____)

Low 1/4 = (sum of low 1/4 catch totals _____ in) = _____ in
(number of low 1/4 catches _____)

Average application rate = $\frac{\text{(Flow, gpm) x (13,624)}}{\text{(tow path spacing, ft) x (wet sector, deg.)}}$

= $\frac{\text{(}\quad\text{gpm) x (13,624)}}{\text{(}\quad\text{ft) x (}\quad\text{deg)}}$ = _____ in/hr

Maximum application rate = (average application rate, in/hr) x (1.5)

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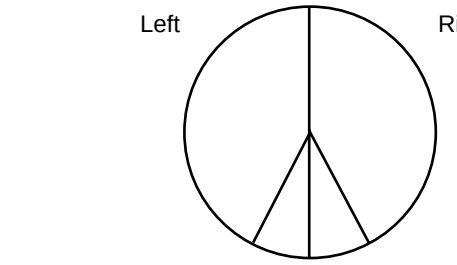
Container test data

Catch can type _____, _____ cc (mL)/in

Note part circle operation
and the dry wedge size in degrees



Path spacing (ft)	Container catch volume				Right plus left side catch totals	
	Left side of path		Right side of path			
	Catch no.	Catch (mL)	Catch no.	Catch (mL)	mL	inches
330	1		33			
320	2		32			
310	3		31			
300	4		30			
290	5		29			
280	6		28			
270	7		27			
260	8		26			
250	9		25			
240	10		24			
230	11		23			
220	12		22			
210	13		21			
200	14		20			
190	15		19			
180	16		18			
170	17		17			
160	18		16			
150	19		15			
140	20		14			
130	21		13			
120	22		12			
110	23		11			
100	24		10			
90	25		9			
80	26		8			
70	27		7			
60	28		6			
50	29		5			
40	30		4			
30	31		3			
20	32		2			
10	33		1			

Sum of all catch totals _____

Sum of low 1/4 catch totals _____

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Potential water and cost savings:

Present management:

Gross applied per year = (Gross applied per irrigation) x (number of irrigation) = _____ in/yr

+ (_____ in) x (_____) = _____ in/yr

Potential management:

Annual net irrigation requirement _____ in/yr, for _____ (crop)

Potential application efficiency (E_q or E_h) _____ % (estimated at 55 - 65%)

Potential annual gross applied = $\frac{\text{(annual net irrigation requirement)}}{\text{Potential } E_q \text{ or } E_h}$ x 100 = _____ in

= (_____in) x 100 = _____ inches

Total annual water conserved

= $\frac{\text{(Present gross applied, inches - potential gross applied, inches)}}{12}$ x (area irrigated, ac) = _____ ac/ft

= (_____ in) - (_____ in) x (_____ ac) = _____ ac-ft
12

Cost savings:

Pumping plant efficiency _____ kind of energy _____

Cost per unit of energy $ _____ energy cost per ac-ft $ _____

Cost savings = (energy cost per ac-ft) x (ac-ft conserved per year) = $ _____

= (_____) x (_____) = $ _____

Water purchase cost:

= (Cost per ac-ft) x (ac-ft saved per year) = $ _____ x _____ = $ _____

Cost savings:

= Pumping cost + water cost = _____ + _____ = $ _____

Example - Sprinkler Irrigation System
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Recommendations: