

# NOTICE

This scan only represents the application as filed. The information contained herein meets the requirements of K.A.R. 5-3-1 or K.A.R. 5-5-1, and has been found acceptable for filing in the office of the Chief Engineer. The application should not be considered to be a complete application as per K.A.R. 5-3-1b or K.A.R. 5-5-2a.

THE STATE OF KANSAS



KANSAS DEPARTMENT OF AGRICULTURE
Mike Beam, Secretary of Agriculture

DIVISION OF WATER RESOURCES
Earl D. Lewis Jr., Chief Engineer

50925

File Number
This item to be completed by the Division of Water Resources.

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DEC 14 2022 11:32

KS DEPT OF AGRICULTURE

APPLICATION FOR PERMIT TO APPROPRIATE WATER FOR BENEFICIAL USE

Filing Fee Must Accompany the Application
(Please refer to Fee Schedule attached to this application form.)

To the Chief Engineer of the Division of Water Resources, Kansas Department of Agriculture, 1320 Research Park Drive, Manhattan, Kansas 66502:

1. Name of Applicant (Please Print): Chris Grauer
Address: 1269 11TH TER
City: Marysville State KS Zip Code 66508
Telephone Number: 785 562 6897

2. The source of water is: [ ] surface water in (stream)
OR [x] groundwater in Big Blue River (drainage basin)

Certain streams in Kansas have minimum target flows established by law or may be subject to administration when water is released from storage for use by water assurance district members. If your application is subject to these regulations on the date we receive your application, you will be sent the appropriate form to complete and return to the Division of Water Resources.

3. The maximum quantity of water desired is 74 acre-feet OR gallons per calendar year, to be diverted at a maximum rate of 500 gallons per minute OR cubic feet per second.

Once your application has been assigned a priority, the requested maximum rate of diversion and maximum requested quantity of water under that priority number can NOT be increased. Please be certain your requested maximum rate of diversion and maximum quantity of water are appropriate and reasonable for your proposed project and are in agreement with the Division of Water Resources' requirements.

4. The water is intended to be appropriated for (Check use intended):
(a) [ ] Artificial Recharge (b) [x] Irrigation (c) [ ] Recreational (d) [ ] Water Power
(e) [ ] Industrial (f) [ ] Municipal (g) [ ] Stockwatering (h) [ ] Sediment Control
(i) [ ] Domestic (j) [ ] Dewatering (k) [ ] Hydraulic Dredging (l) [ ] Fire Protection
(m) [ ] Thermal Exchange (n) [ ] Contamination Remediation

YOU MUST COMPLETE AND ATTACH ADDITIONAL DIVISION OF WATER RESOURCES FORM(S) PROVIDING INFORMATION TO SUBSTANTIATE YOUR REQUEST FOR THE AMOUNT OF WATER FOR THE INTENDED USE REFERENCED ABOVE.

For Office Use Only:
F.O. 1 GMD Meets K.A.R. 5-3-1 (YES / NO) Use IRR Source G/S County MS By ALB Date 12/19/22
Code PEG Fee \$ 200 TR # Receipt Date 12/14/22 Check # 3548

12/20/2022
LMoody

5. The location of the proposed wells, pump sites or other works for diversion of water is:

**Note:** For the application to be accepted, the point of diversion location must be described to at least a 10 acre tract, unless you specifically request a 60 day period of time in which to locate the site within a specifically described, minimal legal quarter section of land.

1/10/2023  
BMM

(A) One in the SW quarter of the NE quarter of the SW quarter of Section 12, more particularly described as being near a point 1784 feet North and 3435 feet West of the Southeast corner of said section, in Township 3 South, Range 7 East, Marshall County, Kansas.

**Applicant requests "60 days" to locate a well site within this quarter section.**

(B) One in the \_\_\_\_\_ quarter of the \_\_\_\_\_ quarter of the \_\_\_\_\_ quarter of Section \_\_\_\_\_, more particularly described as being near a point \_\_\_\_\_ feet North and \_\_\_\_\_ feet West of the Southeast corner of said section, in Township \_\_\_\_\_ South, Range \_\_\_\_\_ East/West (circle one), \_\_\_\_\_ County, Kansas.

(C) One in the \_\_\_\_\_ quarter of the \_\_\_\_\_ quarter of the \_\_\_\_\_ quarter of Section \_\_\_\_\_, more particularly described as being near a point \_\_\_\_\_ feet North and \_\_\_\_\_ feet West of the Southeast corner of said section, in Township \_\_\_\_\_ South, Range \_\_\_\_\_ East/West (circle one), \_\_\_\_\_ County, Kansas.

If the source of supply is groundwater, a separate application shall be filed for each proposed well or battery of wells, except that a single application may include up to four wells within a circle with a quarter (1/4) mile radius in the same local source of supply which do not exceed a maximum diversion rate of 20 gallons per minute per well.

A battery of wells is defined as two or more wells connected to a common pump by a manifold; or not more than four wells in the same local source of supply within a 300 foot radius circle which are being operated by pumps not to exceed a total maximum diversion rate of 800 gallons per minute and which supply water to a common distribution system.

6. The owner of the point of diversion, if other than the applicant is (please print):

Applicant  
\_\_\_\_\_  
(name, address and telephone number)

\_\_\_\_\_  
(name, address and telephone number)

You must provide evidence of legal access to, or control of, the point of diversion from the landowner or the landowner's authorized representative. Provide a copy of a recorded deed, lease, easement or other document with this application. In lieu thereof, you may sign the following sworn statement:

I have legal access to, or control of, the point of diversion described in this application from the landowner or the landowner's authorized representative. I declare under penalty of perjury that the foregoing is true and correct.

Executed on Nov 16, 2022

  
\_\_\_\_\_  
Applicant's Signature

The applicant must provide the required information or signature irrespective of whether they are the landowner. Failure to complete this portion of the application will cause it to be unacceptable for filing and the application will be returned to the applicant.

7. The proposed project for diversion of water will consist of one well \_\_\_\_\_  
(number of wells, pumps or dams, etc.)  
and will be completed (by) following approval \_\_\_\_\_  
(Month/Day/Year - each was or will be completed)

8. The first actual application of water for the proposed beneficial use was or is estimated to be following approval \_\_\_\_\_  
(Mo/Day/Year)

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- 9. Will pesticide, fertilizer, or other foreign substance be injected into the water pumped from the diversion works?  
 Yes  No If "yes", a check valve shall be required.

All chemigation safety requirements must be met including a chemigation permit and reporting requirements.

- 10. If you are planning to impound water, please contact the Division of Water Resources for assistance, prior to submitting the application. Please attach a reservoir area capacity table and inform us of the total acres of surface drainage area above the reservoir.

Have you also made an application for a permit for construction of this dam and reservoir with the Division of Water Resources?  Yes  No

- If yes, show the Water Structures permit number here \_\_\_\_\_
- If no, explain here why a Water Structures permit is not required \_\_\_\_\_

Groundwater application \_\_\_\_\_

- 11. The application must be supplemented by a U.S.G.S. topographic map, aerial photograph or a detailed plat showing the following information. On the topographic map, aerial photograph, or plat, identify the center of the section, the section lines or the section corners and show the appropriate section, township and range numbers. Also, please show the following information:

- (a) The location of the proposed point(s) of diversion (wells, stream-bank installations, dams, or other diversion works) should be plotted as described in Paragraph No. 5 of the application, showing the North-South distance and the East-West distance from a section line or southeast corner of section.
- (b) If the application is for groundwater, please show the location of any existing water wells of any kind within 1/2 mile of the proposed well or wells. Identify each existing well as to its use and furnish the name and mailing address of the property owner or owners. If there are no wells within 1/2 mile, please advise us.
- (c) ~~If the application is for surface water, the names and addresses of the landowner(s) 1/2 mile downstream and 1/2 mile upstream from your property lines must be shown.~~
- (d) The location of the proposed place of use should be shown by crosshatching on the topographic map, aerial photograph or plat.
- (e) Show the location of the pipelines, canals, reservoirs or other facilities for conveying water from the point of diversion to the place of use.

A 7.5 minute U.S.G.S. topographic map may be obtained by providing the section, township and range numbers to: Kansas Geological Survey, 1930 Constant, Campus West, University of Kansas, Lawrence, Kansas 66047.

- 12. List any application, appropriation of water, water right, or vested right file number that covers the same diversion points or any of the same place of use described in this application. Also list any other recent modifications made to existing permits or water rights in conjunction with the filing of this application.

none \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

13. Furnish the following well information if the proposed appropriation is for the use of groundwater. If the well has not been completed, give information obtained from test holes, if available.

Information below is from:  Test holes  Well as completed  Drillers log attached

Well location as shown in paragraph

No.	(A)	(B)	(C)	(D)
Date Drilled	_____	_____	_____	_____
Total depth of well	_____	_____	_____	_____
Depth to water bearing formation	_____	_____	_____	_____
Depth to static water level	_____	_____	_____	_____
Depth to bottom of pump intake pipe	_____	_____	_____	_____

14. The relationship of the applicant to the proposed place where the water will be used is that of owner  
(owner, tenant, agent or otherwise)

15. The owner(s) of the property where the water is used, if other than the applicant, is (please print):  
applicant  
(name, address and telephone number)  
\_\_\_\_\_  
(name, address and telephone number)

16. The undersigned states that the information set forth above is true to the best of his/her knowledge and that this application is submitted in good faith.

Dated at Marysville, Kansas, this 16<sup>th</sup> day of November, 2022.  
(month) (year)

  
\_\_\_\_\_  
(Applicant Signature)

By \_\_\_\_\_  
(Agent or Officer Signature)

\_\_\_\_\_  
(Agent or Officer - Please Print)

Assisted by Lloyd Hemphill TFO/ES Date: 11-7-22  
(office/title)

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## FEE SCHEDULE

1. The fee for an application for a permit to appropriate water for beneficial use, except for domestic use, shall be (see paragraph No. 2 below if requesting storage):

ACRE-FEET	FEE
0-100	\$200.00
101-320	\$300.00
More than 320	\$300.00 plus \$20.00 for each additional 100 acre-feet or any part thereof.

2. The fee for an application in which storage is requested, except for domestic use, shall be:

ACRE-FEET	FEE
0-250	\$200.00
More than 250	\$200.00 plus \$20.00 for each additional 250 acre-feet of storage or any part thereof.

Note: If an application requests both direct use *and* storage, the fee charged shall be as determined under No. 1 or No. 2 above, whichever is greater, but not both fees.

3. The fee for an application for a permit to appropriate water for water power or dewatering purposes shall be \$100.00 plus \$200.00 for each 100 cubic feet per second, or part thereof, of the diversion rate requested.

Note: The applicant shall notify the Chief Engineer and pay the statutorily required field inspection fee of \$400.00 when construction of the works for diversion has been completed, except that for applications filed on or after July 1, 2009, for works constructed for sediment control use and for evaporation from a groundwater pit for industrial use shall be accompanied by a field inspection fee of \$200.00.

### MAKE CHECKS PAYABLE TO THE KANSAS DEPARTMENT OF AGRICULTURE

#### ATTENTION

A Water Conservation Plan may be required per K.S.A. 82a-733. A statement that your application for permit to appropriate water may be subject to the minimum desirable streamflow requirements per K.S.A. 82a-703a, b, and c may also be required from you. After the Division of Water Resources has had the opportunity to review your application, you will be notified whether or not you will need to submit a Water Conservation Plan. You also may be required to install a water flow meter or water stage measuring device on your diversion works prior to diverting water. There may be other special conditions or Groundwater Management District regulations that you will need to comply with if this application is approved.

#### CONVERSION FACTORS

1 acre-foot equals 325,851 gallons

1 million gallons equal 3.07 acre-feet

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2. Please complete the following information for the description of the operation for the irrigation project. Attach supplemental sheets as needed.

a. Indicate the soils in the field(s) and their intake rates:

Soil Name	Percent of field (%)	Intake Rate (in/hr)	Irrigation Design Group
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
Total:	100 %		

b. Estimate the average land slope in the field(s): \_\_\_\_\_ %

Estimate the maximum land slope in the field(s): \_\_\_\_\_ %

c. Type of irrigation system you propose to use (check one):

- Center pivot      \_\_\_\_\_ Center pivot - LEPA      \_\_\_\_\_ "Big gun" sprinkler  
 Gravity system (furrows)      \_\_\_\_\_ Gravity system (borders)      \_\_\_\_\_ Sideroll sprinkler

Other, please describe: \_\_\_\_\_

d. System design features:

i. Describe how you will control tailwater: *existing terraces, waterways, and streams.*

ii. For sprinkler systems:

(1) Estimate the operating pressure at the distribution system: 35 psi

(2) What is the sprinkler package design rate? 650 gpm

(3) What is the wetted diameter (twice the distance the sprinkler throws water) of a sprinkler on the outer 100 feet of the system? see attached documents

(4) Please include a copy of the sprinkler package design information.

e. Crop(s) you intend to irrigate. Please note any planned crop rotations:

*Corn and Soybean rotation*

f. Please describe how you will determine when to irrigate and how much water to apply (particularly important if you do not plan full irrigation).

SOIL MOISTURE & PLANT STRESS

You may attach any additional information you believe will assist in informing the Division of the need for your request.

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## IRRIGATION USE SUPPLEMENTAL SHEET

File No. \_\_\_\_\_

Name of Applicant (Please Print): Chris Grauer

1. Please supply the name and address of each landowner, the legal description of the lands to be irrigated, and designate the actual number of acres to be irrigated in each forty acre tract or fractional portion thereof:

**Landowner of Record** NAME: Chris Grauer

ADDRESS: 1269 11TH TER MARYSVILLE, KS 66508

S	T	R	NE¼				NW¼				SW¼				SE¼				TOTAL		
			NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE			
12	3S	7E											40	9	1	18					68

**Landowner of Record** NAME: \_\_\_\_\_

ADDRESS: \_\_\_\_\_

S	T	R	NE¼				NW¼				SW¼				SE¼				TOTAL		
			NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE			

**Landowner of Record** NAME: \_\_\_\_\_

ADDRESS: \_\_\_\_\_

S	T	R	NE¼				NW¼				SW¼				SE¼				TOTAL		
			NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE			

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Lindsay Corporation  
Lindsay, NE

Dealer : PLYMOUTH IRRIGATION, INC.  
PLYMOUTH, NE

Customer :

Printout No: EH-5829-22

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\*\* Specify Senninger UP3 Nozzles when ordering \*\*

Dealer Name : **PLYMOUTH IRRIGATION, INC.**  
 Sprinkler Chart Number : **EH-5829-22**  
 Last Tower Tire Size : 11.2x24 Lindsay  
 Last Tower Motor Speed : 43  
 Feet per Minute @ 100% : 8.30 fpm  
 Flowrate : 650.35  
 Pivot Pressure : 30.44  
 % of Pivot Revolution: 100.00  
 Length to Last Tower : 740.62 ft  
 Overhang : 44.87  
 Total System Length : 785.49 ft  
 Range of End Gun : 117.00  
 Total Length w/Endgun : 902.49 ft  
 Date : December 5, 2022



**Panel Inputs:**  
**650.35**  
**561 minutes (Circle @ 100%)**  
**0.229 min app rate**  
**902.49 ft (Wetted radius)**

Set specific rate (by inch)			Set specific rate (by timer)		
Gross Application (Inches)	Main Panel Timer (Percent)	Revolution Time (Hours)	Gross Application (Inches)	Main Panel Timer (Percent)	Revolution Time (Hours)
0.23	100.00	9.34	0.23	100.00	9.34
0.23	100.00	9.34	0.24	95.00	9.84
0.23	100.00	9.34	0.25	90.00	10.38
0.30	76.20	12.26	0.27	85.00	10.99
0.40	57.15	16.35	0.29	80.00	11.68
0.50	45.72	20.44	0.30	75.00	12.46
0.60	38.10	24.53	0.33	70.00	13.35
0.70	32.66	28.61	0.35	65.00	14.38
0.80	28.57	32.70	0.38	60.00	15.57
0.90	25.40	36.79	0.42	55.00	16.99
1.00	22.86	40.88	0.46	50.00	18.69
1.10	20.78	44.97	0.51	45.00	20.77
1.20	19.05	49.05	0.57	40.00	23.36
1.30	17.58	53.14	0.65	35.00	26.70
1.40	16.33	57.23	0.76	30.00	31.15
1.50	15.24	61.32	0.91	25.00	37.38
1.60	14.29	65.40	1.14	20.00	46.72
1.70	13.45	69.49	1.52	15.00	62.30
1.80	12.70	73.58	2.29	10.00	93.44
1.90	12.03	77.67	3.27	7.00	133.49
2.00	11.43	81.75	4.57	5.00	186.89

This chart is an estimate of the performance of your Zimmatic center pivot system.  
 Tire inflation, soil conditions, flow fluctuations, and other conditions can cause application and time deviations.  
 The speed (fpm) is based on average operation. Time the rotation of your center pivot to verify accuracy.  
 Any questions should be directed to your Zimmatic Dealership.  
***This chart should not cover safety decals, warning stickers, or wiring diagrams.***



# Lindsay Corporation

214 E. 2nd Street

Lindsay, NE

Date: 12/5/2022

Chart No: EH-5829-22

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## WARRANTY

WATER APPLICATION UNIFORMITY OBTAINED WITH THIS SYSTEM CAN BE ADVERSELY AFFECTED BY MANY VARIABLES INCLUDING THE IMPROPER MAKEUP OR INSTALLATION OF THE SPRINKLER OR SPRAY NOZZLE PACKAGE, OBSTRUCTED NOZZLES, MAINTAINING INCORRECT PIVOT PRESSURE, UNFAVORABLE CLIMATE CONDITIONS, TIGHT AND/OR SLOPING SOILS, IMPROPER END GUN ARC SETTINGS, ERRATIC AND IMPROPER OPERATING SPEED OF THE SYSTEM, AND AS WELL AS INHERENT VARIABLES IN THE MANY COMPONENTS COMPRISING THE SYSTEM. THEREFORE, SENNINGER IRRIGATION INC. MAKES NO WARRANTY AS TO THE UNIFORMITY OF COVERAGE OBTAINED FROM THIS WATER APPLICATION PRINTOUT OTHER THAN ITS MATHEMATICAL ACCURACY.

PRODUCTS MANUFACTURED BY SENNINGER IRRIGATION INC. THAT ARE SPECIFIED ON THIS SYSTEM ARE COVERED UNDER THE PRINTED "LIMITED WARRANTY" OF EACH INDIVIDUAL ITEM.

IT IS THE RESPONSIBILITY OF THE END USER TO DETERMINE IF ANY INCOMPATIBILITY EXISTS BETWEEN THE WATER DISTRIBUTION DEVICES AND THE CROP, THE SOIL, AND THE PHYSICAL STRUCTURE OF THE MECHANICAL MOVE SYSTEM. SENNINGER IRRIGATION THEREFORE DISCLAIMS ANY LIABILITY FOR DAMAGES DUE TO FAILURE OF THE SYSTEM TO PERFORM AS CONTEMPLATED.

ALL FIGURES PRESENTED ON THIS COMPUTER PRINTOUT ARE BASED ON THE FOLLOWING...

1. INFORMATION PROVIDED TO SENNINGER IRRIGATION, INC. CONCERNING PIPE LENGTH, DIAMETER, SURFACE FINISH AND OUTLET SPACINGS, PLUS WATER FLOW AND PRESSURE, PLUS ALL OTHER APPLICABLE DATA IS CORRECT.
2. THERE IS 100% WATER APPLICATION EFFICIENCY (ZERO WIND VELOCITY & NO EVAPORATION)
3. ALL BOW STRING AND WARREN TRUSS TYPE SPANS (EXCEPT THE LAST) ARE CONSIDERED TO END AT THE CENTER OF THE FLEXIBLE COUPLING. THE LAST SPAN IS CONSIDERED TO END AFTER THE "TOWER TOP" OR "END BOOM TRANSITION PIECE" FLANGE. CABLE SUPPORTED SPANS ARE CONSIDERED TO END AT THE CENTER OF THE TOWER.
4. PIVOT PRESSURE IS MEASURED UP ON THE MAIN HORIZONTAL DISTRIBUTION PIPE JUST AFTER THE LAST ELBOW.
5. PIVOT PRESSURE HAS BEEN DETERMINED IN CONSIDERATION OF A MAXIMUM FIELD ELEVATION RISE AND FALL FROM THE PIVOT POINT AS SHOWN ON PAGE ONE, WITH THESE ELEVATIONS OCCURRING AT THE END OF THE SYSTEM.
6. SPRINKLER OR SPRAY NOZZLE BASE PRESSURE MAY BE LESS THAN MAIN LINE PIPE PRESSURE DUE TO THE USE OF PRESSURE REGULATORS, WITH FLOW VS. FRICTION LOSS THROUGH EACH REGULATOR CONSIDERED. WHERE DROP PIPES ARE USED THE STATIC HEAD IS ADDED TO THE MAIN PIPE PRESSURE TO DETERMINE SPRAY NOZZLE INLET PRESSURE.

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# Lindsay Corporation

214 E. 2nd Street

Lindsay, NE

Date: 12/5/2022

Chart No: EH-5829-22

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## Dealer:

## Customer:

## Comments:

PLYMOUTH IRRIGATION, INC.  
PLYMOUTH, NE  
7109-70

### Machine

Mfg: Lindsay  
Flow: 650.00 gpm  
Pivot Pressure: 30.44 psi  
Base Press: 35.00 psi  
End Pressure: 25.96 psi  
Spacing: Span dependent  
Length: 785.49 ft  
GPM / Acre: 11.07 gpm  
Average Drop: 0.0 ft  
End Gun: SR-100T .80" SR100 Nozz  
End Gun Throw: 117.0 ft adj. radius  
Booster pump: 130 gpm

### Pipes

C Factor: 140  
Pipe 1: 740.6 ft, 6.39 inch ID  
Pipe 2: 44.9 ft, 5.37 inch ID

### Elevation

Difference above(+) pivot 0.00  
Difference below(-) pivot 0.00  
Elevation Rise included in calculations

### Sprinklers

90 Wobbler  
(90)Xcel UP3



### Regs

Position : Top  
90 PSR-2-10

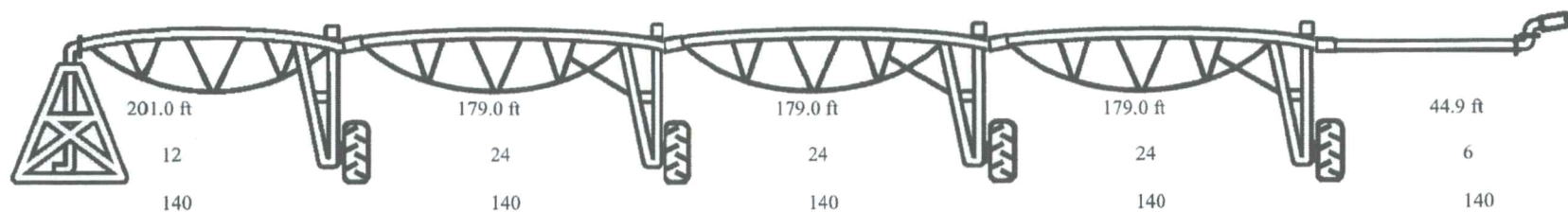
### Spans # 4

Gauge 30.44 psi

6.39

5.37

25.96 psi



35.00 psi



# Lindsay Corporation

214 E. 2nd Street

Lindsay, NE

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## BILL of MATERIALS - Hydraulic Components

Qty	PartNumber	Cost	----- Description -----
1	1465050		#21 UP3 Nozzle (mustard)
1	1465060		#21.5 UP3 Nozzle (mustard) notched
90	1602938		REGULATOR, SENN, PSR2, 10 PSI
1			SR-100T
1	8849861		.80" SR100 Nozz
381	Total		

# Lindsay Corporation

214 E. 2nd Street

Lindsay, NE

Date: 12/5/2022

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## BILL of MATERIALS - Hydraulic Components

Qty	PartNumber	Cost	----- Description -----
90	1610511		Xcel Wobbler, UP3 TOP
90	1351560		3/4" Poly Senninger Nipple
19	1137900		3/4" Plugs
1	1464740		# 6 UP3 Nozzle (gold)
1	1464770		# 7 UP3 Nozzle (lime)
1	1464790		# 8 UP3 Nozzle (lavender)
1	1464810		# 9 UP3 Nozzle (grey)
1	1464820		# 9.5 UP3 Nozzle (grey) notched
2	1464840		#10.5 UP3 Nozzle (turquoise) notched
5	1464850		#11 UP3 Nozzle (yellow)
3	1464860		#11.5 UP3 Nozzle (yellow) notched
4	1464870		#12 UP3 Nozzle (red)
4	1464880		#12.5 UP3 Nozzle (red) notched
5	1464890		#13 UP3 Nozzle (white)
5	1464900		#13.5 UP3 Nozzle (white) notched
1	1464910		#14 UP3 Nozzle (blue)
3	1464920		#14.5 UP3 Nozzle (blue) notched
6	1464930		#15 UP3 Nozzle (brown)
6	1464940		#15.5 UP3 Nozzle (brown) notched
3	1464950		#16 UP3 Nozzle (orange)
5	1464960		#16.5 UP3 Nozzle (orange) notched
2	1464970		#17 UP3 Nozzle (dark green)
4	1464980		#17.5 UP3 Nozzle (dark green) notched
5	1464990		#18 UP3 Nozzle (purple)
4	1465000		#18.5 UP3 Nozzle (purple) notched
7	1465010		#19 UP3 Nozzle (black)
3	1465020		#19.5 UP3 Nozzle (black) notched
4	1465030		#20 UP3 Nozzle (dark turquoise)
~	1465040		#20.5 UP3 Nozzle (dark turquoise) notched

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Lindsay, NE

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Hose database used for drop lengths.

## DEVIATION SUMMARY

Span number	Area	Required flow	Actual flow	% Deviation	GPM/Acre
1	2.99	34.17	34.69	1.53	11.60
2	7.57	88.74	88.43	-0.34	11.69
3	12.19	142.38	142.54	0.11	11.69
4	16.81	196.31	196.93	0.32	11.71
5	4.94	58.04	57.75	-0.50	11.69
End Gun 1	14.24	157.61	130.00	-17.52	9.13

Nozzle Discharge Uniformity Coefficient = 98.3 %





# Lindsay Corporation

214 E. 2nd Street

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## QUANTITIES

Qty	Item	Description
90	Wobbler	(90)Xcel UP3
90	PSR-2-10	
19	Plugs	
1	SR-100T .80" SR100 Nozz	

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MATERIALS		Wobbler	
Qty	Pad	Size	----- Positions -----
5	Xcel UP3	16.5	53 54 55 56 57
2	Xcel UP3	17	58 59
4	Xcel UP3	17.5	62 63 64 66
5	Xcel UP3	18	65 67 68 69 70
4	Xcel UP3	18.5	60-T 71 72 73
7	Xcel UP3	19	T-61 74 75 76 77 78 79
3	Xcel UP3	19.5	80 81 82
4	Xcel UP3	20	83 86 87 88
2	Xcel UP3	20.5	89 90-T
1	Xcel UP3	21	84-T
1	Xcel UP3	21.5	T-85
90	Total		

# Lindsay Corporation

214 E. 2nd Street

Lindsay, NE

Date: 12/5/2022

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MATERIALS		Wobbler	
Qty	Pad	Size	----- Positions -----
1	Xcel UP3	6	1
1	Xcel UP3	7	2
1	Xcel UP3	8	3
1	Xcel UP3	9	4
1	Xcel UP3	9.5	5
2	Xcel UP3	10.5	6 14
5	Xcel UP3	11	7 15 16 17 18
3	Xcel UP3	11.5	8 19 20
4	Xcel UP3	12	21 22 23 24
4	Xcel UP3	12.5	9 25 26 27
5	Xcel UP3	13	10 28 29 30 31
5	Xcel UP3	13.5	11 T-13 32 33 34
1	Xcel UP3	14	35
3	Xcel UP3	14.5	38 39 40
6	Xcel UP3	15	12-T 41 42 43 44 45
6	Xcel UP3	15.5	36-T T-37 46 47 48 49
3	Xcel UP3	16	50 51 52

WATER RESOURCES  
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# SENNINGER IRRIGATION







Date: 12/5/2022

Chart No: EH-5829-22

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LOCATION				HYDRAULICS DATA				HARDWARE DESCRIPTION				Goose Neck
OUTLET COUNT	DISTANCE FROM LAST OUTLET (FT)	DISTANCE FROM LAST TOWER (FT)	PIVOT POINT (FT)	OUTLET FLOW NEEDED (GPM)	ACTUAL OUTLET FLOW (GPM)	MAIN PIPE PRESS (PSI)	SPR. BASE PRESS (PSI)	DROP LENGTH (in)	PRESS REG MODEL	SENNINGER SPRINKLER MODEL&PAD/Weight	NOZZ SIZE (64TH INCH) &COLOR	G=180°Sg Sg=125°Sg Db=125°Db NOZZ#
81	7.50	12.66	574.3	7.17	7.23	26.37	10.93		PSR-2-10	Wobbler Xcel UP3		17.5-DGN/PUR 62 G
82	7.33	19.99	581.6	7.19	7.23	26.35	10.93		PSR-2-10	Wobbler Xcel UP3		17.5-DGN/PUR 63 G
83	7.34	27.33	589.0	7.28	7.23	26.33	10.92		PSR-2-10	Wobbler Xcel UP3		17.5-DGN/PUR 64 G
84	7.33	34.66	596.3	7.45	7.64	26.31	10.89		PSR-2-10	Wobbler Xcel UP3		18-PURPLE 65 G
85	7.50	42.16	603.8	7.37	7.23	26.28	10.92		PSR-2-10	Wobbler Xcel UP3		17.5-DGN/PUR 66 G
86	7.00	49.16	610.8	7.46	7.64	26.27	10.88		PSR-2-10	Wobbler Xcel UP3		18-PURPLE 67 G
87	7.50	56.66	618.3	7.72	7.63	26.25	10.87		PSR-2-10	Wobbler Xcel UP3		18-PURPLE 68 G
88	7.33	63.99	625.6	7.73	7.63	26.23	10.87		PSR-2-10	Wobbler Xcel UP3		18-PURPLE 69 G
89	7.34	71.33	633.0	7.82	7.63	26.21	10.86		PSR-2-10	Wobbler Xcel UP3		18-PURPLE 70 G
90	7.33	78.66	640.3	8.00	8.04	26.19	10.82		PSR-2-10	Wobbler Xcel UP3		18.5-PUR/BLK 71 G
91	7.50	86.16	647.8	7.91	8.04	26.17	10.83		PSR-2-10	Wobbler Xcel UP3		18.5-PUR/BLK 72 G
92	7.00	93.16	654.8	8.00	8.04	26.16	10.82		PSR-2-10	Wobbler Xcel UP3		18.5-PUR/BLK 73 G
93	7.50	100.66	662.3	8.27	8.46	26.15	10.78		PSR-2-10	Wobbler Xcel UP3		19-BLACK 74 G
94	7.33	107.99	669.6	8.27	8.46	26.13	10.78		PSR-2-10	Wobbler Xcel UP3		19-BLACK 75 G
95	7.34	115.33	677.0	8.37	8.46	26.12	10.77		PSR-2-10	Wobbler Xcel UP3		19-BLACK 76 G
96	7.33	122.66	684.3	8.55	8.45	26.11	10.76		PSR-2-10	Wobbler Xcel UP3		19-BLACK 77 G
97	7.50	130.16	691.8	8.45	8.46	26.09	10.76		PSR-2-10	Wobbler Xcel UP3		19-BLACK 78 G
98	7.00	137.16	698.8	8.54	8.45	26.08	10.76		PSR-2-10	Wobbler Xcel UP3		19-BLACK 79 G
99	7.50	144.66	706.3	8.82	8.88	26.07	10.71		PSR-2-10	Wobbler Xcel UP3		19.5-BLK/DTQ 80 G
100	7.33	151.99	713.6	8.82	8.88	26.06	10.71		PSR-2-10	Wobbler Xcel UP3		19.5-BLK/DTQ 81 G
101	7.34	159.33	721.0	8.91	8.88	26.05	10.70		PSR-2-10	Wobbler Xcel UP3		19.5-BLK/DTQ 82 G
102	7.33	166.66	728.3	9.10	9.31	26.05	10.65		PSR-2-10	Wobbler Xcel UP3		20-TURQ 83 G
103	7.50	174.16	735.8	10.36	10.17	26.04	10.49		PSR-2-10	Wobbler Xcel UP3		21-MUSTARD 84 G
<b>Tower 4</b>		179.00	740.62									

**PIPE I.D. CHANGE AT 740.62 ft FROM 6.395 inch TO 5.369 inch**

104	9.21	4.37	745.0	10.48	10.63	26.02	10.44		PSR-2-10	Wobbler Xcel UP3		21.5-MUS/MRN 85 G
105	7.50	11.87	752.5	9.40	9.30	26.00	10.63		PSR-2-10	Wobbler Xcel UP3		20-TURQ 86 G
106	7.33	19.20	759.8	9.39	9.31	25.99	10.63		PSR-2-10	Wobbler Xcel UP3		20-TURQ 87 G
107	7.34	26.54	767.2	9.48	9.30	25.98	10.63		PSR-2-10	Wobbler Xcel UP3		20-TURQ 88 G
108	7.33	33.87	774.5	9.68	9.74	25.97	10.58		PSR-2-10	Wobbler Xcel UP3		20.5-DTQ/MUS 89 G
109	7.50	41.37	782.0	9.88	9.74	25.96	10.56		PSR-2-10	Wobbler Xcel UP3		20.5-DTQ/MUS 90 G
	3.50	44.87	785.5	157.61	130.00	25.96	52.56	End Gun 1		SR-100T .80" SR100 Nozz		

Booster Pump added 26.6 psi to inline pressure

SENNINGER IRRIGATION

Date: 12/5/2022

Chart No: EH-5829-22

LOCATION				HYDRAULICS DATA				HARDWARE DESCRIPTION				Goose Neck
OUTLET COUNT	DISTANCE FROM LAST OUTLET (FT)	DISTANCE FROM LAST TOWER (FT)	PIVOT POINT (FT)	OUTLET FLOW NEEDED (GPM)	ACTUAL OUTLET FLOW (GPM)	MAIN PIPE PRESS (PSI)	SPR. BASE PRESS (PSI)	DROP LENGTH (in)	PRESS REG MODEL	SENNINGER SPRINKLER MODEL&PAD/Weight	NOZZ SIZE (64TH INCH) & COLOR	G=180°Sg Sg=125°Sg Db=125°Db NOZZ#
41	7.50	86.16	289.8	3.54	3.44	27.94	11.29		PSR-2-10	Wobbler Xcel UP3	12-RED	24 G
42	7.00	93.16	296.8	3.63	3.73	27.88	11.27		PSR-2-10	Wobbler Xcel UP3	12.5-RED/WHT	25 G
43	7.50	100.66	304.3	3.80	3.73	27.83	11.27		PSR-2-10	Wobbler Xcel UP3	12.5-RED/WHT	26 G
44	7.33	107.99	311.6	3.85	3.73	27.77	11.26		PSR-2-10	Wobbler Xcel UP3	12.5-RED/WHT	27 G
45	7.34	115.33	318.9	3.94	4.04	27.72	11.25		PSR-2-10	Wobbler Xcel UP3	13-WHITE	28 G
46	7.33	122.66	326.3	4.08	4.04	27.67	11.24		PSR-2-10	Wobbler Xcel UP3	13-WHITE	29 G
47	7.50	130.16	333.8	4.08	4.04	27.62	11.25		PSR-2-10	Wobbler Xcel UP3	13-WHITE	30 G
48	7.00	137.16	340.8	4.16	4.04	27.57	11.24		PSR-2-10	Wobbler Xcel UP3	13-WHITE	31 G
49	7.50	144.66	348.3	4.35	4.35	27.52	11.22		PSR-2-10	Wobbler Xcel UP3	13.5-WHT/BLUE	32 G
50	7.33	151.99	355.6	4.39	4.35	27.47	11.22		PSR-2-10	Wobbler Xcel UP3	13.5-WHT/BLUE	33 G
51	7.34	159.33	363.0	4.49	4.35	27.42	11.22		PSR-2-10	Wobbler Xcel UP3	13.5-WHT/BLUE	34 G
52	7.33	166.66	370.3	4.63	4.68	27.37	11.20		PSR-2-10	Wobbler Xcel UP3	14-BLUE	35 G
53	7.50	174.16	377.8	5.58	5.71	27.33	11.10		PSR-2-10	Wobbler Xcel UP3	15.5-DBN/ORN	36 G
<b>Tower 2</b>			179.00	382.62								
54-Plg			383.6									
55	10.00	5.16	387.8	5.71	5.71	27.26	11.10		PSR-2-10	Wobbler Xcel UP3	15.5-DBN/ORN	37 G
56	7.50	12.66	395.3	4.94	5.01	27.22	11.17		PSR-2-10	Wobbler Xcel UP3	14.5-BLU/DBN	38 G
57	7.33	19.99	402.6	4.98	5.01	27.17	11.17		PSR-2-10	Wobbler Xcel UP3	14.5-BLU/DBN	39 G
58	7.34	27.33	409.9	5.07	5.01	27.13	11.16		PSR-2-10	Wobbler Xcel UP3	14.5-BLU/DBN	40 G
59	7.33	34.66	417.3	5.21	5.36	27.09	11.14		PSR-2-10	Wobbler Xcel UP3	15-DK BROWN	41 G
60	7.50	42.16	424.8	5.19	5.36	27.04	11.14		PSR-2-10	Wobbler Xcel UP3	15-DK BROWN	42 G
61	7.00	49.16	431.8	5.28	5.36	27.01	11.14		PSR-2-10	Wobbler Xcel UP3	15-DK BROWN	43 G
62	7.50	56.66	439.3	5.49	5.35	26.96	11.13		PSR-2-10	Wobbler Xcel UP3	15-DK BROWN	44 G
63	7.33	63.99	446.6	5.52	5.35	26.92	11.12		PSR-2-10	Wobbler Xcel UP3	15-DK BROWN	45 G
64	7.34	71.33	453.9	5.61	5.71	26.89	11.10		PSR-2-10	Wobbler Xcel UP3	15.5-DBN/ORN	46 G
65	7.33	78.66	461.3	5.76	5.71	26.85	11.09		PSR-2-10	Wobbler Xcel UP3	15.5-DBN/ORN	47 G
66	7.50	86.16	468.8	5.72	5.71	26.81	11.10		PSR-2-10	Wobbler Xcel UP3	15.5-DBN/ORN	48 G
67	7.00	93.16	475.8	5.81	5.71	26.78	11.09		PSR-2-10	Wobbler Xcel UP3	15.5-DBN/ORN	49 G
68	7.50	100.66	483.3	6.04	6.08	26.74	11.06		PSR-2-10	Wobbler Xcel UP3	16-ORANGE	50 G
69	7.33	107.99	490.6	6.06	6.08	26.71	11.06		PSR-2-10	Wobbler Xcel UP3	16-ORANGE	51 G
70	7.34	115.33	497.9	6.15	6.08	26.67	11.05		PSR-2-10	Wobbler Xcel UP3	16-ORANGE	52 G
71	7.33	122.66	505.3	6.31	6.46	26.64	11.02		PSR-2-10	Wobbler Xcel UP3	16.5-ORN/DGN	53 G
72	7.50	130.16	512.8	6.26	6.46	26.61	11.03		PSR-2-10	Wobbler Xcel UP3	16.5-ORN/DGN	54 G
73	7.00	137.16	519.8	6.35	6.45	26.58	11.02		PSR-2-10	Wobbler Xcel UP3	16.5-ORN/DGN	55 G
74	7.50	144.66	527.3	6.59	6.45	26.55	11.01		PSR-2-10	Wobbler Xcel UP3	16.5-ORN/DGN	56 G
75	7.33	151.99	534.6	6.61	6.45	26.52	11.01		PSR-2-10	Wobbler Xcel UP3	16.5-ORN/DGN	57 G
76	7.34	159.33	542.0	6.70	6.84	26.49	10.98		PSR-2-10	Wobbler Xcel UP3	17-DK GREEN	58 G
77	7.33	166.66	549.3	6.86	6.84	26.46	10.97		PSR-2-10	Wobbler Xcel UP3	17-DK GREEN	59 G
78	7.50	174.16	556.8	8.22	8.04	26.43	10.81		PSR-2-10	Wobbler Xcel UP3	18.5-PUR/BLK	60 G
<b>Tower 3</b>			179.00	561.62								
79-Plg			562.6									
80	10.00	5.16	566.8	8.35	8.46	26.40	10.77		PSR-2-10	Wobbler Xcel UP3	19-BLACK	61 G

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# SENNINGER IRRIGATION

Date: 12/5/2022

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LOCATION				HYDRAULICS DATA				HARDWARE DESCRIPTION			Goose Neck	
OUTLET COUNT	DISTANCE FROM LAST OUTLET (FT)	DISTANCE FROM LAST TOWER (FT)	PIVOT POINT (FT)	OUTLET FLOW NEEDED (GPM)	ACTUAL FLOW (GPM)	MAIN PIPE PRESS (PSI)	SPR. BASE PRESS (PSI)	DROP LENGTH (in)	PRESS REG MODEL	SENNINGER SPRINKLER MODEL&PAD/Weight	NOZZ SIZE (64TH INCH) &COLOR	G=180°Sg Sg=125°Sg Db=125°Db NOZZ#
<b>Pivot - Gauge</b>												
1-Plg			3.6									
2-Plg			7.8									
3-Plg			15.3									
4-Plg			22.6									
5	29.95		29.9	0.75	0.85	30.16	11.41		PSR-2-10	Wobbler Xcel UP3	6-GOLD	1 G
6-Plg			37.3									
7	14.83	44.78	44.8	1.10	1.17	30.03	11.40		PSR-2-10	Wobbler Xcel UP3	7-LIME	2 G
8-Plg			51.8									
9	14.50	59.28	59.3	1.46	1.53	29.89	11.39		PSR-2-10	Wobbler Xcel UP3	8-LAVENDER	3 G
10-Plg			66.6									
11	14.67	73.95	74.0	1.84	1.93	29.76	11.38		PSR-2-10	Wobbler Xcel UP3	9-GREY	4 G
12-Plg			81.3									
13	14.83	88.78	88.8	2.19	2.16	29.62	11.36		PSR-2-10	Wobbler Xcel UP3	9.5-GRY/TUR	5 G
14-Plg			95.8									
15	14.50	103.28	103.3	2.52	2.64	29.49	11.34		PSR-2-10	Wobbler Xcel UP3	10.5-TUR/YEL	6 G
16-Plg			110.6									
17	14.50	117.78	117.8	2.91	2.89	29.36	11.32		PSR-2-10	Wobbler Xcel UP3	11-YELLOW	7 G
18-Plg			125.3									
19	14.83	132.61	132.6	3.29	3.16	29.23	11.30		PSR-2-10	Wobbler Xcel UP3	11.5-YEL/RED	8 G
20-Plg			140.0									
21	14.67	147.28	147.3	3.62	3.73	29.10	11.27		PSR-2-10	Wobbler Xcel UP3	12.5-RED/WHT	9 G
22-Plg			154.8									
23	14.50	161.78	161.8	4.00	4.04	28.97	11.25		PSR-2-10	Wobbler Xcel UP3	13-WHITE	10 G
24-Plg			169.3									
25	14.83	176.61	176.6	4.39	4.35	28.85	11.22		PSR-2-10	Wobbler Xcel UP3	13.5-WHT/BLUE	11 G
26-Plg			184.0									
27	14.67	191.28	191.3	5.20	5.36	28.72	11.14		PSR-2-10	Wobbler Xcel UP3	15-DK BROWN	12 G
28-Plg			198.8									
<b>Tower 1</b>	201.00		203.62									
29-Plg			204.6									
30	17.50	5.16	208.8	4.34	4.35	28.58	11.22		PSR-2-10	Wobbler Xcel UP3	13.5-WHT/BLUE	13 G
31	7.50	12.66	216.3	2.70	2.63	28.51	11.34		PSR-2-10	Wobbler Xcel UP3	10.5-TUR/YEL	14 G
32	7.33	19.99	223.6	2.76	2.89	28.45	11.33		PSR-2-10	Wobbler Xcel UP3	11-YELLOW	15 G
33	7.34	27.33	231.0	2.85	2.89	28.39	11.33		PSR-2-10	Wobbler Xcel UP3	11-YELLOW	16 G
34	7.33	34.66	238.3	2.98	2.89	28.33	11.32		PSR-2-10	Wobbler Xcel UP3	11-YELLOW	17 G
35	7.50	42.16	245.8	3.00	2.89	28.27	11.32		PSR-2-10	Wobbler Xcel UP3	11-YELLOW	18 G
36	7.00	49.16	252.8	3.09	3.16	28.22	11.31		PSR-2-10	Wobbler Xcel UP3	11.5-YEL/RED	19 G
37	7.50	56.66	260.3	3.25	3.16	28.16	11.31		PSR-2-10	Wobbler Xcel UP3	11.5-YEL/RED	20 G
38	7.33	63.99	267.6	3.31	3.44	28.10	11.29		PSR-2-10	Wobbler Xcel UP3	12-RED	21 G
39	7.34	71.33	274.9	3.40	3.44	28.05	11.29		PSR-2-10	Wobbler Xcel UP3	12-RED	22 G
40	7.33	78.66	282.3	3.53	3.44	27.99	11.29		PSR-2-10	Wobbler Xcel UP3	12-RED	23 G

# Lindsay Corporation

214 E. 2nd Street

Lindsay, NE

Date: 12/5/2022

Chart No: EH-5829-22

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## Dealer:

## Customer:

## Comments:

PLYMOUTH IRRIGATION, INC.  
PLYMOUTH, NE  
7109-70

WATER RESOURCES  
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KS DEPT OF AGRICULTURE

## Precipitation

Delivered Flow:	650.35 gpm
Pivot Pressure:	30.44 psi
Length:	785.49 ft
Area:	58.73 acre
Distance to last tower:	740.62 ft
Speed of last tower:	8.30 ft
Precip. / Acre: (360)	11.07 gpm
Time for coverage:	9.34Hrs
Tire Size	11.2x24 Lindsay
Motor loaded speed (RPM)	1725
Center gear box reduction (RATIO)	40:1
Wheel gear box reduction (RATIO)	50:1
End Gun Throw:	117.0 ft

## Circle Degree 360

<u>Average Depth</u>	<u>Timer</u>	<u>Rotation</u>
0.24 inch	100.00%	9.3hrs
	---	---
0.30 inch	81.08%	11.5hrs
0.40 inch	60.81%	15.4hrs
0.50 inch	48.65%	19.2hrs
0.60 inch	40.54%	23.1hrs
0.70 inch	34.75%	26.9hrs
0.80 inch	30.40%	30.7hrs
0.90 inch	27.03%	34.6hrs
1.00 inch	24.32%	38.4hrs
1.25 inch	19.46%	48.0hrs
1.50 inch	16.22%	57.6hrs
2.00 inch	12.16%	76.8hrs
2.50 inch	9.73%	96.0hrs
0.31 inch	77.87%	12 hrs
0.62 inch	38.93%	24 hrs

Caution\*\*This chart is an estimate of the performance for your irrigation system. Tire inflation, tire slippage, soil conditions, flow fluctuations and other conditions can cause application and time deviations. The info above

# Lindsay Corporation

214 E. 2nd Street

Lindsay, NE

Date: 12/5/2022

Chart No: EH-5829-22

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## **CAUTIONS**

Installation: Xcel UP3 Top: Always use with a 10 psi (.69 bar) pressure regulator (PSR or PSR-2) recommended.

Use a ¾" galvanized, stainless steel or a Senninger thermoplastic nipple into the mainline (maximum 2' Length) PVC nipples are not recommended.

End Gun Varies more than 10% of GPM/Acre (m3h/Hect)

This package was plugged with the recommended minimum ground clearance and above the crop canopy.



**DATA ENTRY SYSTEM ID NUMBER SHEET**

FILE NUMBER 50925

APPLICANT PERSON ID & SEQ #	89948	PDIV ID	BATTERY ID
<u>68782</u>			

LANDOWNER PERSON ID & SEQ #	71155	PUSE ID
<u>68782</u>		

WATER USE CORRESPONDENT PERSON ID & SEQ #
<u>68782</u>

er Line

Electric Line

Symbol

Label

Measure

Options

