NATIONAL POLLUTANT DISCHARGE ATION SYSTEM (NPDES)
DISCHARGE MONITORIN_ EPORT (DMR)

Form
OMB No.

Page

PERMITTEE NAME/ADDRESS *(Include Facility Name/Location if Different)*

NAME: EAGLE BUTTE- CITY OF_____(E)
ADDRESS: 208 SOUTH MAIN
EAGLE BUTTE, SD 57625

FACILITY: EAGLE BUTTE- CITY OF
LOCATION: 208 SOUTH MAIN
EAGLE BUTTE, SD 57625

ATTN:HONORABLE JOHN BACHMAN, MAYOR

SD0020192	001A
PERMIT NUMBER	DISCHARGE NUMBER

DMR MAILING ZIP CODE: 57625
MINOR

FOURTH POND TO GREEN GRASS CRK
External Outfall

No Discharge ☐

MONITORING PERIOD	YEAR	MO	DAY		YEAR	MO	DAY
FROM	09	04	01	TO	09	06	30

PARAMETER		QUANTITY OR LOADING			QUALITY OR CONCENTRATION				NO. EX	FREQUENCY OF ANALYSIS	SAMPLE TYPE
		VALUE	VALUE	UNITS	VALUE	VALUE	VALUE	UNITS			
BOD, 5-day, 20 deg. C	SAMPLE MEASUREMENT	******	******		******	16	18.5			5 Per Month	
00310 1 0 Effluent Gross	PERMIT REQUIREMENT	******	******		******	30 30DA AVG	45 7 DA AVG	mg/L		See Permit	GRAB
pH	SAMPLE MEASUREMENT	******	******		8.53	******	9.12		1	5/30	
00400 1 0 Effluent Gross	PERMIT REQUIREMENT	******	******		6.5 MINIMUM	******	9 MAXIMUM	SU		See Permit	INSTAN
Solids, total suspended	SAMPLE MEASUREMENT	******	******		******	30	34			5/30	
00530 1 0 Effluent Gross	PERMIT REQUIREMENT	******	******		******	110 30DA AVG	165 7 DA AVG	mg/L		See Permit	GRAB
Oil & grease	SAMPLE MEASUREMENT	******	******		******	******	<2			5/30	
00556 1 0 Effluent Gross #19	PERMIT REQUIREMENT	******	******		******	******	10 DAILY MX	mg/L		See Permit	GRAB
E. coli, MTEC-MF	SAMPLE MEASUREMENT	******	******		******	******	135			1/30	
31648 1 0 Effluent Gross	PERMIT REQUIREMENT	******	******		******	******	Req. Mon. DAILY MX	#/100mL		See Permit	GRAB
Floating solids or visible foam-visual	SAMPLE MEASUREMENT	******			******	******	******			6/30	
45613 1 0 Effluent Gross	PERMIT REQUIREMENT	******	0 INST MAX	Y=1;N=0	******	******	******			See Permit	VISUAL
Flow, in conduit or thru treatment plant	SAMPLE MEASUREMENT			29	******	******	******			6/30	
50050 1 0 Effluent Gross #17	PERMIT REQUIREMENT	Req. Mon. 30DA AVG	Req. Mon. DAILY MX	Mgal/d	******	******	******			See Permit	INSTAN

Of Finding of Violation 9/30/10

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER		SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	TELEPHONE		DATE		
B Jon Gant	I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.	B Jon Gant	605 964-8763		09	9	14
TYPED OR PRINTED			AREA Code	NUMBER	YEAR	MO	DAY

COMMENTS AND EXPLANATION OF ANY VIOLATIONS (Reference all attachments here)
If NO DISCHARGE OCCURS DURING THE REPORTING PERIOD, "NO DISCHARGE" SHALL BE REPORTED. INDIAN-EPA

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		VALUE	VALUE	UNITS	VALUE	VALUE	VALUE	UNITS			
BOD, 5-day, 20 deg. C	SAMPLE MEASUREMENT	******	******		******	16	18.5			5/30	
00310 1 0 Effluent Gross	PERMIT REQUIREMENT	******	******		******	30 30DA AVG	45 7 DA AVG	mg/L		See Permit	GRAB
pH	SAMPLE MEASUREMENT	******	******		8.53	******	9.12		1	5/30	
00400 1 0 Effluent Gross	PERMIT REQUIREMENT	******	******		6.5 MINIMUM	******	9 MAXIMUM	SU		See Permit	INSTAN
Solids, total suspended	SAMPLE MEASUREMENT	******	******		******	30	34			5/30	
00530 1 0 Effluent Gross	PERMIT REQUIREMENT	******	******		******	110 30DA AVG	165 7 DA AVG	mg/L		See Permit	GRAB
Oil & grease	SAMPLE MEASUREMENT	******	******		******	******	4.2			5/30	
00556 1 0 Effluent Gross	PERMIT REQUIREMENT	******	******		******	******	10 DAILY MX	mg/L		See Permit	GRAB
E. coli, MTEC-MF	SAMPLE MEASUREMENT	******	******		******	******	135	1		5/30	
31648 1 0 Effluent Gross	PERMIT REQUIREMENT	******	******		******	******	Req. Mon. DAILY MX	#/100mL		See Permit	GRAB
Floating solids or visible foam-visual	SAMPLE MEASUREMENT	******			******	******	******			5/30	
45613 1 0 Effluent Gross	PERMIT REQUIREMENT	******	0 INST MAX	Y=1;N=0	******	******	******			See Permit	VISUAL
Flow, in conduit or thru treatment plant	SAMPLE MEASUREMENT			2.7	******	******	******			5/30	
50050 1 0 Effluent Gross	PERMIT REQUIREMENT	Req. Mon. 30DA AVG	Req. Mon. DAILY MX	Mgal/d	******	******	******			See Permit	INSTAN

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER			TELEPHONE		DATE		
	I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.		AREA Code	NUMBER	YEAR	MO	DAY
TYPED OR PRINTED		SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT					

COMMENTS AND EXPLANATION OF ANY VIOLATIONS (Reference all attachments here)
IF NO DISCHARGE OCCURS DURING THE REPORTING PERIOD, "NO DISCHARGE" SHALL BE REPORTED. INDIAN-EPA

Lagoon Inspection Form

Facility Permit#	SD-0020192
Facility Name	Eagle Butte Lagoon
Date of Inspection	05-01-09
Time of Inspection	10:30
Inspector's Name	R. Thorn - Shaun

Maintenance Activities	Yes	No	Action taken to correct the problem (Indicate when the action was taken.)	Other Comments
Access road and top of dikes maintained.	✓			
Locks, gates, fences, and sign are intact.	✓			
Grass is mowed on the inside, outside slopes and top of dikes.	✓			
Prepare and reseed all areas that need vegetation.		✓		
Check outside toe of dikes for seepage and evidence of rodent damage.	✓			
Check inside slopes of dikes for erosion and evidence of rodent damage. (Riprap inside slopes,if needed to prevent erosion.)	✓			
Influent line is flowing properly.	✓			
Cattails and or trees growing in or around the pond.		✓		

Lagoon Inspection Form During Discharge

Facility Permit #		SD 0020142	
Facility Name		Eagle Butte Lagoon	
Date of Inspection		05-01-07	
Time of Inspection		10:20	
Inspector's Name		Richst	

Operations Activities		Needed information		Other Comments	
Is the cell discharging?				89152	344142
Date discharge started.	No Discharge				
Freeboard at the beginning of discharge. (feet)					
Date discharge stopped.					
Freeboard at the end of the discharge. (feet)					
Pond freeboard in each cell. (feet)					
What color is the pond?					
Are there any odor problems? What is the cause?					

Lagoon Inspection Form

Facility Permit#	SP-20202	
Facility Name	Ford Bott Lagoon	
Date of Inspection	05-05-19	
Time of Inspection	10:30	
Inspector's Name	Richard Kell	

Maintenance Activities	Yes	No	Action taken to correct the problem (Indicate when the action was taken.)		Other Comments
Access road and top of dikes maintained.	✓				
Locks, gates, fences, and sign are intact.	✓				
Grass is mowed on the inside, outside slopes and top of dikes.	✓				
Prepare and reseed all areas that need vegetation.		✓			
Check outside toe of dikes for seepage and evidence of rodent damage.	✓				
Check inside slopes of dikes for erosion and evidence of rodent damage. (Riprap inside slopes if needed to prevent erosion.)	✓				
Influent line is flowing properly.	✓				
Cattails and or trees growing in or around the pond.		✓			

Lagoon Inspection Form During Discharge

Facility Permit #		30 [illegible]	
Facility Name		Eagle Butte Lagoon	
Date of Inspection		05-08-09	
Time of Inspection		10:30	
Inspector's Name		Richard Kell	

Operations Activities		Needed information		Other Comments	
Is the cell discharging?	No			24152	75°F
Date discharge started.					
Freeboard at the beginning of discharge. (feet)		0			
Date discharge stopped.					
Freeboard at the end of the discharge. (feet)		0.5ft			
Pond freeboard in each cell. (feet)		0.5ft			
What color is the pond?		Je			
Are there any odor problems? What is the cause?					

Lagoon Inspection Form

Facility Permit #	[illegible]	
Facility Name	Eagle Butte Lagoon	
Date of Inspection	05 - 16 - 09	
Time of Inspection	10:30	
Inspector's Name	Richard Kell	

Maintenance Activities	Yes	No	Action taken to correct the problem (Indicate when the action was taken.)	Other Comments
Access road and top of dikes maintained.	✓			
Locks, gates, fences, and sign are intact.	✓			
Grass is mowed on the inside, outside slopes and top of dikes.	✓			
Prepare and reseed all areas that need vegetation.		✓		
Check outside toe of dikes for seepage and evidence of rodent damage.	✓			
Check inside slopes of dikes for erosion and evidence of rodent damage. (Riprap inside slopes if needed to prevent erosion.)	✓			
Influent line is flowing properly.	✓			
Cattails and or trees growing in or around the pond.	✓		Sprayed 05-16-09	

Lagoon Inspection Form During Discharge

Facility Permit #	SD-08201.92
Facility Name	Eagle Butte Lagoon
Date of Inspection	05-15-09
Time of Inspection	10:30
Inspector's Name	Richard Kaul

Operations Activities	Needed information	Other Comments	
Is the cell discharging?	No. D		
Date discharge started.		89153	36977
Freeboard at the beginning of discharge. (feet)	3.0 ft		
Date discharge stopped.			
Freeboard at the end of the discharge. (feet)			
Pond freeboard in each cell. (feet)			
What color is the pond?			
Are there any odor problems? What is the cause?			

Lagoon Inspection Form

Facility Permit#	SP 08 20192	
Facility Name	Eagle Butte Lagoon	
Date of Inspection	05-22-09	
Time of Inspection	8:50	
Inspector's Name		

Maintenance Activities	Yes	No	Action taken to correct the problem (Indicate when the action was taken.)		Other Comments
Access road and top of dikes maintained.	✓				
Locks, gates, fences, and sign are intact.	✓				
Grass is mowed on the inside, outside slopes and top of dikes.	✓				
Prepare and reseed all areas that need vegetation.		✓			
Check outside toe of dikes for seepage and evidence of rodent damage.	✓				
Check inside slopes of dikes for erosion and evidence of rodent damage. (Riprap inside slopes if needed to prevent erosion.)	✓				
Influent line is flowing properly.	✓				
Cattails and or trees growing in or around the pond.	✓				

Lagoon Inspection Form During Discharge

Facility Permit #		SP 08 3921	
Facility Name		Fayette Bate Lagoon	
Date of Inspection		05-22-09	
Time of Inspection			
Inspector's Name			

Operations Activities		Needed information		Other Comments	
Is the cell discharging?	No	Discharge			
Date discharge started.				971153	380510
Freeboard at the beginning of discharge. (feet)					
Date discharge stopped.					
Freeboard at the end of the discharge. (feet)					
Pond freeboard in each cell. (feet)					
What color is the pond?					
Are there any odor problems? What is the cause?					

PH Records

5-12-09	8	21	
5-13-09	8.	19	
5-14-09	8.	42	
5-19-09	8.	63	
5-20-09	8.	72	
5-26-09	8.	31	
5-26-09	8.	88	?
6-1-09	8.	94	?
4-26-10	8.	61	
4-27-10	8.	24	
4-28-10	8.	09	

South Dakota Department of Health

DIVISION OF ADMINISTRATION
Public Health Laboratory

615 East Fourth Street
Pierre, South Dakota 57501-1700
605/773-3368 FAX: 605/773-6129
www.state.sd.us/doh/lab/index.htm

Submitter copy to:

Date: 6/1/2009

EAGLE BUTTE,CITY OF-0010
PO BOX 150
EAGLE BUTTE, SD 57625-0150

Spec #: E09EC002601
Subm #:
Lab: ENV CHEMISTRY
Tel #: (605)773-3368

Source

EAGLE BUTTE WWTF EFFLUENT

Date Rcvd: 5/26/2009
Time Rcvd: 1417
Date Coll: 5/26/2009
Time Coll: 1100
Spec Type: WATER

Coll By: SHAWN EBERHARD
Discharging?: Yes
Flow-gpm: 2000
Site Location: #3
medium WATER

Final Results

Solids (Suspended) EPA METHOD 160.2		24 mg/L
TSS SET UP ON 5-26-09 AF		
PH EPA Method 150.1		9.12 pH UNITS
PH SET UP ON 5-27-09 AF		
AMMONIA/WW		1.59 mg/L
E COLI SM 9223B	E.Coli	18.5 / 100 mL

South Dakota Department of Health

DIVISION OF ADMINISTRATION
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515 East Fourth Street
Pierre, South Dakota 57501-1700
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www.state.sd.us/doh/lab/indlex.htm

Date: 6/1/2009

Submitter copy to:

EAGLE BUTTE,CITY OF-0010
PO BOX 150
EAGLE BUTTE, SD 57625-0150

Spec #: E09EC002604
Subm #:
Lab: ENV CHEMISTRY
Tel #: (605)773-3368

Source

EAGLE BUTTE WWTF EFFLUENT

Date Rcvd: 5/26/2009
Time Rcvd: 1417
Date Coll: 5/26/2009
Time Coll: 1115
Spec Type: WATER

Coll By: SHAWN EBERHARD
Discharging?: No
Site Location: #2
medium WATER

Final Results

Solids (Suspended) EPA METHOD 160.2			40 mg/L
TSS SET UP ON 5-26-09 AF			
PH EPA Method 150.1			8.98 pH UNITS
PH SET UP ON 5-27-09 AF			
AMMONIA/WW			2.43 mg/L
E COLI SM 9223B	E.Coli		>2420 / 100 mL

sension™ Portable pH Meter Quick Referer

Changing Meter Setup Options

All setup options have default settings (underlined in the table). To change th
the table below.

Setup	How To Get There	Description of Op
1	Turn the meter on and press SETUP. Press ENTER.	Choose between using the BNC or 5 toggles between the options. Press E complete.
2	Turn the meter on and press SETUP. Press the up arrow once. Press ENTER.	Turn display lock On or Off. ENTER to options. Press EXIT when selection is
3	Turn the meter on and press SETUP. Press the up arrow twice. Press ENTER.	Choose between °C or °F for displaye toggles between the options. Press E complete.
4	Turn the meter on and press SETUP. Press the up arrow three times. Press ENTER.	Select measurement resolution from t thousandths. ENTER toggles between EXIT when selection is complete.
5	Turn the meter on and press SETUP. Press the up arrow four times. Press ENTER.	Select pH 6.86 or 7.00 as the pH the m recognize during calibration. ENTER to options. Press EXIT when selection is

Calibration

1 - Prepare two or three pH buffers (choose from pH 4.01, 6.86, 7.0, and 10.

2 - Press I/O/EXIT. Press CAL. The display will prompt for standard 1.

3 — Place the pH electrode in one of the buffers.

4 — Press READ/ENTER. Wait until electrode stabilizes.

5 — The display will prompt for standard 2. Rinse the electrode with deionize

6 — Place the electrode in the second buffer. Press READ/ENTER.

7 — Repeat *steps* 5 and 6 for the third buffer or press EXIT.

8 — When the reading is stable, the slope and Store ? will appear.

9 — To save the calibration, press ENTER. To exit without saving the calibratio

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On the Worldwide Web - www.hach.com; E-mail - techhelp@hach.com

3.2.1 Performing a Calibration Using pH 4, 6.86, 7, and 10 Buffers

1. If using a probe without a temperature sensor, see *Section 2.3.1* on page 22 and *Section 2.5* on page 22 for information about obtaining and using a default temperature.

2. Prepare two pH buffers, either 4.01 and 7.00 (or 6.86), or 7.00 (or 6.86) and 10.01, according to the electrode instruction manual.

Note: Use a 6.86 or 7.0 pH buffer for the mid-range buffer. To view or change the setting for the mid-range buffer see Section 3.1.5.

Note: The pH values for the buffers are given for 25 °C. If the sample temperature is not 25 °C, the pH values displayed for the buffers will reflect the correct pH value for the sample temperature.

3. Press I/O/EXIT to turn the instrument on. From the Reading mode, press CAL. CAL and flashing ? will appear in the upper display area, along with **Standard** and 1.

4. Press READ/ENTER. The temperature and pH values will be updated until a stable reading is reached.

Note: If the meter is measuring in pH mode, it automatically moves to the next calibration step when stabilization is reached (indicated by three beeps). If measuring in mV mode, the three beeps will still sound when the stabilization occurs, but ENTER must be pressed to accept the reading. This lets the operator control the acceptance point of the buffer.

5. When the reading has stabilized or been accepted, the standard number will change to **2**.

6. Remove the probe from the first buffer and rinse with deionized water. Place the probe in the second buffer.

7. Repeat *steps 5* and *6* for the third buffer and press EXIT.

8. Press READ/ENTER. The temperature and pH values will be updated until a stable reading is reached.

9. When the reading has stabilized or been accepted, the slope value and the Store and ? icons will appear. Verify the slope value is within the ranges specified in the electrode manual.

10. To save the calibration and return to the Reading mode, press ENTER. To exit the calibration without saving it and return to the reading mode, press EXIT.

3.3 Reviewing the Calibration

1. From the pH Reading mode, press the REVIEW key.
2. The display will show the standard number, standard pH, and temperature (view mV value by pressing pH/mV). Press the up arrow once.
3. The meter will continue to scroll through the standard information with each press of the up arrow key. When all the standards have been displayed, press the up arrow key again.
4. The meter will display the slope and offset of the calibration curve.
5. To exit Cal Review mode, press EXIT. To review any standard or slope information again, press the down arrow.

HACH COMPANY

Cat. No. 51910-88

PLATINUM SERIES
pH ELECTRODE

HACH®

HACH COMPANY

Cat. No. 51700-18

sension1™

Portable pH Meter

Instruction Manual

Jan. 2001

HACH®

Water Measurement Units and Conversion Factors

Delbert Schwab
Extension Irrigation Specialist

Oklahoma Cooperative Extension Fact Sheets are also available on our website at:
http://osufacts.okstate.edu

Irrigation water management begins with knowing the quantity of water available. The purpose of this publication is to provide basic information on water measurement units and convenient conversion factors. Sometimes one will want to know only the volume of water used; while, at other times one will want to know the rate of flow. Conversion factors simplify changing from one unit of measurement to another.

Water Measurement Units

There are two conditions under which water is measured—water at rest and water in motion. Water at rest is measured in units of volume. Water in motion is measured in units of flow— unit of volume for a convenient time unit. It is important that the difference between a unit of volume and a unit of flow be kept in mind.

Volume Units

Water at rest; i.e., ponds, lakes, reservoirs, and in the soil, is measured in units of volume — gallon, cubic foot, acre-inch, and acre-foot.

Cubic Foot - The volume of water that would be held in a container one foot wide by one foot long by one foot deep.

Acre-Inch - The volume of water that would cover one acre (43,560 square feet) one inch deep.

Acre-Foot - The volume of water that would cover one acre one foot deep.

Flow Units

Water in motion; i.e., flowing in streams, canals, pipelines, and ditches, is measured in units of volume per unit of time—gallons per minute (gpm), cubic feet per second (cfs), acre-inches per hour and acre feet per day. Cubic feet per second, sometimes written second-feet (sec. ft. or cusec) is most commonly used for measuring flow of irrigation water moving by gravity from streams and reservoirs. Gallons per minute is most commonly used for measuring flow from pumps.

Cubic foot per second - The quantity of water equivalent to a stream one foot wide by one foot deep flowing with a velocity of one foot per second.

Gallon per minute - The quantity of water equivalent to a stream which will fill a gallon measure once each minute of time.

A flow of one cubic foot per second is approximately equal to either 450 gallons per minute, one acre-inch per hour, or two acre-feet per day (24 hours).

List of Equivalents

The following equivalents are useful for converting from one unit to another and for calculating volumes from flow units.

Volume Units

One gallon
= 231 cubic inches
= 0.13368 cubic foot weighs approximately 8.33 pounds

One cubic foot
= 1,728 cubic inches
= 7.481 gallons (7.5 for ordinary calculations) weights 62.4 pounds (62.5 for ordinary calculations)

One acre-inch
= 3,630 cubic feet
= 27,154 gallons (27,200 for ordinary calculations)
= $^{1}/_{12}$ acre-foot weighs approximately 113.1 tons

One acre-foot
= 43,560 cubic feet
= 325,851 gallons
= 12 acre-inches weighs approximately 1,357 tons

Rate of Flow Units

One gallon per minute
= 0.00223 (approximately $^{1}/_{450}$) cubic foot per second
= 0.00221 acre-inch per hour
= 0.00442 acre-foot per (24 hour) day
= 1 acre-inch in 452.6 hours (450 for ordinary calculations)
= 1 acre-foot in 226.3 days

One cubic foot per second
= 448.83 gallons per minute (450 for ordinary calculations)
= 1 acre-inch in 1 hour and 30 seconds (1 hour for ordinary calculations)
= 1 acre-foot in 12 hours and 6 minutes (12 hours for ordinary calculations)
= 1.984 acre-feet per (24 hours) day (2 acre-feet for ordinary calculations)

Conversion Table for units of flow.

Units	Cubic Feet Per Second	Gallons Per Minute	Million Gallons Per Day	Acre-Inches Per 24 Hours	Acre-Feet Per 24 Hours
Cubic Feet Per Second	1.0	448.8	0.646	23.8	1.984
Gallons Per Minute	0.00223	1.0	0.00144	0.053	0.00442
Million Gallons Per Day	1.547	694.4	1.0	36.84	3.07
Acre-Inches Per 24 Hours	0.042	18.86	0.0271	1.0	0.0833
Acre-Feet Per 24 Hours	0.504	226.3	0.3259	12.0	1.0

Million gallons per day (mgd)
= 694.4 gallons per minute (695 for ordinary calculations)
= 1.547 cubic feet per second (1.5 for ordinary calculations)

Using Conversion Table

To use the above conversion table, first locate the know unit of measurement in the left hand column headed "Units." Next, moving to the right, select the appropriate conversion factor listed under the vertical column with the heading of the desired unit of measurement.

Example No. 1: A well yielding 750 gallons per minute will supply how many acre-inches in 24 hours?

Step 1: Locate the line labeled "Gallons Per Minute" in the left-hand column labeled "Units."
Step 2: Move to the right along the "Gallons Per Minute" line and read 0.053 under the column headed "Acre-Inches Per 24 Hours."
Step 3: 750 x 0.053 = 39.75. The 750 gpm well will yield 39.75 acre-inches in 24 hours.

Example No. 2: How many cubic feet per second are required to make a 4 inch gross application on 40 acres of land in 72 hours?

Step 1: 40 acres x 4" = 160 acre-inches gross application. The conversion table shows factors for converting acre-inches per 24 hours to cubic feet per second. 72 hours ÷ 24 hours = 3 days. 160 ÷ 3 = 53.33 acre-inch per 24 hours.
Step 2: Locate the line labeled "Acre-Inches Per 24 Hours" in the left-hand column labeled "Units."
Step 3: Move to the right and under the vertical column labeled "Cubic Feet Per Second" read 0.042.
Step 4: 53.33 x 0.042 = 2.23986. It will require approximately 2 $^{1}/_{4}$ cfs to apply 4" of water on 40 acres in 72 hours.

Conversion Formulas

The following formulas are handy for computing the approximate depth of water applied to a field.

$$\frac{\text{Cubic feet per second x hours}}{\text{acres}}$$ =acre-inches per acre, or average depth in inches.

$$\frac{\text{Gallons per minute x hours}}{\text{450 x acres}}$$ =acre-inches per acre, or average depth in inches.

Example: What average depth of water would be applied to an 80 acre field if a farmer pumped 750 gpm for 8 days (pumping 24 hours a day)?

Solution:

$$\frac{\text{Gallons per minute x hours}}{\text{450 x acres}}$$ =average depth in inches.

$$\frac{\text{750 gpm x 8 days x 24 hours/day}}{\text{450 x 80}}$$ =4 inches average depth.

Irrigation water management does begin with knowing how much water available and involves some arithmetic. The most common mistake when working with water measurement units is to accidentally substitute one flow unit or volume unit for another without proper conversion. Usually the final answer appears obviously wrong; however, this is not always true. When checking your arithmetic, also check the measurement unit to see they are correct.

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