| Angle coefficient | Dist. from initial point | Width | Depth | Observation depth | Revolutions | Time in seconds | VELOCITY At point | VELOCITY Mean in vertical | Adjusted for hor. angle or | Area | Discharge |
|---|---|---|---|---|---|---|---|---|---|---|---|
| .0 | .10 | .20 | .30 | .40 | .50 | .60 | .70 | | .80 | .85 | |
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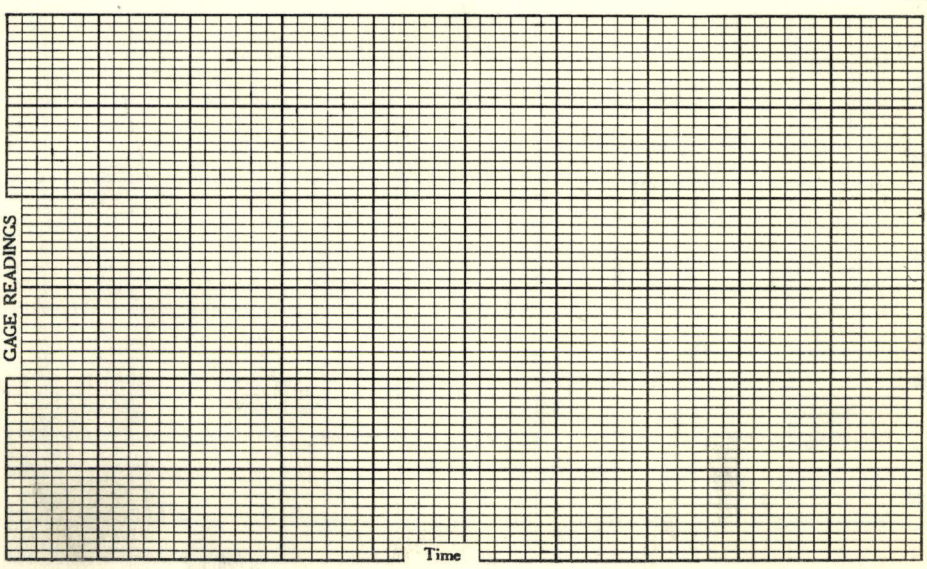
.90 .92 .94 .96 .97 .98 .99 1.00 .99 .98 .97 .96 .94 .92 .90




9-275-F
(Rev. 10-81)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

Meas. No. 871

Comp. by. Pok./JKV

WATER RESOURCES DIVISION

Sta. No. 08114000 **DISCHARGE MEASUREMENT NOTES** Checked by VAM

Brazos River @ Richmond, TX (Hiway 90)

Date JAN. 3, 1992 Party Po Keefe + JK Vanzandt

Width 575 Area 16,000 Vel. 5.13 G.H. 48.46 Disch. 82,100

Method 2.8 No. secs. 29 G.H. change -.02 in 1 hrs. Susp. 100 c 1.00

Method coef. ..... Hor. angle coef. ..... Susp. coef. ..... Meter No. W22673

Type of meter ..... Date rated ..... Tag checked .....

Meter ..... ft. above bottom of wt. Spin before meas. ..... after .....

Meas. plots ..... % diff. from ..... rating. Levels obtained .....

| GAGE READINGS | | | | | |
|---|---|---|---|---|---|
| Time | CTR | Inside | ADR | Graphic | Outside |
| 1010 | 48.54 | 48.73 | 48.54 | 48.48 | 48.58 ±.05 |
| | | @1000 | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| 1242 | | | @1230 | | 48.43 |
| 1244 | 48.43 | 48.58 | 48.43 | 48.43 | 48.43 |
| Weighted M.G.H. | | minus | | | |
| G. H. correction | | +.15 | | | |
| Correct M.G.H. | | | | | |

**WATER QUALITY MEASUREMENTS**

No X Yes ..... Time .....

Samples Collected

No X Yes ..... Time .....

Method Used

EDI ..... EWI ..... Other .....

**SEDIMENT SAMPLES**

No X Yes ..... Time .....

Method Used

EDI ..... EWI ..... Other .....

**BIOLOGICAL SAMPLES**

Yes ..... Time .....

No X Type .....

Check bar. chain found OK changed to ..... at .....

Wading, cable, ice, boat, upstr., downstr., side bridge ..... feet, mile, above, below gage.

Measurement rated excellent (2%), good (5%), fair (8%), poor (over 8%); based on the following cond:

Flow Flood meas.

Cross section .....

Control .....

Gage operating Yes Weather Clear

Intake/Orifice cleaned ..... Air ..... °C@ ..... Water ..... °C@ .....

Record removed Yes Extreme Indicator: Max. ..... Min. .....

Manometer $N_2$ Pressure Tank 2200 Feed 27 Bbl rate 76 per min.

CSG checked ..... Stick reading .....

Observer .....

HWM ..... outside, in well

Remarks Pulled A-35 + ADR Record

G.H. of zero flow ..... ft. Sheet No. 1 of 5 sheets

.0 .10 .20 .30 .40 .50 .60 .70 .75

River at—

| Angle coefficient | Dist. from initial point | Width | Depth | Observation depth | Revolutions | Time in seconds | VELOCITY | | Adjusted for hor. angle or --------- | Area | Discharge |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | At point | Mean in vertical | | | |

.80 .85 .90 .92 .94 .96 .97 .98 .99 ⊙ 1.00 .99 .98 .97 .96 .94 .92 .90 .85 .80

.0 .10 .20 .30 .40 .50 .60 .70 .75

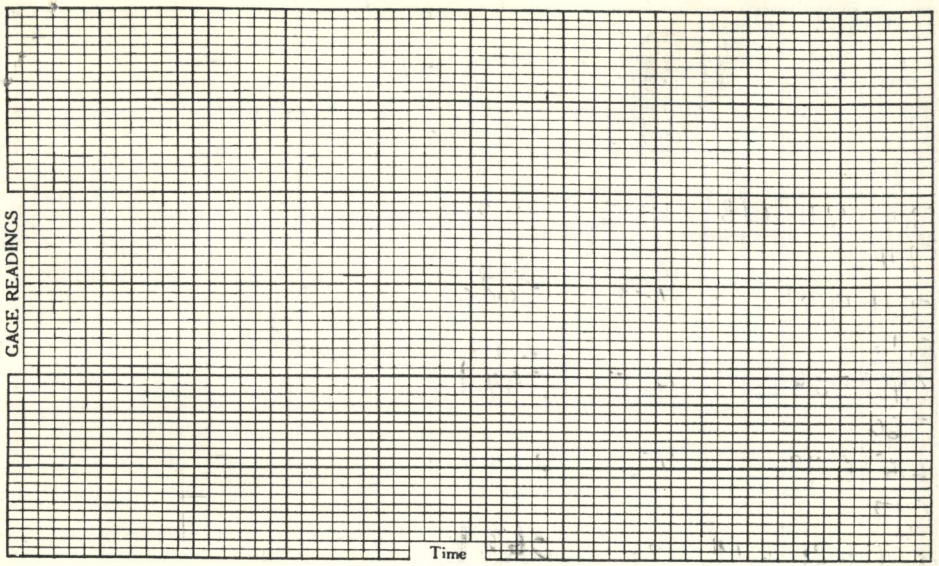
.0 .10 .20 .30 .40 .50 .60 .70 .75

.80 .85 .90 .92 .94 .96 .97 .98 .99 ⊙ 1.00 .99 .98 .97 .96 .94 .92 .90 .85 .80

.0 .10 .20 .30 .40 .50 .60 .70 .75

GAGE READINGS

Time



9-275-b
(Rev. 9-65)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

WATER RESOURCES DIVISION

# DISCHARGE MEASUREMENT NOTES

Meas. No. _____

Comp. by Pak+JKV

Checked by _____

Sta. No. _____

Brazos River @ Richmond, TX

Date JAN. 3, 1992 Party Pokeefe + JK Vanrandt

Width 575 Area 16,000 Vel. 5.13 G. H. 48.46 Disch. 82,100

Method _____ No. secs. _____ G. H. change _____ in _____ hrs. Susp. 0 0 c 1.00

Method coef. _____ Hor. angle coef. _____ Susp. coef. _____ Meter No. W226723

GAGE READINGS

| Time | | Recorder | Inside | Outside |
|---|---|---|---|---|
| 1041 | | | | 48.48 |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| Weighted M. G. H. | | | | |
| G. H. correction | | | | |
| Correct M. G. H. | | | | |

Date rated _____ Used rating for rod _____ susp. Meter _____ ft. above bottom of wt. Tags checked _____

Spin before meas. _____ after _____

Meas. plots _____% diff. from _____ rating

Wading, cable, ice, boat, upstr., downstr., side bridge _____ feet, mile, above, below gage, and _____

Check-bar, chain found _____ changed to _____ at _____

Correct _____

Levels obtained _____

Measurement rated excellent (2%), good (5%), fair (8%), poor (over 8%), based on following conditions: Cross section _____

Flow _____ Weather _____

Other _____ Air _____°F@ _____

Gage _____ Water _____°F@ _____

_____ Record removed _____ Intake flushed U L _____

Observer _____

Control _____

Remarks _____

G. H. of zero flow _____ ft.

4 of 5

.75

| Angle coefficient | Dist. from initial point | Width | Distance above water surface | Vertical angle | Observed depth | Air correction | Wet-line depth | Water correction | Vertical depth | Depth of observation | Revolutions | Time in seconds | | VELOCITY At point | VELOCITY Mean in vertical | Adjusted for hor. angle or -------- | Area 10005 | Discharge 51635 | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| .97 | 850 | 10.0 | 26.0 | 24° | 52.5 | 2.50 | 50.0 | 1.50 | 48.5 | .8 | 150 | 43 | | 7.60 | 7.52 | 7.29 | 485 | 3536 | |
| | | | | | | | | | | .2 | 150 | 44 | .85 | 7.43 | | | | | |
| .94 | 860 | 10.0 | 26.0 | 26° | 53.0 | 2.90 | 50.1 | 1.90 (8.0) | 48.2 (3) | .8 | 150 | 46 | | 7.11 | 7.11 | 6.68 | 482 (3) | 3226 | |
| GH = 48.43 | | 2.11 | 57 | | | | | | | .2 | 150 | 46 | | 7.11 | | | | | |
| .94 | 870 | 10.0 | 26.0 | 26° | 50.0 | 2.90 | 47.1 | 1.80 (6.0) | 45.3 (5) | .8 | 150 | 46 | .90 | 7.11 | 7.04 | 6.62 | 4535 | 3012 ~~2999~~ | |
| | | | | | | | | | | .2 | 150 | 47 | .92 | 6.96 | | | | 2948 | |
| .95 | 880 | 10.0 | 26.0 | 26° | 47.0 | 2.90 | 44.1 | 1.6 (5) | 42.5 (6) | .8 | 150 | 47 | .94 | 6.96 | 7.28 | 6.92 | 4256 | ~~2941~~ | |
| | | | | | | | | | | .2 | 150 | 43 | | 7.60 | | | | | |
| .97 | 890 | 10.0 | 26.0 | 24° | 46.0 | 2.50 | 43.5 | 1.40 (3.0) | 42.1 (2) | .8 | 150 | 49 | .96 | 6.67 | 6.42 | 6.23 | 4212 | 2623 (9) | |
| | | | | | | | | | | .2 | 150 | 53 | .97 | 6.17 | | | | | |
| .97 | 900 | 10.0 | 26.0 | 20° | 46.5 | 1.70 | 44.8 | .90 | 43.9 | .8 | 150 | 48 | .98 | 6.81 | 6.81 | 6.61 | 439 | 2902 | |
| | | | | | | | | | | .2 | 150 | 48 | .99 | 6.81 | | | | | |
| .95 | 910 | 10.0 | 26.0 | 20° | 44.4 | 1.70 | 42.7 | .90 | 41.8 | .8 | 150 | 51 | | 6.41 | 6.29 | 5.98 | 418 | 2500 | |
| | | | | | | | | | | .2 | 150 | 53 | | 6.17 | | | | | |
| .97 | 920 | 12.5 | 26.0 | 14° | 43.0 | .80 | 42.2 | .40 | 41.8 | .8 | 150 | 53 | 1.00 | 6.17 | 6.29 | 6.10 | 522 | 3184 | |
| | | | | | | | | | | .2 | 150 | 51 | | 6.41 | | | 13650 | 75540 | |
| 1 | 935 | 15.0 | 26.0 | 12° | 40.5 | .60 | 39.9 | .30 | 39.6 | .8 | 80 | 42 | | 4.16 | 4.86 | | 594 | 2887 | |
| | | | | | | | | | | .2 | 150 | 59 | .99 | 5.55 | | | | | |
| 1 | 950 | 15.0 | 26.0 | 8° | 36.0 | .30 | 35.7 | .10 | 35.6 | .8 | 80 | 42 | .98 | 4.16 | 4.50 | | 534 | 2403 | |
| | | | | | | | | | | .2 | 100 | 45 | .97 | 4.85 | | | | | |
| .97 | 965 | 17.5 | 26.0 | 6° | 34.5 | .10 | 34.4 | ∅ | 34.4 | .8 | 50 | 41 | .96 | 2.68 | 2.98 | 2.89 | 602 | 1740 | |
| | | | | | | | | | | .2 | 60 | 40 | | 3.28 | | | 15380 | 82570 | |
| .55 | 985 | 30.0 | — | — | 19.5 | | | | | .8 | 30 | 46 | .94 | 1.44 | 1.55 | .85 | 585 | − 497 | BACK water (− Flow) |
| | | | | | | | | | | .2 | 30 | 40 | .92 | 1.66 | | | ~~15965~~ 15980 | ~~82073~~ | |
| | 1025 | 20.0 | | | | | | | REW | | 1237 | | .90 | | | | ≈16,000 | ≈82,100 | |
| | | 575.0 | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | .85 | | | | | | |
| | | | | | | | | | | | | | | | V = 82,100 / 16,000 = 5.13 ft/sec | | | | |
| | | | | | | | | | | | | | .80 | | | | | | |

.75



Sheet No. 5 of 5 sheets.

GAGE READINGS

Time

9-275-b
(Rev. 9-65)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

WATER RESOURCES DIVISION

# DISCHARGE MEASUREMENT NOTES

Meas. No. _____

Comp. by RDF + JKV

Checked by _____

Sta. No. _____

Brazos River @ Richmond, TX

Date JAN. 3, 19 92 Party R.D. Kleefe + JK Vanzandt

Width 575 ft Area 16,000 ft² Vel. 5.13 ft/sec G. H. 48.46 Disch. 82,100 ft³/sec

Method 2.8 No. secs. 29 G. H. change .02 in 1 hrs. Susp. 100C 1.00

Method coef. Noted Hor. angle coef. Noted Susp. coef. Noted Meter No. W226723

GAGE READINGS

| Time | | Recorder | Inside | Outside |
|---|---|---|---|---|
| 1041 | | | | 48.48 |
| 1042 | (S) | | | 48.48 |
| 1118 | | | | 48.48 |
| 1157 | | | | 48.43 |
| 1237 | (E) | | | (48.43) |
| 1242 | | | | 48.43 |
| | | | | |
| | | | | |
| ~~Weighted~~ M. G. H. | | | | 48.46 |
| G. H. correction | | | | |
| Correct M. G. H. | | | | |

Date rated _____ Used rating for rod _____ susp. Meter 1.00 ft. above bottom of wt. Tags checked _____

Spin before meas. 2'59" after —

Meas. plots _____ % diff. from _____ rating

Wading, cable, ice, boat, upstr., downstr., side bridge _____ feet, mile, above, below gage, and _____

Check-bar, chain found _____ changed to OK at _____

Correct _____

Levels obtained _____

Measurement rated excellent (2%), good (5%), fair (8%), poor (over 8%), based on following conditions: Cross section _____

Flow Flood Measurement Weather clear

Other _____ Air _____ °F@ _____

Gage OK Water _____ °F@ _____

_____ Record removed Yes Intake flushed U

Observer _____

Control Bed + Banks + Vegetation on shoreline

Remarks Flood Measurement

G. H. of zero flow _____ ft.

2 of 5

.75

| Angle coefficient | Dist. from initial point | Width | Distance above water surface | Vertical angle | Observed depth | Air correction | Wet-line depth | Water correction | Vertical depth | Depth of observation | Revolutions | Time in seconds | .80 | VELOCITY At point | VELOCITY Mean in vertical | Adjusted for hor. angle or -------- | Area | Discharge | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 450 | 45 | | | | | LEW ∅ | | 1042 | | | | | | | | | | |
| | | | | | | | | | | | | | .85 | | | | | | |
| .99 | 540 | 95 | 26.0 | | 8.50 | | | | | .8 | 30 | 47 | | 1.41 | 1.40 | 1.39 | 808 | 1123 | |
| | | | | | | | | | | .2 | 25 | 40 | | 1.38 | | | | | |
| .96 | 640 | 80 | 26.0 | | 16.0 | | | | | .8 | 60 | 46 | .90 | 2.86 | 3.04 | 2.92 | 1280 | 3738 | |
| | | | | | | | | | | .2 | 60 | 41 | .92 | 3.21 | | | | | |
| ⊥ | 700 | 37.5 | 26.0 | 8° | 42.0 | .30 | 41.7 | .10 | 41.6 | .8 | 50 | 46 | | 2.39 | 3.80 | | 1560 | 5928 | |
| | | | | | | | | | | .2 | 100 | 42 | .94 | 5.20 | | | | | |
| ⊥ | 715 | 15.0 | 26.0 | 10° | 41.5 | .40 | 41.1 | .20 | 40.9 | .8 | 100 | 43 | .96 | 5.08 | 5.08 | | 614 | 3119 | |
| | | | | | | | | | | .2 | 100 | 43 | .97 | 5.08 | | | | | |
| .98 | 730 | 15.0 | 26.0 | 12° | 45.0 | .60 | 44.4 | .30 | 44.1 | .8 | 150 | 57 | .98 | 5.74 | 5.69 | 5.58 | 662 | 3694 | |
| | | | | | | | | | | .2 | 150 | 58 | .99 | 5.64 | | | 4924 | 17602 | |
| .98 | 745 | 15.0 | 26.0 | 12° | 45.0 | .60 | 44.4 | .30 | 44.1 | .8 | 150 | 55 | | 5.95 | 6.00 | 5.88 | 662 | 3892 | |
| | | | | | | | | | | .2 | 150 | 54 | | 6.06 | | | | | |
| ⊥ | 760 | 12.5 | 26.0 | 22° | 46.0 | 2.00 | 44.0 | 1.10 | 42.9 | .8 | 150 | 51 | 1.00 | 6.41 | 6.54 | | 536 | 3505 | |
| GH = | 48.48 ∅ | 1118 | | | | | | | | .2 | 150 | 49 | | 6.67 | | | | | |
| ⊥ | 770 | 10.0 | 26.0 | 24° | 51.0 | 2.50 | 48.5 | 1.50 | 47.0 | .8 | 150 | 50 | | 6.54 | 6.60 | | 470 | 3102 | |
| | | | | | | | | | | .2 | 150 | 49 | .99 | 6.67 | | | | | |
| .99 | 780 | 10.0 | 26.0 | 24° | 51.0 | 2.50 | 48.5 | 1.50 | 47.0 | .8 | 150 | 50 | .98 | 6.54 | 6.75 | 6.68 | 470 | 3146 | |
| | | | | | | | | | | .2 | 150 | 47 | .97 | 6.96 | | | | | |
| .99 | 790 | 10.0 | 26.0 | 26° | 52.0 | 2.90 | 49.1 | 1.70 ~~1.80~~ | 47.4 ~~47.3~~ | .8 | 150 | 47 | .96 | 6.96 | 6.96 | 6.89 | 473 | 3259 | |
| | | | | | | | | | | .2 | 150 | 47 | .94 | 6.96 | | | | | |
| .98 | 800 | 10.0 | 26.0 | 26° | 53.5 | 2.90 | 50.6 | 1.80 ~~1.90~~ | 48.8 ~~48.7~~ | .8 | 150 | 45 | .92 | 7.26 | 7.52 | 7.37 | 488 | 3589 | |
| | | | | | | | | | | .2 | 150 | 42 | .90 | 7.78 | | | 8022 | 38089 | |
| .97 | 810 | 10.0 | 26.0 | 26° | 54.0 | 2.90 | 51.1 | 1.80 ~~1.90~~ | 49.3 | .8 | 150 | 50 | | 6.54 | 6.82 | 6.62 | 493 | 32564 | |
| | | | | | | | | | 49.0 | .2 | 150 | 46 | | 7.11 | | | 490 | 3342 | |
| .94 | 820 | 10.0 | 26.0 | 28° | 54.5 | 3.40 | 51.1 | 2.20 | ~~48.9~~ | .8 | 150 | 45 | | 7.26 | 7.26 | 6.82 | ~~489~~ | ~~3335~~ | |
| | | | | | | | | | | .2 | 150 | 45 | .85 | 7.26 | | | | 3430 | |
| .96 | 830 | 10.0 | 26.0 | 26° | 55.0 | 2.90 | 52.1 | 1.80 ~~2.60~~ | 50.3 | .8 | 150 | 46 | | 7.11 | 7.11 | 6.82 | 503 | ~~3417~~ | |
| | | | | | | | | | | .2 | 150 | 46 | | 7.11 | | | | 51 | |
| .95 | 840 | 10.0 | 26.0 | 26° | 55.0 | 2.90 | 52.1 | 1.80 ~~2.00~~ | 50.3 | .8 | 150 | 43 | .80 | 7.60 | 7.43 | 7.06 | 503 | 3537 | |
| | | | | | | | | | | .2 | 150 | 45 | | 7.26 | | | 10005 | ~~51635~~ | 51703 |