

RESERVOIR SEDIMENTATION
DATA SUMMARY

Wolf Creek (Lake Cumberland)

18-11

NAME OF RESERVOIR

DATA SHEET NO.

| | | | | | | | | | | | | | | | | |
|--|---|--|---------------------------------|------------------------------------|-----------------------------------|---|--------------------------------|-----------------------|-------------------------------------|---------------------|-----------------------------|--------------------|------------------------|------------|-----------------------------------|--|
| DAM | 1. OWNER Corps of Engrs., U.S. Army | | | 2. RIVER Cumberland | | | 3. STATE Kentucky | | | | | | | | | |
| | 4. SEC. - TWP. - RANGE - | | | 5. NEAREST TOWN Jamestown, Ky. | | | 6. COUNTY Russell | | | | | | | | | |
| | 7. STREAM BED ELEV. 540 | | | 8. TOP OF DAM ELEV. 773 | | | 9. SPILLWAY CREST ELEV. 760(1) | | | | | | | | | |
| RESERVOIR | 10. STORAGE ALLOCATION | | 11. ELEVATION TOP OF POOL | | 12. SURFACE AREA ACRES | | 13. STORAGE ACRE-FEET | | 14. ACCUMULATED ACRE-FEET | | 15. DATE STORAGE BEGAN | | | | | |
| | a. FLOOD CONTROL | | 760.0 | | 63,530 | | 2,094,000 | | 6,089,000 | | August 1950 | | | | | |
| | b. POWER | | 723.0 | | 50,250 | | 2,142,000 | | 3,995,000 | | | | | | | |
| | c. WATER SUPPLY | | | | | | | | | | | | | | | |
| | d. IRRIGATION | | | | | | | | | | 16. DATE NORMAL OPER. BEGAN | | | | | |
| | e. CONSERVATION | | | | | | | | | | | | | | | |
| | f. INACTIVE | | 673.0 | | 35,820 | | 1,853,000 | | 1,853,000 | | Dec. 1950(2) | | | | | |
| WATERSHED | 17. LENGTH OF RESERVOIR 101(3) | | | | MILES | | | | AV. WIDTH OF RESERVOIR 0.66 | | | | MILES | | | |
| | 18. TOTAL DRAINAGE AREA 5789 | | | | SQ. MI. | | | | 22. MEAN ANNUAL PRECIPITATION 49.16 | | | | INCHES | | | |
| | 19. NET SEDIMENT CONTRIBUTING AREA 5690 | | | | SQ. MI. | | | | 23. MEAN ANNUAL RUNOFF 21.64 | | | | INCHES | | | |
| | 20. LENGTH 284 | | MILES | | AV. WIDTH 20.4 | | MILES | | 24. MEAN ANNUAL RUNOFF 6,677,000 | | | | AC.-FT. | | | |
| | 21. MAX. ELEV. 4150 | | MIN. ELEV. 540 | | 25. CLIMATIC CLASSIFICATION Humid | | | | | | | | | | | |
| SURVEY DATA | 26. DATE OF SURVEY | | 27. PERIOD YEARS | | 28. ACCL. YEARS | | 29. TYPE OF SURVEY | | 30. NO. OF RANGES OR CONTOUR INT. | | 31. SURFACE AREA ACRES | | 32. CAPACITY ACRE-FEET | | 33. C/W RATIO AC.-FT. PER SQ. MI. | |
| | 7 Aug 1950 | | 0 | | 0 | | Range | | 19 | | 63,530 | | 6,089,000 | | 1,052 | |
| | 5- 8 June 1963 Incl. | | 12.83 | | 12.83 | | Range (Detailed) | | 35 (4) | | Not Determined | | Not Determined | | Not Determined | |
| | 26. DATE OF SURVEY | | 34. PERIOD ANNUAL PRECIPITATION | | 35. PERIOD WATER INFLOW ACRE-FEET | | | | 36. WATER INFL. TO DATE AC.-FT. | | | | | | | |
| | | | | | a. MEAN ANNUAL | | b. MAX. ANNUAL | | c. PERIOD TOTAL | | a. MEAN ANNUAL | | b. TOTAL TO DATE | | | |
| 8 Aug 1950 7 June 1963 Incl. | | 50.2 | | 6,654,273 | | 8,555,847 | | 85,374,323 | | 6,654,273 | | 85,374,323 | | | | |
| 26. DATE OF SURVEY | | 37. PERIOD SEDIMENT DEPOSITS ACRE-FEET | | | | 38. TOTAL SED. DEPOSITS TO DATE ACRE-FEET | | | | | | | | | | |
| | | a. PERIOD TOTAL | | b. AV. ANNUAL | | c. PER SQ. MI.-YR. | | a. TOTAL TO DATE | | b. AV. ANNUAL | | c. PER SQ. MI.-YR. | | | | |
| <p>Volume of sediment deposit not determined because of insufficient number of original ranges, and insignificant amount of sedimentation indicated by resurvey.</p> | | | | | | | | | | | | | | | | |
| 26. DATE OF SURVEY | | 39. AV. DRY WGT. LBS. PER CU. FT. | | 40. SED. DEP. TONS PER SQ. MI.-YR. | | | | 41. STORAGE LOSS PCT. | | 42. SED. INFLOW PPM | | | | | | |
| | | | | a. PERIOD | | b. TOTAL TO DATE | | a. AV. ANNUAL | | b. TO DATE | | a. PERIOD | | b. TO DATE | | |
| <p>Not Computed</p> | | | | | | | | | | | | | | | | |

| | | | | | | | | | | | | | |
|--------------|----------------|---|--|--|--|--|--|--|--|--|--|--|--|
| 26. | DATE OF SURVEY | 43. DEPTH DESIGNATION RANGE IN FEET ABOVE, AND BELOW, CREST ELEVATION | | | | | | | | | | | |
| | | PERCENT OF TOTAL SEDIMENT LOCATED WITHIN DEPTH DESIGNATION | | | | | | | | | | | |
| Not Computed | | | | | | | | | | | | | |

| | | | | | | | | | | | | | | | |
|--|----------------|---|-------|-------|-------|-------|-------|-------|-------|-------|--------|------|------|------|------|
| 26. | DATE OF SURVEY | 44. REACH DESIGNATION PERCENT OF TOTAL ORIGINAL LENGTH OF RESERVOIR | | | | | | | | | | | | | |
| | | 0-10 | 10-20 | 20-30 | 30-40 | 40-50 | 50-60 | 60-70 | 70-80 | 80-90 | 90-100 | -105 | -110 | -115 | -120 |
| PERCENT OF TOTAL SEDIMENT LOCATED WITHIN REACH DESIGNATION | | | | | | | | | | | | | | | |
| Not Computed | | | | | | | | | | | | | | | |

| 45. RANGE IN RESERVOIR OPERATION | | | | | | | |
|----------------------------------|------------|------------|----------------|------------|------------|------------|----------------|
| WATER YEAR | MAX. ELEV. | MIN. ELEV. | INFLOW AC.-FT. | WATER YEAR | MAX. ELEV. | MIN. ELEV. | INFLOW AC.-FT. |
| 1951 | 729.00 | 590.83 | 7,833,000 | 1958 | 738.60 | 689.96 | 8,182,810 |
| 1952 | 741.32 | 693.24 | 8,555,847 | 1959 | 722.39 | 676.73 | 4,134,909 |
| 1953 | 724.20 | 680.86 | 5,219,729 | 1960 | 723.91 | 692.88 | 7,113,234 |
| 1954 | 715.50 | 674.08 | 3,089,847 | 1961 | 725.34 | 684.63 | 6,437,533 |
| 1955 | 740.50 | 677.87 | 6,442,319 | 1962 | 747.12 | 686.20 | 8,261,206 |
| 1956 | 733.72 | 673.01 | 7,253,344 | 1963 | 740.80 | 686.38 | 5,840,168 |
| 1957 | 734.40 | 683.61 | 7,312,788 | | | | |

| 46. ELEVATION-AREA-CAPACITY DATA | | | | | | | | |
|----------------------------------|--------|----------|-----------|--------|-----------|-----------|--------|-----------|
| ELEVATION | AREA | CAPACITY | ELEVATION | AREA | CAPACITY | ELEVATION | AREA | CAPACITY |
| 545 | 0 | 0 | 620 | 17,210 | 401,000 | 700 | 43,360 | 2,919,000 |
| 550 | 190 | 480 | 630 | 21,450 | 594,000 | 710 | 46,240 | 3,367,000 |
| 560 | 720 | 5,010 | 640 | 25,550 | 829,000 | 720 | 49,310 | 3,845,000 |
| 570 | 1,470 | 15,800 | 650 | 29,380 | 1,104,000 | 730 | 52,450 | 4,354,000 |
| 580 | 2,170 | 34,100 | 660 | 32,080 | 1,411,000 | 740 | 55,940 | 4,896,000 |
| 590 | 5,450 | 72,200 | 670 | 35,020 | 1,747,000 | 750 | 59,560 | 5,473,000 |
| 600 | 8,730 | 143,000 | 680 | 37,680 | 2,110,000 | 760 | 63,530 | 6,089,000 |
| 610 | 12,810 | 251,000 | 690 | 40,400 | 2,501,000 | 770 | 65,660 | 6,735,000 |

47. REMARKS AND REFERENCES

- (1) Spillway crest at elevation 723.0 surmounted by 10 tainter gates, 37 feet high and 50 feet wide.
- (2) Dam closure completed and reservoir available for flood control use.
- (3) Length given is along Cumberland River arm to Cumberland Falls. South Fork arm is 48 miles long.
- (4) 16 Additional new ranges added at time of first resurvey.

48. AGENCY SUPPLYING DATA Department of the Army
Corps of Engineers, Nashville District

49. DATE 27 January 1964

RESERVOIR SEDIMENT
DATA SUMMARY

Wolf Creek (Lake Cumberland)

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS

NAME OF RESERVOIR

18-119
DATA SHEET NO.

| | | | | | | | | | | | | | | | | | | | | |
|--------------------|--|-------------------------------------|---------------------------------|------------------------------------|--|------------------------|----------------------------------|--|------------------------------------|-----------------|-----------------------------|---------------------|----------------------------------|-----------------|-------------------------------------|--|---------|--|--|--|
| DAM | 1. OWNER U.S. Army Corps of Engne. STREAM Cumberland River | | | | 3. STATE Kentucky | | | | | | | | | | | | | | | |
| | 4. SEC. TYP. RANGE | | 5. NEAREST P.O. Jamestown, KY | | 6. COUNTY Russell | | | | | | | | | | | | | | | |
| | 7. LAT. 36° 52' " LONG 85° 08' " | | 8. TOP OF DAM ELEVATION 773 | | 9. SPILLWAY CREST ELEV. 760 ^{1/4} | | | | | | | | | | | | | | | |
| RESERVOIR | 10. STORAGE ALLOCATION | | 11. ELEVATION TOP OF POOL | | 12. ORIGINAL SURFACE AREA, ACRES | | 13. ORIGINAL CAPACITY, ACRE-Feet | | 14. GROSS STORAGE, ACRE-Feet | | 15. DATE STORAGE BEGAN | | | | | | | | | |
| | a. FLOOD CONTROL | | 760.0 | | 63,530 | | 2,094,000 | | 6,089,000 | | Aug 1950 | | | | | | | | | |
| | b. MULTIPLE USE | | | | | | | | | | | | | | | | | | | |
| | c. POWER | | 723.0 | | 50,250 | | 2,142,000 | | 3,995,000 | | | | | | | | | | | |
| | d. WATER SUPPLY | | | | | | | | | | 16. DATE NORMAL OPER. BEGAN | | | | | | | | | |
| | e. IRRIGATION | | | | | | | | | | | | | | | | | | | |
| | f. CONSERVATION | | | | | | | | | | | | | | | | | | | |
| | g. INACTIVE | | 673.0 | | 35,820 | | 1,853,000 | | 1,853,000 | | Dec 1950 ^{2/1} | | | | | | | | | |
| WATERSHED | 17. LENGTH OF RESERVOIR 101 ^{3/4} | | | | MILES, AV. WIDTH OF RESERVOIR | | | | MILES | | | | | | | | | | | |
| | 18. TOTAL DRAINAGE AREA 5,789 | | | | SQ. MI. | | | | 22. MEAN ANNUAL PRECIPITATION 49.1 | | | | INCHES | | | | | | | |
| | 19. NET SEDIMENT CONTRIBUTING AREA 5352 | | | | SQ. MI. | | | | 23. MEAN ANNUAL RUNOFF 21.3 | | | | INCHES | | | | | | | |
| | 20. LENGTH 284 | | | | MILES, AV. WIDTH 20.4 | | | | MILES | | | | 24. MEAN ANNUAL RUNOFF 6,589,000 | | | | AC.-FT. | | | |
| | 21. MAX. ELEV. 4150 | | | | MIN. ELEV. 540 | | | | 25. ANNUAL TEMP: MEAN 55° | | | | RANGE 36° - 74° | | | | | | | |
| SURVEY DATA | 26. DATE OF SURVEY | | 27. PERIOD YEARS | | 28. ACCL. YEARS | | 29. TYPE OF SURVEY | | 30. NO. OF RANGES OR CONTOUR INT. | | 31. SURFACE AREA, ACRES | | 32. CAPACITY, ACRE-Feet | | 33. C/I. RATIO, AC.-FT. PER AC.-FT. | | | | | |
| | Aug 1950 | | 0 | | 0 | | Range | | 19 | | 63,530 | | 6,089,000 | | 0.91 | | | | | |
| | June 1963 | | 12.83 | | 12.83 | | Range (D) | | 33 | | 63,530 | | --Not Determined-- | | | | | | | |
| | Aug 1979 | | 16.17 | | 29.0 | | Range (D) | | 33 | | 63,530 | | --Not Determined-- | | | | | | | |
| | Oct 1986 | | 7.17 | | 36.17 | | Range (D) | | 49 | | 63,530 | | --Not Determined-- | | | | | | | |
| | 26. DATE OF SURVEY | | 34. PERIOD ANNUAL PRECIPITATION | | 35. PERIOD WATER INFLOW, ACRE-Feet | | | | 36. WATER INFL. TO DATE, AC.-FT. | | | | | | | | | | | |
| | | | | | a. MEAN ANNUAL | | b. MAX. ANNUAL | | c. PERIOD TOTAL | | a. MEAN ANNUAL | | b. TOTAL TO DATE | | | | | | | |
| | June 1963 | | 50.2 | | 6,654,273 | | 8,555,847 | | 85,374,373 | | 6,654,273 | | 85,374,323 | | | | | | | |
| | Aug 1979 | | 51.4 | | 6,958,955 | | 10,466,959 | | 112,526,302 | | 6,824,159 | | 197,900,625 | | | | | | | |
| | Oct 1986 | | 45.5 | | 5,621,073 | | 9,532,966 | | 40,303,091 | | 6,585,671 | | 238,203,716 | | | | | | | |
| 26. DATE OF SURVEY | | 37. PERIOD CAPACITY LOSS, ACRE-Feet | | | | | | 38. TOTAL SED. DEPOSITS TO DATE, ACRE-Feet | | | | | | | | | | | | |
| | | a. PERIOD TOTAL | | b. AV. ANNUAL | | c. PER SQ. MI.-YEAR | | a. TOTAL TO DATE | | b. AV. ANNUAL | | c. PER SQ. MI.-YEAR | | | | | | | | |
| June 1963 | | NOT DETERMINED | | | | | | | | | | | | | | | | | | |
| Aug 1979 | | | | | | | | (15,000) ⁴ | | | | | | | | | | | | |
| Oct 1986 | | | | | | | | (23,400) ⁵ | | | | | | | | | | | | |
| 26. DATE OF SURVEY | | 39. AV. DRY WGT., LBS. PER CU. FT. | | 40. SED. DEP. TONS PER SQ. MI.-YR. | | 41. STORAGE LOSS, PCT. | | 42. SED. INFLOW, PPM | | | | | | | | | | | | |
| | | | | a. PERIOD | | b. TOTAL TO DATE | | a. AV. ANN. | | b. TOT. TO DATE | | a. PERIOD | | b. TOT. TO DATE | | | | | | |
| June 1963 | | --- | | ---Not Computed--- | | --- | | --- | | --- | | --- | | --- | | | | | | |
| Aug 1979 | | --- | | ---Not computed--- | | --- | | --- | | --- | | --- | | --- | | | | | | |
| Oct 1986 | | --- | | ---Not Computed--- | | --- | | --- | | --- | | --- | | --- | | | | | | |

| 26. DATE OF SURVEY | 43. DEPTH DESIGNATION RANGE IN FEET BELOW AND ABOVE CREST ELEVATION | | | | | | | | | | | | | | |
|--------------------|---|-------|-------|-------|-------|----------|-------|-------|-------|--------|-------|-------|-------|-------|-------|
| | PERCENT OF TOTAL SEDIMENT LOCATED WITHIN DEPTH DESIGNATION | | | | | | | | | | | | | | |
| | 0-10 | 10-20 | 20-30 | 30-40 | 40-50 | 50-60 | 60-70 | 70-80 | 80-90 | 90-100 | +105 | +110 | +115 | +120 | +125 |
| June 1963 | ----- | ----- | ----- | ----- | Not | Computed | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- |
| Aug 1979 | ----- | ----- | ----- | ----- | Not | Computed | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- |
| Oct 1986 | ----- | ----- | ----- | ----- | Not | Computed | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- |

| 26. DATE OF SURVEY | 44. REACH DESIGNATION PERCENT OF TOTAL ORIGINAL LENGTH OF RESERVOIR | | | | | | | | | | | | | | |
|--------------------|---|-------|-------|-------|-------|----------|-------|-------|-------|--------|-------|-------|-------|-------|-------|
| | PERCENT OF TOTAL SEDIMENT LOCATED WITHIN REACH DESIGNATION | | | | | | | | | | | | | | |
| | 0-10 | 10-20 | 20-30 | 30-40 | 40-50 | 50-60 | 60-70 | 70-80 | 80-90 | 90-100 | +105 | +110 | +115 | +120 | +125 |
| June 1963 | ----- | ----- | ----- | ----- | Not | Computed | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- |
| Aug 1979 | ----- | ----- | ----- | ----- | Not | Computed | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- |
| Oct 1986 | ----- | ----- | ----- | ----- | Not | Computed | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- |

| 45. RANGE IN RESERVOIR OPERATION | | | | | | | |
|----------------------------------|------------|------------|-----------------|------------|------------|------------|-----------------|
| WATER YEAR | MAX. ELEV. | MIN. ELEV. | INFLOW, AC.-FT. | WATER YEAR | MAX. ELEV. | MIN. ELEV. | INFLOW, AC.-FT. |
| SEE ATTACHMENT 1 | | | | | | | |

| 46. ELEVATION-AREA-CAPACITY DATA | | | | | | | | |
|----------------------------------|--------|----------|-----------|--------|-----------|-----------|--------|-----------|
| ELEVATION | AREA | CAPACITY | ELEVATION | AREA | CAPACITY | ELEVATION | AREA | CAPACITY |
| 545 | 0 | 0 | 620 | 17,210 | 401,000 | 700 | 43,360 | 2,919,000 |
| 550 | 190 | 480 | 630 | 21,450 | 594,000 | 710 | 46,240 | 3,367,000 |
| 560 | 720 | 5,010 | 640 | 25,550 | 829,000 | 720 | 49,310 | 3,845,000 |
| 570 | 1,470 | 15,800 | 650 | 29,380 | 1,104,000 | 730 | 52,450 | 4,354,000 |
| 580 | 2,170 | 34,100 | 660 | 32,080 | 1,411,000 | 740 | 55,940 | 4,896,000 |
| 590 | 5,450 | 72,200 | 670 | 35,020 | 1,747,000 | 750 | 59,560 | 5,473,000 |
| 600 | 8,730 | 143,000 | 680 | 37,680 | 2,110,000 | 760 | 63,530 | 6,089,000 |
| 610 | 12,810 | 251,000 | 690 | 40,400 | 2,501,000 | 770 | 65,660 | 6,735,000 |

47. REMARKS AND REFERENCES
- (1) Spillway crest at elevation 723.0 surmounted by 10 tainter gates, 37 feet high and 50 feet wide.
 - (2) Dam closure completed and reservoir available for flood control use.
 - (3) Length given is along Cumberland River to Cumberland Falls. South Fork arm is 48 miles long.
 - (4) Mainstem deposition. Total reservoir volume not determined because of insufficient number of tributary ranges. Sixteen ranges added during survey.
 - (5) Mainstem deposition. Insignificant deposition amount of 1.3 percent of original inactive pool at elevation 673 feet. Insufficient tributary ranges from 1979 survey to determine total deposition. Fifteen ranges added in 1983 to complete reservoir range network. The next survey will be the first resurvey of the complete range network.
48. AGENCY MAKING SURVEY U.S. Army Corps of Engineers 50. DATE November 1988
49. AGENCY SUPPLYING DATA U.S. Army Corps of Engineers

ATTACHMENT 1

Range In Wolf Creek
Reservoir Operation
Water Years 1951-1986

| <u>Water Year</u> | <u>Max. Elev.</u> | <u>Min. Elev.</u> | <u>Inflow Ac. Ft.</u> |
|-------------------|-------------------|-------------------|-----------------------|
| 1951 | 729.00 | 590.83 | 7,833,000 |
| 1952 | 741.32 | 693.24 | 8,555,847 |
| 1953 | 724.20 | 680.86 | 5,219,729 |
| 1954 | 715.50 | 674.08 | 3,089,847 |
| 1955 | 740.50 | 677.87 | 6,442,319 |
| 1956 | 733.72 | 673.01 | 7,253,344 |
| 1957 | 734.40 | 683.61 | 7,312,788 |
| 1958 | 738.60 | 689.96 | 8,182,810 |
| 1959 | 722.39 | 676.73 | 4,134,909 |
| 1960 | 723.91 | 692.88 | 7,113,234 |
| 1961 | 725.34 | 684.63 | 6,437,533 |
| 1962 | 747.12 | 686.20 | 8,261,206 |
| 1963 | 740.80 | 686.38 | 5,840,168 |
| 1964 | 725.96 | 683.92 | 4,220,523 |
| 1965 | 731.91 | 696.12 | 6,474,943 |
| 1966 | 720.55 | 682.33 | 2,994,976 |
| 1967 | 728.76 | 693.13 | 8,087,795 |
| 1968 | 725.86 | 679.50 | 6,464,233 |
| 1969 | 722.11 | 678.88 | 3,658,681 |
| 1970 | 730.17 | 684.72 | 5,594,503 |
| 1971 | 729.15 | 694.24 | 7,941,853 |
| 1972 | 733.14 | 696.85 | 8,388,997 |
| 1973 | 737.73 | 696.98 | 9,743,764 |
| 1974 | 724.70 | 686.90 | 9,374,640 |
| 1975 | 730.00 | 680.45 | 9,478,784 |
| 1976 | 699.56 | 684.00 | 6,440,258 |
| 1977 | 713.15 | 677.80 | 5,062,320 |
| 1978 | 724.90 | 685.50 | 7,996,133 |
| 1979 | 727.25 | 685.10 | 9,768,905 |
| 1980 | 725.35 | 683.00 | 4,218,586 |
| 1981 | 727.24 | 674.95 | 4,487,186 |
| 1982 | 723.44 | 684.50 | 7,093,348 |
| 1983 | 740.50 | 681.94 | 6,766,822 |
| 1984 | 752.00 | 679.50 | 8,889,676 |
| 1985 | 716.20 | 695.00 | 5,253,573 |
| 1986 | 715.90 | 687.00 | 3,578,107 |