

Susitna-Watana Hydroelectric Project Document

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APPENDIX A.
SEDIMENT TRANSPORT DATA AND REGRESSION SUMMARY

**Susitna-Watana Hydroelectric Project
(FERC No. 14241)**

**Development of Sediment Transport Relationships
and an Initial Sediment Balance for the Middle and
Lower Susitna River Segments**

Prepared for

Alaska Energy Authority



Prepared by

Tetra Tech

February 2013

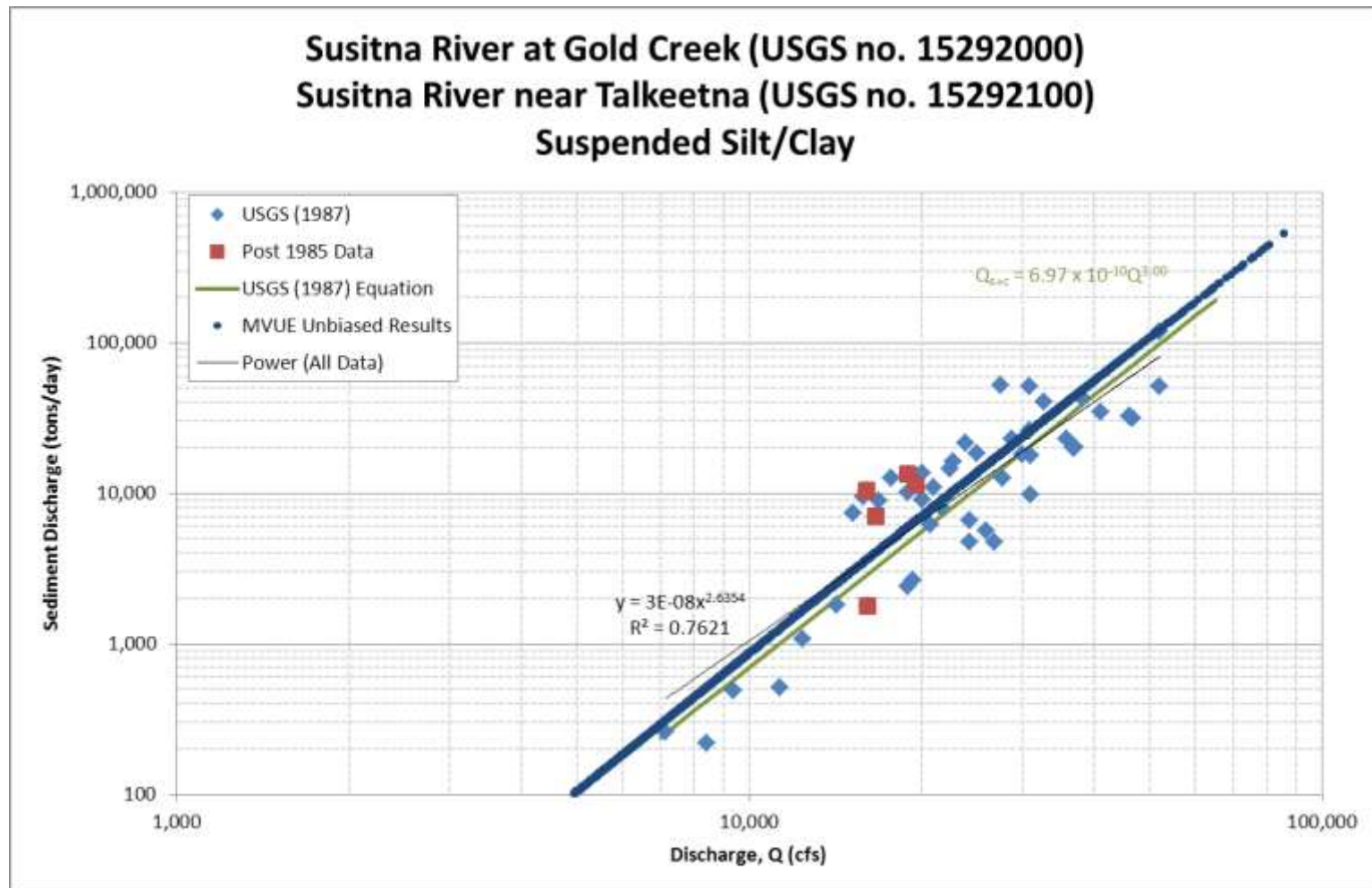


Figure A.1 – Suspended silt/clay sediment transport data and rating equations for Susitna River at Gold Creek and Susitna River near Talkeetna

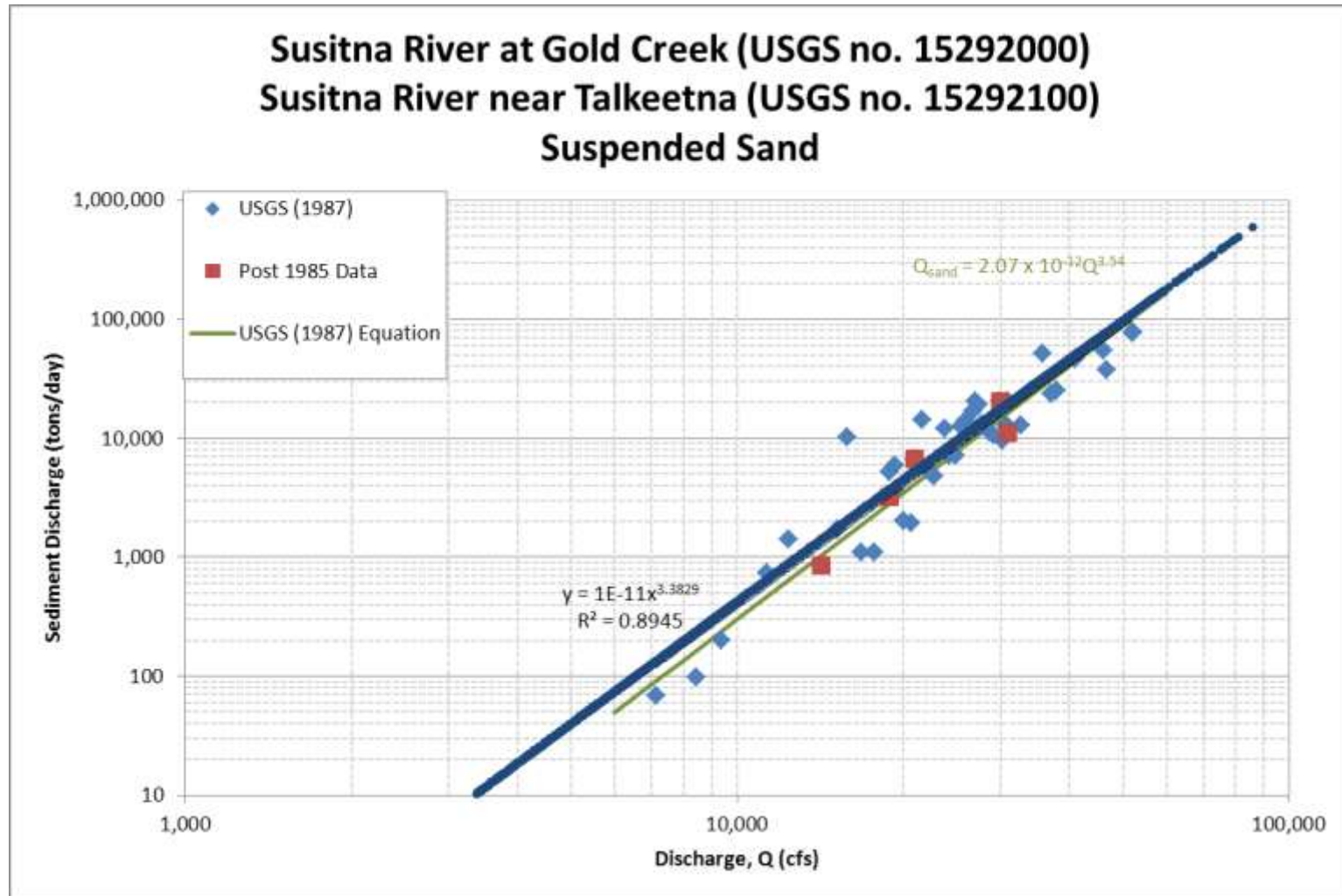


Figure A.2 – Suspended sand sediment transport data and rating equations for Susitna River at Gold Creek and Susitna River near Talkeetna

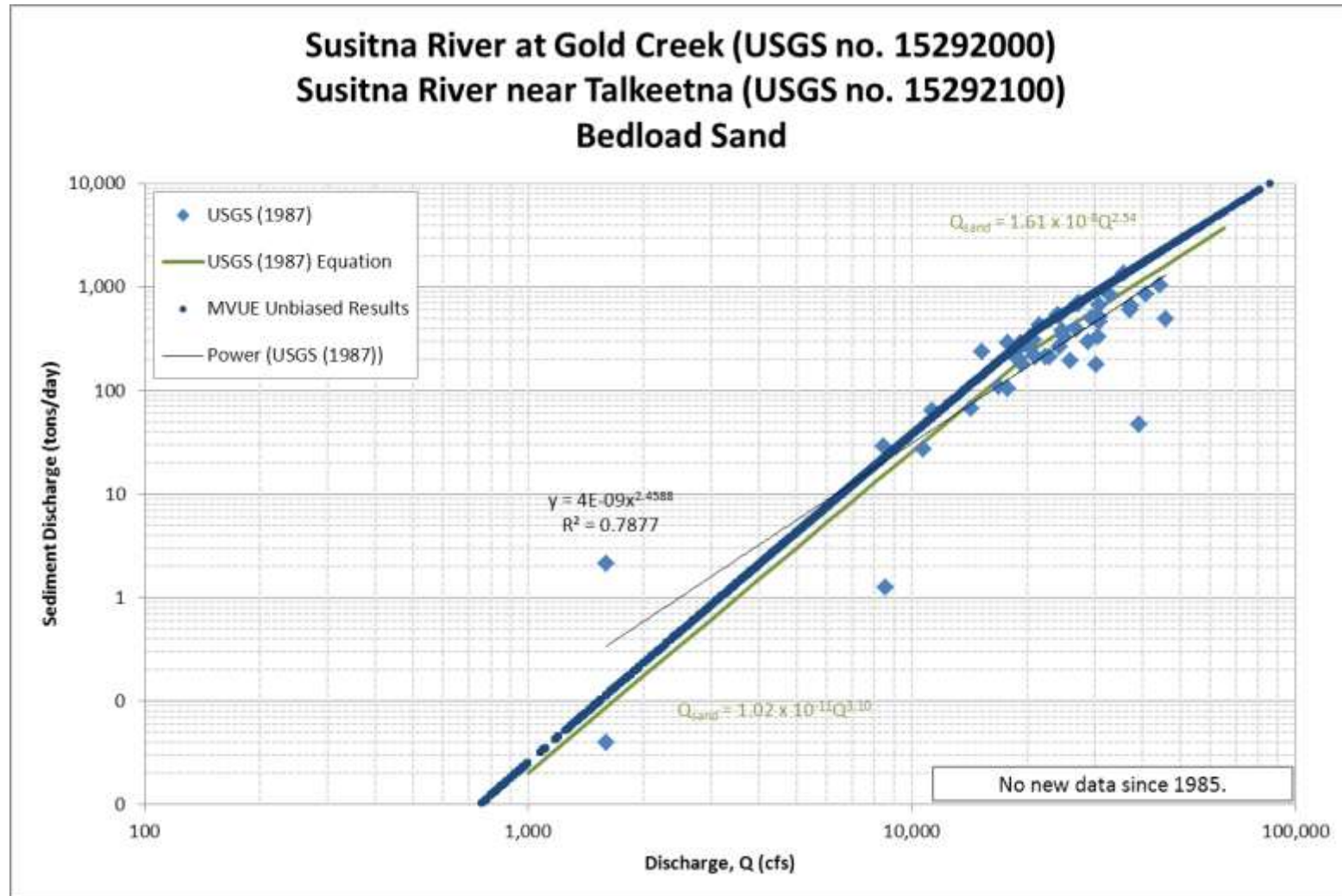


Figure A.3 – Bed-load Sand sediment transport data and rating equations for Susitna River at Gold Creek and Susitna River near Talkeetna

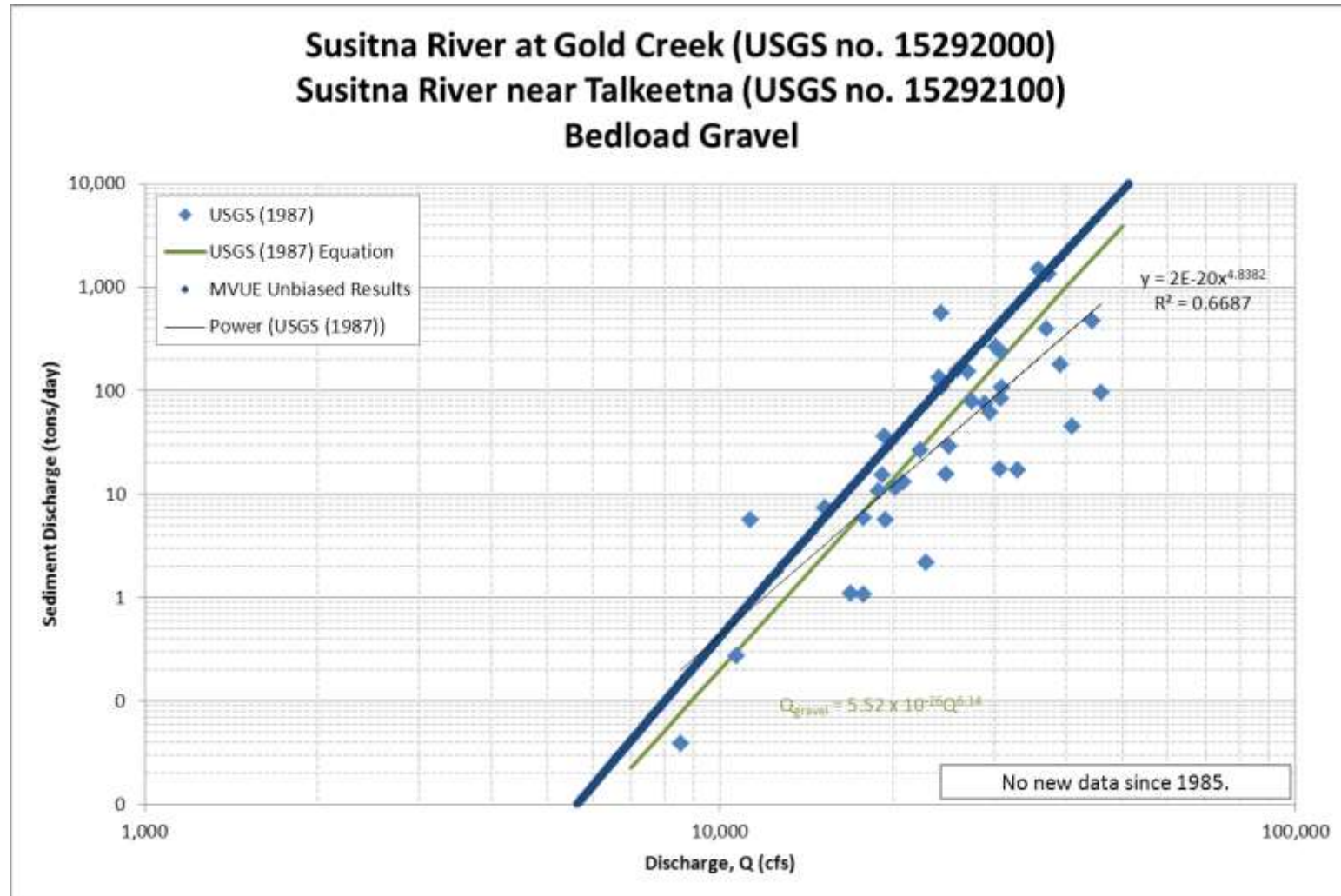


Figure A.4 – Bed-load gravel sediment transport data and rating equations for Susitna River at Gold Creek and Susitna River near Talkeetna

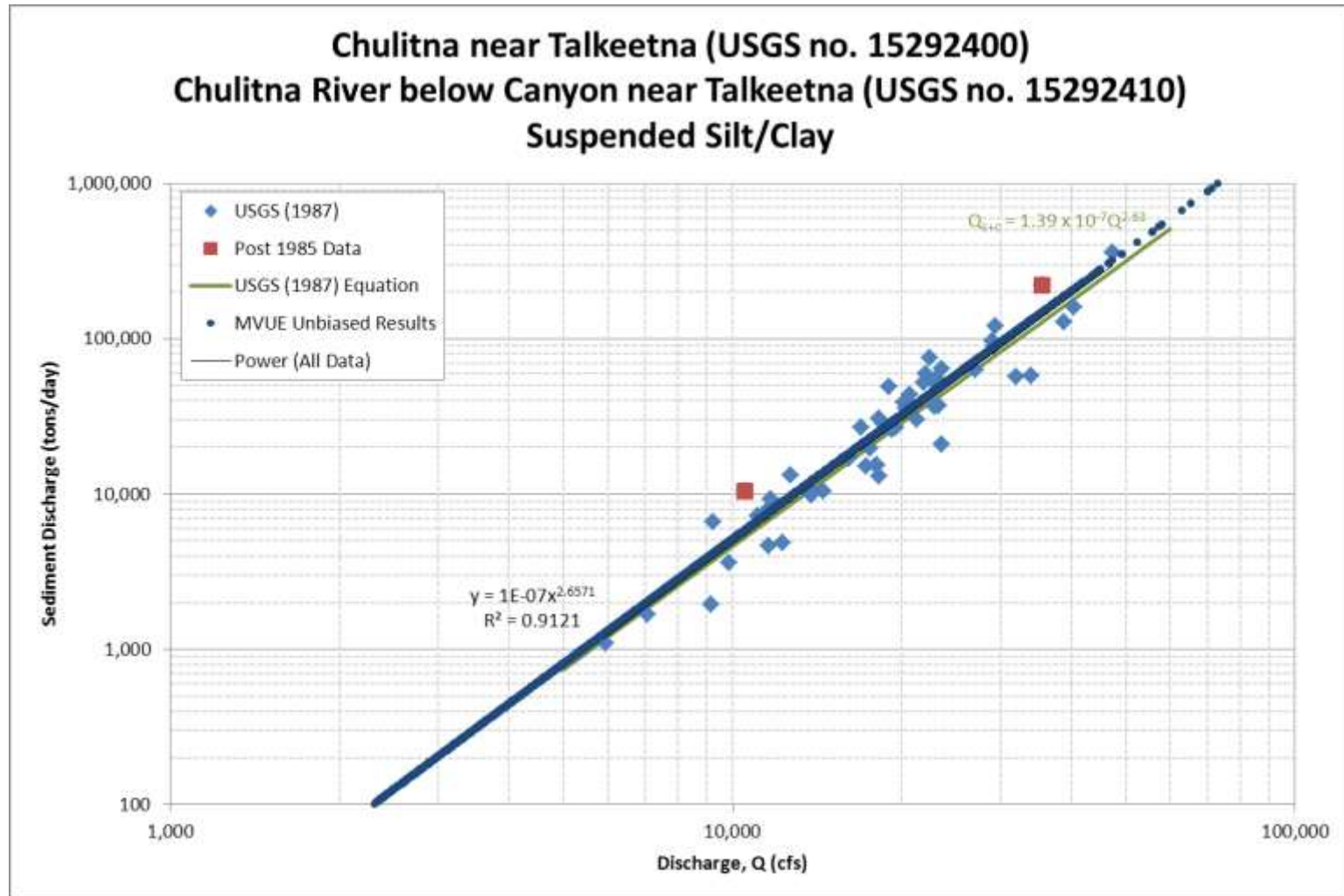


Figure A.5 – Suspended silt/clay sediment transport data and rating equations for Chulitna River near Talkeetna and Chulitna River below Canyon near Talkeetna

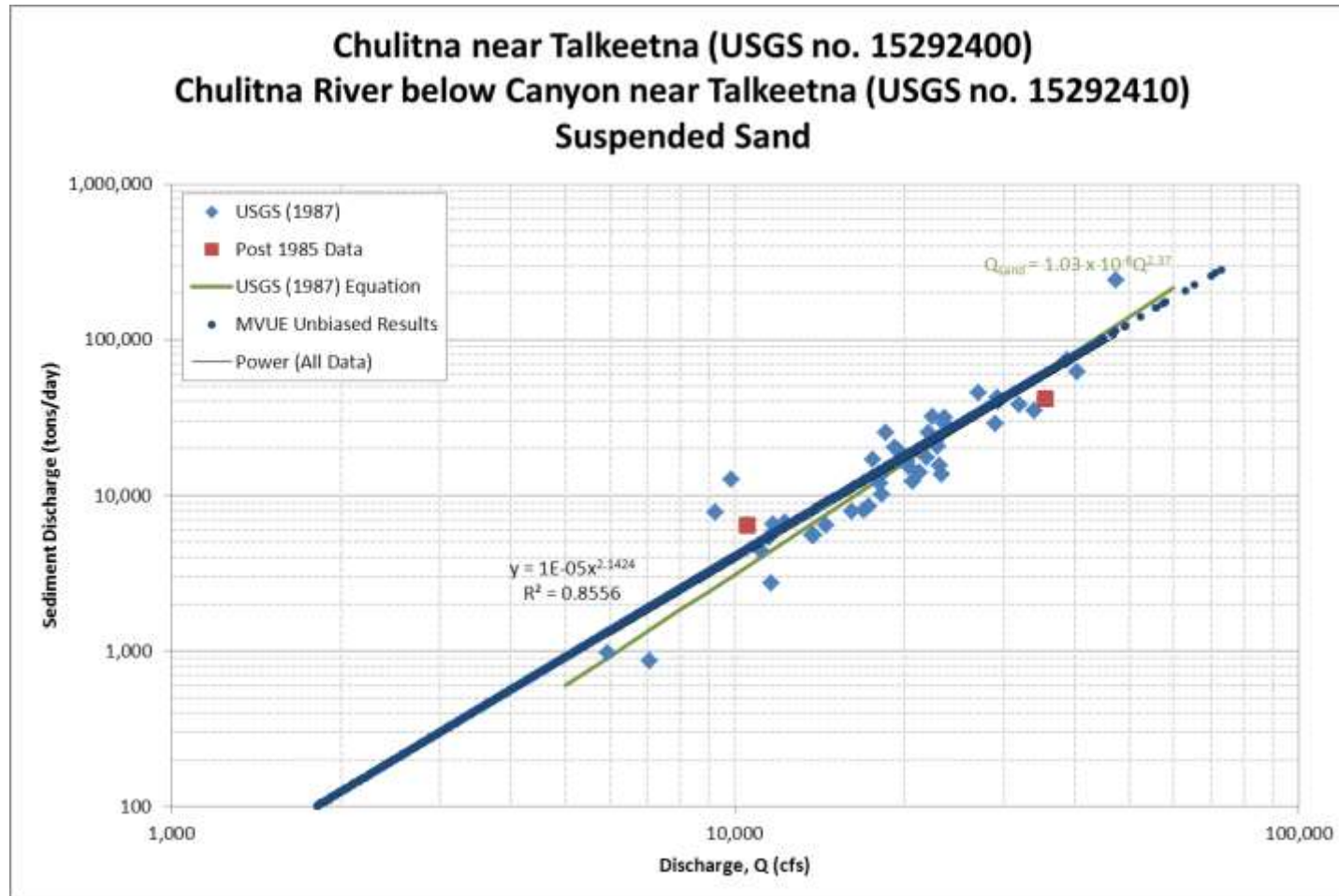


Figure A.6 – Suspended sand sediment transport data and rating equations for Chulitna River near Talkeetna and Chulitna River below Canyon near Talkeetna

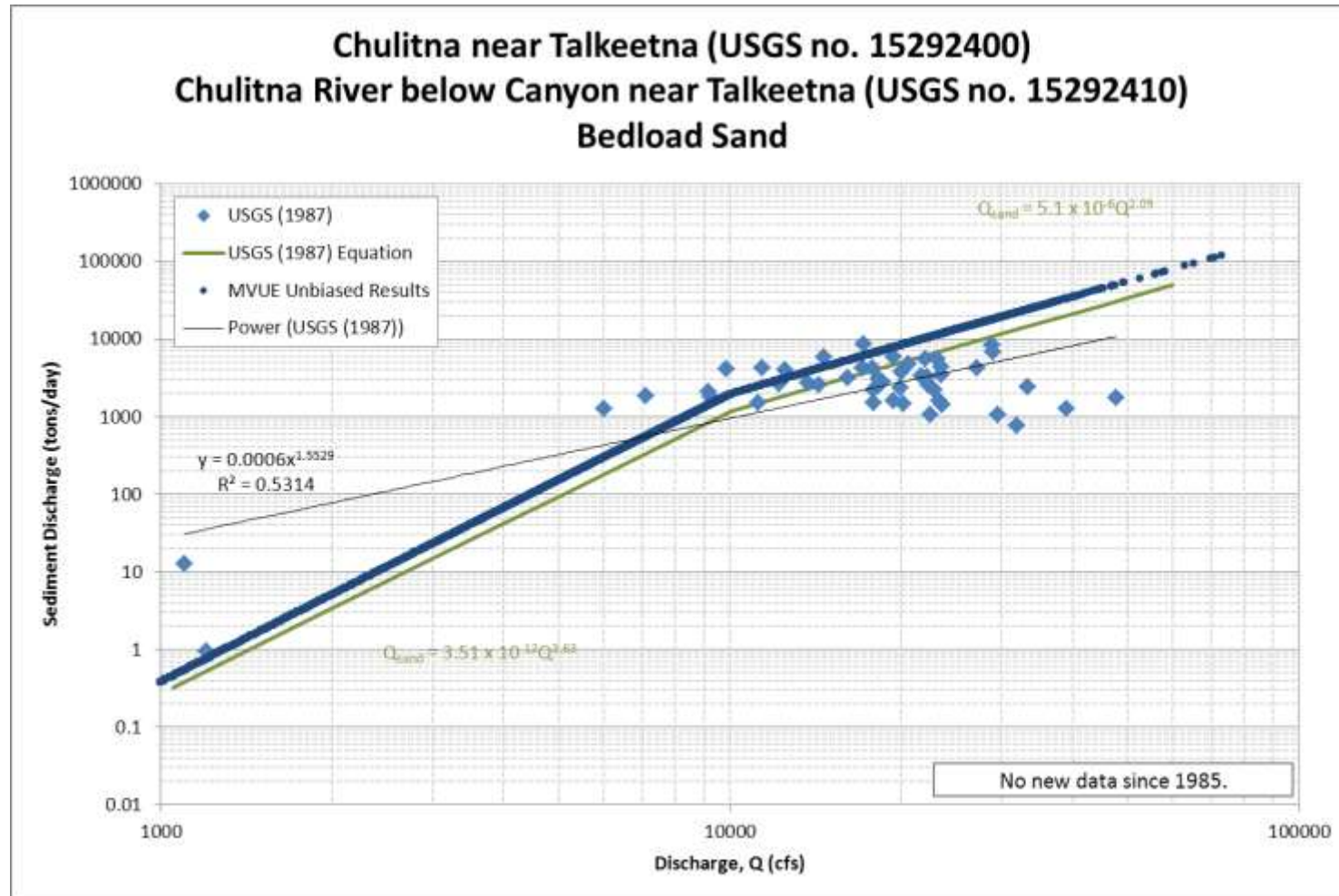


Figure A.7 – Bed-load sand sediment transport data and rating equations for Chulitna River near Talkeetna and Chulitna River below Canyon near Talkeetna

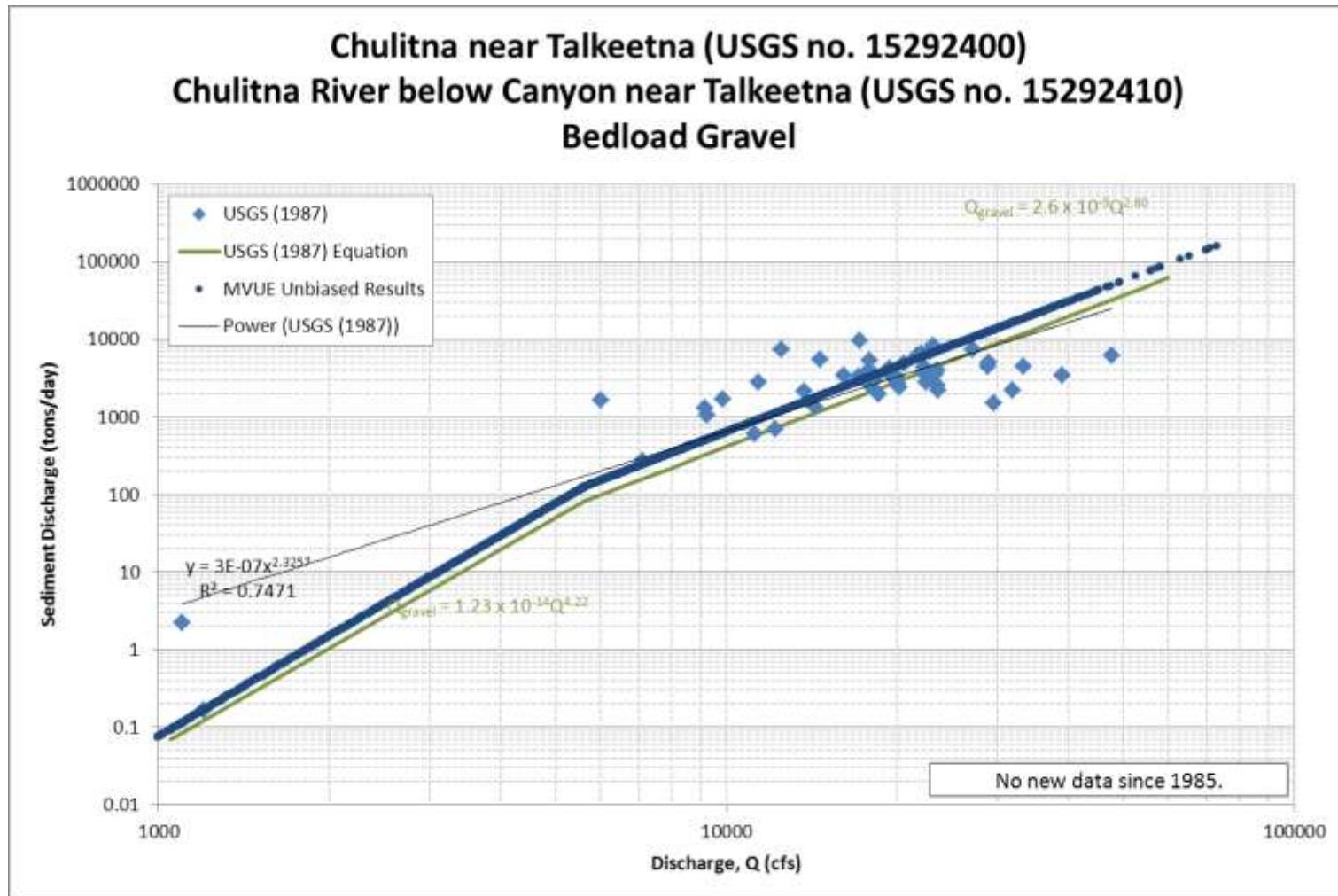


Figure A.8 – Bed-load Gravel sediment transport data and rating equations for Chulitna River near Talkeetna and Chulitna River below Canyon near Talkeetna

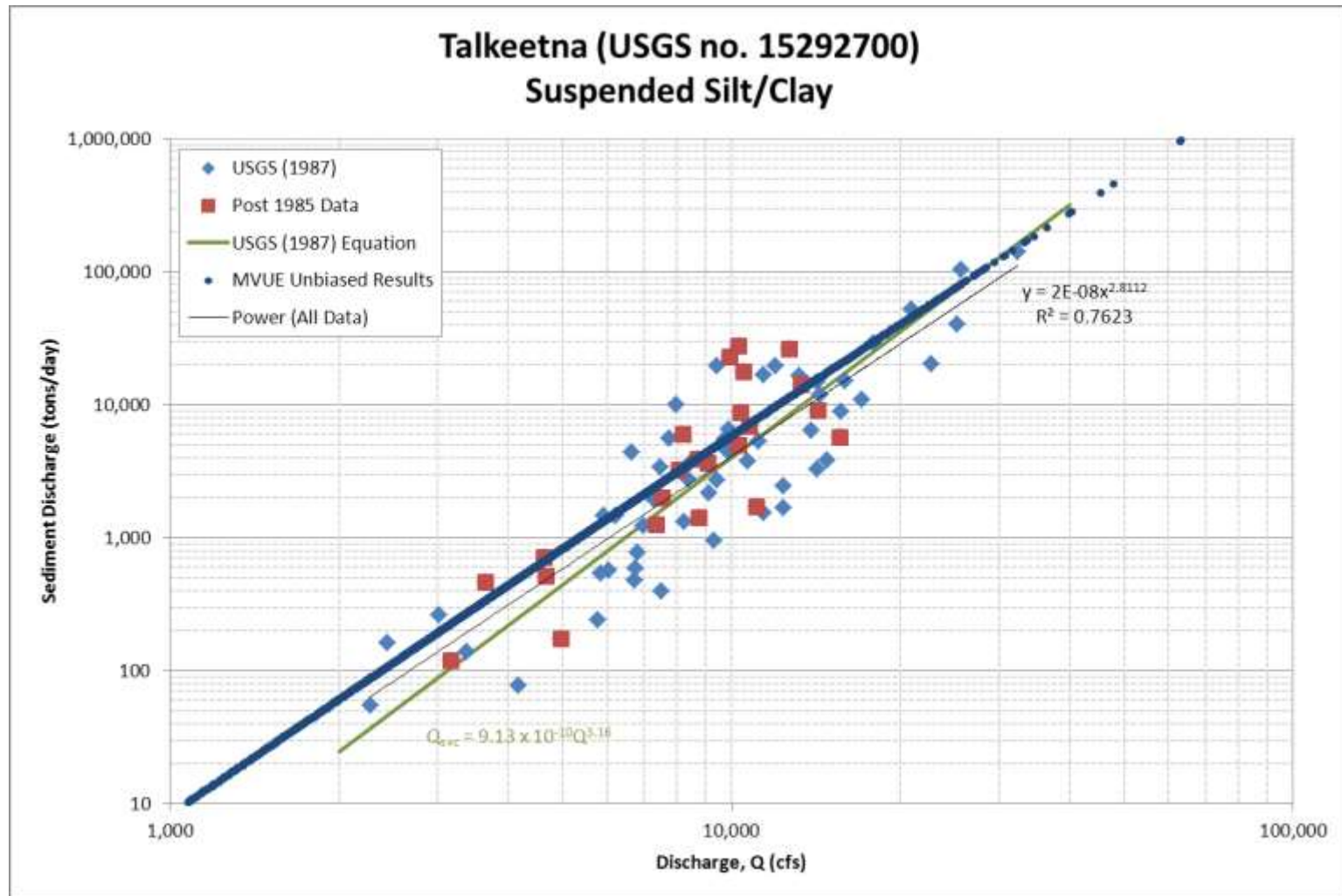


Figure A.9 – Suspended silt/clay sediment transport data and rating equations for Talkeetna River near Talkeetna

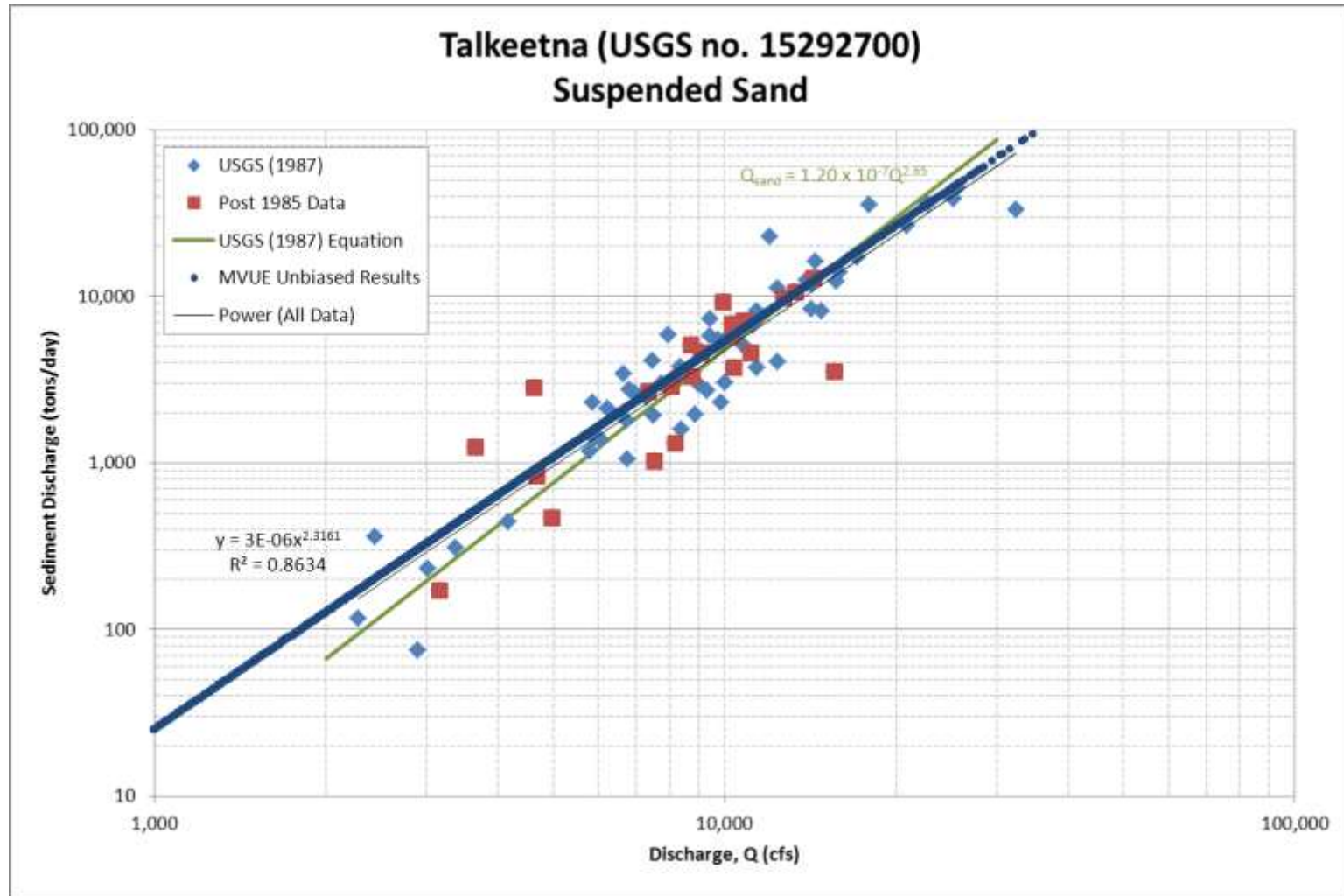


Figure A.10 – Suspended sand sediment transport data and rating equations for Talkeetna River near Talkeetna

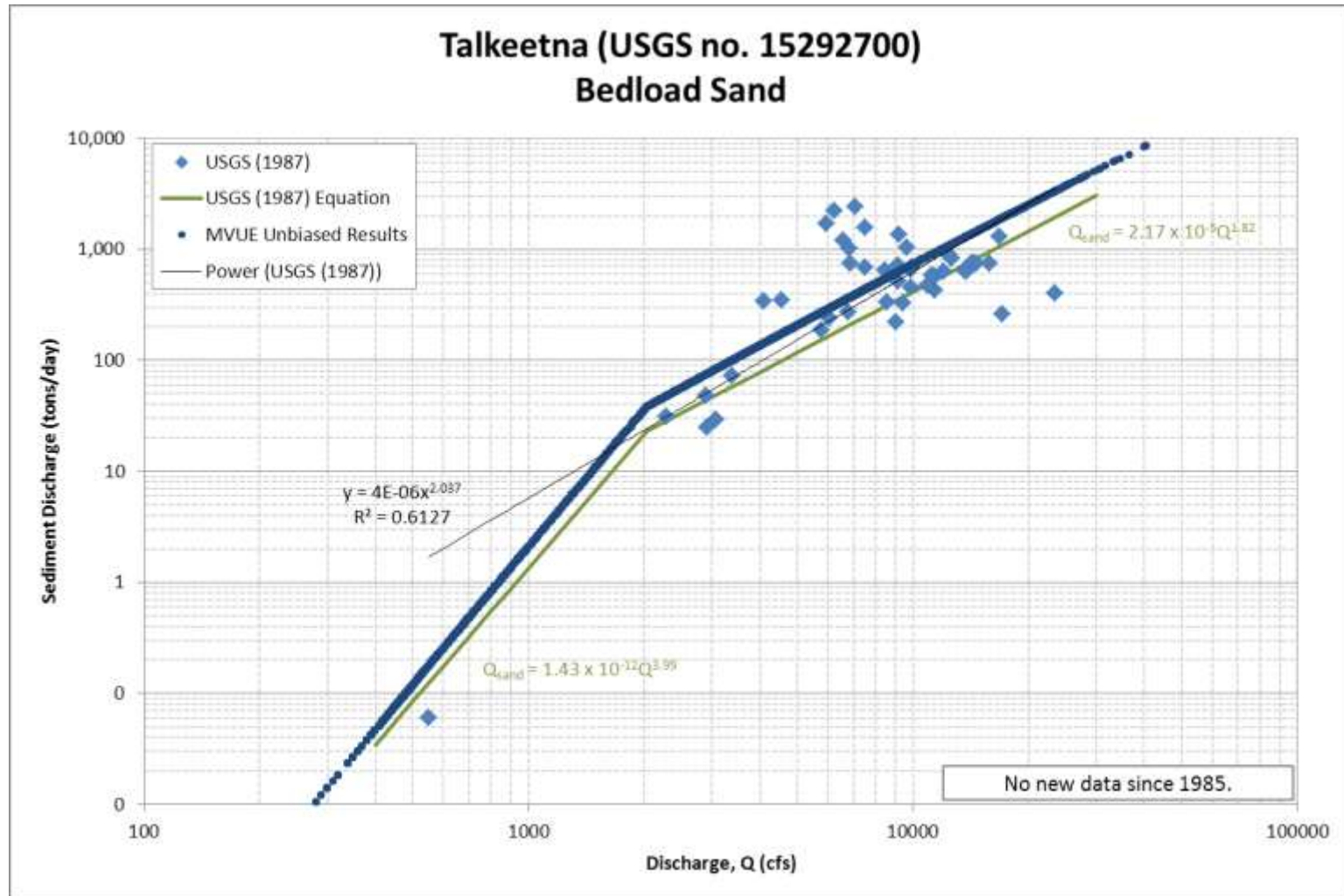


Figure A.11 – Bed-load sand sediment transport data and rating equations for Talkeetna River near Talkeetna

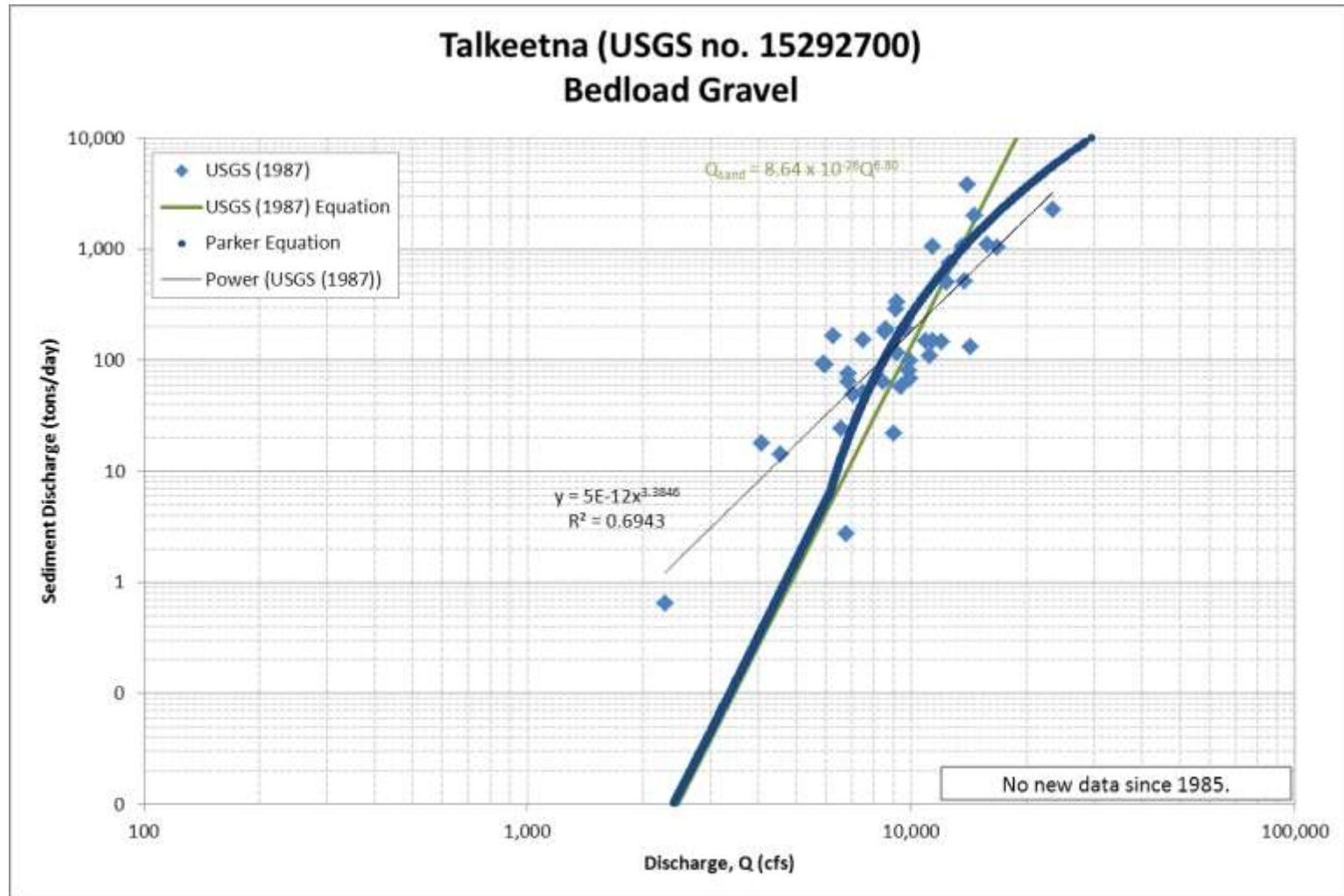


Figure A.12 – Bed-load gravel sediment transport data and rating equations for Talkeetna River near Talkeetna

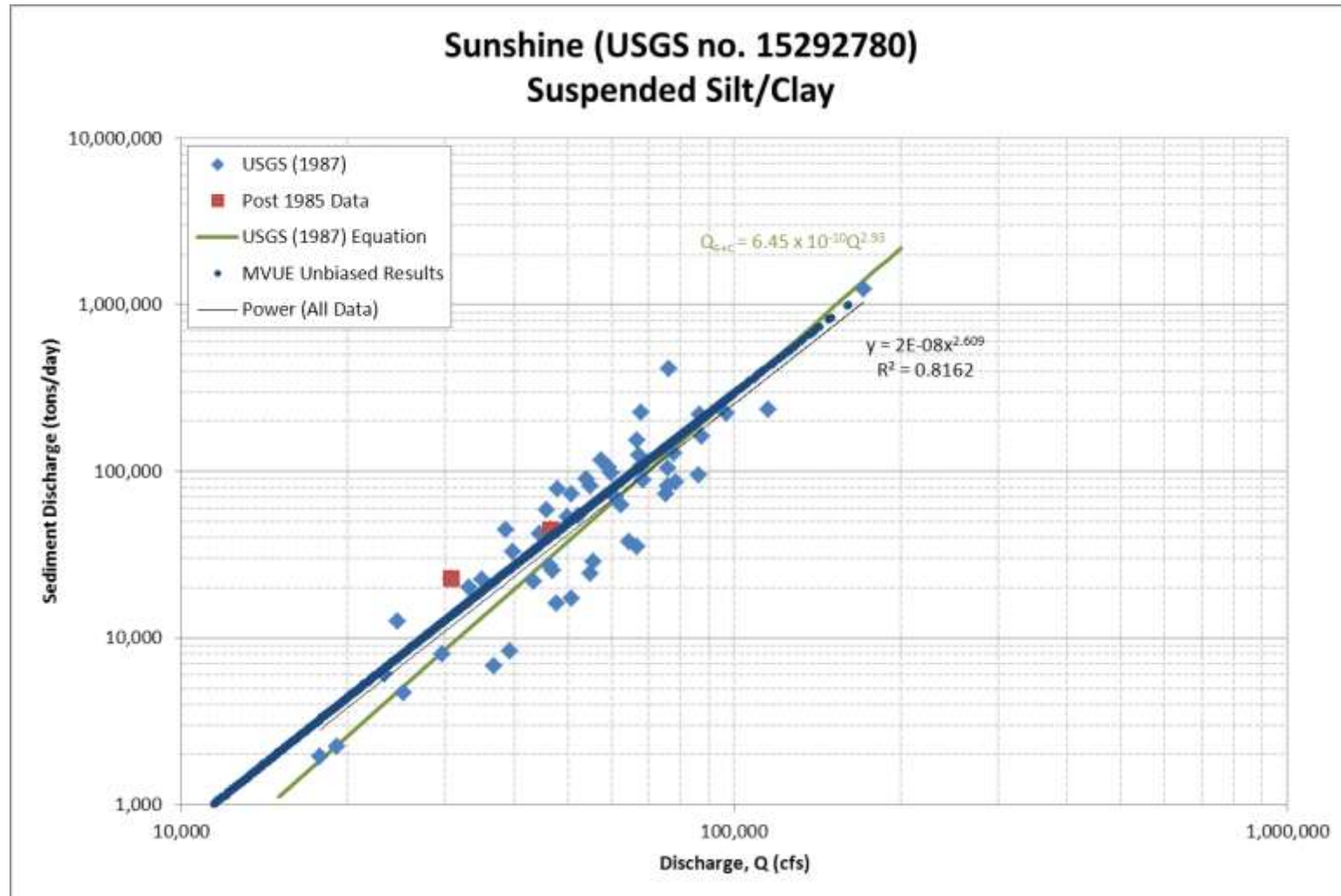


Figure A.13 – Suspended silt/clay sediment transport data and rating equations for Susitna River at Sunshine

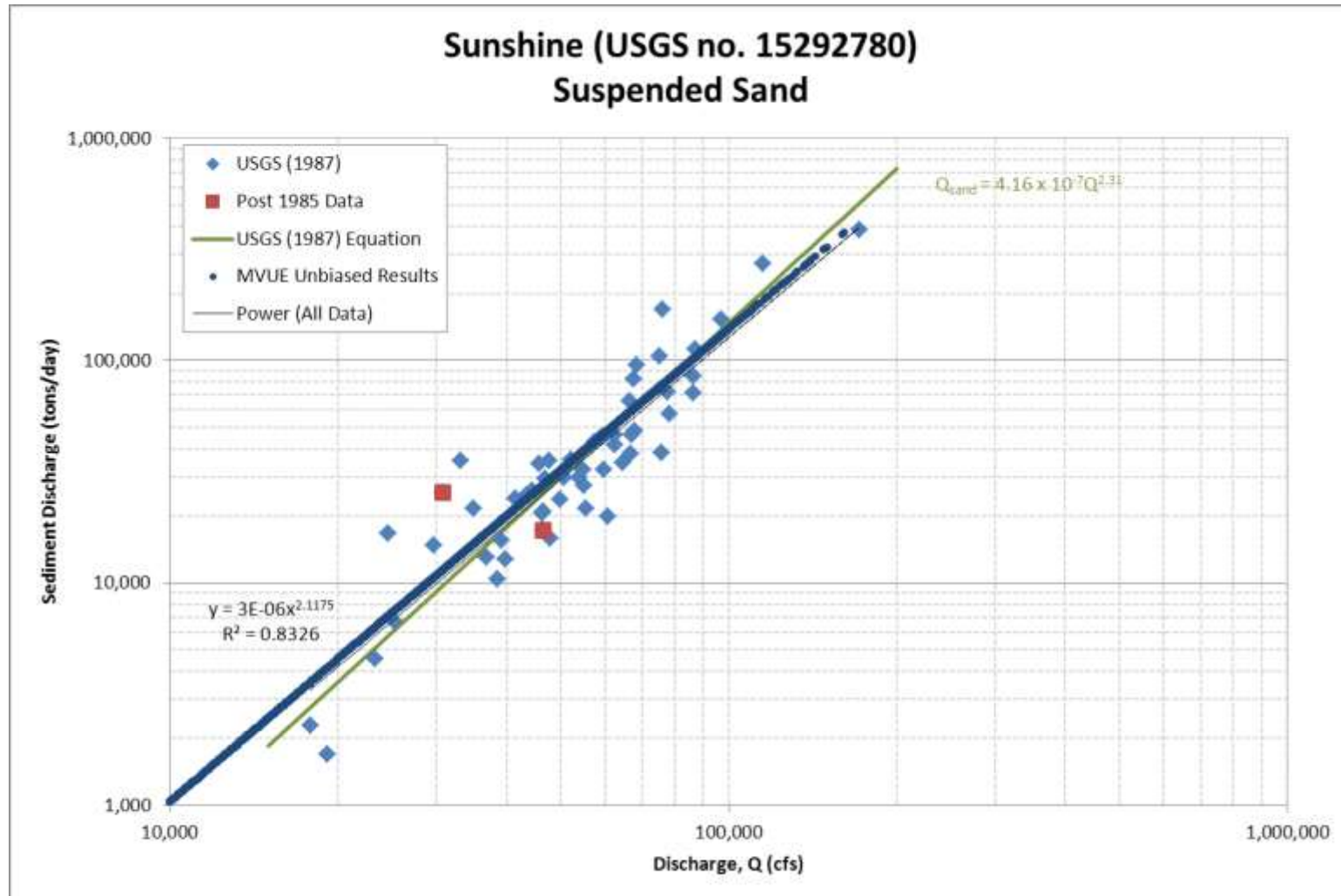


Figure A.14 – Suspended sand sediment transport data and rating equations for Susitna River at Sunshine

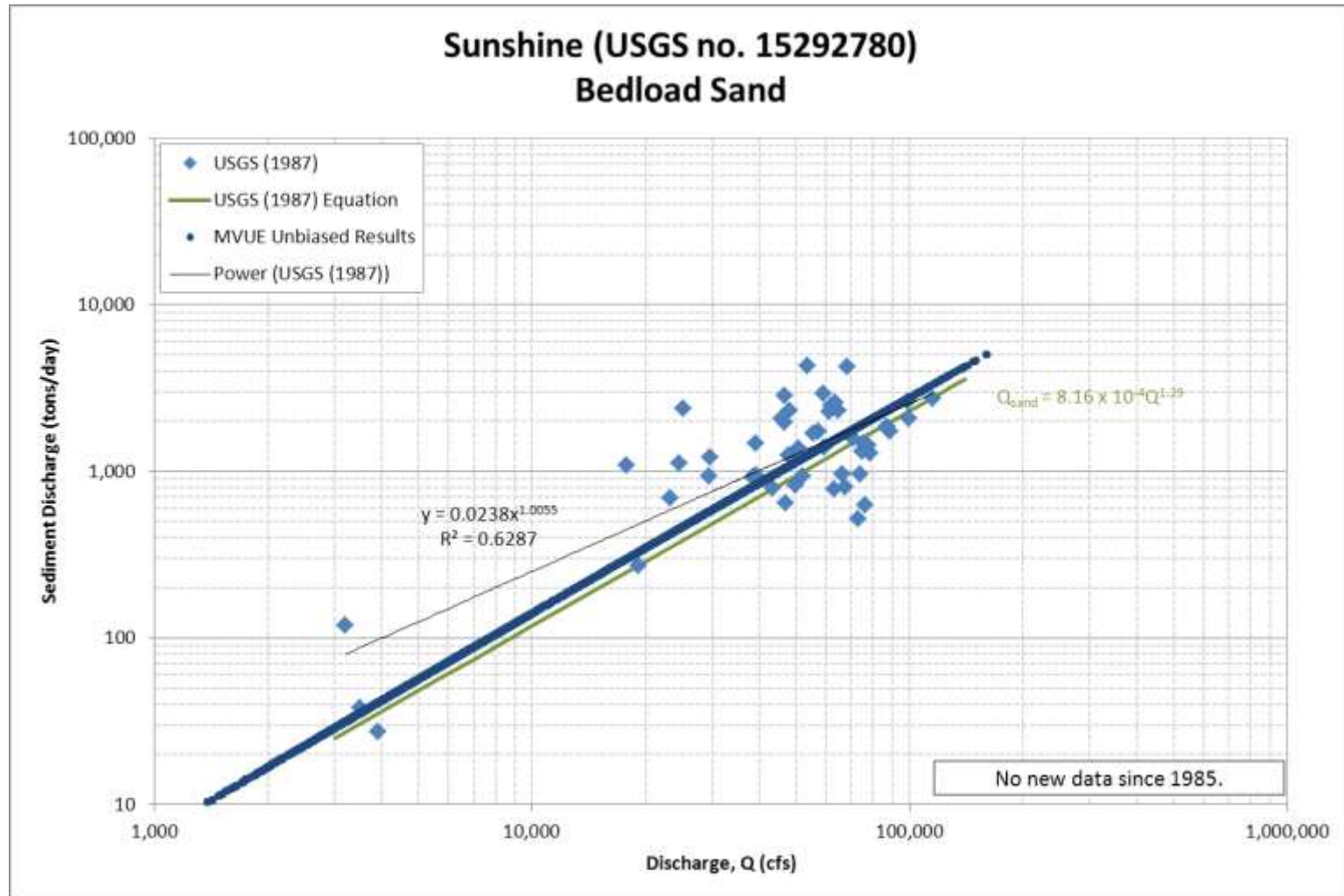


Figure A.15 – Bed-load sand sediment transport data and rating equations for Susitna River at Sunshine

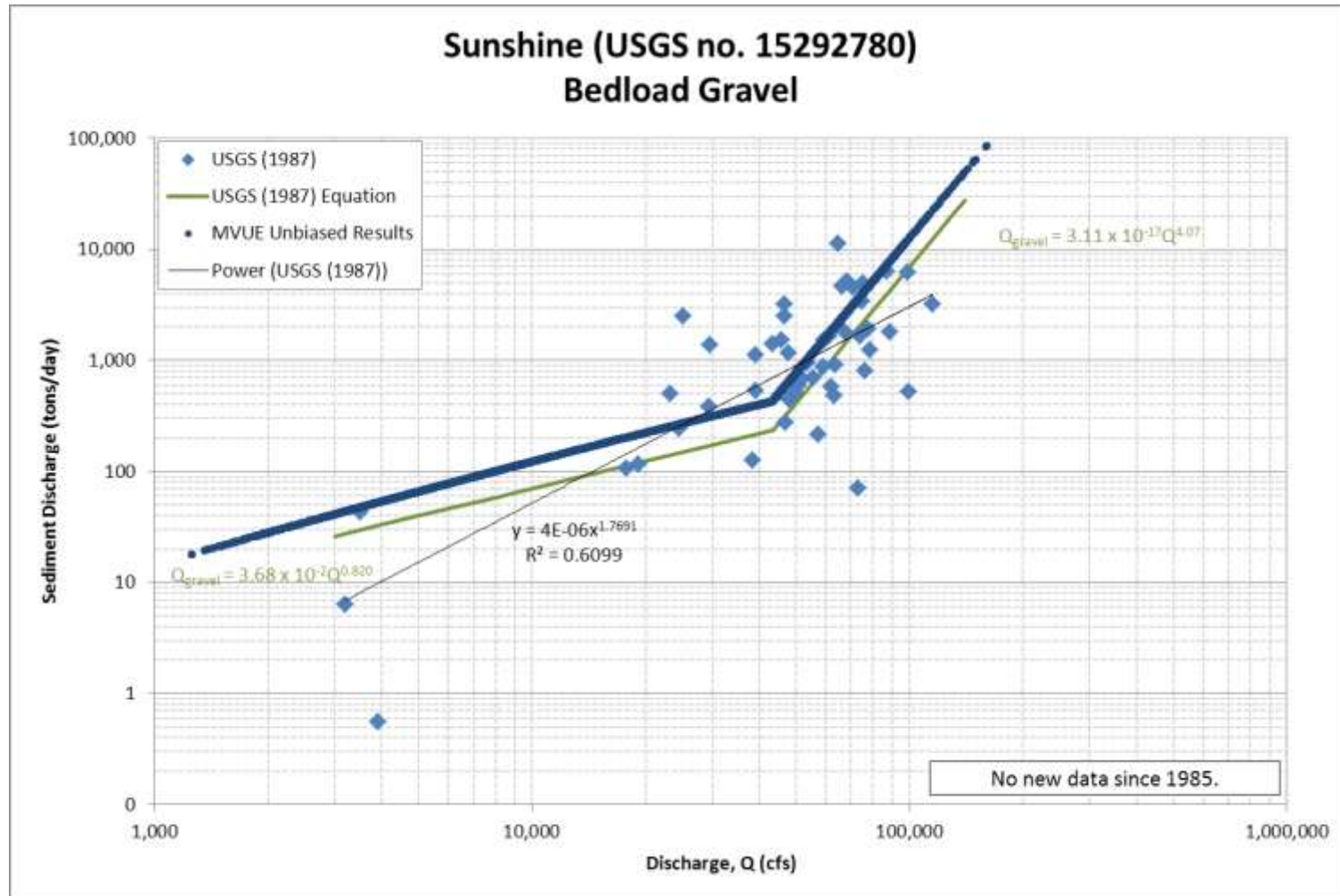


Figure A.16 – Bed-load gravel sediment transport data and rating equations for Susitna River at Sunshine

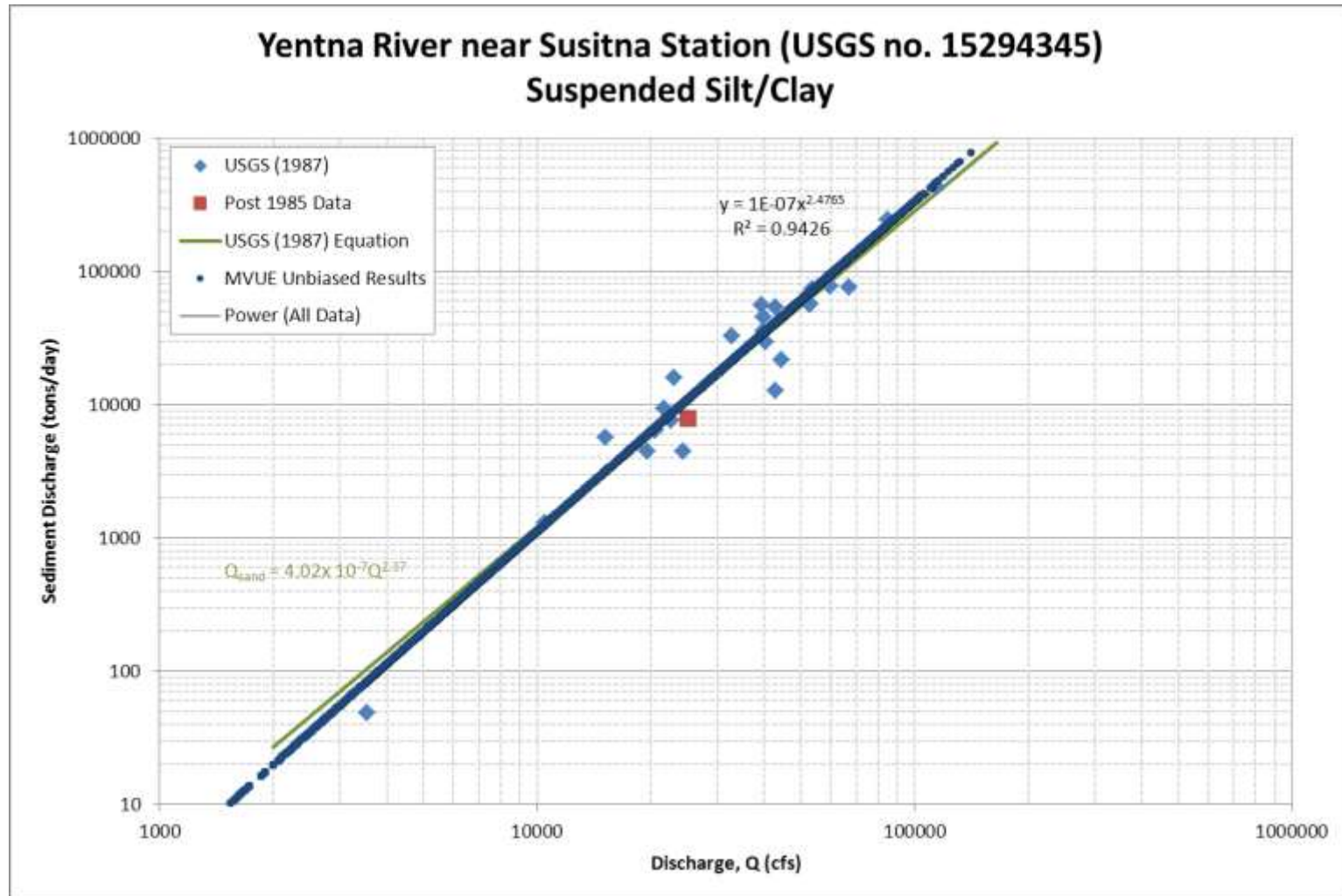


Figure A.17 – Suspended silt/clay sediment transport data and rating equations for Yentna River near Susitna Station

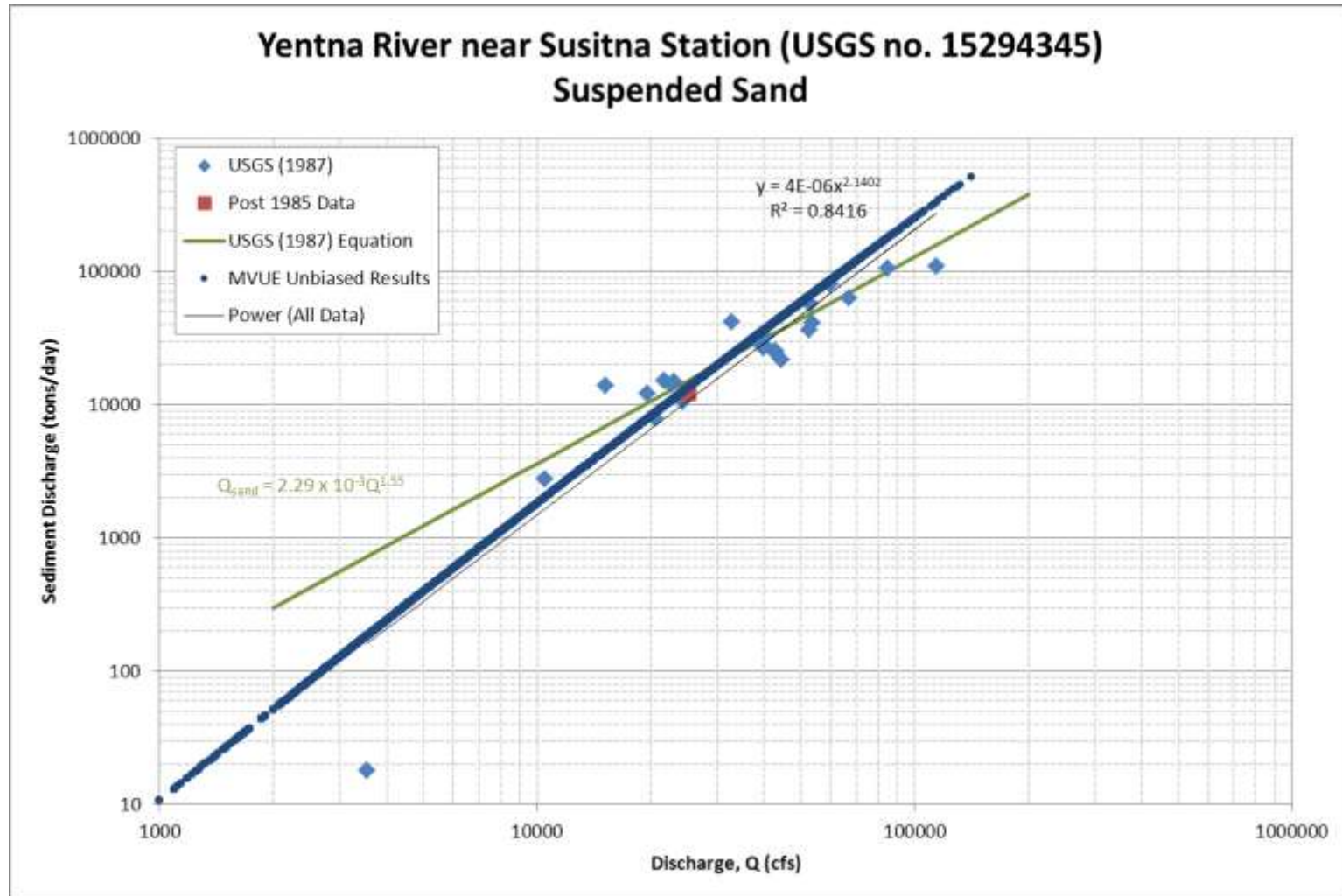


Figure A.18 – Suspended sand sediment transport data and rating equations for Yentna River near Susitna Station

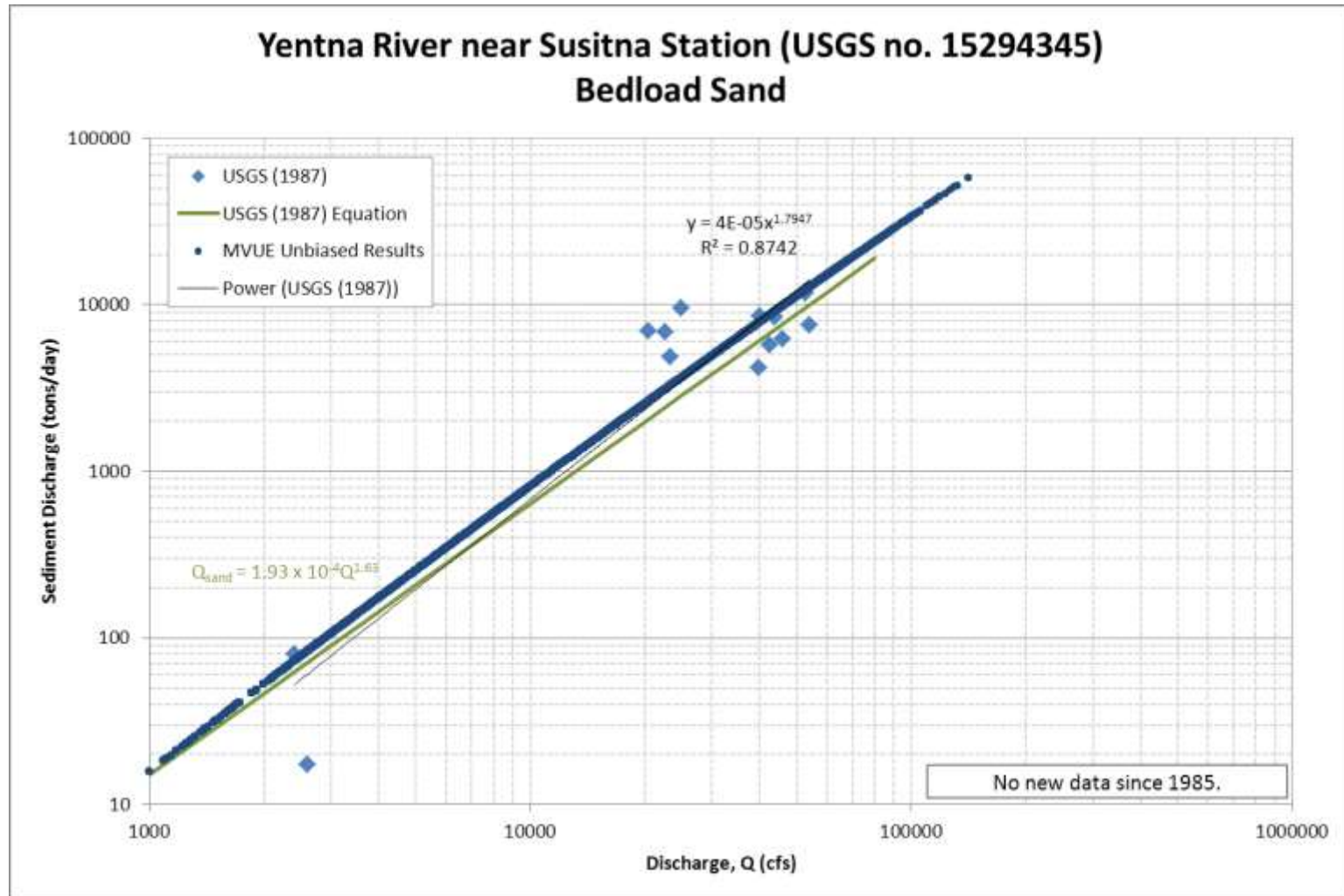


Figure A.19 – Bed-load sand sediment transport data and rating equations for Yentna River near Susitna Station

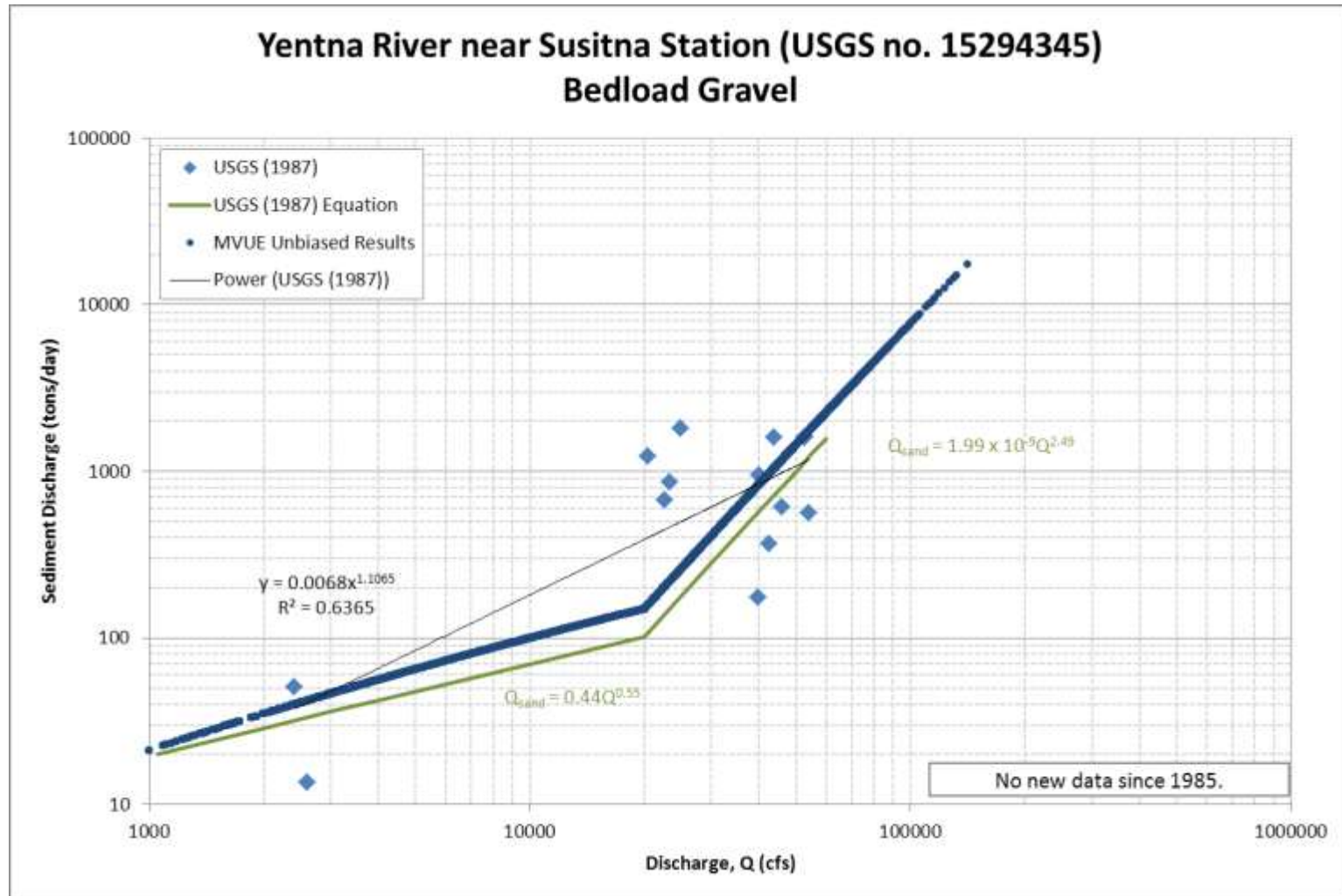


Figure A.20 – Bed-load gravel sediment transport data and rating equations for Yentna River near Susitna Station

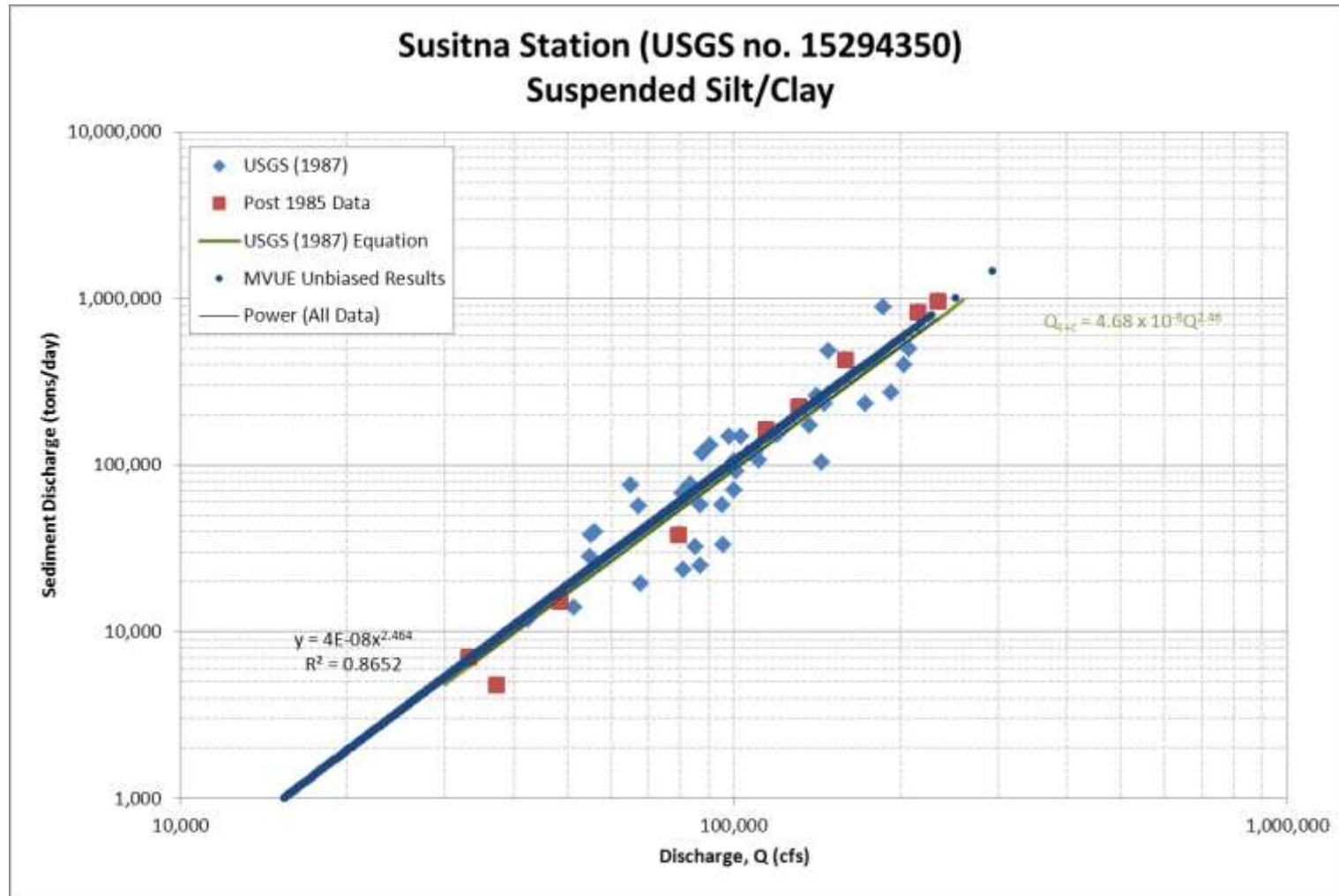


Figure A.21 – Suspended silt/clay sediment transport data and rating equations for Susitna River near Susitna Station

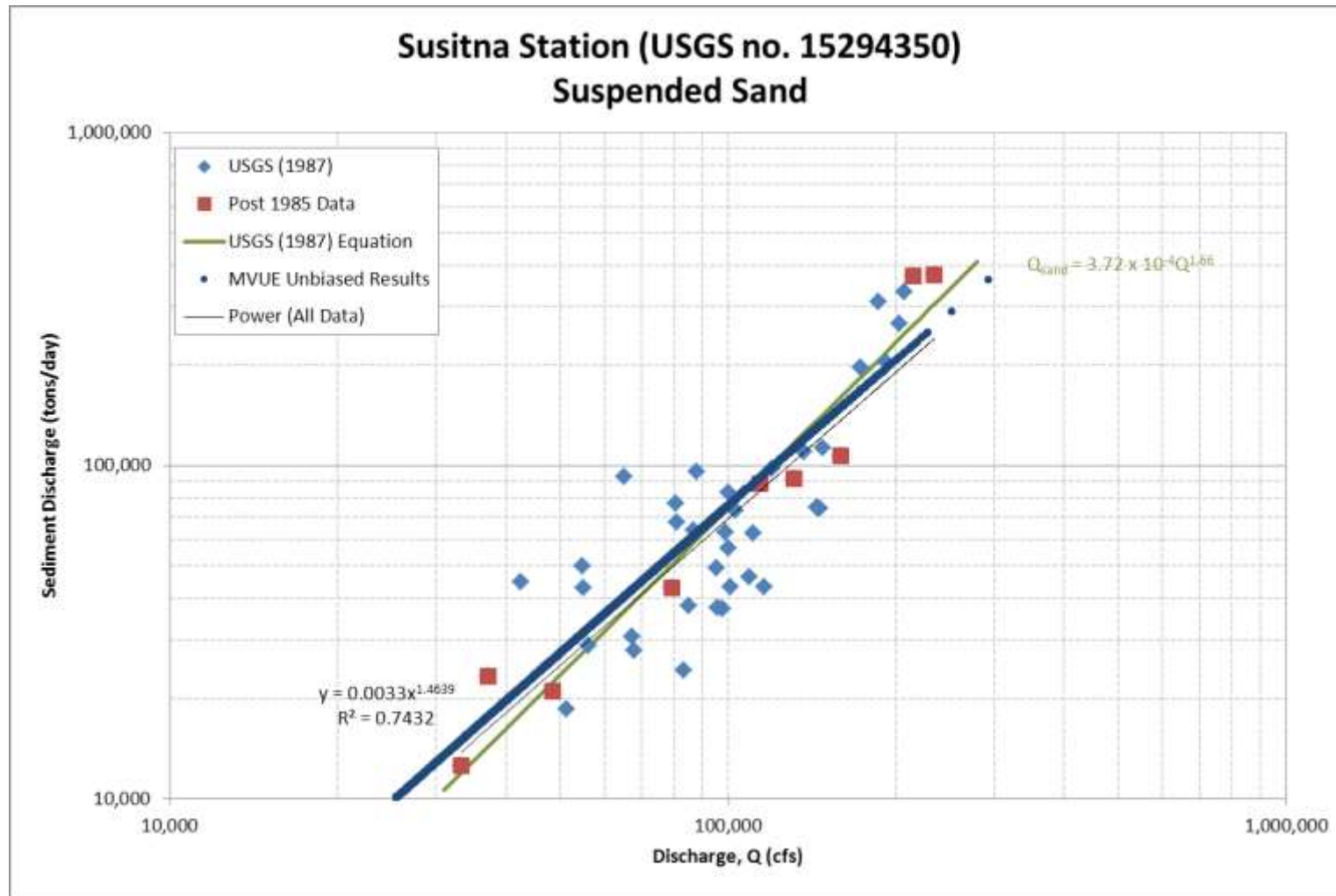


Figure A.22 – Suspended sand sediment transport data and rating equations for Susitna River near Susitna Station

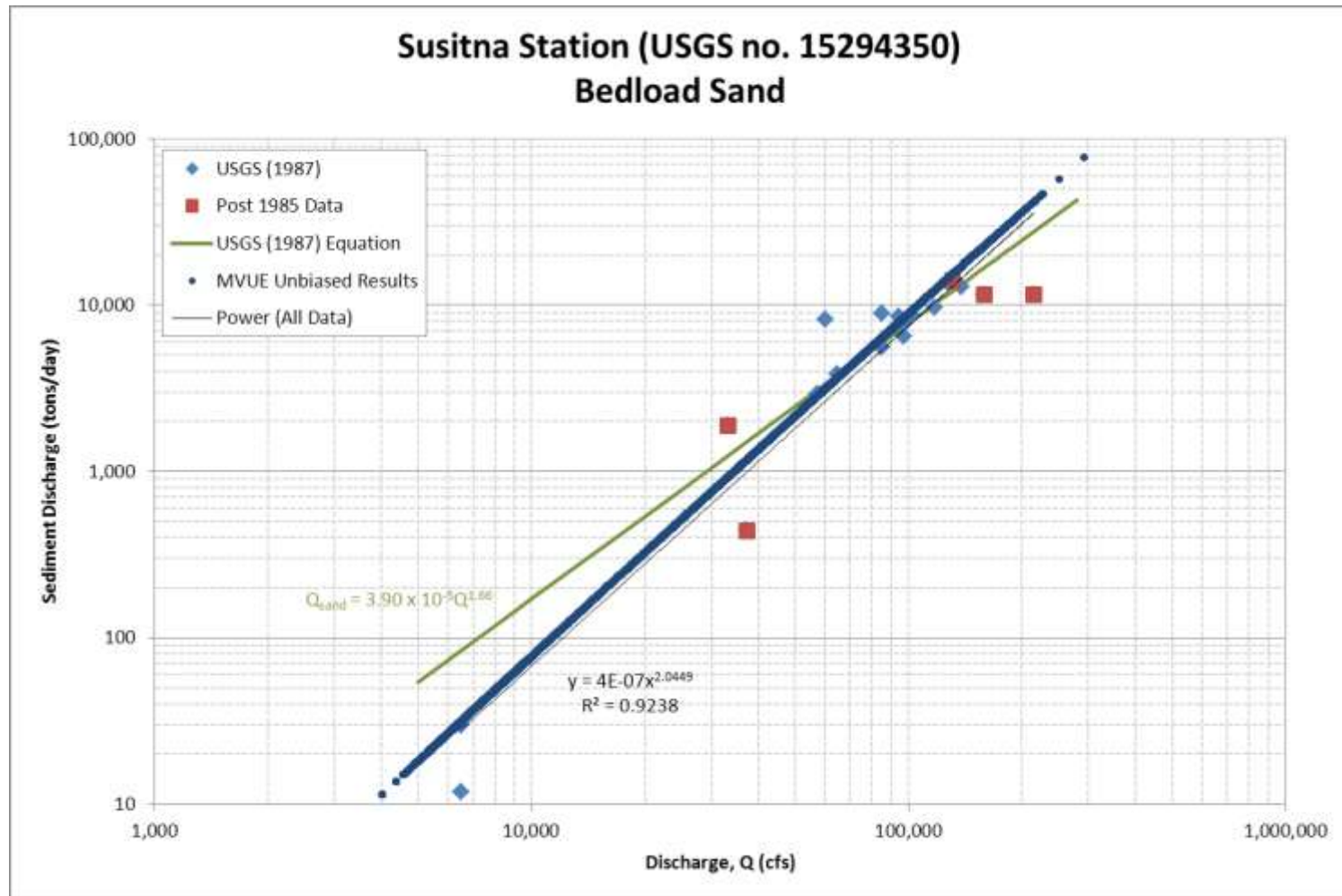


Figure A.23 – Bed-load sand sediment transport data and rating equations for Susitna River near Susitna Station

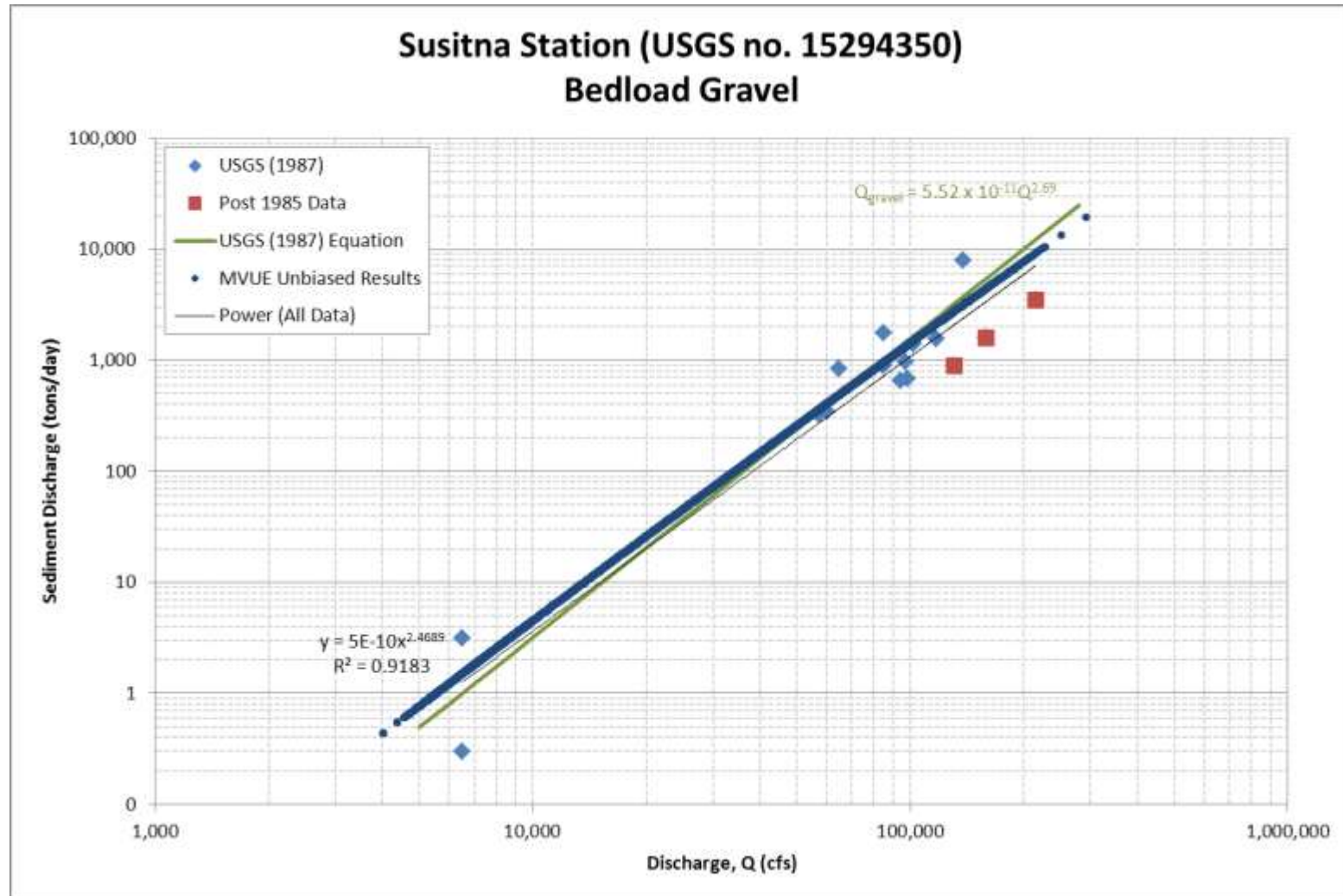


Figure A.24 – Bed-load gravel sediment transport data and rating equations for Susitna River near Susitna Station

APPENDIX B.1. ANNUAL SEDIMENT LOAD TABULAR SUMMARY FOR
PRE-PROJECT CONDITIONS

**Susitna-Watana Hydroelectric Project
(FERC No. 14241)**

**Development of Sediment Transport Relationships
and an Initial Sediment Balance for the Middle and
Lower Susitna River Segments**

Prepared for

Alaska Energy Authority



Prepared by

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February 2013

Table B.1-1 – Annual Sediment Load for Pre-Project Conditions for Susitna River at Gold Creek

Susitna River at Gold Creek - 15292000								
WY	Water Volume (acre-ft)	Suspended Load			Bed Load			Total Load
		Silt/Clay	Sand	Total	Sand	Gravel	Total	
1950	5,810,000	914,000	598,000	1,512,000	38,900	7,520	46,420	1,558,420
1951	6,590,000	1,260,000	845,000	2,105,000	52,900	11,900	64,800	2,169,800
1952	6,920,000	2,070,000	1,550,000	3,620,000	74,200	48,900	123,100	3,743,100
1953	7,310,000	1,450,000	985,000	2,435,000	59,100	17,200	76,300	2,511,300
1954	7,010,000	1,480,000	1,020,000	2,500,000	60,200	19,300	79,500	2,579,500
1955	7,430,000	2,350,000	1,810,000	4,160,000	81,800	79,600	161,400	4,321,400
1956	8,310,000	2,930,000	2,230,000	5,160,000	103,000	81,800	184,800	5,344,800
1957	7,520,000	1,850,000	1,310,000	3,160,000	71,600	30,300	101,900	3,261,900
1958	6,860,000	1,470,000	1,050,000	2,520,000	56,600	29,100	85,700	2,605,700
1959	7,650,000	2,590,000	2,010,000	4,600,000	89,500	103,000	192,500	4,792,500
1960	7,030,000	1,440,000	999,000	2,439,000	56,900	21,600	78,500	2,517,500
1961	7,830,000	1,920,000	1,410,000	3,330,000	71,700	52,100	123,800	3,453,800
1962	8,370,000	3,960,000	3,440,000	7,400,000	118,000	423,000	541,000	7,941,000
1963	8,020,000	2,700,000	2,050,000	4,750,000	95,000	73,100	168,100	4,918,100
1964	7,100,000	5,030,000	4,800,000	9,830,000	127,000	872,000	999,000	10,829,000
1965	7,360,000	1,930,000	1,390,000	3,320,000	73,800	31,900	105,700	3,425,700
1966	6,830,000	1,940,000	1,500,000	3,440,000	67,100	85,400	152,500	3,592,500
1967	8,120,000	3,440,000	2,840,000	6,280,000	110,000	260,000	370,000	6,650,000
1968	7,110,000	1,950,000	1,430,000	3,380,000	71,500	39,100	110,600	3,490,600
1969	4,050,000	337,000	198,000	535,000	15,000	1,150	16,150	551,150
1970	5,500,000	896,000	587,000	1,483,000	37,900	7,230	45,130	1,528,130
1971	7,420,000	3,670,000	3,220,000	6,890,000	107,000	390,000	497,000	7,387,000
1972	7,880,000	2,860,000	2,370,000	5,230,000	91,300	219,000	310,300	5,540,300
1973	5,850,000	1,270,000	919,000	2,189,000	47,400	31,400	78,800	2,267,800
1974	5,520,000	858,000	565,000	1,423,000	35,700	8,170	43,870	1,466,870
1975	7,440,000	2,050,000	1,490,000	3,540,000	76,700	37,500	114,200	3,654,200
1976	5,930,000	967,000	642,000	1,609,000	40,200	9,120	49,320	1,658,320
1977	7,320,000	2,330,000	1,810,000	4,140,000	80,100	83,400	163,500	4,303,500
1978	5,930,000	687,000	425,000	1,112,000	30,900	3,240	34,140	1,146,140
1979	6,870,000	1,630,000	1,160,000	2,790,000	63,000	24,600	87,600	2,877,600

Susitna River at Gold Creek – 15292000 cont.

WY	Water Volume (acre-ft)	Suspended Load			Bed Load			Total Load
		Silt/Clay	Sand	Total	Sand	Gravel	Total	
1980	7,780,000	2,240,000	1,680,000	3,920,000	79,900	57,600	137,500	4,057,500
1981	8,660,000	3,610,000	2,960,000	6,570,000	113,000	188,000	301,000	6,871,000
1982	7,000,000	1,340,000	913,000	2,253,000	54,300	14,800	69,100	2,322,100
1983	7,180,000	1,370,000	924,000	2,294,000	56,200	14,200	70,400	2,364,400
1984	6,950,000	1,470,000	1,050,000	2,520,000	56,900	29,100	86,000	2,606,000
1985	7,150,000	1,720,000	1,230,000	2,950,000	65,800	29,300	95,100	3,045,100
1986	6,180,000	846,000	535,000	1,381,000	37,200	4,920	42,120	1,423,120
1987	7,640,000	1,770,000	1,260,000	3,030,000	68,000	29,300	97,300	3,127,300
1988	7,420,000	1,750,000	1,230,000	2,980,000	68,900	24,200	93,100	3,073,100
1989	7,420,000	1,450,000	986,000	2,436,000	59,300	15,900	75,200	2,511,200
1990	9,420,000	3,180,000	2,400,000	5,580,000	113,000	80,800	193,800	5,773,800
1991	6,180,000	1,040,000	694,000	1,734,000	43,100	10,100	53,200	1,787,200
1992	6,330,000	1,170,000	791,000	1,961,000	48,600	11,200	59,800	2,020,800
1993	7,310,000	1,470,000	998,000	2,468,000	60,200	15,800	76,000	2,544,000
1994	7,210,000	1,550,000	1,110,000	2,660,000	58,500	32,500	91,000	2,751,000
1995	7,450,000	1,570,000	1,080,000	2,650,000	63,000	18,900	81,900	2,731,900
1996	4,940,000	451,000	266,000	717,000	20,200	1,510	21,710	738,710
1997	6,370,000	1,210,000	815,000	2,025,000	50,100	11,700	61,800	2,086,800
1998	6,790,000	1,480,000	1,020,000	2,500,000	60,100	17,000	77,100	2,577,100
1999	6,730,000	1,380,000	962,000	2,342,000	54,500	20,200	74,700	2,416,700
2000	7,430,000	1,920,000	1,390,000	3,310,000	71,100	34,600	105,700	3,415,700
2001	6,910,000	1,590,000	1,130,000	2,720,000	60,800	25,700	86,500	2,806,500
2002	6,140,000	1,040,000	693,000	1,733,000	42,700	10,900	53,600	1,786,600
2003	7,440,000	1,700,000	1,230,000	2,930,000	64,500	35,500	100,000	3,030,000
2004	6,820,000	1,320,000	900,000	2,220,000	54,000	15,600	69,600	2,289,600
2005	8,840,000	2,890,000	2,130,000	5,020,000	107,000	56,400	163,400	5,183,400
2006	7,470,000	2,270,000	1,730,000	4,000,000	80,300	79,000	159,300	4,159,300
2007	6,990,000	1,040,000	662,000	1,702,000	45,300	6,460	51,760	1,753,760
2008	6,460,000	1,010,000	662,000	1,672,000	42,600	8,510	51,110	1,723,110
2009	6,880,000	1,270,000	856,000	2,126,000	51,900	14,600	66,500	2,192,500
2010	7,340,000	1,480,000	1,000,000	2,480,000	60,600	16,600	77,200	2,557,200

Table B.1-2. Annual Sediment Load for Pre-Project Conditions for Chulitna River near Talkeetna

Chulitna River near Talkeetna - 15292400								
WY	Water Volume (acre-ft)	Suspended Load			Bed Load			Total Load
		Silt/Clay	Sand	Total	Sand	Gravel	Total	
1950	5,370,000	3,440,000	1,940,000	5,380,000	885,000	476,000	1,361,000	6,741,000
1951	6,130,000	4,550,000	2,500,000	7,050,000	1,150,000	634,000	1,784,000	8,834,000
1952	5,940,000	5,190,000	2,670,000	7,860,000	1,210,000	736,000	1,946,000	9,806,000
1953	6,690,000	4,910,000	2,700,000	7,610,000	1,240,000	684,000	1,924,000	9,534,000
1954	6,440,000	5,090,000	2,730,000	7,820,000	1,250,000	713,000	1,963,000	9,783,000
1955	6,320,000	5,510,000	2,830,000	8,340,000	1,290,000	781,000	2,071,000	10,411,000
1956	7,110,000	6,980,000	3,520,000	10,500,000	1,600,000	993,000	2,593,000	13,093,000
1957	6,690,000	5,580,000	2,940,000	8,520,000	1,340,000	785,000	2,125,000	10,645,000
1958	6,350,000	5,080,000	2,650,000	7,730,000	1,190,000	719,000	1,909,000	9,639,000
1959	6,060,000	5,540,000	2,780,000	8,320,000	1,260,000	791,000	2,051,000	10,371,000
1960	6,070,000	4,620,000	2,460,000	7,080,000	1,110,000	649,000	1,759,000	8,839,000
1961	6,840,000	6,530,000	3,240,000	9,770,000	1,470,000	935,000	2,405,000	12,175,000
1962	6,380,000	5,850,000	2,930,000	8,780,000	1,320,000	836,000	2,156,000	10,936,000
1963	5,990,000	5,220,000	2,650,000	7,870,000	1,210,000	743,000	1,953,000	9,823,000
1964	6,760,000	9,370,000	4,080,000	13,450,000	1,820,000	1,390,000	3,210,000	16,660,000
1965	6,780,000	6,140,000	3,100,000	9,240,000	1,410,000	876,000	2,286,000	11,526,000
1966	6,260,000	5,960,000	2,960,000	8,920,000	1,340,000	853,000	2,193,000	11,113,000
1967	8,050,000	14,300,000	5,670,000	19,970,000	2,510,000	2,170,000	4,680,000	24,650,000
1968	6,660,000	7,610,000	3,570,000	11,180,000	1,610,000	1,100,000	2,710,000	13,890,000
1969	4,420,000	2,610,000	1,470,000	4,080,000	652,000	361,000	1,013,000	5,093,000
1970	6,320,000	5,660,000	2,860,000	8,520,000	1,300,000	806,000	2,106,000	10,626,000
1971	6,090,000	6,670,000	3,110,000	9,780,000	1,390,000	971,000	2,361,000	12,141,000
1972	6,050,000	4,800,000	2,520,000	7,320,000	1,140,000	677,000	1,817,000	9,137,000
1973	5,490,000	3,780,000	2,060,000	5,840,000	930,000	528,000	1,458,000	7,298,000
1974	5,730,000	3,780,000	2,120,000	5,900,000	971,000	524,000	1,495,000	7,395,000
1975	6,490,000	5,550,000	2,880,000	8,430,000	1,310,000	785,000	2,095,000	10,525,000
1976	5,510,000	3,820,000	2,090,000	5,910,000	942,000	533,000	1,475,000	7,385,000
1977	6,330,000	5,510,000	2,830,000	8,340,000	1,290,000	781,000	2,071,000	10,411,000
1978	5,540,000	3,490,000	1,960,000	5,450,000	885,000	483,000	1,368,000	6,818,000
1979	6,470,000	5,470,000	2,840,000	8,310,000	1,290,000	773,000	2,063,000	10,373,000

Chulitna River near Talkeetna – 15292400 cont.

WY	Water Volume (acre-ft)	Suspended Load			Bed Load			Total Load
		Silt/Clay	Sand	Total	Sand	Gravel	Total	
1980	7,010,000	7,730,000	3,570,000	11,300,000	1,590,000	1,130,000	2,720,000	14,020,000
1981	7,540,000	9,890,000	4,340,000	14,230,000	1,930,000	1,460,000	3,390,000	17,620,000
1982	6,120,000	5,280,000	2,690,000	7,970,000	1,220,000	751,000	1,971,000	9,941,000
1983	5,950,000	4,530,000	2,380,000	6,910,000	1,080,000	639,000	1,719,000	8,629,000
1984	6,140,000	4,300,000	2,330,000	6,630,000	1,060,000	602,000	1,662,000	8,292,000
1985	6,120,000	5,080,000	2,620,000	7,700,000	1,190,000	720,000	1,910,000	9,610,000
1986	5,410,000	3,510,000	1,960,000	5,470,000	897,000	488,000	1,385,000	6,855,000
1987	7,140,000	6,240,000	3,130,000	9,370,000	1,420,000	894,000	2,314,000	11,684,000
1988	5,860,000	3,880,000	2,170,000	6,050,000	994,000	537,000	1,531,000	7,581,000
1989	6,480,000	5,330,000	2,800,000	8,130,000	1,280,000	750,000	2,030,000	10,160,000
1990	7,920,000	7,250,000	3,660,000	10,910,000	1,650,000	1,030,000	2,680,000	13,590,000
1991	5,750,000	4,300,000	2,300,000	6,600,000	1,040,000	605,000	1,645,000	8,245,000
1992	5,450,000	4,180,000	2,230,000	6,410,000	1,010,000	587,000	1,597,000	8,007,000
1993	7,250,000	6,750,000	3,430,000	10,180,000	1,560,000	959,000	2,519,000	12,699,000
1994	6,640,000	5,020,000	2,690,000	7,710,000	1,220,000	705,000	1,925,000	9,635,000
1995	6,290,000	4,620,000	2,520,000	7,140,000	1,160,000	645,000	1,805,000	8,945,000
1996	4,930,000	2,390,000	1,460,000	3,850,000	658,000	324,000	982,000	4,832,000
1997	5,550,000	3,940,000	2,150,000	6,090,000	977,000	551,000	1,528,000	7,618,000
1998	5,960,000	4,770,000	2,530,000	7,300,000	1,150,000	670,000	1,820,000	9,120,000
1999	5,850,000	4,360,000	2,320,000	6,680,000	1,050,000	613,000	1,663,000	8,343,000
2000	6,460,000	5,830,000	2,920,000	8,750,000	1,320,000	832,000	2,152,000	10,902,000
2001	5,680,000	3,930,000	2,150,000	6,080,000	972,000	549,000	1,521,000	7,601,000
2002	5,860,000	4,230,000	2,310,000	6,540,000	1,060,000	591,000	1,651,000	8,191,000
2003	6,580,000	4,640,000	2,540,000	7,180,000	1,150,000	648,000	1,798,000	8,978,000
2004	5,730,000	3,370,000	1,960,000	5,330,000	892,000	461,000	1,353,000	6,683,000
2005	8,470,000	9,190,000	4,480,000	13,670,000	2,030,000	1,320,000	3,350,000	17,020,000
2006	6,000,000	4,890,000	2,510,000	7,400,000	1,130,000	695,000	1,825,000	9,225,000
2007	5,670,000	3,180,000	1,880,000	5,060,000	861,000	434,000	1,295,000	6,355,000
2008	5,410,000	3,130,000	1,820,000	4,950,000	833,000	429,000	1,262,000	6,212,000
2009	5,600,000	3,140,000	1,850,000	4,990,000	848,000	429,000	1,277,000	6,267,000
2010	5,920,000	3,620,000	2,070,000	5,690,000	940,000	499,000	1,439,000	7,129,000

Table B.1-3. Annual Sediment Load for Pre-Project Conditions for Talkeetna River near Talkeetna

Talkeetna River near Talkeetna - 15292700								
WY	Water Volume (acre-ft)	Suspended Load			Bed Load			Total Load
		Silt/Clay	Sand	Total	Sand	Gravel	Total	
1950	2,460,000	459,000	454,000	913,000	65,900	17,300	83,200	996,200
1951	2,800,000	631,000	601,000	1,232,000	84,000	26,800	110,800	1,342,800
1952	2,930,000	1,010,000	836,000	1,846,000	102,000	67,100	169,100	2,015,100
1953	3,080,000	720,000	676,000	1,396,000	93,400	33,100	126,500	1,522,500
1954	2,960,000	736,000	679,000	1,415,000	92,100	35,400	127,500	1,542,500
1955	3,130,000	1,140,000	923,000	2,063,000	111,000	77,300	188,300	2,251,300
1956	3,540,000	1,420,000	1,150,000	2,570,000	137,000	97,900	234,900	2,804,900
1957	3,160,000	908,000	801,000	1,709,000	104,000	51,100	155,100	1,864,100
1958	2,870,000	642,000	600,000	1,242,000	82,900	30,900	113,800	1,355,800
1959	2,950,000	826,000	735,000	1,561,000	95,900	45,600	141,500	1,702,500
1960	2,840,000	607,000	581,000	1,188,000	81,600	26,000	107,600	1,295,600
1961	3,150,000	789,000	724,000	1,513,000	97,300	40,000	137,300	1,650,300
1962	3,160,000	1,020,000	860,000	1,880,000	107,000	62,800	169,800	2,049,800
1963	3,000,000	867,000	764,000	1,631,000	98,700	49,200	147,900	1,778,900
1964	2,870,000	1,210,000	925,000	2,135,000	106,000	88,300	194,300	2,329,300
1965	3,440,000	1,300,000	1,050,000	2,350,000	126,000	89,700	215,700	2,565,700
1966	3,060,000	1,110,000	886,000	1,996,000	106,000	76,500	182,500	2,178,500
1967	3,240,000	1,640,000	1,160,000	2,800,000	126,000	114,000	240,000	3,040,000
1968	3,240,000	1,160,000	942,000	2,102,000	113,000	79,700	192,700	2,294,700
1969	1,630,000	161,000	183,000	344,000	30,600	3,070	33,670	377,670
1970	2,530,000	574,000	535,000	1,109,000	73,500	27,700	101,200	1,210,200
1971	3,840,000	4,070,000	2,300,000	6,370,000	196,000	285,000	481,000	6,851,000
1972	3,250,000	1,130,000	936,000	2,066,000	114,000	72,900	186,900	2,252,900
1973	2,790,000	842,000	691,000	1,533,000	86,100	53,900	140,000	1,673,000
1974	2,410,000	445,000	435,000	880,000	62,800	17,700	80,500	960,500
1975	3,140,000	1,030,000	876,000	1,906,000	109,000	64,500	173,500	2,079,500
1976	2,470,000	527,000	493,000	1,020,000	68,700	25,500	94,200	1,114,200
1977	3,150,000	1,420,000	1,060,000	2,480,000	118,000	105,000	223,000	2,703,000
1978	2,390,000	424,000	418,000	842,000	60,900	17,400	78,300	920,300
1979	3,220,000	1,360,000	1,050,000	2,410,000	119,000	100,000	219,000	2,629,000

Talkeetna River near Talkeetna – 15292700 cont.

WY	Water Volume (acre-ft)	Suspended Load			Bed Load			Total Load
		Silt/Clay	Sand	Total	Sand	Gravel	Total	
1980	3,150,000	1,020,000	840,000	1,860,000	104,000	66,600	170,600	2,030,600
1981	3,200,000	1,840,000	1,250,000	3,090,000	128,000	139,000	267,000	3,357,000
1982	3,040,000	1,130,000	897,000	2,027,000	107,000	77,000	184,000	2,211,000
1983	2,630,000	477,000	473,000	950,000	68,800	18,200	87,000	1,037,000
1984	2,640,000	610,000	551,000	1,161,000	74,800	30,900	105,700	1,266,700
1985	3,080,000	1,060,000	875,000	1,935,000	107,000	67,800	174,800	2,109,800
1986	2,430,000	425,000	426,000	851,000	62,800	15,200	78,000	929,000
1987	3,480,000	2,070,000	1,270,000	3,340,000	129,000	115,000	244,000	3,584,000
1988	2,710,000	546,000	530,000	1,076,000	75,000	21,900	96,900	1,172,900
1989	3,070,000	882,000	775,000	1,657,000	100,000	50,100	150,100	1,807,100
1990	3,900,000	1,570,000	1,230,000	2,800,000	143,000	111,000	254,000	3,054,000
1991	2,740,000	727,000	646,000	1,373,000	84,900	42,000	126,900	1,499,900
1992	2,560,000	653,000	591,000	1,244,000	78,500	34,700	113,200	1,357,200
1993	3,500,000	1,260,000	1,040,000	2,300,000	126,000	82,100	208,100	2,508,100
1994	3,140,000	869,000	758,000	1,627,000	98,500	50,200	148,700	1,775,700
1995	2,920,000	701,000	650,000	1,351,000	88,600	33,500	122,100	1,473,100
1996	2,260,000	317,000	338,000	655,000	53,100	8,410	61,510	716,510
1997	2,590,000	601,000	557,000	1,158,000	75,900	29,600	105,500	1,263,500
1998	2,790,000	776,000	687,000	1,463,000	89,600	42,800	132,400	1,595,400
1999	2,790,000	805,000	683,000	1,488,000	87,100	48,900	136,000	1,624,000
2000	3,230,000	1,260,000	1,000,000	2,260,000	117,000	92,700	209,700	2,469,700
2001	2,680,000	621,000	571,000	1,192,000	77,500	32,200	109,700	1,301,700
2002	2,750,000	700,000	630,000	1,330,000	84,100	37,000	121,100	1,451,100
2003	3,080,000	762,000	686,000	1,448,000	92,600	40,400	133,000	1,581,000
2004	2,620,000	438,000	450,000	888,000	67,700	12,700	80,400	968,400
2005	4,240,000	1,970,000	1,530,000	3,500,000	174,000	146,000	320,000	3,820,000
2006	2,910,000	1,290,000	906,000	2,196,000	101,000	81,300	182,300	2,378,300
2007	2,600,000	436,000	447,000	883,000	67,500	14,100	81,600	964,600
2008	2,490,000	433,000	437,000	870,000	65,000	15,000	80,000	950,000
2009	2,580,000	430,000	440,000	870,000	66,200	13,600	79,800	949,800
2010	2,730,000	497,000	495,000	992,000	72,600	18,100	90,700	1,082,700

Table B.1-4. Annual Sediment Load for Pre-Project Conditions for Susitna River at Sunshine

Susitna River at Sunshine - 15292780								
WY	Water Volume (acre-ft)	Suspended Load			Bed Load			Total Load
		Silt/Clay	Sand	Total	Sand	Gravel	Total	
1950	14,200,000	6,000,000	3,920,000	9,920,000	148,000	130,000	278,000	10,198,000
1951	16,200,000	8,080,000	5,100,000	13,180,000	176,000	172,000	348,000	13,528,000
1952	16,700,000	11,000,000	6,260,000	17,260,000	187,000	324,000	511,000	17,771,000
1953	17,900,000	8,980,000	5,630,000	14,610,000	195,000	202,000	397,000	15,007,000
1954	17,200,000	9,160,000	5,640,000	14,800,000	189,000	212,000	401,000	15,201,000
1955	17,800,000	12,000,000	6,730,000	18,730,000	200,000	369,000	569,000	19,299,000
1956	20,000,000	15,200,000	8,440,000	23,640,000	235,000	454,000	689,000	24,329,000
1957	18,300,000	10,700,000	6,370,000	17,070,000	203,000	271,000	474,000	17,544,000
1958	16,600,000	8,520,000	5,170,000	13,690,000	178,000	228,000	406,000	14,096,000
1959	18,400,000	13,100,000	7,290,000	20,390,000	211,000	406,000	617,000	21,007,000
1960	17,100,000	8,590,000	5,320,000	13,910,000	184,000	208,000	392,000	14,302,000
1961	19,000,000	10,800,000	6,410,000	17,210,000	209,000	297,000	506,000	17,716,000
1962	19,900,000	16,500,000	8,610,000	25,110,000	232,000	664,000	896,000	26,006,000
1963	19,300,000	14,100,000	7,810,000	21,910,000	223,000	424,000	647,000	22,557,000
1964	16,400,000	14,700,000	7,380,000	22,080,000	190,000	663,000	853,000	22,933,000
1965	18,700,000	11,700,000	6,830,000	18,530,000	210,000	305,000	515,000	19,045,000
1966	17,100,000	10,100,000	5,860,000	15,960,000	188,000	297,000	485,000	16,445,000
1967	19,400,000	14,900,000	8,100,000	23,000,000	226,000	497,000	723,000	23,723,000
1968	17,800,000	11,100,000	6,390,000	17,490,000	197,000	314,000	511,000	18,001,000
1969	10,100,000	2,590,000	1,940,000	4,530,000	94,700	61,900	156,600	4,686,600
1970	14,300,000	6,420,000	4,140,000	10,560,000	151,000	139,000	290,000	10,850,000
1971	18,400,000	15,600,000	8,030,000	23,630,000	213,000	649,000	862,000	24,492,000
1972	19,200,000	12,400,000	7,010,000	19,410,000	214,000	391,000	605,000	20,015,000
1973	15,100,000	7,590,000	4,620,000	12,210,000	160,000	206,000	366,000	12,576,000
1974	14,100,000	5,890,000	3,870,000	9,760,000	147,000	127,000	274,000	10,034,000
1975	18,400,000	11,700,000	6,780,000	18,480,000	207,000	307,000	514,000	18,994,000
1976	14,900,000	6,550,000	4,210,000	10,760,000	156,000	151,000	307,000	11,067,000
1977	17,900,000	11,800,000	6,660,000	18,460,000	200,000	366,000	566,000	19,026,000
1978	14,800,000	5,240,000	3,590,000	8,830,000	149,000	115,000	264,000	9,094,000
1979	17,400,000	10,300,000	6,050,000	16,350,000	192,000	277,000	469,000	16,819,000

Susitna River at Sunshine – 15292780 cont.

WY	Water Volume (acre-ft)	Suspended Load			Bed Load			Total Load
		Silt/Clay	Sand	Total	Sand	Gravel	Total	
1980	18,900,000	11,600,000	6,700,000	18,300,000	210,000	334,000	544,000	18,844,000
1981	20,500,000	16,800,000	8,780,000	25,580,000	237,000	674,000	911,000	26,491,000
1982	17,400,000	9,220,000	5,620,000	14,840,000	189,000	231,000	420,000	15,260,000
1983	17,100,000	8,300,000	5,170,000	13,470,000	182,000	201,000	383,000	13,853,000
1984	17,100,000	8,460,000	5,190,000	13,650,000	181,000	219,000	400,000	14,050,000
1985	17,600,000	10,400,000	6,090,000	16,490,000	194,000	277,000	471,000	16,961,000
1986	14,900,000	5,710,000	3,860,000	9,570,000	153,000	117,000	270,000	9,840,000
1987	19,400,000	10,900,000	6,520,000	17,420,000	213,000	286,000	499,000	17,919,000
1988	18,000,000	9,940,000	6,030,000	15,970,000	198,000	236,000	434,000	16,404,000
1989	18,500,000	9,600,000	5,920,000	15,520,000	201,000	223,000	424,000	15,944,000
1990	23,000,000	16,200,000	9,140,000	25,340,000	265,000	469,000	734,000	26,074,000
1991	15,600,000	7,180,000	4,540,000	11,720,000	165,000	168,000	333,000	12,053,000
1992	15,700,000	7,870,000	4,850,000	12,720,000	167,000	186,000	353,000	13,073,000
1993	18,800,000	10,400,000	6,310,000	16,710,000	208,000	244,000	452,000	17,162,000
1994	18,200,000	9,290,000	5,670,000	14,960,000	195,000	242,000	437,000	15,397,000
1995	18,400,000	9,740,000	5,980,000	15,720,000	201,000	226,000	427,000	16,147,000
1996	12,800,000	3,780,000	2,760,000	6,540,000	126,000	79,800	205,800	6,745,800
1997	16,800,000	8,860,000	5,400,000	14,260,000	182,000	215,000	397,000	14,657,000
1998	17,800,000	10,500,000	6,250,000	16,750,000	198,000	260,000	458,000	17,208,000
1999	17,600,000	9,660,000	5,790,000	15,450,000	192,000	255,000	447,000	15,897,000
2000	19,300,000	12,400,000	7,090,000	19,490,000	216,000	366,000	582,000	20,072,000
2001	17,200,000	9,100,000	5,500,000	14,600,000	186,000	236,000	422,000	15,022,000
2002	15,700,000	7,210,000	4,600,000	11,810,000	166,000	161,000	327,000	12,137,000
2003	18,600,000	9,850,000	5,960,000	15,810,000	201,000	258,000	459,000	16,269,000
2004	16,900,000	8,110,000	5,130,000	13,240,000	181,000	179,000	360,000	13,600,000
2005	22,400,000	16,700,000	9,350,000	26,050,000	263,000	459,000	722,000	26,772,000
2006	18,100,000	11,400,000	6,550,000	17,950,000	202,000	339,000	541,000	18,491,000
2007	17,200,000	6,950,000	4,650,000	11,600,000	180,000	140,000	320,000	11,920,000
2008	16,000,000	6,770,000	4,420,000	11,190,000	167,000	147,000	314,000	11,504,000
2009	16,900,000	7,720,000	4,970,000	12,690,000	181,000	165,000	346,000	13,036,000
2010	18,000,000	8,790,000	5,540,000	14,330,000	194,000	194,000	388,000	14,718,000

Table B.1-5. Annual Sediment Load for Pre-Project Conditions for Yentna River near Susitna Station

Yentna River near Susitna Station - 15294345								
WY	Water Volume (acre-ft)	Suspended Load			Bed Load			Total Load
		Silt/Clay	Sand	Total	Sand	Gravel	Total	
1950	11,800,000	4,730,000	4,820,000	9,550,000	1,050,000	122,000	1,172,000	10,722,000
1951	13,400,000	6,180,000	6,160,000	12,340,000	1,290,000	155,000	1,445,000	13,785,000
1952	13,300,000	7,180,000	6,810,000	13,990,000	1,330,000	180,000	1,510,000	15,500,000
1953	14,800,000	6,750,000	6,730,000	13,480,000	1,410,000	168,000	1,578,000	15,058,000
1954	14,200,000	6,830,000	6,720,000	13,550,000	1,380,000	171,000	1,551,000	15,101,000
1955	14,300,000	7,710,000	7,290,000	15,000,000	1,420,000	194,000	1,614,000	16,614,000
1956	15,800,000	9,650,000	9,000,000	18,650,000	1,700,000	236,000	1,936,000	20,586,000
1957	14,900,000	7,610,000	7,370,000	14,980,000	1,480,000	191,000	1,671,000	16,651,000
1958	13,700,000	6,140,000	6,030,000	12,170,000	1,260,000	158,000	1,418,000	13,588,000
1959	14,800,000	8,460,000	7,950,000	16,410,000	1,530,000	210,000	1,740,000	18,150,000
1960	13,000,000	5,490,000	5,480,000	10,970,000	1,170,000	142,000	1,312,000	12,282,000
1961	14,700,000	7,260,000	6,970,000	14,230,000	1,410,000	183,000	1,593,000	15,823,000
1962	11,600,000	3,940,000	4,120,000	8,060,000	948,000	106,000	1,054,000	9,114,000
1963	11,900,000	5,580,000	5,380,000	10,960,000	1,100,000	142,000	1,242,000	12,202,000
1964	12,700,000	7,900,000	7,090,000	14,990,000	1,310,000	197,000	1,507,000	16,497,000
1965	13,400,000	6,780,000	6,490,000	13,270,000	1,300,000	171,000	1,471,000	14,741,000
1966	13,000,000	6,800,000	6,320,000	13,120,000	1,240,000	172,000	1,412,000	14,532,000
1967	11,400,000	4,550,000	4,610,000	9,160,000	1,000,000	118,000	1,118,000	10,278,000
1968	13,100,000	6,640,000	6,310,000	12,950,000	1,250,000	170,000	1,420,000	14,370,000
1969	10,600,000	4,830,000	4,670,000	9,500,000	957,000	126,000	1,083,000	10,583,000
1970	14,700,000	8,640,000	8,020,000	16,660,000	1,520,000	213,000	1,733,000	18,393,000
1971	14,000,000	11,100,000	9,360,000	20,460,000	1,580,000	271,000	1,851,000	22,311,000
1972	12,200,000	5,280,000	5,230,000	10,510,000	1,100,000	136,000	1,236,000	11,746,000
1973	10,700,000	3,520,000	3,670,000	7,190,000	851,000	94,700	945,700	8,135,700
1974	10,500,000	2,860,000	3,170,000	6,030,000	789,000	79,800	868,800	6,898,800
1975	13,700,000	6,960,000	6,660,000	13,620,000	1,330,000	176,000	1,506,000	15,126,000
1976	12,500,000	4,710,000	4,840,000	9,550,000	1,080,000	123,000	1,203,000	10,753,000
1977	19,000,000	15,600,000	13,300,000	28,900,000	2,220,000	378,000	2,598,000	31,498,000
1978	12,900,000	4,990,000	5,080,000	10,070,000	1,120,000	129,000	1,249,000	11,319,000
1979	15,000,000	7,330,000	7,110,000	14,440,000	1,440,000	185,000	1,625,000	16,065,000

Yentna River near Susitna Station – 15294345 cont.

WY	Water Volume (acre-ft)	Suspended Load			Bed Load			Total Load
		Silt/Clay	Sand	Total	Sand	Gravel	Total	
1980	18,900,000	13,400,000	11,700,000	25,100,000	2,080,000	324,000	2,404,000	27,504,000
1981	18,000,000	12,200,000	10,900,000	23,100,000	1,960,000	297,000	2,257,000	25,357,000
1982	13,500,000	6,430,000	6,190,000	12,620,000	1,260,000	164,000	1,424,000	14,044,000
1983	13,300,000	6,190,000	5,930,000	12,120,000	1,210,000	158,000	1,368,000	13,488,000
1984	14,500,000	7,450,000	7,100,000	14,550,000	1,410,000	187,000	1,597,000	16,147,000
1985	14,200,000	7,430,000	7,110,000	14,540,000	1,410,000	186,000	1,596,000	16,136,000
1986	14,200,000	6,570,000	6,460,000	13,030,000	1,340,000	166,000	1,506,000	14,536,000
1987	17,100,000	11,100,000	9,940,000	21,040,000	1,820,000	271,000	2,091,000	23,131,000
1988	16,600,000	9,270,000	8,700,000	17,970,000	1,680,000	232,000	1,912,000	19,882,000
1989	17,700,000	11,700,000	10,600,000	22,300,000	1,930,000	284,000	2,214,000	24,514,000
1990	19,100,000	12,200,000	11,200,000	23,400,000	2,070,000	297,000	2,367,000	25,767,000
1991	14,900,000	8,160,000	7,690,000	15,850,000	1,500,000	204,000	1,704,000	17,554,000
1992	13,300,000	5,480,000	5,480,000	10,960,000	1,170,000	144,000	1,314,000	12,274,000
1993	14,800,000	6,830,000	6,750,000	13,580,000	1,400,000	174,000	1,574,000	15,154,000
1994	14,300,000	6,240,000	6,190,000	12,430,000	1,310,000	159,000	1,469,000	13,899,000
1995	14,900,000	7,020,000	6,910,000	13,930,000	1,420,000	178,000	1,598,000	15,528,000
1996	10,000,000	2,780,000	3,070,000	5,850,000	762,000	76,800	838,800	6,688,800
1997	13,400,000	6,130,000	6,050,000	12,180,000	1,250,000	157,000	1,407,000	13,587,000
1998	14,100,000	7,140,000	6,920,000	14,060,000	1,390,000	180,000	1,570,000	15,630,000
1999	14,100,000	6,620,000	6,470,000	13,090,000	1,330,000	167,000	1,497,000	14,587,000
2000	15,300,000	8,130,000	7,710,000	15,840,000	1,520,000	203,000	1,723,000	17,563,000
2001	13,900,000	6,460,000	6,310,000	12,770,000	1,300,000	165,000	1,465,000	14,235,000
2002	12,400,000	5,000,000	5,080,000	10,080,000	1,100,000	130,000	1,230,000	11,310,000
2003	14,700,000	6,820,000	6,670,000	13,490,000	1,380,000	173,000	1,553,000	15,043,000
2004	13,700,000	6,160,000	6,120,000	12,280,000	1,280,000	157,000	1,437,000	13,717,000
2005	17,100,000	10,500,000	9,840,000	20,340,000	1,860,000	257,000	2,117,000	22,457,000
2006	14,500,000	7,780,000	7,410,000	15,190,000	1,460,000	194,000	1,654,000	16,844,000
2007	14,300,000	5,650,000	5,800,000	11,450,000	1,280,000	145,000	1,425,000	12,875,000
2008	13,100,000	5,130,000	5,240,000	10,370,000	1,150,000	133,000	1,283,000	11,653,000
2009	13,900,000	6,020,000	6,050,000	12,070,000	1,290,000	152,000	1,442,000	13,512,000
2010	14,800,000	6,900,000	6,840,000	13,740,000	1,420,000	174,000	1,594,000	15,334,000

Table B.1-6. Annual Sediment Load for Pre-Project Conditions for Susitna River at Susitna Station

Susitna River at Susitna Station - 15294350								
WY	Water Volume (acre-ft)	Suspended Load			Bed Load			Total Load
		Silt/Clay	Sand	Total	Sand	Gravel	Total	
1950	30,700,000	14,200,000	10,500,000	24,700,000	1,180,000	190,000	1,370,000	26,070,000
1951	34,300,000	18,300,000	12,500,000	30,800,000	1,470,000	244,000	1,714,000	32,514,000
1952	34,000,000	21,200,000	12,700,000	33,900,000	1,610,000	283,000	1,893,000	35,793,000
1953	37,800,000	20,100,000	13,700,000	33,800,000	1,620,000	268,000	1,888,000	35,688,000
1954	36,000,000	20,100,000	13,300,000	33,400,000	1,600,000	268,000	1,868,000	35,268,000
1955	36,400,000	22,800,000	13,700,000	36,500,000	1,730,000	304,000	2,034,000	38,534,000
1956	40,100,000	28,300,000	15,900,000	44,200,000	2,100,000	377,000	2,477,000	46,677,000
1957	37,800,000	22,300,000	14,100,000	36,400,000	1,740,000	297,000	2,037,000	38,437,000
1958	35,200,000	18,100,000	12,400,000	30,500,000	1,450,000	242,000	1,692,000	32,192,000
1959	37,400,000	24,800,000	14,400,000	39,200,000	1,860,000	330,000	2,190,000	41,390,000
1960	34,600,000	17,800,000	12,300,000	30,100,000	1,440,000	237,000	1,677,000	31,777,000
1961	37,800,000	21,100,000	13,800,000	34,900,000	1,660,000	281,000	1,941,000	36,841,000
1962	34,700,000	19,700,000	12,600,000	32,300,000	1,540,000	263,000	1,803,000	34,103,000
1963	34,100,000	19,900,000	12,600,000	32,500,000	1,540,000	265,000	1,805,000	34,305,000
1964	31,000,000	18,400,000	11,400,000	29,800,000	1,410,000	245,000	1,655,000	31,455,000
1965	35,700,000	20,600,000	13,100,000	33,700,000	1,610,000	275,000	1,885,000	35,585,000
1966	33,500,000	18,100,000	12,000,000	30,100,000	1,430,000	241,000	1,671,000	31,771,000
1967	32,700,000	17,800,000	11,800,000	29,600,000	1,410,000	237,000	1,647,000	31,247,000
1968	34,000,000	19,300,000	12,300,000	31,600,000	1,500,000	257,000	1,757,000	33,357,000
1969	24,200,000	9,610,000	7,720,000	17,330,000	821,000	128,000	949,000	18,279,000
1970	33,800,000	18,400,000	12,300,000	30,700,000	1,460,000	245,000	1,705,000	32,405,000
1971	34,600,000	23,100,000	13,200,000	36,300,000	1,710,000	307,000	2,017,000	38,317,000
1972	33,900,000	18,600,000	12,300,000	30,900,000	1,470,000	248,000	1,718,000	32,618,000
1973	29,900,000	13,100,000	9,950,000	23,050,000	1,090,000	174,000	1,264,000	24,314,000
1974	29,000,000	11,500,000	9,460,000	20,960,000	1,000,000	154,000	1,154,000	22,114,000
1975	33,400,000	18,900,000	12,100,000	31,000,000	1,480,000	252,000	1,732,000	32,732,000
1976	31,200,000	14,500,000	10,700,000	25,200,000	1,200,000	193,000	1,393,000	26,593,000
1977	40,500,000	28,800,000	15,900,000	44,700,000	2,110,000	383,000	2,493,000	47,193,000
1978	30,400,000	13,100,000	10,200,000	23,300,000	1,110,000	175,000	1,285,000	24,585,000
1979	38,900,000	23,700,000	14,600,000	38,300,000	1,820,000	316,000	2,136,000	40,436,000

Susitna River at Susitna Station – 15294350 cont.

WY	Water Volume (acre-ft)	Suspended Load			Bed Load			Total Load
		Silt/Clay	Sand	Total	Sand	Gravel	Total	
1980	45,000,000	32,600,000	17,700,000	50,300,000	2,360,000	434,000	2,794,000	53,094,000
1981	40,300,000	29,400,000	15,800,000	45,200,000	2,110,000	390,000	2,500,000	47,700,000
1982	34,100,000	17,700,000	12,000,000	29,700,000	1,410,000	236,000	1,646,000	31,346,000
1983	31,700,000	14,200,000	10,700,000	24,900,000	1,180,000	189,000	1,369,000	26,269,000
1984	32,900,000	14,600,000	11,100,000	25,700,000	1,220,000	196,000	1,416,000	27,116,000
1985	34,200,000	19,300,000	12,500,000	31,800,000	1,510,000	257,000	1,767,000	33,567,000
1986	33,600,000	15,200,000	11,400,000	26,600,000	1,270,000	203,000	1,473,000	28,073,000
1987	39,700,000	25,800,000	15,100,000	40,900,000	1,920,000	343,000	2,263,000	43,163,000
1988	38,900,000	22,300,000	14,200,000	36,500,000	1,740,000	297,000	2,037,000	38,537,000
1989	40,900,000	27,400,000	15,900,000	43,300,000	2,050,000	365,000	2,415,000	45,715,000
1990	44,300,000	28,800,000	17,100,000	45,900,000	2,180,000	384,000	2,564,000	48,464,000
1991	34,900,000	19,700,000	12,700,000	32,400,000	1,540,000	263,000	1,803,000	34,203,000
1992	31,900,000	13,800,000	10,500,000	24,300,000	1,150,000	184,000	1,334,000	25,634,000
1993	38,500,000	22,400,000	14,300,000	36,700,000	1,750,000	298,000	2,048,000	38,748,000
1994	37,500,000	19,400,000	13,300,000	32,700,000	1,560,000	259,000	1,819,000	34,519,000
1995	37,200,000	20,100,000	13,500,000	33,600,000	1,610,000	268,000	1,878,000	35,478,000
1996	27,800,000	9,770,000	8,720,000	18,490,000	878,000	131,000	1,009,000	19,499,000
1997	32,300,000	16,700,000	11,400,000	28,100,000	1,340,000	223,000	1,563,000	29,663,000
1998	34,100,000	19,600,000	12,600,000	32,200,000	1,530,000	261,000	1,791,000	33,991,000
1999	33,700,000	17,600,000	11,900,000	29,500,000	1,400,000	235,000	1,635,000	31,135,000
2000	36,500,000	21,300,000	13,300,000	34,600,000	1,640,000	284,000	1,924,000	36,524,000
2001	34,000,000	17,700,000	12,000,000	29,700,000	1,410,000	236,000	1,646,000	31,346,000
2002	32,700,000	16,000,000	11,400,000	27,400,000	1,310,000	214,000	1,524,000	28,924,000
2003	38,000,000	19,800,000	13,500,000	33,300,000	1,590,000	265,000	1,855,000	35,155,000
2004	34,700,000	17,000,000	12,200,000	29,200,000	1,400,000	227,000	1,627,000	30,827,000
2005	44,400,000	31,400,000	17,700,000	49,100,000	2,340,000	418,000	2,758,000	51,858,000
2006	35,800,000	20,900,000	13,200,000	34,100,000	1,620,000	278,000	1,898,000	35,998,000
2007	35,100,000	15,500,000	12,000,000	27,500,000	1,320,000	207,000	1,527,000	29,027,000
2008	32,900,000	14,900,000	11,200,000	26,100,000	1,250,000	199,000	1,449,000	27,549,000
2009	34,500,000	16,300,000	12,000,000	28,300,000	1,360,000	217,000	1,577,000	29,877,000
2010	36,400,000	18,200,000	12,900,000	31,100,000	1,480,000	242,000	1,722,000	32,822,000

APPENDIX B.2. ANNUAL SEDIMENT LOAD TABULAR SUMMARY FOR
MAXIMUM LOAD FOLLOWING OPERATIONS SCENARIO 1

**Susitna-Watana Hydroelectric Project
(FERC No. 14241)**

**Development of Sediment Transport Relationships
and an Initial Sediment Balance for the Middle and
Lower Susitna River Segments**

Prepared for

Alaska Energy Authority



Prepared by

Tetra Tech

February 2013

Table B.2-1. Annual Sediment Load for Max LF OS-1 Conditions for Susitna River at Gold Creek

Susitna River at Gold Creek - 15292000								
WY	Water Volume (acre-ft)	Suspended Load			Bed Load			Total Load
		Silt/Clay	Sand	Total	Sand	Gravel	Total	
1950	6,130,000	19,900	92,100	112,000	8,480	67	8,547	120,547
1951	6,590,000	24,700	118,000	142,700	10,600	107	10,707	153,407
1952	6,540,000	24,700	119,000	143,700	10,600	122	10,722	154,422
1953	7,160,000	43,500	239,000	282,500	19,300	1,050	20,350	302,850
1954	6,980,000	42,200	237,000	279,200	18,100	1,520	19,620	298,820
1955	7,310,000	72,700	488,000	560,700	27,600	13,500	41,100	601,800
1956	8,270,000	103,000	681,000	784,000	41,100	11,100	52,200	836,200
1957	7,480,000	57,700	338,000	395,700	25,400	2,330	27,730	423,430
1958	6,840,000	44,600	264,000	308,600	18,500	2,980	21,480	330,080
1959	7,450,000	101,000	735,000	836,000	35,100	26,500	61,600	897,600
1960	6,990,000	47,700	287,000	334,700	19,400	4,170	23,570	358,270
1961	7,800,000	67,500	408,000	475,500	28,600	3,810	32,410	507,910
1962	8,350,000	100,000	643,000	743,000	42,000	7,740	49,740	792,740
1963	7,980,000	91,900	603,000	694,900	36,700	10,400	47,100	742,000
1964	7,070,000	41,300	224,000	265,300	18,300	857	19,157	284,457
1965	7,300,000	62,300	387,000	449,300	25,700	5,130	30,830	480,130
1966	6,810,000	30,400	152,000	182,400	13,200	276	13,476	195,876
1967	7,910,000	117,000	853,000	970,000	41,400	33,600	75,000	1,045,000
1968	7,100,000	43,900	245,000	288,900	19,200	1,410	20,610	309,510
1969	5,920,000	17,700	80,600	98,300	7,510	52	7,562	105,862
1970	4,980,000	20,500	100,000	120,500	8,880	115	8,995	129,495
1971	5,960,000	31,000	161,000	192,000	13,600	371	13,971	205,971
1972	7,870,000	65,600	386,000	451,600	28,900	2,650	31,550	483,150
1973	6,140,000	20,300	95,000	115,300	8,690	79	8,769	124,069
1974	6,410,000	22,800	108,000	130,800	9,790	93	9,883	140,683
1975	6,140,000	28,800	145,000	173,800	12,500	239	12,739	186,539
1976	6,210,000	20,600	96,300	116,900	8,820	76	8,896	125,796
1977	6,980,000	34,500	178,000	212,500	15,100	464	15,564	228,064
1978	6,100,000	19,400	89,400	108,800	8,260	63	8,323	117,123
1979	6,650,000	27,100	133,000	160,100	11,700	182	11,882	171,982

Susitna River at Gold Creek – 15292000 cont.

WY	Water Volume (acre-ft)	Suspended Load			Bed Load			Total Load
		Silt/Clay	Sand	Total	Sand	Gravel	Total	
1980	7,690,000	77,800	505,000	582,800	31,000	9,850	40,850	623,650
1981	8,410,000	163,000	1,210,000	1,373,000	56,400	42,300	98,700	1,471,700
1982	6,960,000	41,900	239,000	280,900	17,500	2,200	19,700	300,600
1983	7,150,000	51,700	308,000	359,700	21,800	3,040	24,840	384,540
1984	6,930,000	44,200	254,000	298,200	18,800	2,120	20,920	319,120
1985	7,110,000	42,800	236,000	278,800	18,700	1,190	19,890	298,690
1986	6,190,000	20,200	94,000	114,200	8,640	70	8,710	122,910
1987	7,510,000	62,500	380,000	442,500	26,400	4,000	30,400	472,900
1988	7,390,000	52,400	302,000	354,400	23,100	1,920	25,020	379,420
1989	7,380,000	52,900	305,000	357,900	23,100	2,010	25,110	383,010
1990	9,330,000	154,000	1,060,000	1,214,000	60,300	22,000	82,300	1,296,300
1991	6,200,000	20,900	97,700	118,600	8,930	81	9,011	127,611
1992	6,250,000	21,200	99,200	120,400	9,070	80	9,150	129,550
1993	7,260,000	58,500	362,000	420,500	23,900	5,260	29,160	449,660
1994	7,210,000	45,900	257,000	302,900	20,200	1,330	21,530	324,430
1995	7,390,000	53,200	308,000	361,200	23,200	2,130	25,330	386,530
1996	6,130,000	19,700	91,400	111,100	8,420	67	8,487	119,587
1997	5,990,000	25,100	123,000	148,100	10,800	146	10,946	159,046
1998	6,280,000	25,100	122,000	147,100	10,800	130	10,930	158,030
1999	6,370,000	22,400	105,000	127,400	9,600	89	9,689	137,089
2000	7,300,000	48,100	272,000	320,100	21,000	1,710	22,710	342,810
2001	6,900,000	39,200	217,000	256,200	16,800	1,340	18,140	274,340
2002	6,170,000	20,300	94,600	114,900	8,690	72	8,762	123,662
2003	7,330,000	57,900	349,000	406,900	24,300	3,670	27,970	434,870
2004	6,850,000	35,200	186,000	221,200	15,500	608	16,108	237,308
2005	8,720,000	110,000	711,000	821,000	46,300	8,740	55,040	876,040
2006	7,340,000	82,600	577,000	659,600	29,800	18,700	48,500	708,100
2007	6,930,000	35,300	185,000	220,300	15,500	575	16,075	236,375
2008	6,430,000	25,200	124,000	149,200	10,900	231	11,131	160,331
2009	6,850,000	34,700	184,000	218,700	15,100	727	15,827	234,527
2010	7,310,000	51,900	300,000	351,900	22,700	2,050	24,750	376,650

Table B.1-2. Annual Sediment Load for Max LF OS-1 Conditions for Susitna River at Sunshine

Susitna River at Sunshine - 15292780								
WY	Water Volume (acre-ft)	Suspended Load			Bed Load			Total Load
		Silt/Clay	Sand	Total	Sand	Gravel	Total	
1950	14,500,000	3,130,000	2,580,000	5,710,000	136,000	83,300	219,300	5,929,300
1951	16,200,000	4,140,000	3,250,000	7,390,000	156,000	96,700	252,700	7,642,700
1952	16,300,000	5,070,000	3,660,000	8,730,000	160,000	127,000	287,000	9,017,000
1953	17,700,000	5,030,000	3,920,000	8,950,000	176,000	112,000	288,000	9,238,000
1954	17,200,000	5,030,000	3,840,000	8,870,000	170,000	116,000	286,000	9,156,000
1955	17,700,000	6,440,000	4,570,000	11,010,000	180,000	191,000	371,000	11,381,000
1956	20,000,000	8,590,000	5,950,000	14,540,000	212,000	228,000	440,000	14,980,000
1957	18,200,000	5,980,000	4,450,000	10,430,000	185,000	136,000	321,000	10,751,000
1958	16,600,000	4,710,000	3,600,000	8,310,000	163,000	124,000	287,000	8,597,000
1959	18,200,000	7,370,000	5,110,000	12,480,000	189,000	241,000	430,000	12,910,000
1960	17,100,000	4,820,000	3,720,000	8,540,000	168,000	125,000	293,000	8,833,000
1961	19,000,000	6,370,000	4,720,000	11,090,000	194,000	159,000	353,000	11,443,000
1962	19,900,000	8,620,000	5,910,000	14,530,000	211,000	243,000	454,000	14,984,000
1963	19,300,000	7,890,000	5,510,000	13,400,000	202,000	212,000	414,000	13,814,000
1964	16,400,000	5,800,000	4,050,000	9,850,000	164,000	156,000	320,000	10,170,000
1965	18,600,000	6,720,000	4,810,000	11,530,000	190,000	168,000	358,000	11,888,000
1966	17,100,000	5,130,000	3,800,000	8,930,000	169,000	126,000	295,000	9,225,000
1967	19,200,000	8,190,000	5,630,000	13,820,000	202,000	267,000	469,000	14,289,000
1968	17,800,000	5,920,000	4,290,000	10,210,000	179,000	143,000	322,000	10,532,000
1969	12,000,000	1,570,000	1,550,000	3,120,000	103,000	67,200	170,200	3,290,200
1970	13,700,000	3,600,000	2,820,000	6,420,000	133,000	82,700	215,700	6,635,700
1971	16,900,000	6,630,000	4,470,000	11,100,000	174,000	175,000	349,000	11,449,000
1972	19,200,000	6,850,000	4,950,000	11,800,000	197,000	167,000	364,000	12,164,000
1973	15,400,000	3,840,000	2,980,000	6,820,000	146,000	102,000	248,000	7,068,000
1974	15,000,000	3,260,000	2,700,000	5,960,000	141,000	87,700	228,700	6,188,700
1975	17,100,000	5,600,000	4,070,000	9,670,000	172,000	123,000	295,000	9,965,000
1976	15,200,000	3,480,000	2,810,000	6,290,000	143,000	89,800	232,800	6,522,800
1977	17,600,000	5,680,000	4,110,000	9,790,000	175,000	139,000	314,000	10,104,000
1978	15,000,000	2,990,000	2,540,000	5,530,000	139,000	82,100	221,100	5,751,100
1979	17,100,000	5,210,000	3,830,000	9,040,000	169,000	124,000	293,000	9,333,000

Susitna River at Sunshine – 15292780 cont.

WY	Water Volume (acre-ft)	Suspended Load			Bed Load			Total Load
		Silt/Clay	Sand	Total	Sand	Gravel	Total	
1980	18,800,000	6,530,000	4,780,000	11,310,000	192,000	179,000	371,000	11,681,000
1981	20,300,000	10,000,000	6,590,000	16,590,000	217,000	377,000	594,000	17,184,000
1982	17,400,000	5,440,000	4,010,000	9,450,000	173,000	138,000	311,000	9,761,000
1983	17,000,000	4,710,000	3,690,000	8,400,000	167,000	123,000	290,000	8,690,000
1984	17,000,000	5,000,000	3,760,000	8,760,000	167,000	138,000	305,000	9,065,000
1985	17,500,000	5,700,000	4,160,000	9,860,000	176,000	138,000	314,000	10,174,000
1986	14,900,000	3,020,000	2,570,000	5,590,000	139,000	82,600	221,600	5,811,600
1987	19,200,000	6,490,000	4,770,000	11,260,000	196,000	163,000	359,000	11,619,000
1988	18,000,000	5,510,000	4,190,000	9,700,000	180,000	124,000	304,000	10,004,000
1989	18,400,000	5,850,000	4,380,000	10,230,000	186,000	136,000	322,000	10,552,000
1990	22,900,000	10,100,000	7,130,000	17,230,000	248,000	282,000	530,000	17,760,000
1991	15,700,000	3,820,000	3,020,000	6,840,000	150,000	96,100	246,100	7,086,100
1992	15,600,000	4,030,000	3,110,000	7,140,000	150,000	96,200	246,200	7,386,200
1993	18,800,000	6,360,000	4,660,000	11,020,000	191,000	154,000	345,000	11,365,000
1994	18,200,000	5,370,000	4,100,000	9,470,000	181,000	128,000	309,000	9,779,000
1995	18,300,000	5,640,000	4,290,000	9,930,000	184,000	127,000	311,000	10,241,000
1996	14,100,000	2,400,000	2,170,000	4,570,000	127,000	77,100	204,100	4,774,100
1997	16,400,000	4,770,000	3,580,000	8,350,000	161,000	109,000	270,000	8,620,000
1998	17,300,000	5,460,000	3,980,000	9,440,000	172,000	122,000	294,000	9,734,000
1999	17,300,000	5,040,000	3,740,000	8,780,000	170,000	121,000	291,000	9,071,000
2000	19,200,000	6,850,000	4,870,000	11,720,000	196,000	168,000	364,000	12,084,000
2001	17,200,000	4,880,000	3,740,000	8,620,000	170,000	120,000	290,000	8,910,000
2002	15,700,000	3,820,000	3,030,000	6,850,000	150,000	94,500	244,500	7,094,500
2003	18,500,000	5,680,000	4,310,000	9,990,000	185,000	138,000	323,000	10,313,000
2004	17,000,000	4,470,000	3,530,000	8,000,000	166,000	99,700	265,700	8,265,700
2005	22,200,000	9,900,000	6,860,000	16,760,000	240,000	244,000	484,000	17,244,000
2006	17,900,000	6,390,000	4,590,000	10,980,000	182,000	199,000	381,000	11,361,000
2007	17,100,000	4,160,000	3,410,000	7,570,000	166,000	98,600	264,600	7,834,600
2008	15,900,000	3,690,000	3,010,000	6,700,000	152,000	92,100	244,100	6,944,100
2009	16,900,000	4,250,000	3,420,000	7,670,000	164,000	98,800	262,800	7,932,800
2010	18,000,000	5,160,000	4,020,000	9,180,000	179,000	120,000	299,000	9,479,000

Table B.2-3. Annual Sediment Load for Max LF OS-1 Conditions for Susitna River at Susitna Station

Susitna River at Susitna Station - 15294350								
WY	Water Volume (acre-ft)	Suspended Load			Bed Load			Total Load
		Silt/Clay	Sand	Total	Sand	Gravel	Total	
1950	31,100,000	10,900,000	9,710,000	20,610,000	982,000	148,000	1,130,000	21,740,000
1951	34,300,000	13,800,000	11,300,000	25,100,000	1,210,000	187,000	1,397,000	26,497,000
1952	33,600,000	15,100,000	11,300,000	26,400,000	1,260,000	204,000	1,464,000	27,864,000
1953	37,600,000	15,700,000	12,700,000	28,400,000	1,380,000	215,000	1,595,000	29,995,000
1954	36,000,000	15,500,000	12,200,000	27,700,000	1,340,000	213,000	1,553,000	29,253,000
1955	36,300,000	17,200,000	12,500,000	29,700,000	1,440,000	238,000	1,678,000	31,378,000
1956	40,000,000	21,700,000	14,600,000	36,300,000	1,780,000	302,000	2,082,000	38,382,000
1957	37,800,000	17,300,000	13,000,000	30,300,000	1,470,000	238,000	1,708,000	32,008,000
1958	35,200,000	14,100,000	11,500,000	25,600,000	1,230,000	193,000	1,423,000	27,023,000
1959	37,200,000	18,900,000	13,200,000	32,100,000	1,560,000	263,000	1,823,000	33,923,000
1960	34,600,000	13,700,000	11,400,000	25,100,000	1,210,000	188,000	1,398,000	26,498,000
1961	37,800,000	16,700,000	12,900,000	29,600,000	1,440,000	231,000	1,671,000	31,271,000
1962	34,700,000	14,300,000	11,600,000	25,900,000	1,280,000	204,000	1,484,000	27,384,000
1963	34,100,000	14,700,000	11,500,000	26,200,000	1,280,000	207,000	1,487,000	27,687,000
1964	30,900,000	12,700,000	10,100,000	22,800,000	1,100,000	174,000	1,274,000	24,074,000
1965	35,600,000	16,000,000	12,100,000	28,100,000	1,360,000	221,000	1,581,000	29,681,000
1966	33,500,000	13,600,000	11,000,000	24,600,000	1,180,000	186,000	1,366,000	25,966,000
1967	32,500,000	12,800,000	10,700,000	23,500,000	1,170,000	185,000	1,355,000	24,855,000
1968	34,000,000	14,400,000	11,300,000	25,700,000	1,240,000	198,000	1,438,000	27,138,000
1969	26,100,000	8,050,000	7,660,000	15,710,000	742,000	110,000	852,000	16,562,000
1970	33,200,000	14,900,000	11,300,000	26,200,000	1,260,000	201,000	1,461,000	27,661,000
1971	33,200,000	15,800,000	11,400,000	27,200,000	1,300,000	215,000	1,515,000	28,715,000
1972	33,900,000	14,600,000	11,400,000	26,000,000	1,260,000	203,000	1,463,000	27,463,000
1973	30,200,000	9,720,000	9,160,000	18,880,000	896,000	132,000	1,028,000	19,908,000
1974	29,800,000	9,060,000	8,940,000	18,000,000	857,000	124,000	981,000	18,981,000
1975	32,100,000	13,300,000	10,600,000	23,900,000	1,140,000	181,000	1,321,000	25,221,000
1976	31,500,000	11,300,000	9,910,000	21,210,000	1,010,000	153,000	1,163,000	22,373,000
1977	40,200,000	22,100,000	14,500,000	36,600,000	1,750,000	299,000	2,049,000	38,649,000
1978	30,600,000	10,400,000	9,460,000	19,860,000	946,000	141,000	1,087,000	20,947,000
1979	38,600,000	18,400,000	13,400,000	31,800,000	1,520,000	248,000	1,768,000	33,568,000

Susitna River at Susitna Station – 15294350 cont.

WY	Water Volume (acre-ft)	Suspended Load			Bed Load			Total Load
		Silt/Clay	Sand	Total	Sand	Gravel	Total	
1980	44,800,000	26,600,000	16,600,000	43,200,000	2,070,000	364,000	2,434,000	45,634,000
1981	40,100,000	23,100,000	14,700,000	37,800,000	1,840,000	327,000	2,167,000	39,967,000
1982	34,000,000	14,200,000	11,200,000	25,400,000	1,220,000	195,000	1,415,000	26,815,000
1983	31,700,000	10,700,000	9,840,000	20,540,000	990,000	149,000	1,139,000	21,679,000
1984	32,900,000	11,400,000	10,300,000	21,700,000	1,040,000	158,000	1,198,000	22,898,000
1985	34,200,000	14,700,000	11,400,000	26,100,000	1,260,000	202,000	1,462,000	27,562,000
1986	33,600,000	12,000,000	10,600,000	22,600,000	1,080,000	163,000	1,243,000	23,843,000
1987	39,600,000	21,300,000	14,100,000	35,400,000	1,690,000	291,000	1,981,000	37,381,000
1988	38,900,000	17,400,000	13,200,000	30,600,000	1,480,000	238,000	1,718,000	32,318,000
1989	40,800,000	23,400,000	14,900,000	38,300,000	1,830,000	318,000	2,148,000	40,448,000
1990	44,200,000	23,000,000	16,100,000	39,100,000	1,930,000	325,000	2,255,000	41,355,000
1991	34,900,000	15,400,000	11,700,000	27,100,000	1,300,000	208,000	1,508,000	28,608,000
1992	31,800,000	10,300,000	9,680,000	19,980,000	948,000	140,000	1,088,000	21,068,000
1993	38,400,000	17,900,000	13,300,000	31,200,000	1,520,000	247,000	1,767,000	32,967,000
1994	37,500,000	15,400,000	12,500,000	27,900,000	1,350,000	211,000	1,561,000	29,461,000
1995	37,100,000	15,800,000	12,500,000	28,300,000	1,370,000	217,000	1,587,000	29,887,000
1996	29,000,000	8,100,000	8,490,000	16,590,000	786,000	111,000	897,000	17,487,000
1997	31,900,000	12,500,000	10,300,000	22,800,000	1,090,000	170,000	1,260,000	24,060,000
1998	33,600,000	14,400,000	11,200,000	25,600,000	1,230,000	195,000	1,425,000	27,025,000
1999	33,400,000	13,000,000	10,800,000	23,800,000	1,130,000	176,000	1,306,000	25,106,000
2000	36,300,000	16,000,000	12,200,000	28,200,000	1,360,000	219,000	1,579,000	29,779,000
2001	34,000,000	13,400,000	11,000,000	24,400,000	1,170,000	183,000	1,353,000	25,753,000
2002	32,700,000	12,300,000	10,500,000	22,800,000	1,090,000	166,000	1,256,000	24,056,000
2003	37,900,000	15,600,000	12,700,000	28,300,000	1,370,000	215,000	1,585,000	29,885,000
2004	34,700,000	13,200,000	11,200,000	24,400,000	1,180,000	180,000	1,360,000	25,760,000
2005	44,300,000	24,800,000	16,500,000	41,300,000	2,020,000	344,000	2,364,000	43,664,000
2006	35,700,000	15,800,000	12,100,000	27,900,000	1,360,000	221,000	1,581,000	29,481,000
2007	35,100,000	12,500,000	11,200,000	23,700,000	1,140,000	171,000	1,311,000	25,011,000
2008	32,800,000	11,500,000	10,300,000	21,800,000	1,040,000	156,000	1,196,000	22,996,000
2009	34,500,000	12,600,000	11,100,000	23,700,000	1,140,000	172,000	1,312,000	25,012,000
2010	36,400,000	14,400,000	12,000,000	26,400,000	1,280,000	198,000	1,478,000	27,878,000

