DISSERTATION

SIAM – SEDIMENT IMPACT ANALYSIS METHODS

Submitted by

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WE HEREBY RECOMMEND THAT THE DISSERTATION PREPARED UNDER OUR SUPERVISION BY DAVID M. MOONEY ENTITLED SIAM – SEDIMENT IMPACT ANALYSIS METHODS BE ACCEPTED AS FULFILLING IN PART REQUIREMENTS FOR THE DEGREE OF DOCTOR OF PHILOSOPHY.

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ABSTRACT OF DISSERTATION

SIAM – SEDIMENT IMPACT ANALYSIS METHODS

The Sediment Impact Analysis Methods (SIAM) techniques provide a framework to assemble and draw quantitative sediment load and morphologic change conclusions from hydrologic, hydraulic, and morphologic information describing the flow of sediment through a watershed. SIAM conceptualizes a basin as a network of linked reaches that store, release, and convey sediment from watershed sources and channel boundaries. The procedures non-numerically assess channel stability and the movement of material from a systems approach, while maintaining linkages between local morphologic changes, sediment sources, and network evolution.

SIAM channel networks can include non-cohesive, cohesive, armored, and bedrock reaches. Inputs of sediment sources, hydrology, hydraulics, and transport potential provide information on the materials entering the system and how those materials move through individual reaches as wash load, bed material load, and transitioning material. SIAM synthesizes how sediment sources and reaches interact both locally and across the network. Results include a local balance to determine potential areas of channel instability, sediment source tracking to indicate where potentially problematic material originates, and energy-based methods to provide estimates of channel adjustment. Each concept is applied to a hypothetical scenario to demonstrate model behavior and then to Hickahala Basin, Mississippi, for a field application. Results

matched prior studies for identifying areas of channel stability and the linkages to sediment sources. Energy methods represented ranges of individual channel adjustment and equilibrium conditions with order of magnitude accuracy. Further work is required for computations predicting net aggradation or degradation from interactions between multiple adjusting unstable reaches.

SIAM quantitatively examines channel instability at the fundamental level of sediment balance rather than from the perspective of morphologic change. At the reach scale, morphologic change results from sediment imbalance. Assessment of stability at the sediment balance level may be more effective for design purposes than using an estimated morphologic change approach. The model produces a sediment analysis and design process that is more detailed than a qualitative assessment but less complicated than a numerical mobile boundary model. SIAM is a design and analysis tool for the existing condition, not a predictive tool for future conditions.

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TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF SYMBOLS, UNITS, AND ABBREVIATIONS

Symbols

a	power function coefficient
b	power function exponent
B	represents a reach at equilibrium slope for 725 tons/d
$B_{LC, I}$	stress in reach i from the balance of local channel material
C	total sand/gravel concentration in ppm by mass
C_i	concentration of material using d = representative diameter of bin i
C_t	total concentration in ppm by mass
d	particle diameter
d_0 through d_{100}	all material present in bed
d_{10}	grain diameter at which 10% of the material is finer
$d_{armor\ layer}$	threshold grain diameter for armor layer
d_{cc}	threshold grain diameter for cohesive control
d_s	particle diameter
d_{wc}	largest diameter of wash load classes
dm/dt	rate of scour
D_{50}	median grain size; grain diameter at which 50% of the material is finer
D_G	gully depth at downstream extent (ft)
D_s	representative diameter
e_b	efficiency coefficient; the portion of total power expended in transporting sediment

e_t	trap efficiency
F	units of force
F	designation of a flat reach
h	height of the water column
i	reach within a channel network
i	grain size bin
k_v	average annual volume of water
$(K_s/K_r)S$	energy loss due to grain resistance
L	units of length
L	gully length (ft)
$\overline{L}$	un-weighted average reach length over all hydraulic records
$L_{C,i}$	load of material leaving the channel reservoir from reach i
mass/year	units of the loading rate
M	empirical constant
n	number of reaches within a channel network
n	Manning n roughness value for flow in the main channel
n_i	Manning roughness for event i
N	total number of grain size bins
$N_{p,i,ds}$	network stress downstream of the pivot
$N_{p,i,us}$	network stress upstream of the pivot
p	pivoting reach
p_0	porosity of the sediment
p_i	fraction of bed material present in grain class i
p_i	fraction of material present in grain size bin i
P	wetted perimeter

P_i	wetted perimeter for event i
$P_{p,ds}$	propagated stress in the pivoting reach on the downstream side of the pivot
$P_{p,us}$	propagated stress in the pivoting reach on the upstream side of the pivot
$P_{s,b}$	fraction of total material represented in the bed gradation
$P_{s,t}$	total amount of material moving though a reach in grain class s
q_b	bedload rate in underwater weight per unit time
Q	discharge
Q_2	discharge for a 2-yr recurrence event
Q_{ac}	armor control discharge
Q_i	discrete flow interval i
Q_i	total discharge (hydrology record) in discrete flow interval i
Q_s	sediment load; quantity of sediment; volume of sediment load; sediment transport through a reach; sediment load in mass per time; sediment transport rate
Q_w	water discharge
R	hydraulic radius
R^2	coefficient of determination
R_g	grain Reynolds number
R_i	hydraulic radius for event i
S	represents a steep reach
S	energy slope
S	sediment load in mass per time
$S_{C,i}$	supply material entering the channel reservoir in reach i
$S_{1,i}$	stress from reach 1 on reach i
$S_{2,i}$	stress from reach 2 on reach i

$S_{3,i}$	stress from reach 3 on reach i
$S_{4,i}$	stress from reach 4 on reach i
$S_{5,i}$	stress from reach 5 on reach i
S_f	friction slope
$S_{f,i}$	friction slope for event i
$S_{i,N}$	stress from reach i upon the network
$S_{N,p}$	network stress in the pivoting reach
t	duration
t	time step
t_e	duration of event e in the hydrology regime
t_i	duration of interval i
T	units of time
T_E	trap efficiency for Δx
U_*	shear velocity
v	average flow velocity
v_i	average flow velocity for event i
$\frac{v}{\omega} \propto e_b$	efficiency coefficient for the proportion of total work expended in transporting sediment
V	channel flow velocity; average flow velocity
V_{cr}	critical velocity at incipient motion
V_{cr}/ω	dimensionless critical velocity
W	width of the channel bed
W	gully top width at downstream extent (ft)
W_{max}	maximum top width in the hydraulic input
x, y	subscripts indicating the impact of reach x upon reach y

x	units of the scalar value in the multiplier field
x	length of the control volume
x_p	pivot point
x_p	fraction of the total reach length from downstream end of the reach to the pivot point
x_p	ratio of distance between the downstream end of a reach and the pivot point to the total length of the reach
X	reach length; longitudinal length of the channel
X	channel length
y_t	gully volume (ft^3)
$Y_{c,i}$	channel load in grain class i
Y_d	depth of sediment over the annual regime
Y_s	sediment yield
Y_s	depth of sediment in the control volume

Greek

γ	specific weight of water
γ_s	specific weight of sediment
$\Delta q_s/\Delta x$	difference in sediment transport rates between the upstream and downstream end of the reach
Δt	duration of a flow event
ΔY_S	change in sediment yield
$\Delta z/\Delta t$	change in bed elevation over the time step
$\Delta \Pi_A$	change in applied energy
ν	kinematic viscosity
Π_A	applied work
ρ	density of sediment in mass per volume

ρ	specific mass of water
τ	shear stress
τ	bed shear force
τ_b	bed shear stress
τ_{cd}	critical shear stress for deposition
τ_{ce}	critical shear stress for erosion
ϕ	metric versus U.S. customary unit conversion
ϕ	fraction of stress absorbed by each reach
$\phi_{i,e}$	transport potential for grain class i during event e
$\phi_{1,i}$	fraction of stress from reach 1 absorbed by reach i
$\phi_{2,i}$	fraction of stress from reach 2 absorbed by reach i
$\phi_{3,i}$	fraction of stress from reach 3 absorbed by reach i
$\phi_{4,i}$	fraction of stress from reach 4 absorbed by reach i
$\phi_{5,i}$	fraction of stress from reach 5 absorbed by reach i
$\phi_{US,i}$	pivoting reach absorbs stress upstream of the pivot point
$\phi_{DS,i}$	pivoting reach absorbs stress downstream of the pivot point
$\phi_{j,i}$	pivoting reach shows the impacts from network stress from reach j on reach i
Ψ	applied work
Ψ	response parameter
ψ_i	responsiveness in reach i
$\psi_{i\rightarrow US}$	sum of responsiveness in reaches upstream of and including reach i
ω	particle fall velocity
$\overline{\omega}$	fraction weighted fall velocity
ω_i	fall velocity for the representative diameter of grain class i

Ω_A	applied stream power
Ω_T	total stream power

Units

%	percent
d	day
d/event	day(s) per event
d/regime	day(s) per regime
d/yr	day(s) per year
ft	feet
ft/ft	feet per foot
ft/s	feet per second
ft/yr	feet per year
ft^3	cubic feet
ft^3/s	cubic feet per second
lb(s)	pound(s)
lbs/ft	pounds per foot
lbs/ft^3	pounds per cubic feet
lbs/s	pounds per second
lbs/s-ft	pounds per second per foot
m	meter(s)
m/s	meter(s) per second
m/yr	meter(s) per year
m^3	cubic meter(s)
m^3/ft	cubic meter(s) per foot

m^3/s	cubic meter(s) per second
mi^2	square mile(s)
mm	millimeter(s)
N/m^2	Newton(s) per square meter
N/s	Newton(s) per second
N*m	Newton-meters
ppm	parts per million
s/yr	second(s) per year
text	text units
tonnes	metric ton
tonnes/d	metric tonnes per day
$tonnes/m^3$	metric tonnes per cubic meter
tonnes/yr	metric tonnes per year
tons	U.S. units
tons-ft	ton-feet
tons/d	ton(s) per day
tons/event	ton(s) per event
tons/ft	ton per foot
$tons/mi^2$	ton(s) per square mile
tons/regime	ton(s) per regime
tons/yr	ton(s) per year
yr(s)	year(s)

Abbreviations

CG	Coarse Gravel
CLAY	Clay

CM	Coarse Silt
CS	Coarse Sand
CSU	Colorado State University
DS	downstream
FG	Fine Gravel
FM	Fine Silt
FS	Fine Sand
GSTAR-1D	Generalized Sediment Transport for Alluvial Rivers – One Dimension
HEC-RAS	Hydrologic Engineering Center – River Analysis System
LB	Large Boulder
LC	Large Cobble
MC	Medium Cobble
MG	Medium Gravel
MM	Medium Silt
MS	Medium Sand
SAM	Sediment Analytic Model
SB	Small Boulder
SC	Small Cobble
SIAM	Sediment Impact Analysis Methods
SLA	Simons, Li, and Associates
US	upstream
USACE	U.S. Army Corps of Engineers
USEPA	U. S. Environmental Protection Agency
USGS	U.S. Geological Survey
VCG	Very Coarse Gravel

VCS	Very Coarse Sand
VFG	Very Fine Gravel
VFM	Very Fine Silt
VFS	Very Fine Sand
WFPB	Washington Forest Practices Board
XS	cross section

CHAPTER 1

INTRODUCTION

1.1 Overview

River engineering projects alter the flow of water and sediment throughout the system for a variety of reasons including water quality, habitat, and infrastructure. The maintenance requirements and sustainability depend upon the context of a project within the larger system (Watson *et al.* 1999). A change to one portion of a watershed can impact other areas far removed. Undesirable scour, deposition, or total load may originate from causes upstream, downstream, or in an entirely different branch from the problem location. Addressing the root causes of problems rather than symptoms, and developing plans that work within the processes of sediment movement and geomorphic change, reduce the ongoing maintenance costs of a river engineering project.

Existing techniques for evaluating sediment movement at scales larger than individual reaches include qualitative geomorphic evaluations describing the processes and interactions, sediment budgets summing the existing input and output within a network, and mobile boundary numerical models. A gap in analysis capabilities exists between the qualitative description of sediment sources and adjustment processes and quantitative predictive tools used for design purposes. Sediment budgets neglect long-term adjustments to a system. Numerical models can require detailed data collection efforts and the computational burden may prohibit extension of the model beyond the main stem and into tributary reaches where sediment sources may originate. Both sediment budgets and numerical models can lose the linkages between sediment sources and impacts.

The Sediment Impact Analysis Methods (SIAM) techniques provide a framework for quantitatively combining hydrologic, hydraulic, and morphologic information for a series of reaches representing a channel network. Using a systems approach, the model quantitatively and non-numerically assesses channel stability and the movement of material. The algorithms compute dynamic equilibrium in channel networks and use the sediment connectivity between reaches to evaluate the impact of local changes on the stream network from a sediment continuity perspective. At the reach scale, morphologic changes in channel geometry, slope, or planform result from sediment imbalance. SIAM quantitatively examines channel instability at the level of a sediment balance rather than from the perspective of morphologic change. Assessment of stability at a fundamental level can be more effective for design purposes than using a perceived morphologic change approach. SIAM also identifies links between local sediment supply and sources elsewhere in the channel network to provide information for targeting the origin of geomorphic problems and solutions.

SIAM does not replace mobile boundary numerical modeling, but provides an additional tool with different and sometimes complementary capabilities. River engineers, planners, and managers might use SIAM to construct a model of a large watershed to evaluate a broad range of alternatives. A more detailed study approach could then focus on the most promising alternatives in locations identified as potential trouble areas.

1.2 Objectives

The research objective was to develop and evaluate a computer model (SIAM) to integrate watershed-scale sediment continuity concepts into stream rehabilitation and management by providing a framework to combine hydrology, hydraulics, and sediment supply into geomorphic assessments and rehabilitation design. Desired model characteristics were to:

1. Include methods to identify stability trouble spots where sediment imbalances indicate aggradation or degradation trends.
2. Use existing computational methods for the hydrology, hydraulic, and sediment transport conditions to minimize complexity of the model and to minimize the learning curve for practicing engineers.
3. Provide quantitative comparisons for evaluating multiple alternatives for stream rehabilitation design and management.
4. Link the sediment imbalances in the drainage network to the sources supplying sediment, which will focus further studies and remediation efforts on potential trouble areas.

1.3 Scope and Limitations

Results provided assessment-level information. Future efforts and designs may require more detailed studies. The methods cover the following aspects of river mechanics:

1. The analysis applies to dendritic networks on a reach-by-reach basis using reach representative characteristics. Individual bends, structures, or banks are smaller than the anticipated analysis scale.
2. Sediment balances use a series of discrete discharges and durations that represent a hydrologic and hydraulic regime.
3. The evaluation measures instantaneous stability and the interpretation of results require extrapolating trends for the current stream geometry, hydrology, and sediment gradation. SIAM does not simulate the feedback processes caused by geometry changes.
4. The model quantifies sediment transport processes within the stream channel. External sources of sediment are provided as input data from techniques beyond the scope of SIAM.
5. The methods use existing hydraulic and hydrologic estimation techniques as input. Generation of hydrologic and hydraulic data lies beyond the scope of SIAM.
6. SIAM considers the hydraulics of a reach but not the techniques used to model the specific features. Simulating engineered riffles could involve increasing channel roughness or modeling a series of weirs. SIAM input only

consists of the resulting velocity, slope of the energy grade line, main channel discharge, etc.

7. SIAM uses existing sediment transport relationships as input to link the hydraulics to sediment transport capacity for both cohesive and non-cohesive materials. No new methods for estimating sediment transport rate were developed.
8. Transport processes consider a range of grain sizes divided into discrete classes represented by a single diameter for each class. Each class acts independently of the other classes.
9. SIAM can identify hydraulic conditions required for equilibrium but not recommend specific methods for generating equilibrium hydraulics.

SIAM provides a synthesis tool to establish linkages between reaches based on sediment sources and sediment continuity. Input records govern the behavior of individual sources and reaches. Though results are dependent upon the quality and applicability of the input data, SIAM functions independently of the techniques used to develop input records. By separating the development of input records from the synthesis, the model retains the flexibility to vary techniques and procedures as the state-of-the-art improves.

1.4 SIAM Concepts

At a broad level, SIAM contributes to stream assessment and rehabilitation by facilitating the integration of sediment continuity. These considerations reduce the likelihood of scour or deposition which would shorten the useful life of a project. The methods incorporate several advancements in sediment analysis.

As sediment moves through a river network, a portion of the material may originate from, or interact with, the bed and banks forming the boundaries of the channel. The transfer of particles between reaches as sediment moves downstream may occur in a state of equilibrium with supply equaling depletion and resulting in no net change to channel form. Alternately, the transfer of particles may result in an imbalance between inflowing and exiting sediment loads, causing adjustments to channel dimensions in width, profile, and planform. Some material (wash load) passes through a river reach unhindered without interacting with the channel boundaries. Particles passing unimpeded through one portion of a river network may interact with the channel boundary in another portion and vice versa. Grain-size specific computations of sediment continuity can account for the differences in impact between wash material and bed material, and the associated pollutant transport or geomorphic impacts. The ability to target sources of specific size classes can allow planners to focus rehabilitation efforts on the areas causing the most problems. In considering the transition from wash load to bed material load, immediate benefits may be realized through size-specific design practices.

Source linkages tie adjustment processes to the supply of material from sources outside the channel network or originating from channel adjustments in upstream areas of the modeled network. Targeting the supply of sediment can identify alternatives for reducing excessive loads. Simulating river engineering projects can identify potential instabilities created through modifications to the flow of material.

The simplified formulation of continuity at a single instant in time eliminates many of the numerical instabilities present in numerical modeling efforts that adjust the bed profile. The reduced modeling effort encourages inclusion of sediment transport analysis into management plans. By locating potential instabilities, detailed field investigative efforts can target the most crucial areas. Projecting the impact from local effects on the complete system reduces the likelihood of adverse impacts and identifies mitigation needs.

Work and energy-based techniques for analysis and design provide a means to evaluate the erosion and sedimentation impacts from a particular management strategy. Providing applied energy as a design parameter enables and encourages innovative and cost-effective solutions to sedimentation problems.

1.5 Chapters Outline

- **Chapter 2, Literature Review,** describes published work surrounding dynamic equilibrium, graded stream profiles, and analysis of river adjustment processes.
- **Chapter 3, Input Data Requirements,** describes the types of information required to run a SIAM model.
- **Chapter 4, Local Accounting and Sediment Loads,** describes the local accounting computational routines, including demonstration examples and a discussion of sensitivity and limitations.
- **Chapter 5, Source Tracking and Management,** describes the process of linking sediment sources to sediment yield and potential aggradational or

degradational imbalances, including a demonstration of source tracking and a discussion of sensitivity and limitations.

- **Chapter 6, Applied Energy Reach Modification,** applies stream power and energy concepts to predict the range of adjustment a channel may undergo as a result of sediment imbalances. Applied energy techniques can assist in estimating the scope of structural or operational intervention required to engineer a change in sediment continuity. Discussions include a demonstration, sensitivity, and range of applicability.
- **Chapter 7, Network Accounting,** describes how SIAM estimates the geomorphic impact from changes to one reach on the remainder of the system. The chapter includes comparisons to mobile boundary methods and a discussion of limitations.
- **Chapter 8, Watershed Implementation of SIAM,** applies SIAM to the Hickahala Basin in north central Mississippi as a field demonstration.
- **Chapter 9, Conclusions,** summarizes SIAM methodology and describes future work.
- **Appendix A** contains an example input file describing the model scenarios for the Hickahala Basin, Mississippi.
- **Appendix B** contains example output from the Hickahala SIAM simulation.
- **Appendix C** contains a list of projects and a reference citing SIAM applications.

CHAPTER 2

LITERATURE REVIEW

2.1 Overview

The motion of sediment through a system can create changes in the form and function of a landscape. The following literature review explores published efforts to understand river processes in terms of hydraulics, sediment, and morphologic interactions. Prior work includes qualitative descriptions of adjustment responses, techniques for estimating local movement, empirical relationships, and numerical process models.

2.2 The Concept of Equilibrium Channels

J. Hoover Mackin (1948) drew on the works of Gilbert (1877) and Davis (1902) to develop the concept of a graded stream. Mackin applied the concept of a dynamic equilibrium to streams at a process and time scale within the scope of an engineering project.

> "A graded stream is one in which over a period of years, slope is delicately adjusted to provide, with available discharge and with prevailing channel characteristics, just the velocity required for the transportation of the load supplied from the drainage basin. The graded stream is a system in equilibrium; its diagnostic characteristic is that any change in any of the controlling factors will cause a displacement of the

equilibrium in a direction that will tend to absorb the effect of the change."
(Mackin 1948)

Mackin sought to avoid the linguistic pitfalls surrounding equilibrium concepts in river mechanics. Rather than requiring a static state, Mackin allows the slope to fluctuate around a central tendency. The dynamic equilibrium concept allows for bed-form progression and meander migration in stable reaches. The balance between the channel hydraulics controlling sediment transport and the sediment supply to the reach generates negative feedback mechanisms toward no net change in profile over time.

Mackin excludes reaches controlled by immobile boundaries such as bedrock since the slope cannot readily adjust. Streams rarely reach capacity for fine silts and clays since the particles do not settle out of the water column under typical stream flow conditions. An armored gravel bed remains within the scope of a graded stream. The definition does not require carrying at capacity, merely passing the inflowing load. The definition requires both the potential for a stream to adjust boundaries and meet constraints on sediment transport capacity.

2.3 Quantitative Estimates of Equilibrium

Lacy (1929) developed a series of relationships known as regime equations to relate channel dimensions, slope, and velocity as a function of discharge and grain size. Leopold and Maddock (1953) related channel form and hydraulics to the channel-forming discharge through a power function. Both regime equations and hydraulic geometry use measurable design parameters to produce estimates of shape and that remain relatively fixed over time. These techniques assume a representative or design discharge, and constant controlling variables. The equations apply to site-specific scenarios and must be re-developed for each new situation.

The U.S. Army Corps of Engineers (USACE 1994) defines a set of maximum permissible velocities for a channel depending on the substrate material. Another technique defines the allowable hydraulics in terms of tractive stress (Lane 1955a). Both equations require a representative or design discharge. While accounting for the type of material, the results neglect live bed dynamic equilibrium where the inflowing load replenishes transported material and the geometry stays constant through time. Inflowing sediment could deposit in channels designed with these methods. Permitting energy values higher than static stability analysis requires accounting for particle interaction with the bed.

Mussetter (1982) computed analytical solutions to water and sediment continuity for four cases: 1) generic channels where suspended sediment is negligible; 2) wide channels where suspended sediment is negligible; 3) generic channels where suspended sediment is significant; and 4) wide channels where suspended sediment is significant. For channels with negligible suspended sediment, Mussetter used the Meyer-Peter and Müller (1948) relationship for sediment transport. Cases with significant suspended load transport used a power function fit to flow velocity, hydraulic depth, and top width. In wide channels, Mussetter substitutes depth for hydraulic radius and analytically solves for a ratio between the original width and the final stable channel width. For the general case, he developed depth-based hydraulic geometry relationships. Mussetter dealt with sediment gradations by summing the individual contributions from each class of particles before applying his equilibrium slope relationship.

Copeland (1991) described a channel-design method to generate a stable slope-width curve using depth and load predictors developed by Brownlie (1981) for sand bed channels. Brownlie's relationship yields a total load and includes the geometric standard deviation of the size distribution to account for the gradation of the bed material. The Sediment Analytic Model (SAM) hydraulic design package (Thomas *et al.* 2000) provides routines to iteratively solve the equations of water continuity, sediment continuity, and energy loss using the Copeland method over a range of widths. Hydrologic Engineering Center – River Analysis System (HEC-RAS) 3.1 includes Copeland's procedure.

Brandt (2000) reviewed relationships predicting stable channel form including regime equations and analytical solutions. Brandt found a high degree of variability in the results and cautioned against assuming broad applicability.

2.4 Sediment Transport Modes

Hydraulically transported material breaks down to three categories: 1) dissolved load, 2) wash load, and 3) bed material load (Knighton 1998). Dissolved load interacts at a molecular level as solute. Wash load comprises the portion of material not widely represented in the bed. Bed material forms the channel boundaries and moves both in suspension and in contact with the bed. Parthenaides (1977) differentiated between wash load and bed material load based on particle interaction with the flow. Wash load quantities do not depend on flow parameters, but bed material load capacity changes with channel hydraulics. Particles with diameters finer than 0.0625 mm typically move as wash load. Einstein (1950, Einstein *et al.* 1940) suggested that a wash threshold diameter is the material finer than 10% of the material present in the bed.

Yang (1973) developed an equation for sediment transport in sand-sized grain classes based on excess unit stream power, the grain Reynolds number, and dimensionless shear velocity. Equation 2-1 shows the relationship:

$$\log(C) = 5.435 - 0.286 \cdot \log\left(\frac{\omega \cdot d}{\nu}\right) - 0.457 \cdot \log\left(\frac{U_*}{\omega}\right) +$$

$$\left[1.799 - 0.409 \cdot \log\left(\frac{\omega \cdot d}{\nu}\right) - 0.314 \cdot \log\left(\frac{U_*}{\omega}\right)\right] \cdot \log\left(\frac{V \cdot S_f}{\omega} - \frac{V_{cr} \cdot S_f}{\omega}\right)$$

Equation 2-1

where,

C = total sand concentration in parts per million (ppm) by mass;

ω = fall velocity;

d = particle diameter;

ν = kinematic viscosity;

U_* = shear velocity;

V = average flow velocity;

S_f = friction slope; and

V_{cr} = critical velocity at incipient motion.

Yang uses the grain Reynolds number, Equation 2-2, to determine dimensionless critical velocity:

$$R_g = \frac{U_* \cdot d}{\nu}$$

Equation 2-2

where,

R_g = grain Reynolds number;

U_* = critical shear velocity;

d = particle diameter; and

ν = kinematic viscosity.

For Reynolds values between 1.2 and 70, Equation 2-3 yields the critical velocity:

$$\frac{V_{cr}}{\omega} = \frac{2.5}{\log(R_g) - 0.06} + 0.66$$

Equation 2-3

where,

V_{cr}/ω = dimensionless critical velocity; and

R_g = grain Reynolds number.

For Reynolds values greater or equal to 70, the critical velocity is constant, Equation 2-4:

$$\frac{V_{cr}}{\omega} = 70$$

Equation 2-4

where,

V_{cr}/ω = dimensionless critical velocity.

In 1979, Yang published a revised equation eliminating the need to compute the critical shear threshold for concentrations greater than 100 ppm. Both equations yield almost equivalent results for concentrations greater than 100 ppm, but the 1979 equation does not apply to smaller concentrations. In 1984, Yang published new regression coefficients for gravel-sized classes between 2 and 10 mm. Equation 2-5 shows the gravel transport relationship. Yang still uses Equations 2-3 and 2-4 for dimensionless critical velocity:

$$\log(C) = 6.681 - 0.633 \cdot \log\left(\frac{\omega \cdot d}{\nu}\right) - 4.816 \cdot \log\left(\frac{U_*}{\omega}\right) +$$

$$\left[2.784 - 0.305 \cdot \log\left(\frac{\omega \cdot d}{\nu}\right) - 0.282 \cdot \log\left(\frac{U_*}{\omega}\right)\right] \cdot \log\left(\frac{V \cdot S_f}{\omega} - \frac{V_{cr} \cdot S_f}{\omega}\right)$$ **Equation 2-5**

where,

- C = total gravel concentration in ppm by mass;
- ω = fall velocity;
- d = particle diameter;
- ν = kinematic viscosity;
- U_* = shear velocity;
- V = average flow velocity;
- S_f = friction slope; and
- V_{cr} = critical velocity at incipient motion.

The equations were derived from non-uniform materials. The total load over a non-uniform bed equals the sum of the transport rate for each grain class weighted by the fraction present in the bed, Equation 2-6 (Yang 1996):

$$C_t = \sum_{i=1}^{N} p_i C_i$$ **Equation 2-6**

where,

C_t = total concentration in ppm by mass;

i = grain size bin;

N = total number of grain size bins;

p_i = fraction of material present in grain size bin i; and

C_i = concentration of material using d = representative diameter of bin i.

For particles in the size classes greater than 3 mm, Meyer-Peter and Müller (1948) developed a relationship based on energy slope. Equation 2-7 shows the relationship:

$$\gamma \cdot \left(\frac{K_s}{K_r}\right)^{3/2} \cdot R \cdot S = 0.047 \cdot (\gamma_s - \gamma) \cdot d + 0.25 \cdot \rho^{1/3} q_b^{2/3} \qquad \textbf{Equation 2-7}$$

where,

γ = specific weight of water;

γ_s = specific weight of sediment;

$(K_s/K_r)S$ = energy loss due to grain resistance;

R = hydraulic radius;

S = energy slope;

ρ = specific mass of water; and

q_b = bed-load rate in underwater weight per unit time.

The USACE (1991) describes scour and deposition of cohesive materials. At grain diameters smaller than coarse silt, 0.04 mm, electro-chemical forces play a role in the initiation of motion. For clays, diameters less than 0.005 mm, electro-chemical forces dominate. As shear stress increases over incipient motion, the scour process moves through three stages. At the first stage, individual particles detach from the bed. In the second stage, small clumps, flocks, break off. When the shear stress increases to the third stage, the bed fails in bulk, creating a mass erosion process. Aggregates of silt-clay particles in motion behave as bed material load of a size equivalent to the diameter of the flock. Particles initially settle loosely on the bed in thin layers of roughly a few centimeters. Most river deposits consolidate in a week or two.

Parthenaides (1965) studied the relationship between erosion rates and shear stress for cohesive materials. From the failure of previous attempts to link erosion and deposition rates to sediment properties, he concluded that shear values must be measured empirically. Ariathurai and Krone (1976) simplified Parthenaides results into Equation 2-8 for scour:

$$\frac{dm}{dt} = M \cdot \left(\frac{\tau_b}{\tau_{ce} - 1} \right)$$ **Equation 2-8**

where,

dm/dt = rate of scour;

M = empirical constant;

τ_b = bed shear stress; and

τ_{ce} = critical shear stress for erosion.

USACE (1991) reported Equation 2-9 for deposition of fine material when the bed shear stress, τ_b, drops below a critical level for deposition, τ_{cd}:

$$\frac{dm}{dt} = M \cdot \left(\frac{\tau_b - \tau_{cd}}{\tau_{cd}} \right)$$ **Equation 2-9**

where,

dm/dt = rate of deposition;

M = empirical constant;

τ_b = bed shear stress; and

τ_{cd} = critical shear stress for deposition.

Critical shear stress for deposition values range between 0 and 0.15 N/m^2 (USACE 1991). Parthenaides (1965) found a critical velocity around 0.5 ft/s, and no influence from suspended sediment concentration on erosion rates. A gap between the critical shear stress for deposition versus the value for scour led him to conclude that cohesive particles do not interact with the bed. In beds with more than 10% silts and clays, HEC-6 (USACE 1993) uses cohesive material scour equations.

2.5 Qualitative Prediction of Channel Adjustment

Previous discussions apply to streams at grade and do not hold under perturbed scenarios. To address channel adjustment, Mackin (1948) applied Le Chatlier's Principle,

> "if a stress is brought to bear on a system in equilibrium, a reaction occurs, displacing the equilibrium in the direction that tends to absorb the effect of the stress."

Lane (1955b) defined a qualitative relationship between the controlling variables and changes in stream morphology. Sediment transport and grain size change proportionally with discharge and slope. Equation 2-10 shows the relationship known as Lane's Balance:

$$Q_S \cdot d_S \propto Q_W \cdot S_f \qquad \textbf{Equation 2-10}$$

where,

Q_s = quantity of sediment;

d_s = particle diameter;

Q_w = water discharge; and

S_f = friction slope.

Modifications to one parameter result in adjustment of the others to regain equilibrium. For example, to hold sediment transport constant, increased discharge must be balanced by a decrease in slope or an increase in grain size. Lane categorizes types of adjustment into six classes depending on the slope adjustment. In class 1, the sediment supply increases and requires an increase in slope to balance transport capacity. Class 2 occurs when a decrease in sediment load causes a corresponding decrease in slope. Class 3 and 4 disturbances originate from raising or lowering of the base level. Classes 4 and 5 occur with a longitudinal shift in base-level control.

Hey (1994) qualitatively described the expected response of rivers to anthropogenic modification. He divides engineering works into flood alleviation, regional channel stabilization, local channel stabilization, and river restoration schemes. Under each category, he discusses several design options and the impact on channel stability and environmental restoration goals. In general, reducing the energy dissipation from bank resistance creates the potential for instabilities. Concentrating flow through levees or floodplain encroachment also threatens to initiate degradation. Hey recommends a geomorphologic approach that accounts for dynamic equilibrium as the most cost-effective stabilization method relative to designs using regime equations or tractive stress calculations.

2.6 Quantitative Measures of Channel Adjustment

Quantitative measures of channel adjustment relate sediment supply to sediment transport over a given time step and adjust the channel cross section based on the mass balance. Julien (1998) modified the Exner (1925) relationship to develop Equation 2-11 showing the aggradational change in bed elevation as a function of the trap efficiency, porosity of the sediment, and unit sediment load over a reach:

$$\frac{\Delta z}{\Delta t} = -\frac{T_E}{(1-p_0)} \cdot \frac{\Delta q_s}{\Delta x}$$ **Equation 2-11**

where,

$\Delta z/\Delta t$	=	change in bed elevation over the time step;
T_E	=	trap efficiency for Δx;
p_0	=	porosity of the sediment; and
$\Delta q_s/\Delta x$	=	difference in sediment transport rates between the upstream and downstream end of the reach.

The trap efficiency, T_E, represents the amount of sediment able to settle within the reach length. Equation 2-12 (Julien 1998) approximates trap efficiency with an exponential decay function for settling suspending load. Variables include reach length, particle fall velocity, depth of the water column, and the longitudinal velocity of the channel:

$$T_E = 1 - e^{\frac{-X \cdot \omega}{h \cdot V}}$$ **Equation 2-12**

where,

T_E = trap efficiency;

X = channel length;

ω = particle fall velocity;

h = height of the water column; and

V = channel flow velocity.

Equation 2-13 shows the relationship for channel degradation neglecting length requirements for entrainment (USACE 1993). Assuming equilibrium transport and converting to mass and unit width, Equation 2-11 equals Equation 2-13:

$$\frac{dQ_s}{dx} + W \cdot \frac{dY_s}{dt} = 0$$ **Equation 2-13**

where,

Q_s = volume of sediment load;

x = length of the control volume;

W = width of the channel bed;

Y_s = depth of sediment in the control volume; and

t = time step.

The HEC-6 model (USACE 1993) simulates vertical channel adjustment under quasi-steady flow conditions. HEC-6 uses Equation 2-13 for aggradation and degradation. Features include multiple sediment transport relationships, armoring, and channel maintenance options. HEC-6 does not include channel widening or unsteady flow effects. Generalized Sediment Transport for Alluvial Rivers – One Dimension (GSTAR-1D; Huang and Greimann 2005) incorporates more recent sediment transport theory and more complex hydraulics to adjust cross sections based on continuity after a series of time steps. Constructing a model requires defining properties of the substrate, coding the channel geometry, estimating the discharge or range of discharges, and quantifying inflowing sediment. The solution requires setting time steps where changes in bed elevation do not significantly affect the water surface profile.

Operation of the HEC-6 or GSTAR-1D model requires knowledge of numerical modeling and the behavior of the governing equations. A successful model might require adjusting inputs to work with the implementation of the equations to formulate a model with numerical stability. Gee (1989) reviewed the sensitivity of HEC-6 to input parameters. The model is most sensitive to cross-section geometry, movable bed limits, bed material gradation, and inflowing load. Results were relatively insensitive to the downstream boundary water surface rating curve and water temperature. For the problems reviewed by Gee, roughness and flow record were moderately sensitive. After comparing HEC-6 to flume experiments, Tingsanchali and Supharatid (1996) found total load equations matched bed profiles the best. They concluded the average prediction of bed change pattern was good for both abrupt changes and gradual variations in geometry, but the model performed poorly near areas of highly non-uniform flow.

2.7 Energy Methods and Stream Network Relationships

Stream power provides a means of understanding channel adjustment processes. Bagnold (1966) used stream power to predict sediment transport. Equation 2-14 shows the relationship between sediment transport and hydraulics:

$$Q_s = \left(\frac{\gamma}{\gamma_s - \gamma}\right) \cdot \tau \cdot v \cdot P \cdot e_b \cdot \tan(\alpha) \qquad \textbf{Equation 2-14}$$

where,

Q_s = sediment transport through a reach;

γ = specific weight of water;

γ_s = specific weight of sediment;

τ = bed shear force;

v = average flow velocity; and

P = wetted perimeter.

Total stream power is derived from shear stress multiplied by the velocity multiplied by the lateral length of application. Equation 2-15 shows stream power in terms of shear stress and Equation 2-16 shows the hydraulic components of shear stress:

$$\Omega_T = \tau \cdot v \cdot P \qquad \textbf{Equation 2-15}$$

$$\tau = \gamma \cdot R \cdot S_f \qquad \textbf{Equation 2-16}$$

where,

Ω_T = total stream power;

τ = shear stress;

v = mean channel velocity;

P = wetted perimeter;

γ = unit weight of water;

R = hydraulic radius; and

S_f = friction slope.

Bagnold (1980) developed an empirical relationship using stream power in excess of the mass required to move sediment. Yang (1973) also linked stream power and movement of material at multiple scales and grain diameters. Gregory (1979) applied stream power to describe large-scale geomorphic behaviors from a geologic time frame. Yang (1984) used unit stream power and an assumption of minimum energy dissipation to derive coefficients for hydraulic geometry. Molnár and Ramírez (1998a) applied minimum energy dissipation to predict channel geometry on Goodwin Creek, Mississippi. Molnár and Ramírez (1998b) extended the concept further to predict stability and the potential for channel adjustment.

2.8 Stable Channel and Rehabilitation Design

Soar and Thorne (2001) defined a four-step procedure for stream-rehabilitation projects beginning with a baseline survey identifying stable reference reaches and a channel-forming discharge. In the first step, "supply reach assessment," the boundary conditions on a candidate reach are established, including quantity and gradation of sediment supply and the flow frequency. The "project reach assessment" identifies goals, constraints, and the basic planform for the restoration design. The third step, "channel design," involves selecting reach average dimensions, planning local variability, and assessing stability. Final construction plans are prepared in the last stage.

Copeland *et al.* (2001) outline design procedure options for computing a stable channel. The authors solve the problem of indeterminacy in graded channel design equations by a combination of analytic routines and empirical equations. After generating a family of stable slope-width pairs, a hydraulic geometry relationship is used to select design width.

Thomas (1995) described a process for verifying proposed grade control structures using HEC-6. His methods check, rather than prescribe, the final design. Initial spacing studies are recommended to use SAM. Thomas recommends including field recognizance and empirical relationships.

2.9 Summary

MacDonald (2000) described a need to evaluate the combined impact from multiple actions within a watershed in both space and time. Procedures and models exist in varying stages of development for quantifying individual sediment contributors to a watershed (for example: Washington Forest Practices Board (WFPB 1997) and the U. S. Environmental Protection Agency (USEPA 1999)). Methods for routing sediment through main stem reaches and large tributaries with numerical mobile boundary models have been validated and applied (HEC-6, GSTAR-1D). Catchment models are available for evaluating small headwater basins (USEPA 1999). A review of the literature failed to identify a means for rapidly and quantitatively evaluating the sediment impacts and linkages at multiple scales within large channel networks and tying impacts to the sources. Researchers continue to develop new techniques for estimating quantities and movement, but tools for drawing large-scale conclusions are limited.

CHAPTER 3

INPUT DATA REQUIREMENTS

3.1 Overview

The SIAM model synthesizes quantitative geomorphic information for a watershed. SIAM represents a watershed as a series of linked sediment reaches dividing a channel network into segments at significant changes in bed composition, hydrology, hydraulics, sediment transport, or sediment sources. Reaches span the length of potential projects or portions of river with unique characteristics. Sections upstream and downstream of a tributary junction must belong to separate reaches. The selection of sediment reaches determines the resolution of the model. Longer reach lengths smooth small imbalances, while shorter lengths identify more localized effects. Input includes locations, magnitudes, and composition of catchment sediment sources; magnitudes and durations of discharges comprising a hydrologic regime; hydraulic performance of the stream network; and sediment transport characteristics of the channels. The SIAM framework provides the linkages to connect sediment movement to geomorphic change through a channel network. The methods allow flexibility to accommodate a variety of technologies and techniques to quantify watershed processes. A discussion of specific input assessment procedures lies beyond the scope of the SIAM model. SIAM compiles diverse geomorphic information into a quantitative description of stream morphology.

3.2 Tables, Templates, Sets, Records, and Fields

SIAM groups input and output into tables corresponding to different types of information. Each table consists of records representing related pieces of data called fields. Related records within a single table are called a group or a set. A template establishes a record containing data common across multiple other records. Figure 3-1 shows input tables.

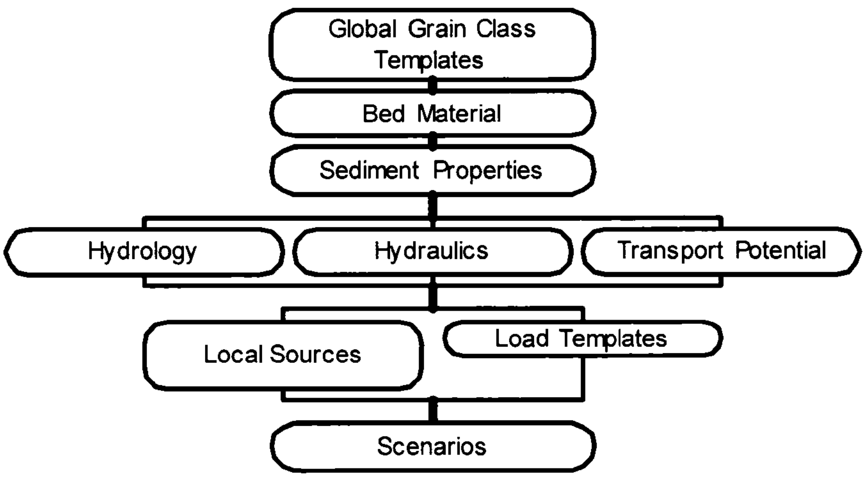

Figure 3-1 SIAM Input Tables.

Global grain class templates divide a continuous sediment spectrum into discrete categories. Bed material sets and sediment-property records control the interaction between the channel boundary and sediment transport. Hydrology, hydraulics, and transport potential represent a probability distribution for events within a flow regime. Local sources and load templates specify sediment inputs. Scenarios assign sets of records to reaches within a network and describe network topology.

Each flow event includes a hydrology, hydraulic, and transport potential record. While overall flow sequence does not matter, a set of hydrology, hydraulics, and transport potential records must use the same record order for SIAM to properly link the records for a single event. The event data output table shows the combined hydrology-hydraulic-transport potential groupings.

The division into multiple tables maximizes the flexibility of the SIAM model and simplifies the input process. Users may develop a single set of records for the hydrology of all first-order streams and apply the same table multiple times within a scenario. The same hydrology table may be associated with different hydraulic tables and vice versa. The number and order of records in a set of events must remain the same. Different sets may use different numbers of events.

3.3 Global Grain Classes

SIAM classifies grain classes according to a representative diameter such as the geometric mean. Table 3-1 describes the fields in a global grain class record.

Table 3-1 Global Grain Class Fields.

Field	Units	Description
Name	Text	Name of the global grain class
Diameter	Length	Representative grain diameter for the global grain class
Fall Velocity	$\frac{\text{Length}}{\text{Time}}$	Representative settling velocity of the particle in a column of water
Comment	Text	Notes

Sediment accounting uses the diameter to determine transport mode. Energy computations use the fall velocity. Table 3-2 shows a classification system with divisions based on a log-2 scale.

Table 3-2 Wentworth Grain Classification.

Designation	Abbreviation	Upper Bound (mm)	Geometric Mean (mm)
Clay	CLAY	0.004	0.0028
Very Fine Silt	VFM	0.008	0.0055
Fine Silt	FM	0.016	0.011
Medium Silt	MM	0.031	0.022
Coarse Silt	CM	0.0625	0.044
Very Fine Sand	VFS	0.125	0.088
Fine Sand	FS	0.25	0.177
Medium Sand	MS	0.5	0.354
Coarse Sand	CS	1	0.707
Very Coarse Sand	VCS	2	1.414
Very Fine Gravel	VFG	4	2.828
Fine Gravel	FG	8	5.656
Medium Gravel	MG	16	11.31
Coarse Gravel	CG	32	22.63
Very Coarse Gravel	VCG	64	45.25
Small Cobble	SC	128	90.51
Medium Cobble	MC	256	181.0
Large Cobble	LC	512	362.0
Small Boulder	SB	1024	724.0
Large Boulder	LB	2048	1448

Distinguishing impacts between closely spaced grain sizes may require more classes. At a minimum, the divisions must include separate classes for each transition between wash load and bed material load.

3.4 Bed Material

Bed material establishes the particle distribution of the sediment in the portion of the channel boundary available for hydraulic interaction with the water over the modeled range of flows. Bed material also contributes to computing the fraction-weighted fall velocity for use in energy computations. Table 3-3 lists input fields for a bed material record.

Table 3-3 Bed Material Fields.

Field	Units	Description
Name	Text	Name of the bed material record
Global Grain Classes	Fraction	Fraction present of sediment load in decimal form for each grain class in the global grain class template records
⋮		
Comment	Text	Notes

In an armored or paved reach, the bed material should include a sample representating the active layer upon destruction of the pavement. Supply-limited material within the channel boundary should not be included in the bed material input records for armored reaches. In most cases, silt and clay are supply limited in an armored bed. In cohesive reaches, the bed material should include the silts, clays, and embedded coarse materials that will release under scour processes.

The sum of the fractions in a set should not exceed unity, but the model will accept smaller totals to allow scenarios where a user wishes to exclude fractions from analysis. SIAM does not consider multiple layers of bed material.

3.5 Sediment Properties

Sediment properties control the interaction between event hydraulics and the channel boundary. Interactions include non-cohesive live-bed sediment transport, cohesive scour, bedrock, and armored or paved substrates. Table 3-4 lists sediment property fields.

Table 3-4 Sediment Property Fields.

Field	Units	Description
Name	Text	Name of the sediment property record
Wash load Threshold	Length	Largest diameter of material moving through the reach without interacting with the channel boundary
Cohesive Control	Length	Largest diameter of material subject to significant cohesive forces, typically silts and clays, 0.0625 mm
Armor Control	$\frac{\text{Length}^3}{\text{Time}}$	Smallest discharge at which bed material begins to move; below the threshold, no bed material transport occurs
Density	$\frac{\text{Mass}}{\text{Length}^3}$	Conversion factor for changing sediment loads into a volume of material
Comment	Text	Notes

The density of sediment provides a conversion between mass and volume for output tables requesting depth. Density may be computed using specific gravity and porosity or measured in the field.

SIAM treats diameters less than or equal to the wash load threshold as wash material. The wash load threshold specifies the largest grain diameter passing through the reach over an annual regime without interacting with the channel bed, supply-limited capacity. Larger diameters constitute channel material and either originate from, or interact with, the reach boundaries as bed material load. In unarmored, non-cohesive beds, the wash load threshold corresponds to the portion of the sediment gradation not found in the bed in appreciable quantities (Einstein *et al.* 1940). Einstein recommends setting the threshold to the grain diameter at which 10% of the material is finer, d_{10}. The SIAM definition of wash load, requiring interaction with the channel boundary, includes material freed through cohesive scour or destruction of the armor layer since the material will not deposit and create geomorphic change.

Cohesive control sets the maximum diameter of material where cohesive forces dominate erosion processes rather than hydraulics. The USACE considers inter-particle cohesion significant when the median grain diameter falls below 0.0625 mm (USACE 1991). HEC-6 (USACE 1993) considers a stream subject to cohesive control when more than 10% of the bed consists of cohesive material. The user specifies when a cohesive control is present in a SIAM model according to criteria outside the scope of the SIAM model. A zero value indicates no cohesive control. Positive values indicate the presence of a cohesive control. In a cohesive or bedrock stream, all grain classes must pass through the reach without net deposition in order for the substrate to remain uncovered. If deposition does not occur, all grain classes must pass through the reach and, by definition, the wash load threshold must span all material present in the bed. A layer of sand over a cohesive reach would be considered under cohesive control if scour of the underlying silts and clays controls the profile. SIAM considers bedrock a special case of cohesive channel where the cohesive control equals the upper bound of the smallest particle diameter class in the global grain templates and all material will pass through.

Armor control sets a discharge threshold representing the flow necessary to disrupt the armor layer, or pavement, of a stream. Below the threshold, the flow lacks the competence to alter the channel bed. Above the threshold, the concept of equal mobility applies and the entire bed moves subject to transport potential. Armor control works as an on-off switch based on discharge. Discharge should include only the portion of the flow conveyed by the main channel and should correspond to the discharge in the hydraulic records rather than the hydrology records. In an armored reach, wash material spans all diameters finer than the armor layer. As with a cohesive reach, all finer grains must pass through the reach in order for the armor layer to remain uncovered. SIAM will pass all material below the wash load threshold through the reach as wash load. The armor threshold may be computed through incipient motion equations, field reconnaissance, or other means.

SIAM considers wash material to be all grain classes not impacting the structure of the channel boundary. For cohesive reaches, scour processes dominate and no grains moving into the reach impact width or profile in the current reach. Under scenarios representing altered condition, coarse grains may deposit depending on upstream conditions and transport potential. In armored reaches, material finer than the diameters comprising the armor layer moves through the system without net deposition. The grains with diameters equal to or coarser than the armor layer limit scour. If SIAM identifies a depositional process, the wash load threshold and armor control may require modification and a second model run.

The wash load and cohesive thresholds should correspond to the upper limit of a grain class. If the median diameter is less than or equal to the threshold, SIAM will assume the entire bin is wash material. The wash load and cohesive thresholds use the diameter at the upper bound, while the grain class bins use the geometric mean. This strategy avoids floating point ambiguity when determining transport mode and cohesion.

3.6 Hydrology

Hydrology records describe the magnitude, duration, and water temperature of discharge events. The magnitude represents the total flow for a storm event including both the main channel and floodplain areas. Hydrology records describe a flow regime representing the distribution of discharges over a time period. This time period is typically 1 yr, and represents an annual regime. In an annual regime, the sum of the durations should not exceed 365.25 days. A 100-yr recurrence event should be represented by a hydrology record with a 100-yr discharge acting for 1/100th of the event duration. Total durations of less than 1 yr may be used in systems with flows deemed insignificant for part of the year. Modeling total durations longer than 1 yr may represent periodic climatic cycles. Periodic cycles spanning more than 1 yr can be normalized to a single year, as with the example of the 100-yr event. Because SIAM does not adjust geometry or recompute hydraulics, long regimes violate the assumption of constant conditions. Shorter regimes may neglect cyclic processes. Table 3-5 lists the hydrology fields.

Table 3-5 Hydrology Fields.

Field	Units	Description
Set	Text	Name of the hydrology set
Event	Text	Name of the flow event
Discharge	$\frac{\text{Length}^3}{\text{Time}}$	Total magnitude of flow including both the main channel and floodplain areas
Duration	$\frac{\text{Time}}{\text{Time}}$	Duration of the flow
Temperature	Degrees	Temperature of the flow in the main channel
Comment	Text	Notes

The duration field expands the individual sediment transport rates into regime quantities as well as computing total applied work from the stream power of a single event. SIAM computations use the flow in the hydrology records for the applied energy computation routines. The analysis of armor control, applied power, and applied work are limited to the main channel by using the discharge specified in the hydraulic records, not the hydrology field. SIAM does not verify hydrologic continuity. Discharges or volumes within a reach do not need to equal the sum of the upstream inflow.

3.7 Hydraulics

The hydraulic table contains a record for each entry in hydrology. Hydraulic records define the average hydraulic performance over the entire reach for the portion of the cross section within the main channel. Records do not include the floodplain hydraulics. When the flow exceeds channel capacity, the hydraulic discharge will no longer correspond to the hydrology discharge. SIAM links hydrology-hydraulic pairs according to the order of entry, but the sequence does not matter. Within a record, fields must use the same length and time units. Table 3-6 lists hydraulic fields.

Table 3-6 Hydraulic Fields.

Field	Units	Description
Name	Text	Name of the hydraulic set
Event	Text	Name of the flow event
Discharge	$\frac{\text{Length}^3}{\text{Time}}$	Magnitude of flow in the main channel
Depth	Length	Distance from the water surface to the thalweg in the main channel
Area	Length^2	Active flow area in the main channel
Velocity	$\frac{\text{Length}}{\text{Time}}$	Speed of flow within the main channel
Radius	Length	Hydraulic radius of the main channel
Top Width	Length	Top width across the active portion of the main channel
Perimeter	Length	Wetted perimeter of the main channel
Friction Slope	Fraction	Slope of the energy grade line in the main channel
Bed Slope	Fraction	Average slope between cross-section inverts
Reach Length	Length	Travel distance for flow in the main channel
Roughness	Manning n	Manning n roughness value for flow in the main channel
Comment	Text	Notes

3.8 Transport Potential

Transport potential reflects the hydraulic ability of a channel to move sediment within a grain class. Table 3-7 lists transport potential fields.

Table 3-7 **Transport Potential Fields.**

Field	Units	Description
Name	Text	Name of the transport potential set
Event	Text	Name of the flow event
Global Grain Classes	$\frac{\text{Mass}}{\text{Time}}$	Contribution of sediment load in mass per time within each grain class in the global grain class template records
⋮		
Comment	Text	Notes

The values of the transport potential records depend on whether hydraulic or cohesive forces dominate for a grain class. For non-cohesive channels, or grain classes above the cohesive control, records represent the transport potential assuming a uniform bed composed of material in the class. In cohesive channels, for grain classes below the cohesive thresholds, the transport potential equals the total scour mass including all grain diameters. Chapter 4 discusses computations in more detail, but when interacting with transport potential the order of operations for evaluating sediment properties, for each grain class, starts with wash load threshold, then armor control, and lastly cohesive control.

In non-cohesive beds, each field in the transport potential represents the capacity of the stream to transport the given grain size assuming a uniform composition of the bed. Figure 3-2 shows the modeling of a reach with non-cohesive materials.

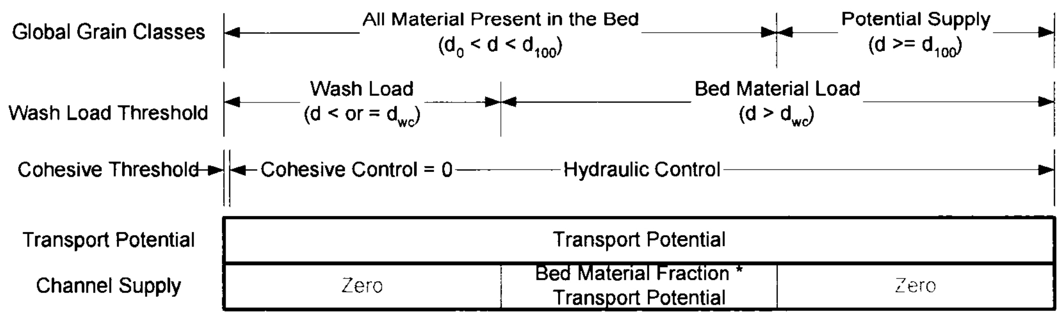

Figure 3-2 Sediment Transport Properties for Non-cohesive Reaches.

A lack of silts and clays means cohesive forces do not control scour. The cohesive control threshold is set to zero. Transport potential records will represent the carrying capacity of the stream in all classes. The resulting channel load will equal zero in wash material classes and be a function of the fraction present and the carrying capacity for larger grains. Grain classes larger than the material present in the bed could potentially be supplied from sources outside the channel boundaries.

In cohesive beds, channel competence should move all grain classes present in the bed and the wash load threshold equals the D_{100}. The bed material records should represent the block of material adhered together due to cohesive forces. Figure 3-3 shows sediment transport properties for a reach with cohesive substrate.

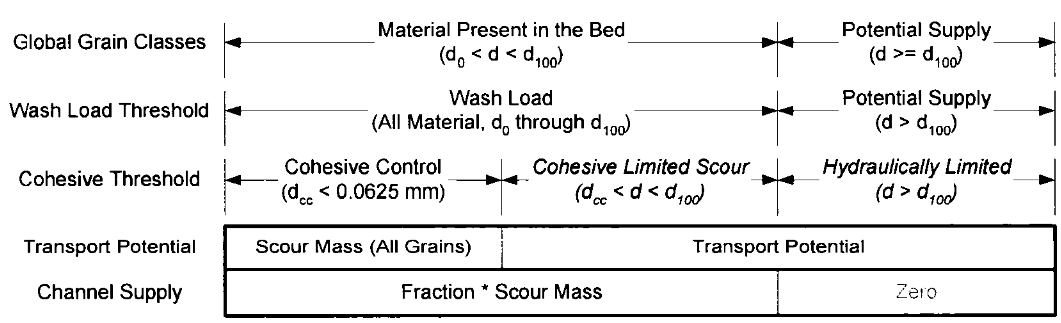

Figure 3-3 Sediment Transport Properties for Cohesive Reaches.

The transport potential records still contain hydraulic carrying capacity values for grain classes larger than the cohesive control. For grains below the cohesive control, the transport potential contains the scour rate for the entire block. For all grain classes, the channel load will only release material at the rate of the total cohesive scour mass multiplied by the fraction present. If the model contains two classes below the cohesive threshold, both classes would contain the same value. Above the cohesive threshold, cohesive and non-cohesive streams all use equivalent transport potential records. Zero or very low scour mass rates represent bedrock reaches.

Armored and unarmored non-cohesive streams use identical transport potentials for the same hydraulics. The wash load threshold will span the entire range of material present in the active layer under scour conditions. Figure 3-4 shows the sediment transport properties for an armored reach.

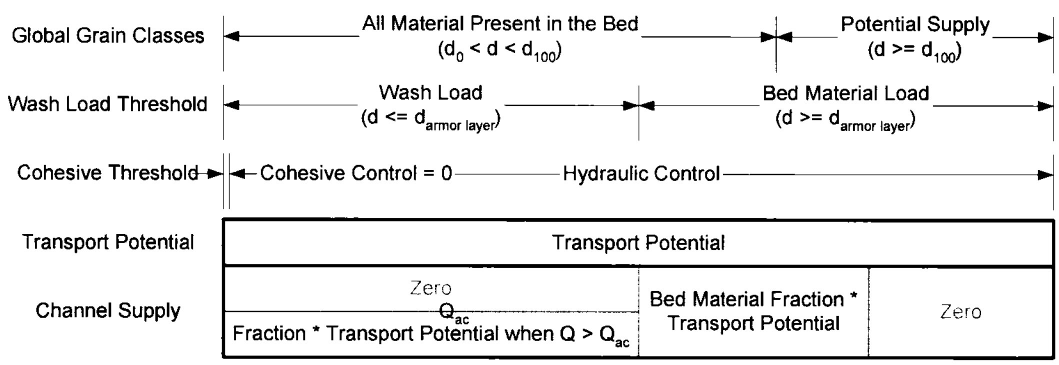

Figure 3-4 Sediment Transport Properties for Armored Non-cohesive Reaches.

Below the discharge threshold, the stream will not release any material from the bed. Above the discharge, all bed material will move as a function of the transport potential. Figure 3-5 combines cohesive and armor control to represent gravel or armoring over a cohesive bed.

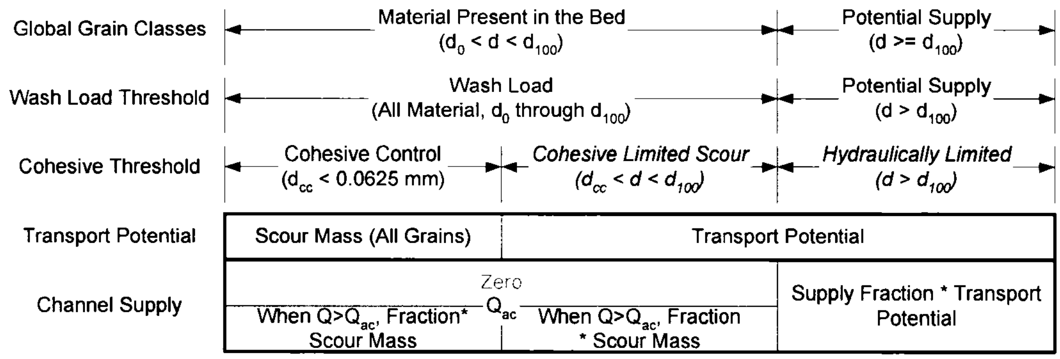

Figure 3-5 Sediment Transport Properties for Armored Cohesive Reaches.

Implementing both cohesive and armor control will limit entrainment of material to the scour mass in the transport potential records but only when the discharge exceeds the armor-control threshold. Coarse material will still release material according to transport potential.

3.9 Loading Templates and Local Sources or Sinks

Local sediment sources include material supplied to a reach from outside of the channel bed or upstream of the model boundary. Sources include inflows to the reaches at the upstream boundary of the model, bank failures, surface erosion, gravel mining, gully formation, and all other forms of external sediment production. Local sediment-source records do not include material hydraulically supplied between modeled reaches through entrainment or bed scour.

Input combines two tables. The two tables allows the user to first define generic values for sources such as bank failure, gullies, and surface erosion; and then multiply each source by a factor to scale the load for the number or magnitude of occurrences within a specific watershed. Negative values for loading templates represent persistent sinks such as a maintained in-channel reservoir or diversion structures. Sinks such as gravel pits can be modeled using hydraulics or negative local sources. Some anticipated loading multiplier pairings include:

- upstream boundary sediment load for an input discharge multiplied by duration;
- gully supply rate multiplied by the number of contributing gullies;
- bank failure block multiplied by the length of failing bank within the reach; and
- surface erosion rate multiplied by the drainage area.

Table 3-8 lists the fields in a loading template and Table 3-9 lists the fields in a local sources record.

Table 3-8 Loading Template Fields.

Field	Units	Description
Name	Text	Name of the loading template
Grain Class ⋮	$\frac{\text{Mass}}{\text{Time}}$	Contribution of sediment load in mass per time within each grain class in the global grain class template records
Comment	Text	Notes

Table 3-9 Local Sources Fields.

Field	Units	Description
Name	Text	Name of the local sources set
Template	Text	Name of the load template
Multiplier	Number	Number or scale of the load template
Comment	Text	Notes

Users must ensure units of the loading record and the multiplier result in a mass per year, Equation 3-1:

$$\frac{{}^{mass}\!/_{year}}{x} \cdot x = {}^{mass}\!/_{year} \qquad \textbf{Equation 3-1}$$

where,

mass/year	=	units of the loading rate; and
x	=	units of the scalar value in the multiplier field.

3.10 Scenarios

Scenarios link sets of records to specific reaches and define network topology. A confluence may merge multiple upstream contributors but everything must drain to a single downstream reach. Looped networks are not supported unless a single sediment reach can represent the characteristics of the entire looped portion and there is no need to differentiate between sediment impacts in different legs of the loop. Table 3-10 lists the fields in a scenario table.

Table 3-10 Scenario Fields.

Field	Units	Description
Stream	Text	Name of the river
Reach	Text	Name of the reach within a river
DS Reach	Text	Key for the immediate downstream reach receiving water and sediment
Bed Material	Text	Name of the bed material set comprising the channel material
Sediment Properties	Text	Name of the sediment property set specifying the transport characteristics of the channel material
Hydrology	Text	Name of the hydrology set containing flow magnitude and duration records
Hydraulics	Text	Name of the hydraulic set specifying the flow characteristics of the channel under each flow event
Transport Potential	Text	Name of the sediment transport potential set specifying the amount of material per time under uniform bed conditions
Local Sources	Text	Name of the set of records specifying sediment input to the channel from sources outside the channel boundary
Comment	Text	Notes

Multiple scenarios represent different watershed conditions. Past, present, and potential future alternatives may require different sets of records and thus comprise a different scenario. Multiple scenarios can be stored within a single SIAM model or the user may choose to construct multiple models.

3.11 Output Specification

SIAM output also follows the pattern of tables, sets, and records. The output section begins with a definition of units and a list of specific tables. Specific tables are described in the sections discussing computational methods. In general, output tables include a table with a reach-by-reach summary and a table with "details" listing the individual components in the reach summary.

SIAM can report table values as a total load or normalize by distributing the value over the length and width of a reach to yield a depth per channel area. While mass equations provide an absolute magnitude of the sediment impact, depth provides an indication of the relative impact on a particular reach. Large sediment masses on long wide reaches exert smaller impacts than large sediment masses on smaller reaches. Equation 3-2 shows the formula for converting an annual load to a depth:

$$Y_d = S \cdot \frac{1}{\rho \cdot \overline{L} \cdot W_{max}}$$ **Equation 3-2**

where,

Y_d = depth of sediment over the annual regime;

S = sediment load in mass per time;

ρ = density of sediment in mass per volume;

$\overline{L}$ = un-weighted average reach length over all hydraulic records; and

W_{max} = maximum top width in the hydraulic input.

Input data reflection tables can assist in creating plots or verify the proper assembly of information in the input file. SIAM includes the following tables to reflect the input records:

- **Reach Distances**: Four values measuring: 1) the distance from the downstream end of the reach to the mouth of the stream; 2) the distance from the downstream end of the reach to the basin outlet (downstream model extent); 3) the distance from the middle of the reach to the mouth of the stream; and 4) the distance from the middle of the reach to the basin outlet. Reach distances allow the SIAM output to be plotted in profile.

- **Flow Events**: Reflection of the input hydrology, hydraulics, and transport potential input assembled as one record to allow users to verify proper linkages across input tables.

Example input files in Appendix A describe different model scenarios. Appendix B contains an example output from the Hickahala Basin, Mississippi.

3.12 Reach Length and Modeling Scale

SIAM considers reach-averaged properties. Reach breaks occur at tributaries, projects, and places with a physical justification for a change in conditions. Longer reaches smooth variability while shorter reaches show more variability. The length of the reach determines the scale of the result. To evaluate stability at a riffle scale, SIAM requires defining each riffle as a separate reach. For evaluating stability over many riffles, a reach spanning many riffles will create the required resolution. However, SIAM methodology returns trends and trends require care when extrapolating. A riffle-scale anlaysis may show areas of aggradation where the riffle grows and degradation where the riffle erodes. If a reach spans many riffles, the general number and size of riffle might remain constant. A riffle is unstable at a riffle scale and a proper formulation of SIAM would show that. A reach of the same riffles may be in dynamic equilibrium and a longer reach would show no net change. Similarly a long reach encompassing a headcut may fail to identify the severity of the imbalance. The time scale of the anlaysis is limited to the period where the forces driving the identified processes are likely to remain constant.

The selection of reach breaks becomes a model scoping consideration rather than a model parameter and cannot take place without consideration of the features present in the modeled system.

CHAPTER 4

LOCAL ACCOUNTING AND SEDIMENT LOADS

Local accounting models the movement of sediment and the sediment interactions with the channel boundaries from sources in the immediate vicinity or those connected through processes active within the time frame of a single regime. Local accounting results include the wash load, channel load or bed material load, and the difference between the modeled sediment supply and equilibrium transport. The immediate morphologic and yield impact from a change in sediment sources, flow regime, hydraulics, or transport would appear within the local accounting tables, including the potential to destabilize a reach. Longer-term effects such as the upstream migration of a headcut, downstream translation of a sediment pulse, or change in supply of material forming the channel boundary will not appear in the local accounting records outside of the immediately impacted reach. Morphology related impacts from causes outside the immediate reach connections are discussed in *Network Accounting*, Chapter 7.

The following sections describe the local accounting conceptual model and related output tables, show examples of using sediment properties to model different types of substrate for channel load calculations, and demonstrate the local balance routines.

4.1 Local Accounting Methods

The sediment accounting algorithms divide particle gradations bins into wash or channel material on a reach-by-reach basis and treat the two transport modes separately. Wash material passes through a reach without interacting with or modifying the channel boundary. Channel material either interacts with, or originates from, the boundaries. A reach in SIAM consists of a wash material reservoir, a channel material reservoir, and linkages. Upstream material enters into one of the reservoirs through linkages between reaches according to both the transport mode in the immediately adjacent upstream reaches and the transport mode in the local reach. Material leaves a reach as either channel load or wash load. Four possible transitions can occur between reaches:

1. the grain size moves as wash load locally and was wash material upstream;
2. the grain size moves as wash load locally but was channel material upstream;
3. the grain size moves as bed material load locally but was wash material upstream; or
4. the grain size moves as bed material load locally and was channel material upstream.

At junctions with two or more streams, Scenarios 1 and 2 or 3 and 4 may occur simultaneously within a grain-size class. Material leaving the channel-material reservoir is designated as channel load. Channel material includes all grain classes forming the boundary of the stream, including fine grain classes, freed through cohesive scour or destruction of an armor layer. For cohesive scour and armor layer destruction, transport in the smaller grain classes may not be hydraulically limited. Figure 4-1 shows the components of a local sediment budget.

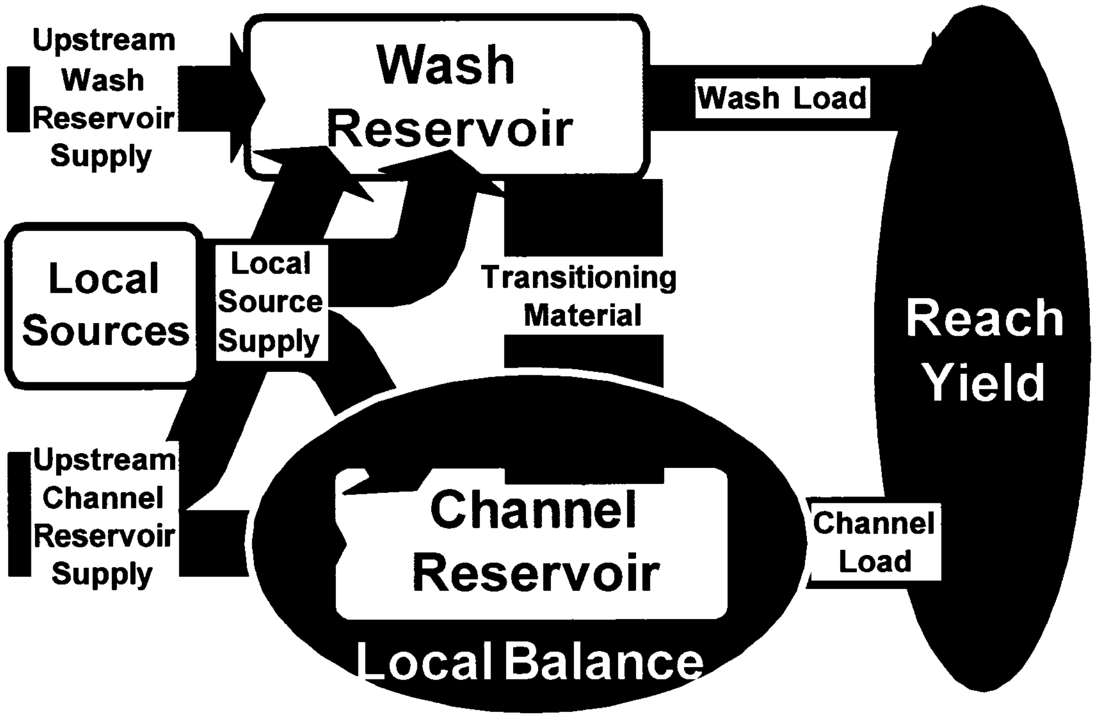

Figure 4-1 SIAM Local Sediment Accounting.

Material enters the system from local sources, the upstream wash material reservoir and the upstream channel material reservoir. Inside the reach, material in a grain class may transition from wash to channel material if the wash load threshold decreases due to a change such that transport capacity. All wash material either transitions to the channel reservoir or passes downstream. The channel portion of the sediment reservoir releases material according to channel load. Part of the channel load from an upstream reach may enter the wash reservoir if the wash load threshold decreases. The combined amount of material leaving the wash reservoir and channel reservoir equals the reach yield. The local balance measures the trend in the channel reservoir.

Each arrow in Figure 4-1 corresponds to a potential SIAM output table. Some arrows represent a collection of contributing features. SIAM will report individual contributing features by appending the word "details" to the name of the output table. All tables may be converted to a depth for comparison between different-sized reaches. All tables include a field for each grain class in the global grain-class templates. SIAM output tables include:

- **Channel Load**: material leaving the reach from the channel reservoir. Channel load equals the annual sediment load from the transport potential adjusted by the fraction present in each grain class. The channel load details table reports the channel load from individual flow events. Channel load includes the effects from armoring and cohesive beds.
- **Channel Reservoir Supply**: all material entering the channel reservoir including local sources, the channel component of upstream reaches, and transitioning material. The details specify the contribution from individual local source load templates, transitioning material, and a record for each upstream reach.
- **Local Channel Balance**: the difference between supply to the channel reservoir and the channel load leaving the channel reservoir. No local channel balance details table is generated.
- **Local Supply**: material from the local source records. The details correspond to each load template in the input set for the reach.

- **Local Supply Wash Material**: local source material entering the wash reservoir. The details correspond to each load template in the input set for the reach.
- **Local Supply Channel Material**: local source material entering the channel reservoir. The details correspond to each load template in the input set for the reach.
- **Local Wash Balance**: a check showing the difference between the wash load and the transport potential for the reach. No local wash balance details table is generated.
- **Reach Yield**: a load table summing all material leaving the reach. The yield equals the sum of the wash and channel loads. No reach yield details table is generated.
- **Transitioning Material**: a supply table showing the amount of material in grain classes larger than the wash load threshold entering the wash reservoir from reaches immediately upstream. The details are similar to the wash material supply but only include grains larger than the wash load threshold.
- **Transport Capacity**: a load table specifying the quantity of material possible to move through a reach. Transport capacity equals the input transport potential multiplied by the input fraction present multiplied by the input duration. The details break the capacity down by flow event. The transport capacity does not consider armored beds or cohesive controls and may not represent the actual amount of material moving.

- **Upstream Channel Reservoir Supply**: contributions from the channel reservoirs in immediately adjacent upstream reaches. The details records report one record per upstream reach.
- **Upstream Channel Reservoir Channel Supply**: contributions from the channel reservoirs in immediately adjacent upstream reaches in grain classes larger than the wash load threshold. The details records report individual upstream reaches.
- **Upstream Channel Reservoir Wash Supply**: contributions from the channel reservoirs in immediately adjacent upstream reaches in grain classes smaller than the wash load threshold. The details records report individual upstream reaches.
- **Upstream Wash-reservoir Supply**: contributions from the wash reservoirs in immediately adjacent upstream reaches. The details records report one record per upstream reach.
- **Wash Load**: material leaving a reach from the wash reservoir. The details table includes a record for each load template and all upstream channel loads connected through wash-reservoir linkages.
- **Wash Material Supply**: all material entering the wash reservoir including local sources, all upstream wash reservoirs, and channel reservoirs in immediately adjacent upstream reaches. The details table divides the total into load templates from local source records and channel loads from all upstream reaches connected through wash reservoir linkages. Channel load

contributions use a single record, titled by the reach identification, for each upstream reach contributing material.

Subsequent sections describe the conceptual framework and computational methods used to generate the local accounting output tables.

4.1.1 Load Tables

Load tables describe the material passing out of the wash and channel reservoirs to downstream reaches. Load tables include: wash load, channel load, transport capacity, and reach yield.

All material entering the wash reservoir leaves either as wash load or through transitioning to the channel reservoir. The details table contains a record for each load template and channel load in reaches supplying wash material.

Transport capacity sums the total ability of the reach to move sediment irrespective of cohesive control or armoring. Transport capacity is the product of transport potential, the fraction present, and the duration of an event, Equation 4-1:

$$Y_{C,i} = \sum_{e=1}^{\text{Number of Events}} \phi_{i,e} \cdot p_i \cdot t_e \qquad \textbf{Equation 4-1}$$

where,

$Y_{c,i}$ = channel load in grain class i;

$\phi_{i,e}$ = transport potential for grain class i during event e;

p_i = fraction of bed material present in grain class i; and

t_e = duration of event e in the hydrology regime.

The transport capacity details table contains a record for each event within a regime. Transport capacity returns zero for material below the cohesive control threshold. For grain classes below the wash load threshold, the transport capacity represents the ability of the stream to move material if the material were present rather than the actual amount of material moving. The local wash balance uses the transport capacity to determine if sediment should be transport limited.

Material entering the channel reservoir leaves only at the rate of the channel load. For unarmored, non-cohesive beds, the channel load supplied to downstream reaches is a function of the transport potential (as if the bed was composed of uniform material) times the fraction of material present in the bed and the duration of an event. Cohesive streams supply material in both wash and channel grain classes according to total scour mass and the fraction of material present in the bed. Armored non-cohesive streams supply material in wash load classes according to transport potential and the fraction present in the bed for flows higher than the discharge threshold. Armored cohesive streams restrict scour to flows larger than the discharge threshold and supply material from the channel reservoir according to the scour mass in the transport potential records. SIAM uses sediment-property records to represent bedrock, cohesive, sand, gravel, or mixed substrates under armored or unarmored conditions. Figure 4-2 shows the internal program logic for computing channel load from the transport potential records and sediment properties.

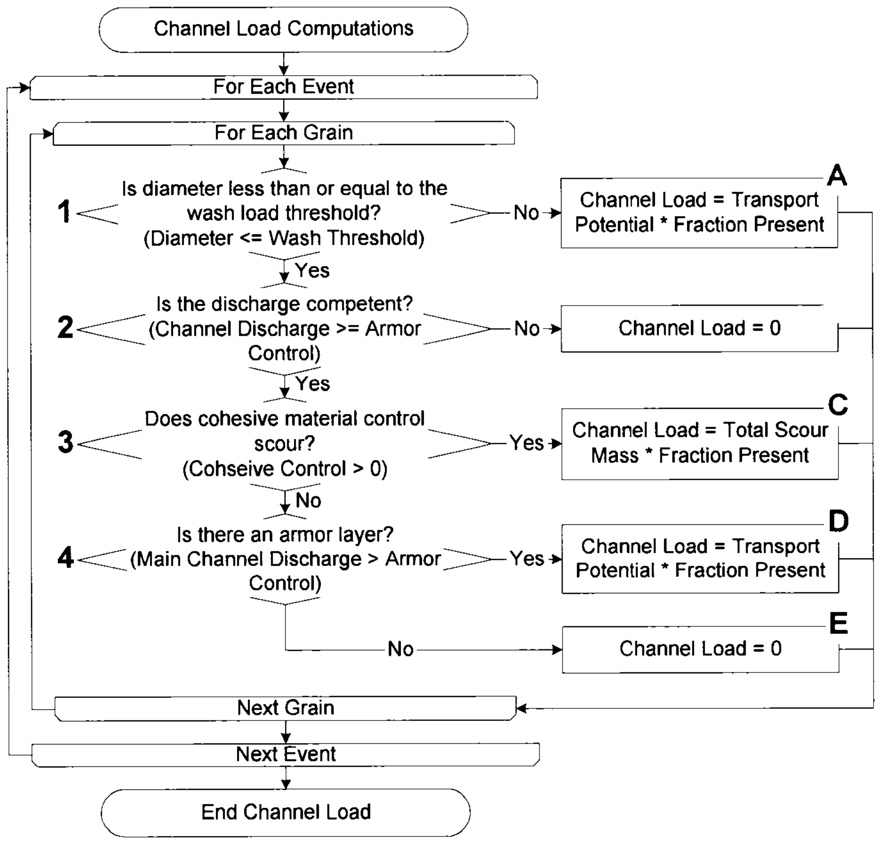

Figure 4-2 Channel Load Computational Algorithm.

From decision branch 1, all grain classes larger than the wash load threshold will transport according to the hydraulically limiting conditions specified in the transport potential records and the fraction of material present in the bed, box A in Figure 4-2. From decision branch 2, all grain classes less than the wash load threshold at discharges less than the armor control threshold result in zero channel load, box B. At decision branch 3, all grain classes are less than the wash load threshold and the discharge exceeds the armor control. If bed interaction occurs through scour of cohesive material, the channel load equals the scour mass of the cohesive fields for the transport potential input table, box C. At branch 4, all grain classes are less than the wash load threshold, the discharge exceeds the armor control, and the bed is non-cohesive. All material moves according to transport potential, box D. In unarmored reaches, wash material is not present in significant quantities and the channel load is zero, box E. Cohesive reaches with an armor layer will end in box C after exceeding the armor threshold. Figure 4-3 summarizes the interaction between sediment properties and the resulting channel load.

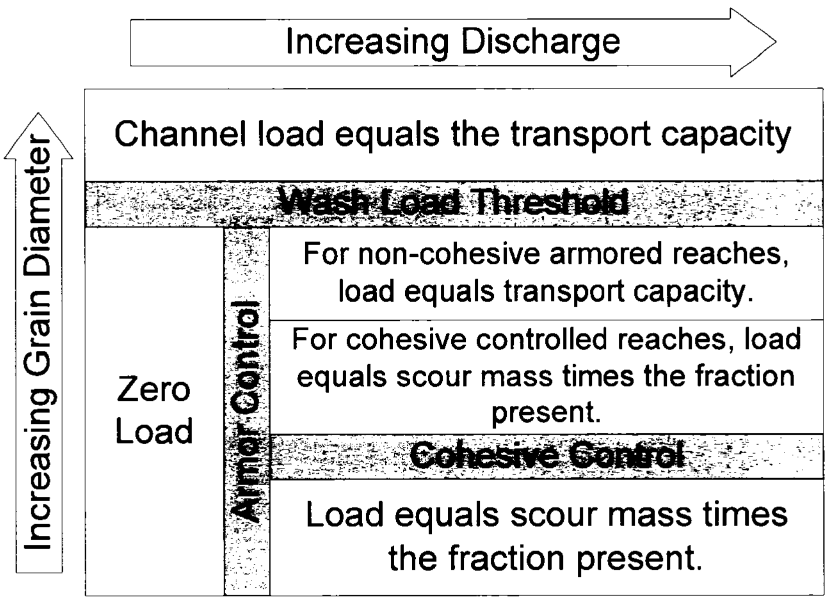

Figure 4-3 Channel Load Summary.

Channel load includes wash material freed through cohesive scour processes or the destruction of an armor layer, but not wash material in unarmored non-cohesive reaches. The bed material gradation in an armored reach should contain diameters from both the armor layer and the underlying active layer subject to scouring, and interaction with flows under the annual regime. For flows below the armor-control discharge, channel load will only include material in classes greater than the wash load threshold (the limiting armor classes and larger). This allows for some motion in the armor layer without full mobilization of the substrate. After exceeding the armor-control threshold, channel load will treat all grain classes as bed material load and compute supply as if the channel were unarmored. If a non-cohesive armored bed contains non-zero values for the fraction of silts and clays present in the bed, the transport potential records will most likely report very high loads. In actuality, most systems will remain supply limited, not transport limited, for fine grain classes. The bed material gradation should enter zero values for those classes.

Reach yield includes all material leaving the reach regardless of transport mode. The sediment load includes the portion of the wash material supply remaining as wash load and the entire channel supply.

4.1.2 Supply Tables

Supply tables report the sediment entering the local reach to either the wash reservoir or channel reservoir. Tables in the supply category include: local supply, upstream wash reservoir supply, upstream channel reservoir supply, transitioning material, channel reservoir supply, and wash reservoir supply.

Local source supply sums the contributions from local sources in a reach. The table applies the multiplier in the local source input records to scale the load-template records. The local source supply details table reports individual records after expansion by the multiplier. Local supply wash material and local supply channel material divide the contribution into the wash and channel reservoirs according to the wash load threshold in the current reach.

Upstream tables do not include any local sources in the current reach. The upstream wash reservoir supply shows the immediately adjacent upstream reaches contributing material from upstream wash reservoirs. The details table contains a record for each load template and for every upstream reach with a channel load contributing material through wash reservoir connections. Upstream channel reservoir supply includes material entering the reach from immediately adjacent upstream channel reservoirs. Upstream channel reservoir channel supply contains only the grain classes larger than the wash load threshold in the current reach. Upstream channel reservoir wash supply contains grain classes less than or equal to the wash load threshold in the current reach. The upstream channel reservoir supply details table contains a record for each reach immediately upstream.

Channel reservoir supply includes all material entering the channel reservoir of the current reach including local sources, upstream channel reservoirs, and material transitioning in the current reach.

Wash reservoir supply includes all grain classes entering the wash reservoir including upstream wash loads from immediately adjacent reaches, local sources, and channel reservoirs immediately upstream in grain classes less than or equal to the wash load threshold in the current reach. The supply includes material that will transition in the current reach.

Transitioning material occurs when the wash load threshold in a reach immediately upstream is larger than the wash load threshold in the current reach. All material entering the wash reservoir in grain classes above the wash load threshold will become transitioning material. Only the sediment in upstream wash material classes can become transitioning material. Material entering the channel from local sources or upstream channel reservoirs will directly enter the channel reservoir. Transitioning material counts both as wash material supply and channel material supply. The double counting in the supply tables reflects the ability of transitioning material to respond instantly to changes in the watershed as well as the potential to initiate long-term geomorphic effects. The reach yield does not double count transitioning material. The channel load includes transitioning material leaving the reach.

4.1.3 Local Balance Tables

Modifications to a system may show an instantaneous effect (i.e., within an annual cycle) on the wash load. Changes to the bed material budget may take many years to exert an impact. The local balance compares the supply of sediment to the reach with the capacity of the reach to transport the material out. Local balance tables include the local channel balance and the local wash balance.

The local channel balance compares channel-material supply and channel load to determine the stress, i.e., inflow minus outflow, on a reach. Equation 4-2 expresses the algorithm mathematically:

$$B_{LC,i} = S_{C,i} - L_{C,i}$$ **Equation 4-2**

where,

$B_{LC,I}$ = stress in reach i from the balance of local channel material;

$S_{C,i}$ = supply material entering the channel reservoir in reach i; and

$L_{C,i}$ = load of material leaving the channel reservoir from reach i.

Negative stresses indicate degradation and positive stresses indicate aggradation trends. Zero represents a channel in equilibrium, but an exact zero value is extremely unlikely. Users should consider a buffer around zero to account for minor discrepancies between supply and capacity, and to more clearly identify significant imbalances. The size of the buffer depends on the confidence in the input records and can be varied or checked by sensitivity studies. The sum of the local channel balance across the entire watershed reflects net erosion of sediment from the channel. The resulting value represents sediment released from or stored in channel boundaries.

In non-cohesive channels the local balance compares only material in grain classes greater than the wash load threshold. In cohesive channels, the local balance will include the full range of grain classes moving through the reach. In armored channels, the local balance also will include the full range of grain classes moving through the reach. Supply-limited material within the channel boundary should not be included in the bed material input records for armored reaches, as the local balance may report unrepresentative high values in the channel load for fine sands, silts, and clays.

Local wash balance tables provide an error check on the assumption that transport of material within a grain class is supply limited within a reach. SIAM assumes all grain classes designated as wash material will move through the entire system within the input regime. A portion of the channel material may persist from one regime time frame to another. A geomorphic evaluation of existing conditions can establish the wash load threshold through empirical data. Alternate management scenarios may shift the wash load threshold to smaller grain classes. The wash material deposition table provides a method to check the validity of the assumption by comparing the wash load in the grain class against the transport capacity. The check cannot be applied to the cohesive-control grain class since the transport potential records contain a scour mass, not a hydraulically-limited load. Deposition of material in a cohesive control class is unlikely outside of lakes and reservoirs. In an armored reach, material must pass through the reach each year without depositing in order for the armor layer to persist. If the material designated as wash load cannot be transported, the local wash balance will indicate a positive balance to suggest deposition. The armor control discharge should be corrected and the model re-run.

The local wash balance table reports only positive values indicating potential aggradation. In a cohesive reach, an evaluation of baseline conditions should always show degradation or else non-cohesive material would deposit and cover the cohesive substrate and control the stream profile. Positive wash material deposition on a cohesive reach indicates aggradation and a shift to a sand or gravel substrate. Under armored conditions, positive values indicate deposition and burying of the armor layer. A positive value indicates a violation of the wash material threshold and may invalidate model results. The wash load threshold should be adjusted and the model re-run to indicate the correct conditions. There is no clear check on whether the wash load threshold is too small and should be increased. Large aggradation or degradation in the network balance may indicate a need to adjust the wash load threshold to a larger diameter.

Total masses provide absolute magnitudes useful for identifying large contributors. Distributed depths identify relative magnitudes of geomorphic changes between reaches. Local balance tables do not provide any details. The individual elements in the conceptual model will show the sediment contributors.

4.2 Channel Load Demonstration

Channel load tables represent the material from the channel boundary in the current reach that will be routed downstream. SIAM classifies substrate as combinations of non-cohesive or cohesive material and unarmored or armored conditions. Sediment-property records provide switches to control the behavior of the input tables. The following sections walk through each combination of substrate classification showing input and output records. The demonstration separates material into three global grain templates: fines, sands, and gravels.

4.2.1 Non-cohesive Channel without an Armor Layer

A non-cohesive channel without armoring most likely consists of sand or small gravels. Table 4-1 shows the bed material records for a hypothetical non-cohesive reach. Fine material is specified as wash load.

Table 4-1 Non-cohesive Bed Material Distribution.

Grain Class	Fraction Present
Fines	0.10
Wash Threshold	
Sands	0.75
Gravels	0.15

Simulation in SIAM uses a cohesive control of zero to indicate the lack of cohesive material in the bed. A zero armor control discharge, Q_{ac}, indicates an unarmored transport limited state. Table 4-2 shows the transport potential and resulting channel load records for three events under this scenario.

Table 4-2 **Transport Potential and Channel Load for Non-cohesive Channels without an Armor Layer.**

			Transport Potential (tonnes/d)			Channel Load (tonnes/yr)		
Event	**Discharge**	**Duration (d/yr)**	**Fines**	**Medium**	**Coarse**	**Fines**	**Medium**	**Coarse**
1	Low Flow	40	8,400,000	512	0	0	15,347	0
2	Medium Flow	20	25,000,000	1,543	0	0	23,143	0
3	High Flow	10	72,000,000	4,440	41.6	0	33,297	62.4

For material within wash load grain classes, transport potential is ignored and load equals zero regardless of the fraction present in the bed material records. Only the local and upstream sources contribute wash material to downstream reaches.

4.2.2 Non-cohesive Armored Channel

Setting a positive armor control discharge, Q_{ac}, indicates the presence of an armor layer. The simulation of a gravel or mixed bed stream with an armor layer has no cohesive control; therefore, d_{cc} equals zero and all materials smaller than the armor layer are set to wash load. Table 4-3 shows the resulting hypothetical distribution of bed material.

Table 4-3 **Non-cohesive Armored Bed Material Distribution.**

Grain Class	**Fraction Present**
Fines	0
Sands	0.6
Wash Threshold	
Gravels	0.3

Sands and fines are wash material. The fractions of fines present are set to zero since the channel load uses the transport potential to compute the channel load during events capable of disrupting the armor layer. In this example, fines are not subject to hydraulically-limited transport calculations. Including a non-zero value for fines would result in moving the amount in the transport potential records and potentially overestimate channel load. Table 4-4 shows the channel load output.

Table 4-4 Non-cohesive Armored Channel Transport Potential and Channel Load.

			Transport Potential (tonnes/d)			Channel Load (tonnes/yr)		
Event	**Discharge**	**Duration (d/yr)**	**Fines**	**Medium**	**Coarse**	**Fines**	**Medium**	**Coarse**
1	Low Flow	40	42,900,000	1,575	0	0	0	0
2	Medium Flow	20	114,000,000	4,306	37.9	0	0	227.4
			Armor-control Discharge					
3	High Flow	10	293,000,000	11,125	210.9	0	66,750	632.8

The channel load reports non-zero values only when the discharge exceeds the armor control threshold. At smaller flows, the channel load returns zero. Computations for the bed material range behave identically to an unarmored channel.

4.2.3 Cohesive or Bedrock Unarmored Channel

A bedrock channel is considered an erosion-resistant form of a cohesive bed. In cohesive channels, inter-particular forces dominate over hydraulic entrainment. Cohesion between the smaller particles traps larger particles and restricts scour.

Cohesive beds can only scour. A positive cohesive control indicates the presence of significant cohesive forces by some grain classes. Table 4-5 shows the distribution of material in the example reach.

Table 4-5 Cohesive Bed Material Distribution.

Grain Class	Fraction Present
Fines	0.3
Cohesive Control	
Sands	0.5
Gravels	0.2

A cohesive control of 0.0625 mm indicates that the transport potential records for classes with that representative diameter and smaller will indicate a total scour mass rather than a hydraulic carrying capacity. SIAM will use only the smallest cohesive class. A bedrock channel should have zero values for the transport potential of the smallest cohesive class. Table 4-6 shows the transport potential and channel load for the example cohesive reach.

Table 4-6 Cohesive Bed Transport Potential and Channel Load.

			Transport Potential (tonnes/d)			Channel Load (tonnes/yr)		
Event	Discharge	Duration (d/yr)	Fines	Medium	Coarse	Fines	Medium	Coarse
1	Low Flow	40	0	5073	35.2	0	0	0
2	Medium Flow	20	50	13,828	287	300	500	200
3	High Flow	10	300	36,355	782	900	1500	600

The fine material transport potential records show the low-flow event incapable of scouring the cohesive material. The medium- and high-flow events scour small amounts of material. The remaining transport potential records show the hydraulic carrying capacity. SIAM will use these records to compute the local wash material balance to determine if a scenario violates the assumption of a cohesive-controlled bed and the system may change to non-cohesive control. The channel load records reflect the fraction of material present in the class multiplied by the duration of the event and the total scour mass in the transport potential records for the cohesive grain classes.

To simulate an immobile boundary, bed material records should show 100 percent of the fraction present in grain classes below the cohesive threshold. Transport potential records should show a zero scour mass in cohesive classes. Non-cohesive classes should still reflect the hydraulic transport potential to allow SIAM to check for potential deposition.

4.2.4 Armor Layer over Cohesive Material

An armor layer over cohesive material protects the underlying substrate from scour until the discharge threshold is exceeded. Table 4-7 shows a sample bed material distribution for an armored cohesive reach.

Table 4-7 Cohesive Bed Material Distribution.

Grain Class	Fraction Present
Fines	0.34
Cohesive Control	
Sands	0.33
Wash Threshold	
Gravels	0.33

Table 4-8 shows the transport potential and channel load records for this hypothetical reach. All parameters are the same as the plain cohesive or bedrock channel except that the armor-control discharge is no longer zero.

Table 4-8 Cohesive Bed Transport Potential and Channel Load.

			Transport Potential			Channel Load			
Event	Discharge	Duration (d/yr)	Fines	Medium	Coarse	Fines	Medium		Coarse
1	Low Flow	40	0	3208	4.38	0	0	Wash Threshold	57.9
2	Medium Flow	20	50	8810	152	0	0		1002
			Armor-control Discharge						
3	High Flow	10	300	23328	503	1020	990		1659

All events below the armor control in grain classes smaller than the wash load threshold will be zero. All classes larger than the wash load threshold behave according to transport capacity. Classes below the wash threshold and larger than the armor control discharge behave according to total scour of the cohesive size classes.

4.3 Local Sediment Balances

Sediment within SIAM originates from local sources or degradation in channel boundaries. Local sources include features such as surface erosion, bank failure, gullies, and tributaries not modeled as part of the channel network. Adjustments to the channel boundary include degradation due to excess transport capacity, scour in a cohesive reach, and disruption of an armor layer. Sediment may enter either the channel reservoir or the wash reservoir. Material entering a channel reservoir will not impact the channel load calculations for a reach. Material entering the wash reservoir may either pass through as wash load or transition to the channel reservoir. Material passing through as wash load may impact the wash load in downstream reaches all the way to the watershed outlet.

The following example uses six reaches linked together in series with a reach named "Thread 1" located upstream and a reach named "Thread 6" as the downstream outlet. Four local sediment sources represent features supplying material to a reach and a fifth local source provides an upstream boundary condition for wash material. The demonstration uses the same three grain classes as the channel load demonstration presented in Section 4.2. Table 4-9 shows the layout of the demonstration reach for tracking sources.

Table 4-9 Local Source Template Demonstration Example.

Template	Fines	Sands	Gravels
Source A	100	10	1
Source B	300	30	3
Source C	500	50	5
Source D	700	70	7
Source E (Surface Erosion)	900	90	9

A separate local source table was created for each reach with a different multiplier for each load template. Not all load templates are present in each reach. Table 4-10 summarizes the local sources input.

Table 4-10 Local Source Table Multipliers.

	Local Source Table Multipliers					
Template	**Reach 1 (Gravel)**	**Reach 2 (Sand)**	**Reach 3 (Cohesive)**	**Reach 4 (Armored Cohesive)**	**Reach 5 (Armored)**	**Reach 6 (Gravel)**
	Upstream					Outlet
Source A	2		12	15	18	
Source B	3	6		16	19	22
Source C	4	7	10		20	23
Source D		8	11	14		24
Source E	1	5	9	13	17	21

Different sediment transport properties were specified for each reach and a corresponding bed material was defined. The sediment properties (Table 4-11) correspond to the channel load section.

Table 4-11 Sediment Property Assignment.

Reach	Sediment Properties	Wash Load
Thread 1	Gravel Reach	Fines and Sands
Thread 2	Sand Reach	Fines
Thread 3	Cohesive Reach	All Material
Thread 4	Armored Cohesive Reach	Fines and Sands
Thread 5	Armored Reach	Fines and Sands
Thread 6	Gravel Reach	Fines and Sands

The example will demonstrate how the sediment properties interact with the wash load and wash material tracking. The flow of material from reaches Thread 1 to Thread 2 shows a basic fining process with the connection between sand classes severed. Between Thread 2 and Thread 3 the fines connection was maintained and the sands and gravels connections reestablished at zero. From Thread 3 to Thread 4 the gravel connection was severed, while fines and sands remained connected. Thread 4 to Thread 5 showed no change in connectivity, but additional material from armor disruption. Thread 5 to Thread 6 showed the same connections as between Thread 1 and Thread 2.

4.3.1 Wash Load and Transitioning Material

The channel load for a given scenario is independent of the other reaches within the network. Table 4-12 shows the channel loads for the example scenario.

Table 4-12 Channel Loads.

Reach	Sediment Properties	Fines	Sands	Gravels
Thread 1	Gravel Reach	0	0	13478
Thread 2	Sand Reach	0	430241	824
Thread 3	Cohesive Reach	34400	43000	8600
Thread 4	Armored Cohesive Reach	17000	16500	137
Thread 5	Armored Reach	0	17758	208
Thread 6	Gravel Reach	0	0	374

In SIAM, cohesive and armored reaches are capable of contributing material below the wash load threshold through channel load, while non-cohesive reaches return zero in wash load classes for the reach, but a transition may occur downstream. In the wash reservoir, the material may either pass downstream as wash load or transition to the channel reservoir. Table 4-13 shows the accounting in the wash reservoir for the example scenario.

Table 4-13 Wash Reservoir Accounting.

Reach	Upstream Channel Material (Wash Classes)			Local Supply (Wash Classes)			Transitioning Material			Wash Load		
	Fines	Sands	Gravels	Fines	Sands	Gravels	Fines	Sands	Gravels	Fines	Sands	Gravels
Thread 1	0	0	0	4000	400	0	0	0	0	4000	400	0
Thread 2	0	0	0	15400	0	0	0	400	0	19400	0	0
Thread 3	0	430241	824	22000	2200	220	0	0	0	41400	432441	1044
Thread 4	34400	43000	0	27800	2780	0	0	0	1044	103600	478221	0
Thread 5	17000	16500	0	32800	3280	0	0	0	0	153400	498001	0
Thread 6	0	17758	0	53800	5380	0	0	0	0	207200	521140	0

As an upstream model boundary, Thread 1 has no upstream channel material but the local supply equals the total amount in the local sources records. Without any upstream reaches there is no material available for transition. The wash load consists entirely of the local supply.

Sand moving as wash load in Thread 1 will transition to channel material in Thread 2. Thread 1 does not contribute channel material to Thread 2 because all sands are designated as wash material in Thread 1 and, therefore, not considered upstream channel load. Additional fine material enters from the local sources in Thread 2 adding to the wash load from Thread 1.

In Thread 3, a cohesive bed sets all grain classes as wash load. In fine-grain classes, upstream wash load combines with local sources to result in the wash load for fine-grain classes. The sand and gravel channel load from upstream combine with the local sources to constitute the wash load in sand and gravel classes.

In Thread 4, the channel consists of an armored cohesive bed. Gravel now moves as bed material load and transitions from the upstream wash reservoir. Upstream channel contributions occur through scour of the cohesive bed.

Thread 5 only receives channel material from upstream in the events which disrupt the armor layer and cause cohesive scour.

Thread 6 only receives material from the events that disrupt the armor layer. Fine material is not present in the bed in hydraulically-limited quantities and is, therefore, not a part of the bed material definition and, therefore, zero. Table 4-14 shows the wash load details table for the outlet reach, Thread 6. The details table contains all contributions to the total wash load broken down by load template or channel load.

Table 4-14 Wash Load Details Table.

Scenario	Reach Key	Fines (tonnes/yr)	Sands (tonnes/yr)	Gravels (tonnes/yr)	Comment
Scenario	Thread – 6	4700	450	0	Source A
Scenario	Thread – 6	19800	1710	0	Source B
Scenario	Thread – 6	32000	2650	0	Source C
Scenario	Thread – 6	39900	3430	0	Source D
Scenario	Thread – 6	59400	5400	0	Source E
Scenario	Thread – 6	0	430241.3	0	Thread – 2
Scenario	Thread – 6	34400	43000	0	Thread – 3
Scenario	Thread – 6	17000	16500	0	Thread – 4
Scenario	Thread – 6	0	17758.44	0	Thread – 5

The sum of each column equals the values reported in Table 4-13. A large amount of sand becomes wash material after leaving Thread 2 and entering Reach 3. Gravel is not wash material in Thread 6 and, therefore, all values are zero.

4.3.2 Local Balance and Wash Material Deposition

The local balance measures the difference between the supply and transport of material in channel load classes. Channel load classes include the wash material freed from the bed through disruption of an armor layer and the scour of cohesive material. Table 4-15 shows the local balance from the demonstration reach.

Table 4-15 Local Balance.

Reach Key (text)	Fines (tonnes/yr)	Sands (tonnes/yr)	Gravels (tonnes/yr)	Sum (tonnes/yr)
Thread – 1	0	0	-13439	-13439
Thread – 2	0	-428301	12808	-415493
Thread – 3	-34400	-43000	-8600	-86000
Thread – 4	-17000	-16500	9785	-23715
Thread – 5	0	-17758	257	-17501
Thread – 6	0	0	372	372

The local balance contains mostly negative values in the summation column with the exception of Thread 6. In Thread 2, the sands show a negative balance, while the gravels show a positive balance. Results suggest the potential for the bed to coarsen. Table 4-16 shows the same information with yields converted to depths.

Table 4-16 Local Balance Depths.

Reach Key (text)	Fines (m/yr)	Sands (m/yr)	Gravels (m/yr)	Sum (m/yr)
Thread – 1	0	0	-0.29	-0.29
Thread – 2	0	-9.26	0.28	-8.98
Thread – 3	-0.74	-0.92	-0.18	-1.85
Thread – 4	-0.45	-0.44	0.26	-0.63
Thread – 5	0	-0.47	6.8E-03	-0.46
Thread – 6	0	0	9.8E-03	9.8E-03

The rates assume a sediment density of 1.2 tonnes/m^3 over a reach length of 5,000 ft and a maximum top width varying from reach to reach but near 90 ft in all cases. The SIAM software can handle mixed units. The wash material deposition table contains all zero values, Table 4-17.

Table 4-17 Wash Material Deposition.

Reach Key (text)	Fines (tonnes/yr)	Sands (tonnes/yr)	Gravels (tonnes/yr)
Thread – 1	0	0	0
Thread – 2	0	0	0
Thread – 3	0	0	0
Thread – 4	0	0	0
Thread – 5	0	0	0
Thread – 6	0	0	0

Zero values in the wash material deposition table indicate the initial assumption of the wash load threshold is not too small. Positive values would indicate one of the assumptions was incorrect. Negative values are not possible.

4.4 Sensitivity in Local Accounting

The local accounting routines in SIAM perform direct algebraic operations and cannot form numerical instabilities. The inputs applicable to local accounting include the records specifying: hydrologic, transport potential, and sediment-load regimes; global grain-class templates; and the sediment properties. Anticipating and describing the range of potential input techniques and associated variability lies beyond the scope of the SIAM effort, but the advantage of short computation times in SIAM allows for more detailed explorations of the sensitivity and uncertainty of model results than a mobile boundary model with similar time and budget constraints. SIAM sensitivity studies can also feed sensitivity studies for mobile boundary investigations. At a reach scale, the input manifests in developing supply and delivery loads for wash and channel grain-size classes. The local accounting routines do not use the hydraulic records.

4.4.1 Channel Load Sensitivity

Channel load depends on the input records describing the local reach including: duration from the hydrology records, transport potential, bed material, wash load threshold, and armor control. Channel load calculations operate independent of the network. Changes to a different reach do not alter the channel load in the local reach.

SIAM divides the regime-driving channel processes into discrete bins representing flow events. Increasing the number of bins can improve the representation of field conditions at the cost of increased input development requirements, longer computational run times, and more output post-processing evaluation. The likely change in run times will lie on the order of minutes, but the effort to sort through additional input and output records can be substantial. The impact of bin sizing can be explored through a case-specific study of the current regime. Summing all bins will result in a cumulative volume of water or sediment load. Trial calculations with different bins will provide information for making a value judgment on the diminishing returns for increased number of bins. The lower limit of only one bin to represent the entire regime is analogous to effective discharge. As with most models, consistency across different runs allows for more accurate relative comparisons between scenarios. After determining an appropriate size, bin flow events should remain consistent across multiple runs. The duration, associated hydraulics, or transport potential may change for a given flow rate.

For hydrology records, the duration exerts a direct linear impact on the channel load. A 10% increase in the duration of an event results in a 10% increase in the channel load for the event. Transport potential and bed material records also affect channel loads in a linear manner. Variability accumulates directly. For a scenario with 90% confidence that the duration for an event will not exceed the specified value and an 80% confidence that the transport rate for the event will not exceed the specified value, the combination results in a 72% confidence level that the load for the event will not exceed the specified value. Across multiple events, the sensitivity depends on the relative magnitude of the load from a specific event versus the cumulative load from all events. The uncertainty of an event with a load of 5,000 tonnes in a regime of 20,000 tonnes will reduce the impact of the uncertainty by 25%. For equal uncertainty in the techniques across all events, the weighting by total load is unnecessary.

Armor control behaves in step-wise manner with a flow event turning armor control on or off. Greater discretization of the events provides finer control of the armor control discharge. Decreases in armor control discharge result in higher sediment loads and increases reduce the sediment loads. The sensitivity of sediment loads of the armor control depends on the magnitude of sediment transport in the next higher and lower bins. Evaluation of the sensitivity of the armor control discharge likely requires multiple runs with a varied parameter.

The presence of a cohesive control can be specified with a high degree-of-certainty through field observations and does not require sensitivity analysis. The chance of misidentification of a cohesive control could be addressed by sensitivity analysis on the transport potential.

4.4.2 Local Sources Sensitivity

Sediment sources affect local supplies in a direct linear manner. Uncertainty in a sediment source directly translates to uncertainty in the supply after weighting by the total amount of supply for all sources. For sediment sources, multiple techniques would likely be required to account for the different types of sources. Each technique would likely result in different uncertainty.

4.4.3 Wash Load and Local Channel Balance Sensitivity

Wash load results depend on all upstream reaches linked through wash material reservoirs and can be evaluated through the same manner as the local sources and channel load by considering all connected reaches.

The finesse available for addressing wash load threshold depends on the specification of global grain class templates. Narrowly-sized bins provide finer control for specifying the threshold at a cost of more input development and increased computational burden. The sensitivity is a function of the amount of material in the wash load threshold class compared to the total amount in other classes. Due to accumulation of sources from upstream, the wash material loads can become large relative to transport potential. In reaches with transitioning material, a wash material grain class covering a wide range of sizes may fail to register deposition if the threshold is too large or indicate excessive amounts of degradation if the threshold is too small. Sensitivity evaluations where changes in wash load threshold between grain classes result in large jumps in local channel balances may benefit from narrower grain class definitions for diameters near the threshold. If transport potential is near the same value as the wash load, the transition impact on the local balance may be negligible.

Local channel balances include the immediately adjacent upstream reaches as well as transitioning material from the wash reservoir. The sensitivity of a local balance combines all aspects of channel load, local sources, and wash load. The wash load threshold can potentially impact armored reaches if the wash threshold is smaller than the particle diameters present in the bed and armor layer.

4.4.4 Local Wash Balance Sensitivity

The local wash balance serves as a check on the specification of an armored or cohesive bed. The sensitivity is a combination of the sensitivities for the wash load and the transport potential.

4.5 Limitations and Range of Applicability

SIAM performs reach average calculations representing a hydrologic, hydraulic, and sediment supply regime. Individual cross sections, bends, or pools are below the resolution of the model. Including reaches with lengths on the order of a single bend, riffle, or pool may violate assumptions in the sediment transport relationships and may indicate excessively high or excessively low values.

The trends methods of analysis report the potential for change and the relative magnitude versus other reaches, but not the actual adjustment. The local accounting methods are designed to identify areas of concern and assess the relative effectiveness of potential solutions. Quantifying the degree of change requires further, more detailed study.

Rivers respond and adjust to changes in the input conditions. In some cases, these adjustments can cross a threshold and create dramatic shifts in planform. In other cases, the river can self-correct to cancel perturbations. SIAM does not account for crossing over a threshold. While SIAM indicates a tendency to degrade or aggrade, the rate does not include the impacts from coarsening or fining of substrate material. The formation of an armor layer may preclude large adjustments.

Local accounting identifies immediate effects transmitted through wash load or reaches in the immediate vicinity. The local accounting routines do not address network processes such as downstream transport of a sediment plug, headward migration of a knick zone, or sediment starvation far downstream from impoundments.

SIAM can be useful when the scope of data collection or alternatives prohibits detailed studies. However, approximations in the input data will transfer to uncertainty in the results and requires careful interpretation.

4.6 Summary

As an analysis tool, local accounting quantifies the present state-of-equilibrium within a channel network, including stable and unstable reaches as well as sediment yields. As a planning tool, local accounting indicates the likely immediate morphologic and yield impact from changes to the hydrologic, hydraulic, and sediment-source regimes. The analysis can then be used to identify hot spots for more detailed studies or identify action plans which to mitigate undesirable changes.

CHAPTER 5

SOURCE TRACKING AND MANAGEMENT

Wash load management tables provide information on how material supplied to the channel network moves through the wash reservoirs. Material connected through wash reservoirs will exert immediate and direct impacts throughout all downstream reaches either as sediment yields or transitioning material.

5.1 Source Tracking Methods

Links between channel material reservoirs depend on the hydraulic limits imposed by the transport potential and will be addressed in *Network Accounting*, Chapter 7. Short-term impacts to sediment yield require adjustment of sources contributing wash material or alteration of transport characteristics in immediately adjacent upstream reaches. Adjustments to transport capacity elsewhere in the system will take time before realizing impacts. Figure 5-1 shows the connections between the wash and channel reservoirs.

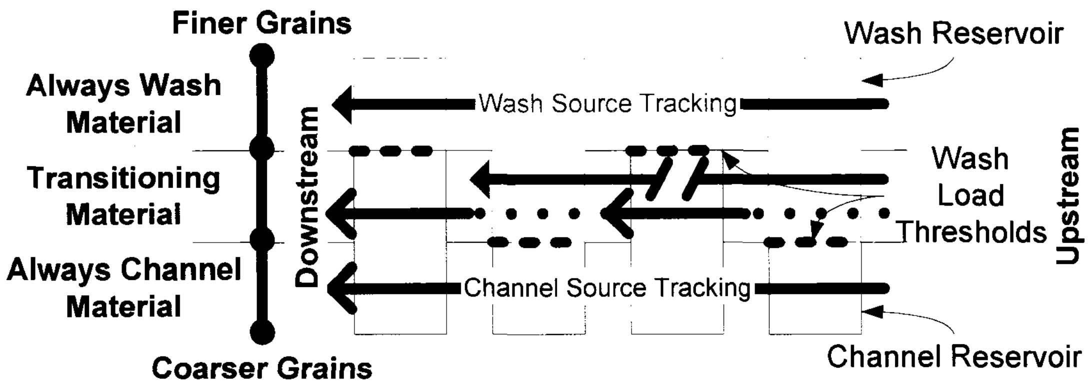

Figure 5-1 Source Tracking Connections.

Wash material passes uninhibited through the system without impacting the stream structure unless transitioning to the channel reservoir. A transition to channel material severs the link between wash reservoirs for that grain class. Upstream channel load entering the wash reservoir forms a new series of links within the grain class. Channel reservoirs maintain a link across all transitions, but a grain class may move as wash load through some reaches and not appear in channel-material tables until the diameter for the class exceeds the wash load threshold.

Source tracking tables assist in managing sediment yield and planning channel rehabilitation to accommodate changes in sediment sources. Source tracking includes two types of tables. An accumulation table reports the total amount of material connected through upstream reaches. A distribution table measures the fractional contribution to the total amount at the outlet. Detail tables break down the total according to load template and reach-specific channel loads. Source tracking tables include:

- **Wash Material Tracking**: contributions to the wash load at the network outlet connected through the linkages of the wash reservoirs. Results include both local sources and channel loads. Grain classes in reaches not connected through wash reservoirs will report zero contribution. Detail tables break down the contribution by load template and scour of cohesive material or destruction of an armor layer. Channel-material contributions to the wash supply are reported as from the reach the channel material is generated.

- **Wash Tracking Distribution**: ratio of material generated or originating in the local reach to the wash load at the outlet. The details table breaks down the ratio by load template, scour of cohesive beds, or destruction of an armor layer.
- **Source Accumulation**: sum of all upstream local sources irrespective of reservoir connections. Detail tables break down the sum according to load template.
- **Source Channel Accumulation**: material from local sources moving locally as channel load. Wash load classes contain zero values but do not impact the accumulation linkages. The details tables break down according to the load template. Scour of cohesive material or destruction of an armor layer is not included.

5.1.1 Wash Material Tracking

The wash material tracking table identifies the origin of impacts due to wash load transport modes. The origin may include local sources, cohesive scour, or destruction of an armor layer anywhere upstream so long as the grain classes are connected through wash reservoirs. Transitions to bed material sever the links within specific grain classes.

Transitions returning a material to wash load create a new series of connections but do not reestablish any severed links. Table 5-1 summarizes the algorithm to determine connectivity.

Table 5-1 Wash Material Tracking within a Grain Class.

		Upstream Reach	
		Channel Material	**Wash Material**
Current Reach	Channel Material	Neglect	Include Start New Links
	Wash Material	Include Sever Link	Include

Tracking begins with a grain-class tracking threshold for each reach immediately adjacent upstream of the outlet. In the case of a confluence, each branch may begin with a different threshold. Beginning computations at the reach or reaches upstream from the outlet allows SIAM to include material that enters the outlet wash material reservoir but transitions to the channel reservoir. For all other upstream reaches, the tracking threshold is the smaller of the wash load threshold in the local reach and the tracking threshold from the downstream reach. The tracking threshold can only decrease. Increases in the wash load threshold result in a severed link and sediment can no longer reach the outlet entirely through a wash reservoir. Figure 5-2 shows the example of a severed link that causes SIAM to neglect material moving in wash mode upstream.

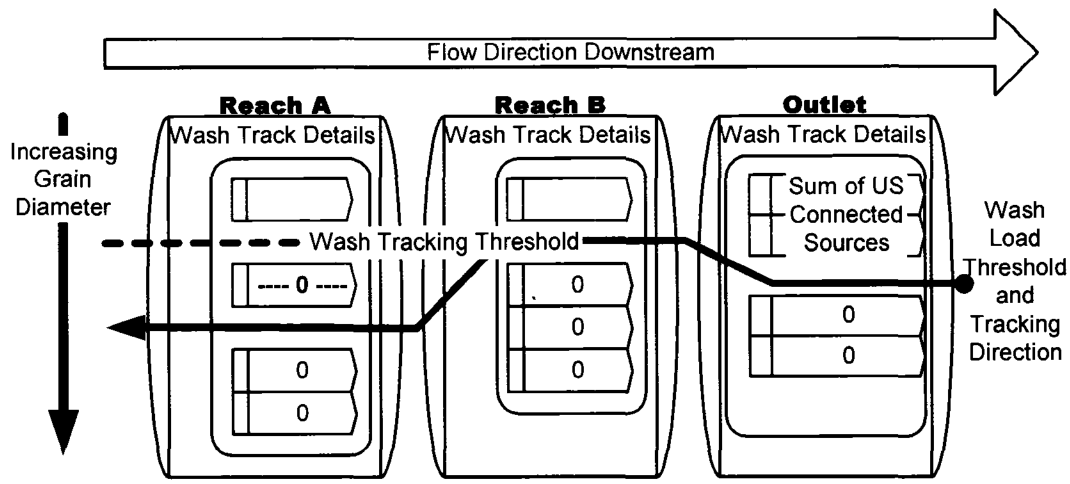

Figure 5-2 Increases in Wash Load Threshold versus Tracking Threshold.

The wash tracking will include the smallest grain class from each reach. Tracking includes the second lower square from the Outlet Reach and Reach B only. The second lower square in Reach A is upstream of a severed link.

By definition, non-cohesive reaches do not contribute significant quantities of wash material and are not included. This includes armored non-cohesive reaches. The details table divides the contribution into the component from each load template, scoured reach, or armored reach. Determining the wash load tracking in other reaches requires truncating the model to set the outlet at the reach of interest and re-running the calculations.

5.1.2 Wash Material Distribution

The wash distribution tables measure the fractional contribution of wash load supplied to the basin outlet from local sources originating within the reach, local scour of cohesive material, or destruction of the armor layer in grain classes connected through wash load reservoirs. Within a grain class, the wash material distribution sum across all connected reaches within the network will equal unity. The distribution table assists in reduction of sediment yield by identifying the largest contributors to the wash material component of the sediment yield. The detail table contains a list of records for each load template or reach. The distribution tables reference the characteristics of the outlet reach. Determining the fraction in other reaches requires truncating the network at the reach of interest and re-running SIAM for that portion of the network.

5.1.3 Sediment Sink Reaches

Storage of material is identified in several ways. Transitioning-material tables locate sinks only for wash material load, and local balance tables identify sinks and sources for bed material load. Negative local sources also act as sinks. Identification of sinks determines which reaches may limit the movement of material downstream. Modification to the reach could alter the balance in otherwise stable downstream reaches. In source management, only negative local sources can act as sinks. Source management considers scour of cohesive beds and destruction of an armor layer in wash material tracking, but does not consider aggradation or degradation of channel material as defined by the wash load threshold. Wash material linkages consider sources on a time frame at the scale of the regime. Scour of cohesive beds and destruction of an armor layer may supply amounts of material significant at that scale. Channel-material linkages consider sources on an undefined, but long-term time scale. Channel-adjustment processes are considered transitory in SIAM.

5.1.4 Source Accumulation and Distribution

The source accumulation and source distribution tables return a cumulative sum of material from local sources in a downstream direction regardless of transport mode. Source accumulation measures the total upstream contribution of material outside the modeled channel boundaries. Channel degradation and scour are assumed to lie within the model boundaries and are, therefore, excluded from the source accumulation tables. The distribution table returns the fractional contribution of each reach to the cumulative sum at the outlet. The detail tables contain a separate record for each load template.

5.1.5 Source Channel Accumulation

Source accumulation can report accumulation of bed material load or wash load within a reach. The split depends on local conditions irrespective of the wash load threshold at the outlet or in any reaches upstream. Channel accumulations always use a constant tracking threshold equal to the wash load threshold of the reach. Source channel accumulation tables provide an analog to the wash material tracking in identifying agents of geomorphic change and ultimate impact on channel yield. Assuming a network entirely in equilibrium, each channel must pass the sediment generated from all upstream local supplies. Scour of cohesive beds or destruction of an armor layer represents transitory non-equilibrium processes. In tracking a sediment source downstream through the channel network, the accumulation table will cumulatively sum the upstream components within each gradation whenever the representative diameter of the class enters the bed-sediment reservoir. Table 5-2 shows the algorithm for the source channel accumulation.

Table 5-2 Source Channel Accumulation Matrix within a Grain Class.

		Upstream	
		Bed Material	**Wash Material**
Current Reach	Bed Material	Include	Include
	Wash Material	Neglect	Neglect

The source channel distribution table reports the fractional contribution of the total accumulated channel material entering the outlet reach from local sources originating within the reach. The source channel distribution table assists in identifying causes of potential aggradation or future sedimentation. Material leaving the wash reservoir for a channel reservoir downstream continues to accumulate, but the linkage does not sever and the counter is not reset.

The details table report accumulation and distribution by load template. If the transport capacity of the current channel cannot pass the cumulative channel material, then the channel adjusts to increase or decrease the load. Long-term adjustment is dependent on the local sources.

5.2 Source Tracking Demonstration

The source tracking capabilities of SIAM link the origin of sediment to the impact to identify causality for potential remediation. Without adjusting channel boundaries, material entering a channel reservoir can at most impact the reach immediately downstream. The impact of material entering wash reservoirs may propagate all the way to the channel outlet or end somewhere within the network by transitioning to bed material load. Each grain class follows of path of linkages down a channel network with six possible scenarios from the upstream boundary to the outlet:

1. wash material remains as wash load throughout the entire network;
2. channel material remains channel material throughout the entire network;
3. wash material transitions to channel material and remains channel material;
4. channel material transitions to wash material and remains wash material;
5. wash load material transitions to channel material and then transitions back to wash material one or more times; and
6. channel material transitions to wash material and then transitions back to channel material one or more times.

In the first two scenarios, the wash material maintains a linkage through the network wash reservoirs and the channel material maintains a linkage through the channel reservoirs with no breaks or bypasses in the type of sediment continuity. Scenario 3 terminates the wash-reservoir linkages at the transition with no connections downstream. Channel reservoir linkages begin at the transition. Scenario 4 creates a new wash-reservoir path below the transition and channel reservoir linkages will no longer be reported. In Scenario 5, the wash linkages restart from zero after the transition back to wash material. In Scenario 6, the channel linkages are suspended but not reset until the material returns to channel load.

The example includes four grain classes: gravels, sands, silts, and clays. The stream network consists of a single river named "Thread" with reaches numbered sequentially from upstream to downstream with the properties shown in Table 5-3.

Table 5-3 **Source Tracking Scenario Table.**

Stream (text)	Reach (text)	Bed Material (text)	Sediment Properties (text)
Thread	1	Gravel	Gravel Bed
Thread	2	Sand	Sand Bed
Thread	3	Silt	Silt Bed
Thread	4	Cohesive Bed	Cohesive Bed
Thread	5	Armored Gravels	Armored Gravel Bed
Thread	6	Sand	Sand Bed
Thread	7	Silt	Silt Bed

Local sources and hydraulics use the same values as the demonstration case in Sections 4.2 and 4.3.

5.2.1 Source Accumulation

Source accumulation totals all the local sources upstream of a reach regardless of transport mode. Source accumulation provides an estimate of equilibrium loads assuming no aggradation or degradation anywhere in the basin and constant sediment sources. Table 5-4 shows the source-accumulation details for Thread 7.

Table 5-4 Source-accumulation Details for Reach 7.

Reach Key (text)	Clays (tonnes/yr)	Silts (tonnes/yr)	Sands (tonnes/yr)	Gravels (tonnes/yr)	Comment (text)
Thread – 7	2800	1400	140	14	Source A
Thread – 7	5400	2700	270	27	Source B
Thread – 7	21000	10500	1050	105	Source C
Thread – 7	26600	13300	1330	133	Source D
Thread – 7	27000	13500	1350	135	Source E

The source accumulation table contains a record for every local source upstream of Thread 7 and a summation of the contribution irrespective of wash load threshold.

5.2.2 Wash Material Tracking

The wash load will include wash-sized grain classes from local sources in the current reach as well as all sources connected through upstream wash load reservoirs. Additionally, the wash load will include channel load sources connected through upstream wash reservoirs. The wash load details table will contain a record for every source contributing wash material as well as every channel load contributing material in wash-size grain classes.

Table 5-5 shows the wash material tracking table with Thread 7 specified as the outlet. The table contains a single record for each upstream reach aggregating all local contributing material specific to each reach.

Table 5-5 Wash Load, Reach 7 Outlet.

Reach Key (text)	Clays (tonnes/yr)	Silts (tonnes/yr)	Sands (tonnes/yr)	Gravels (tonnes/yr)
Thread – 1 (Upstream)	8000	0	0	0
Thread – 2	30800	0	0	0
Thread – 3	44000	673295	0	0
Thread – 4	88000	52600	0	0
Thread – 5	0	0	0	0
Thread – 6	1000	500	0	0
Thread – 7 (Outlet)	0	0	0	0

The outlet reach, Thread 7, specifies clay sizes only as wash load; however, Thread 6 specifies both silts and clays. Therefore, both classes will enter the outlet wash reservoir through wash reservoir linkages. There are no wash reservoir linkages in the sand- and gravel-sized classes. Thread 5 and Thread 7 add no material to the wash load.

At Thread 3, the linkage through silt classes is cut and SIAM reports zero for all reaches upstream. Transitioning material from Thread 3 is still included.

Table 5-6 shows part of the wash material tracking details table with Reach 7 as the outlet. The details table contains individual records showing the amount of material from each source within a reach that passes to the outlet through the wash reservoir linkages. The full table includes multiple records for each reach contributing material.

Table 5-6 Example Wash Material Tracking Details, Reach 7 (Outlet).

Reach Key (text)	Clays (tonnes/yr)	Silts (tonnes/yr)	Sands (tonnes/yr)	Gravels (tonnes/yr)	Comment (text)
Thread – 3	2400	0	0	0	Source A
Thread – 3	10000	0	0	0	Source C
Thread – 3	15400	0	0	0	Source D
Thread – 3	16200	0	0	0	Source E
Thread – 3	0	673295	0	0	Thread – 3: Channel Load
Thread – 4	2800	1400	0	0	Source A
Thread – 4	9000	4500	0	0	Source B
Thread – 4	13000	6500	0	0	Source C
Thread – 4	28800	14400	0	0	Source E
Thread – 4	34400	25800	0	0	Thread – 4: Channel Load

Reach 3 contains a record for a transition from channel material to wash material in silt classes. Reach 4 contains a record for scour of cohesive material. The summary table can identify reaches with large contributions. The details table provides information on which processes in the reach contribute the most wash material.

Material for both the summary and details tables can also be expressed as a fraction of the wash load at the outlet. The sum down each column equals the wash load at the outlet. The wash material tracking results are specific to the reach designated as the outlet. Investigating wash load contributions to other reaches in the watershed requires designating a different outlet reach.

5.3 Sensitivity in Source Tracking

The accuracy of source tracking depends on the ability to identify and quantify external sources of sediment in each reach, scour of cohesive beds, and disruption of an armor layer. The sensitivity of the results to changes in input determines the level of confidence required in the input data to generate useful results. One may use different techniques to estimate sediment sources each with a different spread of variability and uncertainty. The uncertainty of the computed sediment sources depends upon the ability to identify all sediment sources and the computation techniques. Aerial photographs may miss a gully due to shadows or coarse resolution may prevent identification of sources smaller than the pixel dimensions. Both scour and transport rates use relationships with an empirical component and some uncertainty associated with the empirical values. Because the wash load threshold and armor control regulate material transport those parameters will affect source tracking. As with local accounting, addressing sensitivity can be handled through a Monte Carlo style of analysis. If the uncertainty in the input parameters is difficult to quantify, a what-if scenario can provide helpful insights.

5.3.1 Source Accumulation

Source accumulation depends only upon the local sources input. Quantifying external sources follows the same sensitivity practices as for quantifying wash load.

Uncertainty is linearly related to the source magnitude. In source accumulation, the relative importance of an individual source decreases with increasing proximity to the outlet and as other sources add to the total accumulation. Similar input development methods may provide similar confidence intervals at the outlet. Grouping individual sources of the same type may simplify a sensitivity analysis.

The source channel accumulation uses the wash load threshold to divide the source accumulation into a channel and wash component. The wash threshold does not impact the total source accumulation. Changes to the wash threshold in one reach will not propagate to the source accumulation tables in other reaches.

5.3.2 Wash Material Tracking and Distribution

Unlike wash load, transitions with accurate transport potentials cannot reduce the sensitivity of the wash load threshold for source tracking. Severing or establishing a connection may result in changing a linkage with many upstream sources. Sensitivity can increase when changing a linkage includes or excludes grain classes from a large number of upstream sources.

Source accumulation tables provide a partial check on the impact of the wash load threshold. However, accumulation tables do not include material freed through scour of cohesive reaches or destruction of an armor layer. The quantity of material from the grain classes adjacent to the grain class with the wash load threshold compared to the total amount of all grain classes can quantify the impact of changing the wash load threshold.

5.4 Limitations and Range of Applicability

A geomorphic assessment can identify primary contributors, but estimation of quantities and grain-size distributions can be extrememly difficult and expensive. Local and network accounting routines can still provide useful information even without any source tracking. Situations where source tracking might prove useful include: deposition of material transported in the wash column and down-cutting from starvation of sediment supply. An educated guess and what-if studies can provide an intermediate stage to determine if examining sources would provide useful information.

5.5 Summary

Wash material tracking provides a means for identifying the causes of the wash component of sediment yields within time frames on the order of a regime, typically 1 yr. Source-accumulation reports long-term yields requiring geomorphic adjustment as well as providing information for sensitivity analysis of the wash load. Management scenarios can alter supply of material to meet yield targets and then use local accounting to check the effect on reach stability.

CHAPTER 6

APPLIED ENERGY REACH MODIFICATION

6.1 Overview

SIAM considers three relationships to govern channel form: 1) sediment transport, 2) volume of water, and 3) hydraulic resistance. Applied energy develops work as an integrative parameter controlling sediment transport and geomorphic adjustment. Streams balance the energy expended in sediment transport to meet sediment supply. Planned alterations to a stream can target the energy expenditure to meet specific design goals. The applied stream power provides a surrogate for sediment transport, while applied work represents geomorphic change. Energy is the ability to do work; work is the transfer of energy; and power is the rate of work. Applied energy tables in SIAM include:

- **Event Energy**: volume-averaged applied stream power, work, and sediment transport for the flow regime. Details table lists the individual event records.
- **Regime Energy**: applied work-rating curve based on the events in the hydrologic input records.

The following paragraphs introduce the origin of applied work as a channel morphologic parameter and discuss the influence on local sediment continuity. Network accounting will use the applied energy concepts to distribute the effects of a local project throughout a channel network.

6.2 Applied Energy Methods

6.2.1 Event Energy

Bagnold (1966) found sediment loads proportional to the total power expended as water flows downstream. The fraction of power expended transporting sediment determines the efficiency. Stream power provides an integrative parameter for comparing sediment transport rates across different hydraulic situations, Equation 6-1:

$$Q_s \propto \Omega_A = \sum\left(\gamma \cdot e_b \cdot \Omega_T\right) \qquad \textbf{Equation 6-1}$$

where,

Q_s = sediment load;

Ω_A = applied power expended in sediment transport;

γ = unit weight of water;

e_b = efficiency, the portion of total power expended in transporting sediment; and

Ω_T = total stream power for a flow event.

Unit weight of water, γ, is a constant required for dimensional correctness. The efficiency term, e_b, is related to the ratio between channel velocity and mean particle diameter. Using fall velocity as a surrogate for particle diameter results in Equation 6-2 for efficiency:

$$e_b \propto \frac{v}{\omega}$$ **Equation 6-2**

where,

e_b = efficiency coefficient;

v = average flow velocity; and

ω = particle fall velocity in water.

Equation 6-3 expresses applied power in terms of measurable and designable parameters:

$$\Omega_A = \sum\left(\gamma \cdot \left(\frac{v}{\omega}\right) \cdot \left(R \cdot S_f \cdot v \cdot P\right)\right)$$ **Equation 6-3**

where,

Ω_A = power expended in sediment transport over a flow event;

$\frac{v}{\omega} \propto e_b$ = efficiency coefficient for the proportion of total work expended in transporting sediment;

v = velocity;

ω = average fall velocity for the sediment mixture;

R = hydraulic radius;

S_f = friction slope; and

P = wetted perimeter.

The applied stream power represents a flux of force per time over an area for a single flow event. Sediment load is also a flux, but of mass (or volume) per time. SIAM applies the stream power to a reach control volume. Work done on the channel boundary comes from applying the stream power of an event for the duration of the event over a reach length. Geomorphic change occurs due to net transfer of material, yield, from a channel boundary. Equation 6-4 applies the stream power over the longitudinal length of a channel for the duration of a flow event to derive an applied-work term, Π_A:

$$Y_s \propto \Pi_A = \sum(\Omega_A \cdot \Delta t \cdot X) \qquad \textbf{Equation 6-4}$$

where,

Y_s = sediment yield;

Π_A = applied work;

Δt = duration of a flow event; and

X = longitudinal length of the channel.

The units of applied work from Equation 6-4 are shown in Equation 6-5. The unit weight of water provides dimensional consistency with traditional units of work:

$$\Pi_A = \Omega_A \cdot t \cdot X = \frac{F}{L^3} \cdot \left(\frac{L/T}{L/T} \right) \cdot L \cdot 1 \cdot \frac{L}{T} \cdot L \cdot T \cdot L = F \cdot L \qquad \textbf{Equation 6-5}$$

where,

F = units of force;

L = units of length; and

T = units of time.

Work is equivalent to a force applied over a distance. Modifying the applied work represents the potential for geomorphic change over time. Modifying the applied power in a system impacts the amount of work performed and the magnitude and direction of adjustment over time.

The applied energy parameters include fall velocity. However, sediment mixtures contain a range of grain sizes. SIAM uses a fraction weighted fall velocity, Equation 6-6:

$$\overline{\omega} = \frac{\sum (p_i \cdot \omega_i)}{\sum p_i} \qquad \textbf{Equation 6-6}$$

where,

$\overline{\omega}$ = fraction weighted fall velocity;

p_i = fraction of bed material in grain class i; and

ω_i = fall velocity for the representative diameter of grain class i.

In computing sediment transport over a range of grain classes, the potential assumes a bed of uniform material multiplied by the fraction present. The weighted fall velocity mirrors this approach.

6.2.2 Regime Energy

A regime consists of the series of flows and corresponding durations experienced by a river system. Neglecting uplift, subsidence, and long-term erosion, the potential energy of a drainage basin remains constant for a given amount of water irrespective of how the energy is or is not applied. The amount of water can change for different climatic conditions or trans-basin diversions. Equation 6-7 shows this volume continuity constraint:

$$\sum_{i=1}^{Q_n} Q_i \cdot t_i = k_v$$ **Equation 6-7**

where,

Q_i = total discharge (hydrology record) in discrete flow interval i;

t_i = duration of interval i; and

k_v = average annual volume of water.

Decreasing the discharge in one part of the flow-duration curve requires increasing the magnitude or duration of flow in another. To determine the range and capability of impacting the applied work, SIAM creates hypothetical scenarios. For each event, the regime energy computations adjust the duration so that the annual volume of water remains constant. The sediment transport rate applied over the adjusted duration results in the yield for the hypothetical regime.

Modifications of the flow-duration curve such as reservoir operations or detention facilities can impact discharge and duration. The sediment transport responds in a non-linear manner to changes in discharge, while continuity remains linear. A shift of volume from a high-discharge event to a lower-discharge event may reduce the total sediment transport. Power-function regression equations can provide site-specific quantification. Equation 6-8 shows a generic power function relationship using applied power as the predictive variable:

$$Q_s = a \cdot \Omega_A{}^b$$ **Equation 6-8**

where,

Q_s = sediment load in mass per time;

a = power function coefficient;

b = power function exponent; and

Ω_A = applied stream power.

For exponents greater than 1, moving high flows to longer lower flows reduces the total annual yield. Computations do not consider whether or not the specified flow is adequate to pass the volume within the time period represented by the hydrologic regime.

A power function also was selected to characterize the relationship between sediment yield in mass per time and applied work. The coefficients in the function are assumed to account for factors governing the efficiency. The regression line through the data points provided by each hypothetical scenario provides an estimate of the work required to achieve a target sediment yield. A relationship between applied power and sediment yield can also be derived from Yang (1973) or Parthenaides (1977).

6.2.3 RSVP Channel Adjustment and Response

The amount of energy expended in transporting sediment will change through geomorphic adjustment or anthropogenic intervention. Channel widening, aggradation, degradation, constrictions, grade control, channelization, etc. can modify hydraulics. For a given discharge-duration relationship, the applied energy relationship shows four degrees-of-freedom: velocity, hydraulic radius, wetted perimeter, and friction slope. Adjustments to the channel hydraulics follow the three governing equations. Equation 6-9 shows the first equation, hydraulic continuity, within a flow event:

$$Q_i = v_i \cdot R_i \cdot P_i \qquad \textbf{Equation 6-9}$$

where,

Q_i = discrete flow interval i;

v_i = average flow velocity for event i;

R_i = hydraulic radius for event i; and

P_i = wetted perimeter for event i.

The second constraint, geometry, relates wetted perimeter to hydraulic radius. For a given channel, knowing or setting a wetted perimeter fixes the hydraulic radius, Equation 6-10. For complex channels that cannot be represented by basic geometric shapes, the relationship is not directly expressible:

$$R_i \propto P_i \qquad \textbf{Equation 6-10}$$

where,

R_i = hydraulic radius for event i; and

P_i = wetted perimeter for event i.

Hydraulic roughness provides a final relationship relating velocity, hydraulic radius, and slope. Equation 6-11 shows the Manning relationship:

$$v_i = \frac{\phi}{n_i} \cdot R_i^{\frac{2}{3}} \cdot S_{f,i}^{\frac{1}{2}} \qquad \textbf{Equation 6-11}$$

where,

v_i = average flow velocity for event i;

ϕ = metric versus U.S. customary unit conversion;

n_i = Manning roughness for event i;

R_i = hydraulic radius for event i; and

$S_{f,i}$ = friction slope for event i.

For an alluvial channel in equilibrium, the sediment transport hydraulics must fluctuate in time and space around an average value constant in time and space over the length of the reach. Intermediate river channel variability, such as pool-riffle sequences, can vary depth and slope but, over the length of a reach, the average water surface profile in a stable reach must approach normal depth for the average bed slope. Individual discharges may have unique friction slopes but averaged over an entire annual regime and neglecting local losses due to expansion and contraction, the friction slope must still equal the bed slope. For an alluvial reach transporting material, deviation from a normal depth condition indicates disequilibrium because the flow must either expand or contract according to gradually-varied flow water surface profiles (Chow 1973). Expansion or contraction creates a change in the sediment transport capacity profile where upstream and downstream rates are no longer equal. While it is theoretically possible to create a situation where one-dimensional calculations could balance the hydraulic variables used to predict sediment transport such that non-normal conditions demonstrate equal transport capacity, a full three-dimensional flow field would still show expansion and contraction of the streamlines.

Applied energy provides a sense of the scope of channel changes required to correct a sediment imbalance. Neglecting overbank processes, treating velocity as a dependent variable, and assuming a relationship for radius as a function of perimeter provides a range of channel adjustments in width or slope to respond to excess or deficit of sediment. Research identified in Section 2.8 of the *Literature Review* postulated means for selecting a specific design slope and perimeter pairs, but a managed system carries no inherent need to approach an undisturbed state and multiple combinations will satisfy continuity. Some combinations may contain other disadvantages or require high maintenance. Modifications are subject to physical constraints as well as practical limitations. Changes in one area may impact any area of a watershed connected through channel reservoirs or wash material deposition.

6.3 Applied Energy Equilibrium Demonstration

SIAM incorporates modifications to a river system by altering input records and re-running the model. The effects of a change are expressed in terms of the impact on the hydrology, hydraulics, transport potential, and local sources. Flow regulation, whether through detention ponds or reservoir operation, results in altered discharge duration records. Grade control, channelization, and clearing of snags result in modified hydraulics and transport potential for a given discharge. The change in travel times may also alter the discharge duration records. Incorporation of changes into SIAM requires consideration of the reach-scale impacts from a project. SIAM operates independently of the technique used to represent the reach-scale impacts.

The hypothetical demonstration of applied energy uses a rectangular channel with a uniform grain class of representative diameter, D_S, equal to 1.4 mm, very coarse sand. The trend methods do not adjust sediment gradations so the representative fall velocity remains constant even under different regimes.

6.3.1 Discharge Duration Adjustment

The discharge duration demonstration uses three discharges to represent a hydrologic regime over a year. Table 6-1 shows three arbitrarily selected discharges, hydraulics, applied power, and sediment transport rates.

Table 6-1 Applied Event Energy Demonstration.

Event	Discharge (ft^3/s)	Water Unit Weight (lbs/ft^3)	Fall Velocity (ft/s)	Hydraulic Radius (ft)	Friction Slope (ft/ft)	Velocity (ft/s)	Wetted Perimeter (ft)	Applied Power (lbs/s)	Transport Rate (tons/d)
1	1500	62.4	0.45	2.94	0.005	6.15	82.9	102.6	1.29E+04
2	2000	62.4	0.45	3.47	0.005	6.90	83.5	153.4	1.92E+04
3	2500	62.4	0.45	3.95	0.005	7.52	84.1	208.9	2.60E+04

The units of applied power act longitudinally along the channel. Table 6-1 expresses the power per unit length. The hypothetical regime relationship estimates the work performed by each event over the entire regime volume, assuming the total volume of water is constant but flows through the system at a different rate. Table 6-2 shows the applied regime energy again per unit length.

Table 6-2 Applied Regime Energy Demonstration.

Event	Discharge (ft^3/s)	Event Duration (d/event)	Event Volume (ft^3)	Event Work (lbs)	Event Yield (tons/event)	Regime Volume (ft^3)	Regime Duration (d/regime)	Regime Work (lbs)	Regime Yield (tons/regime)
1	1500	3	3.89E+08	2.66E+07	3.86E+04	1.56E+09	12.00	1.06E+08	1.54E+05
2	2000	3	5.18E+08	3.98E+07	5.75E+04	1.56E+09	9.00	1.19E+08	1.73E+05
3	2500	3	6.48E+08	5.41E+07	7.81E+04	1.56E+09	7.20	1.30E+08	1.87E+05
Regime						1.56E+09	9.00	1.20E+08	1.74E+05

The higher flows transported more sediment. The regime relationship shows increasing the discharge for shorter durations will increase sediment yield, while shifting to lower discharges for longer durations will reduce sediment yield. Figure 6-1 shows a different distribution of discharge and duration plotted onto the hypothetical regime curve.

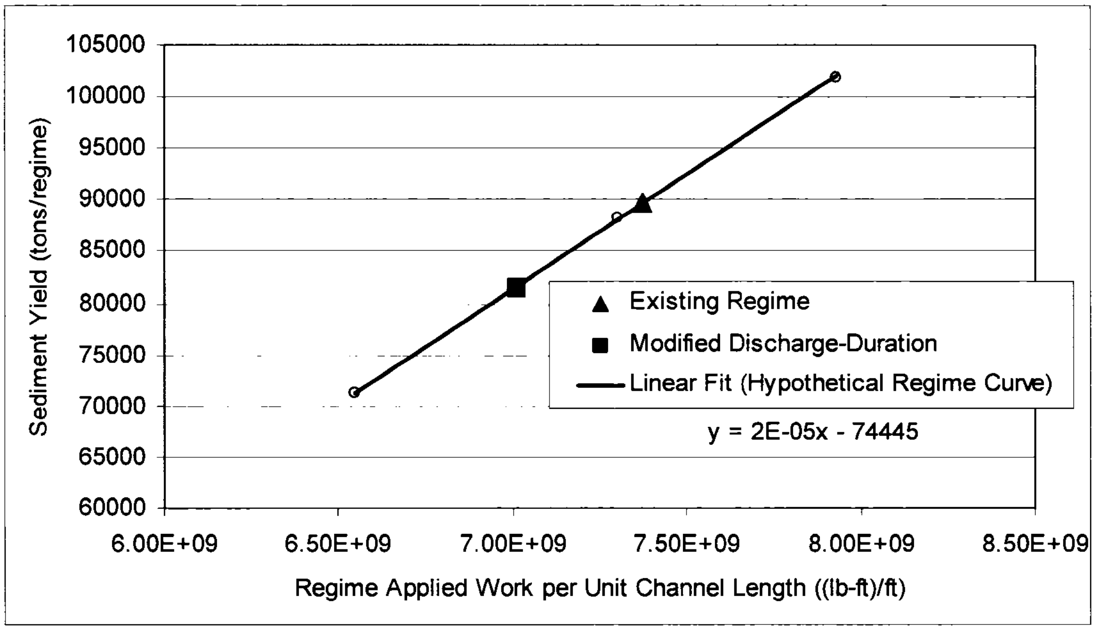

Figure 6-1 Discharge Duration Adjustment along Hypothetical Regime Curve.

The hollow circles with the linear fit show the hypothetical regime curve. The triangle shows existing conditions of three equal duration discharges. The square shows a potential operational modification that stores high flows and releases at a lower flow rate for longer time periods. The lower applied work results in reduced sediment yield. Table 6-3 shows the calculations.

Table 6-3 Discharge Duration Adjustment.

Event	Discharge (ft^3/s)	Event Duration (d/event)	Event Volume (ft^3)	Event Work (lbs)	Event Yield (tons/event)
1	1500	6.37037	8.26E+08	5.64E+07	8.19E+04
2	2000	3	5.18E+08	3.98E+07	5.75E+04
3	2500	1	2.16E+08	1.80E+07	2.60E+04
Regime			1.56E+09	1.14E+08	1.65E+05

The hypothetical regime can help identify flow regulation practices to meet a sediment yield objective. After selecting a desired sediment yield, the amount of work becomes a design parameter. Applied energy methods only address material interacting with the channel boundaries. Changing wash load requires addressing sediment sources.

6.3.2 Geometry Adjustment

Given a flow-resistance equation, hydraulic radius and velocity can be treated as a function of wetted perimeter and slope. In channels with high width to depth ratios, wetted perimeter can be represented by the width of the channel. The geometry adjustment demonstration changes width and slope. Estimates assume either adequate depth to fully contain the flow, or the exclusion of water in overbank areas. The demonstration does not consider attenuation over a floodplain.

The geometry adjustment demonstration example uses regime volume from the discharge duration demonstration of 2,000 ft^3/s discharge over 9 days. Varying width and slope result in different transport rates. Plotting yield versus regime energy from the previous example results in Figure 6-2.

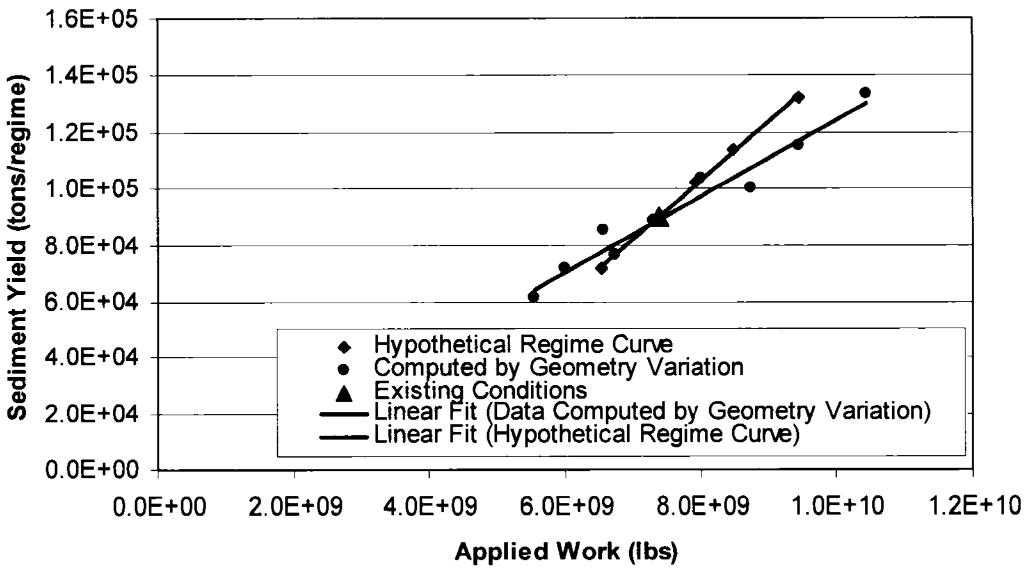

Figure 6-2 Slope and Width Changes versus Hypothetical Regime.

The geometry adjustment scatters farther around the trend than the hypothetical regime curve. The sediment transport relationship used was Yang (1973) to compute the rate. Yang's equation includes additional parameters beyond energy methods and the power fit represents a simplification. The widest separation between the two lines within the range shown is 20%. The difference between the two curves is less than the potential differences between potential sediment transport equations (Yang 1996) and exceeds measurement capabilities.

Selecting a target yield and determining the required power result in a range of slope and width combinations. Selecting a specific slope and width requires imposing external constraints such as available space, flood conveyance, geotechnical stability, or a theoretical approach such as minimum stream power. Some channel configurations may require more maintenance than others. For example, a very steep channel in a formerly meandering system may attempt to shift to a braided pattern. Chapter 7 contains examples of applied energy on the Hickahala Creek demonstration basin.

Grade control impacts the hydraulic response under a given discharge. Hydraulics should include only the impact on the channel. The input friction slope should not include losses within the structure due to turbulence and internal friction.

6.4 Sensitivity

Applied energy uses input from hydrology, hydraulics, and transport potential in the local reach. Local sources do not play a role. Network effects do not influence applied energy. The intertwined relationships between channel geometry, hydraulics, and sediment transport conducting a sensitivity analysis difficult. A Monte Carlo style of sensitivity analysis can provide site-specific quantification. Confidence intervals on the hypothetical regime relationship using the residuals from the sediment yield and work represents the goodness of fit for the assumed applied energy relationship, but does not account for the uncertainty in the computation of the data points comprising the regression. Bracketing the full range of uncertainty requires evaluating the uncertainty in the computation of applied power, transport rate, and the link between the two.

Power computations use hydraulic data. The relationship between geometry and hydraulics lies beyond the scope of SIAM. After establishing the uncertainty in input parameters, the normal depth relationship and Manning's equation provide a means for understanding the sensitivy within the SIAM model alone (neglecting limitations to the stream power surrogate) to changes in input. The stream power relationship follows Equation 6-12:

$$\Omega_A = \frac{R \cdot S_f \cdot v^2 \cdot P}{\omega}$$ **Equation 6-12**

$$v = \frac{\phi}{n} \cdot R^{2/3} \cdot S_f^{1/2}$$ **Manning**

$$R = \left(\frac{Q \cdot n}{\phi \cdot S_f^{1/2} \cdot P} \right)^{3/5}$$ **Normal Depth**

$$\Omega_A = \frac{\left(\frac{Q \cdot n}{\phi \cdot S_f^{1/2} \cdot P} \right)^{3/5} \cdot S_f \cdot \left(\frac{\phi}{n} \cdot \left(\frac{Q \cdot n}{\phi \cdot S_f^{1/2} \cdot P} \right)^{2/5} \cdot S_f^{1/2} \right)^2 \cdot P}{\omega}$$

$$\Omega_A = \frac{Q}{\omega} \cdot \left(\frac{\phi}{n \cdot P} \right)^{3/5} \cdot S_f^{13/10}$$ **Normal Depth Applied Power**

Partial derivatives with respect to perimeter and slope show slope exerting over twice the influence of perimeter (width). Variability in the hydraulics would translate to variability in the normal depth applied power relationship.

Transport rates use bed material, hydraulics, and an empirical equation or measurements. McLean (1985) discusses the impact of hydraulic variability on sediment transport rates. The channel load routines in SIAM result in a direct relationship between variability in bed material fraction present and the resulting distribution of loads between grain classes. If hydraulics and transport rate can be transformed into a linear relation with stream power as postulated by Bagnold (1966, 1980), the sensitivity is linear or log-linear with changes in stream power. This assumption does not apply to non-linear relationships between stream power and sediment transport.

Hydrology impacts the duration of the power and dictates the time available for performing work. The duration in hydrology exerts a direct impact in proportion to the fraction of the total applied power of a regime.

6.5 Limitations and Range of Applicability

The local balance tables identify the magnitude and direction of a sediment imbalance. Applied energy specifies a combination of changes to width and slope to accommodate the instability, but does not specify a specific width and slope. Additional information is required to bracket a range of likely width and slope adjustments. Physical constraints, regime relationships, or theoretical hypotheses can make value judgments to narrow the range. In planning structural adjustment to balance sediment continuity, the width and slope combinations do not include sustainability criteria. Many empirical techniques for estimating channel geometry attempt to mimic a natural configuration. Deviations from "typical" geometries may result in high maintenance requirements. Other values such as habitat, physical constraints, or floodway maintenance may dictate potential combinations.

The applied energy relationship is used to develop a simplified, case-specific rating curve from more complex and generalized sediment transport relationships. The applied power does not adjust the grain size distribution and cannot account for armoring or fining processes. Conceptually, bed material coarsening would increase the representative fall velocity and reduce the applied power to result in less transport.

Coarsening invalidates the sediment transport versus applied-power relationship and would require a new relationship.

Mathematically, constructing a hypothetical regime curve requires input for at least two events transporting bed material. For multiple events, evaluation of the scatter around the resulting regression relationship establishes the confidence in the ability to represent the hypothetical regime by a curve fit.

Applied energy provides a means to improve estimates of equilibrium channel geometry. Design or evaluation at a site-specific or project level can use more detailed analysis techniques for improved results. SIAM simplifies processes to provide a framework for integrating sediment continuity and adjustment on a large scale when more detailed and precise methods becomes cost or time prohibitive.

CHAPTER 7

NETWORK ACCOUNTING

7.1 Overview

In physical systems, changes to a single reach can propagate both upstream and downstream with multiple aggrading and degrading reaches combining to attenuate or amplify geomorphic change. Previously presented methods cannot describe interactions as a channel network evolves. In local balance calculations, channel reservoir linkages are limited to adjacent reaches and may fail to identify sediment impacts originating from other areas. In source tracking, the accumulated source materials in channel reservoir classes describe the total sediment load for the evolved channel, but not the adjusted channel geometry nor transitory changes to supply due to geomorphic change. Applied energy methods estimate equilibrium combinations of slope and width but not the intermediate processes and, therefore, neglect complex response. The previously described methods cannot distinguish between the ultimate state of a reach degrading 2 ft to reach equilibrium within the entire network from the ultimate state of a channel degrading 10 ft or even avulsing to reach the same balance. SIAM defines aggradation solely by a reach evolving towards increased sediment transport irrespective of change to profile elevation.

Network accounting seeks to address some of these shortcomings by propagating sediment imbalances upstream and downstream beyond immediately adjacent reaches through channel reservoir linkages. The following sections present a preliminary framework for estimating the network impacts from geomorphic adjustment within a single reach using applied energy and distributing applied work, but the methods require further refinement before practical application becomes feasible. Network accounting tables in SIAM include:

- **Network Stress**: difference between source accumulation and channel load in channel-material size classes.
- **Network Propagation**: fractional distribution of stress from other reaches.
- **Network Balance**: network stress originating in reaches connected through channel-material reservoirs. Details tables break down the sum according to source reach.
- **Network Wash Deposition**: amount of supply in wash material size classes exceeding transport potential input records.

At this time, the framework is incomplete and primarily supports qualitative conclusions. The distribution of stresses does not always scale between reaches and, therefore, the effects from multiple reaches cannot be summed. The estimates of the network impacts to the channel reservoir provide guidance for further modeling and research.

7.2 Network Accounting Methods

7.2.1 Network Stress

SIAM quantifies impacts from local instabilities and changes in sediment supply as stresses. A stress measures the difference between the supply of material and the channel load. Positive stresses indicate aggradation and negative stresses indicate degradation. There are two general classes of stress: 1) stresses due to supply, and 2) stresses due to transport capacity. A reach originally in equilibrium, subjected to change in sediment or water supply, will evolve to balance transport with supply resulting in a permanent difference in geometry at a new equilibrium transport rate. Land management, dams, and watershed activities can create supply stresses. A reach originally in equilibrium and then modified in a manner that alters sediment transport will experience a transitory stress and ultimately return to the initial equilibrium transport rate. Channelization, headcuts, river training, and grade control create transport stresses.

A local balance calculation may identify a portion of the transport component of a network stress, but cannot identify a supply stress unless the supply occurs within the reach. Network accounting calculates a balance for each reach as the difference between source channel accumulation and the channel load.

7.2.2 Responsiveness and Propagation of Imbalances

SIAM propagates the impact from an imbalance in capacity or supply through the concept of a pivot point. Considering only slope changes, and allowing the upstream and downstream boundaries to move, an aggrading reach will increase the bed elevation of upstream reaches and reduce the bed elevation of downstream reaches. A degrading imbalance pivots the opposite direction. Figure 7-1 shows an example pivot from a change in sediment supply using the numerical mobile-boundary model GSTAR-1D (Huang and Greimann 2005).

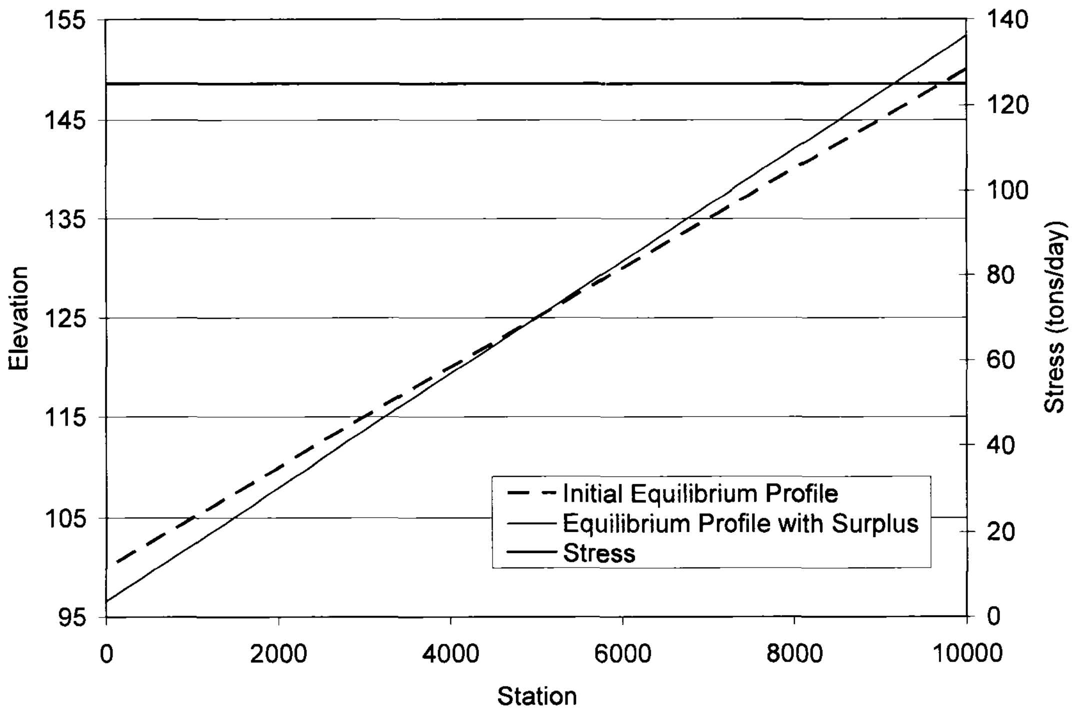

Figure 7-1 Reach Pivot Due to a Change in Sediment Supply.

The increase in supply results in a permanent change in slope. With both boundaries free to adjust, the graphical representation of the change occurs equally over the length of the stream with the upstream half elevating and the downstream half lowering. The entire length is considered aggradational by the definition of evolution to increased sediment transport. SIAM cannot determine whether the evolution to an increased slope will occur at the indicated elevation or a higher or lower elevation.

For a network otherwise in equilibrium, an imbalance in transport capacity will raise or lower the bed without altering the equilibrium slope and width. Figure 7-2 shows a GSTAR-1D simulation of an aggrading reach created through a flattened slope.

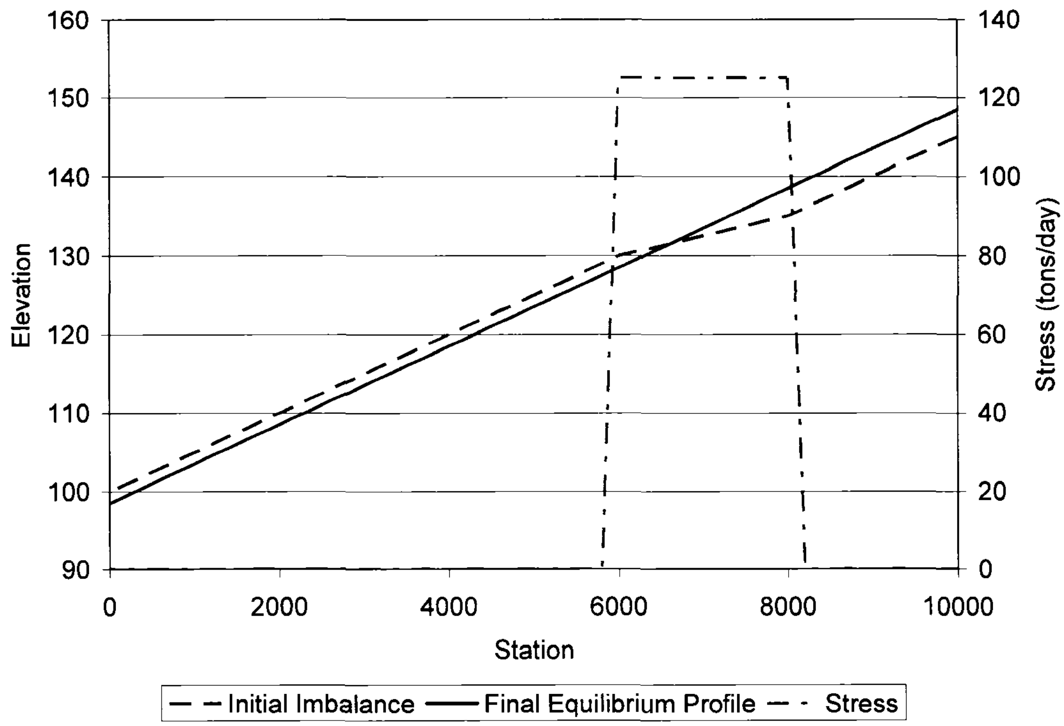

Figure 7-2 Example Pivot-point Adjustment with Insufficient Transport Capacity.

The unbalanced reach steepened to increase the sediment transport rate. Upstream of the imbalance, the rising base level causes upstream reaches to rise, but ultimately with no net change in transport capacity. Downstream of the imbalance, the temporary reduction in sediment supply resulted in a sediment-starved condition and lowering. Figure 7-3 shows a numerical simulation of a degrading reach created through a steeper slope.

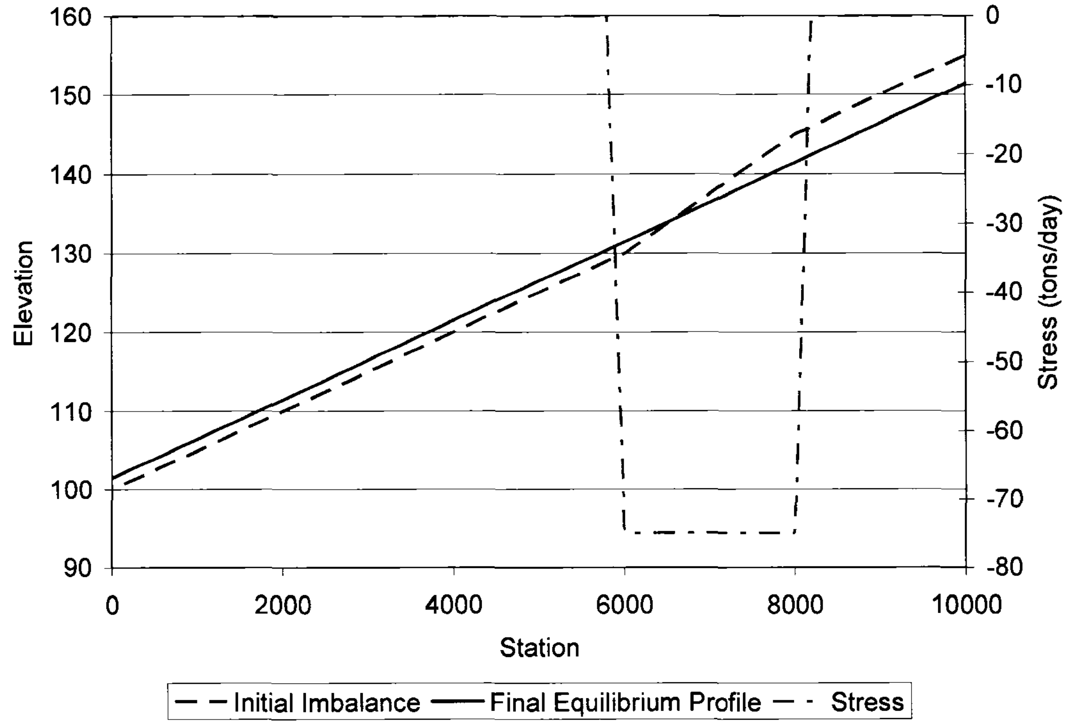

Figure 7-3 Example Pivot-point Adjustment with Excess Transport Capacity.

The upstream reaches lower following a reduction in base-level control through the mechanism of a headcut or knick zone. The increase in material supplied to downstream reaches causes the lower reaches to rise without changing the ultimate transport capacity.

Upstream and downstream reaches do not adjust equally and the location of the pivot point need not rest at the center of the pivoting reach. The location of a pivot point and the distribution of network stress depend upon the reaches connected to the pivoting reach through channel material reservoirs. A reach generating a pivot must adjust all connected channel material reservoirs, including reaches connected through tributaries entering downstream of a pivot. Reaches on each side of the pivot move in opposite directions to absorb stress such that the imbalanced reach approaches equilibrium. The amount of absorption on each side of the pivot is, therefore, equal and opposite. Connected reaches upstream absorb half the stress and the downstream connected reaches absorb the other half.

Some reaches can change faster than others to respond to an imposed stress. Across a pivoting reach, the location of the pivot shifts towards the less responsive reaches. When a stress is applied, highly responsive reaches react more quickly and absorb more change. Using applied energy as a surrogate for channel geometry, the relationship between applied work and yield describes the absorption of stress and the responsiveness of a reach to a change in sediment supply. Responsiveness is defined by the slope of the yield versus work relationship, Equation 7-1:

$$\Psi = \frac{\Delta Y_s}{\Delta \Pi_A} = \frac{\Delta \sum (Q_s \cdot t)}{\Delta \sum (\Omega_A \cdot t \cdot X)} \approx \frac{\Delta Q_s}{\Delta \sum (\Omega_A \cdot X)}$$ **Equation 7-1**

where,

Ψ = response parameter;

ΔY_S = change in yield;

$\Delta \Pi_A$ = change in applied energy;

Q_S = sediment transport rate;

t = duration;

Ω_A = applied power; and

X = channel length.

In highly responsive reaches small changes in applied energy result in large changes in transport capacity. In less responsive reaches, large changes in applied energy result in small changes in transport capacity. As with the applied energy calculations, SIAM discretizes work and responsiveness according to the hydrology records and assumes a constant relationship between applied energy and sediment transport rate throughout the channel adjustment through time.

The location of the pivot point within an imbalanced reach depends upon the upstream and downstream responsiveness. Equation 7-2 shows the method for computing the location of a pivot by geometrically distributing work on each side of the pivot to result in a total stress of zero:

$$x_p = \frac{\sum_{i=p}^{n} \psi_i}{\psi_p + \sum_{i=1}^{n} \psi_i} \qquad \textbf{Equation 7-2}$$

where,

x_p = ratio of distance between the downstream end of a reach and the pivot point to the total length of the reach;

i = reach within a channel network;

n = number of reaches within a channel network;

p = pivoting reach; and

ψ_i = responsiveness in reach i.

The numerator computes a distance-averaged responsiveness for all reaches upstream of and including the pivoting reach. The denominator computes the responsiveness of the all reaches and then double counts the pivoting reach. Half of the stress will be distributed upstream and half will be distributed downstream. The pivot reach will absorb some of the upstream stress, Equation 7-3, and some of the downstream stress, Equation 7-4:

$$P_{p,us} = \frac{S_{N,p}}{2} \cdot (1 - x_p) \cdot \frac{\Psi_{p,us}}{\Psi_{p,us} + \sum \Psi_{us}}$$ **Equation 7-3**

$$P_{p,ds} = \frac{S_{N,p}}{2} \cdot (x_p) \cdot \frac{\Psi_{p,ds}}{\Psi_{p,ds} + \sum \Psi_{ds}}$$ **Equation 7-4**

where,

$P_{p,us}$ = propagated stress in the pivoting reach on the upstream side of the pivot;

$P_{p,ds}$ = propagated stress in the pivoting reach on the downstream side of the pivot;

$S_{N,p}$ = network stress in the pivoting reach;

x_p = fraction of the total reach length from downstream end of the reach to the pivot point; and

Ψ = applied work.

Net aggradation or degradation within a reach depends on the location of the pivot point. Figure 7-4 shows example pivot movement and the impact on the accumulated network balance for the pivoting reach.

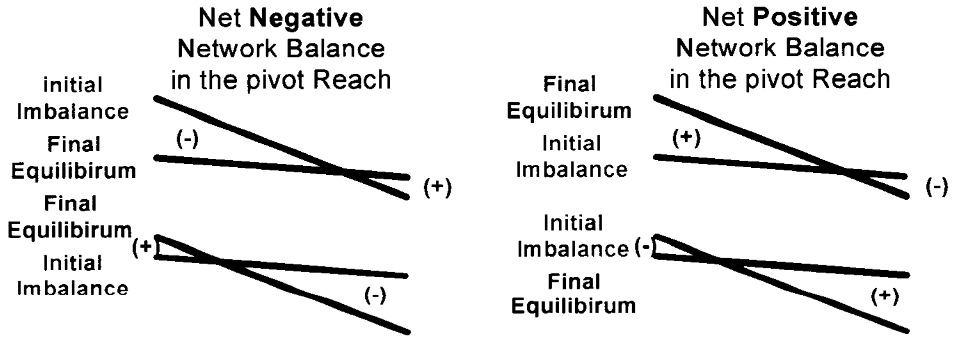

Figure 7-4 Pivot-reach Absorption of Network Balance Effects.

The remainder of the stress is propagated to the upstream and downstream reaches according to responsiveness. For reaches of equivalent responsiveness, the distribution occurs as an inverse ratio of the length. A pivot with 3,000 m on the downstream side and 1,000 m on the upstream will distribute the work in a 1/3 change on the downstream side compared to the 2/3 change on the upstream side. A less responsive upstream will experience less change for the same amount of work. This algorithm assumes each reach ultimately absorbs the same amount of work per unit length from an imbalance in the network. An unequal amount of work would create a new imbalance and not represent a channel at equilibrium.

7.2.3 Fixed Boundary Conditions

The previous examples show free boundaries capable of adjusting in response to changes. Other possible conditions include an infinite sink or an immobile boundary. An infinite sink is characterized by zero transport potential in all channel material grain classes. Physical examples include a channel maintained through dredging or a large reservoir where the inflowing load does not influence base level. An infinite sink stops potential base-level rising or lowering and severs the channel reservoir connection; upstream reaches must absorb all change. Figure 7-5 shows two mobile-boundary examples of an infinite sink where the downstream water surface elevation is fixed. The red shows a degrading reach and the blue an aggrading reach.

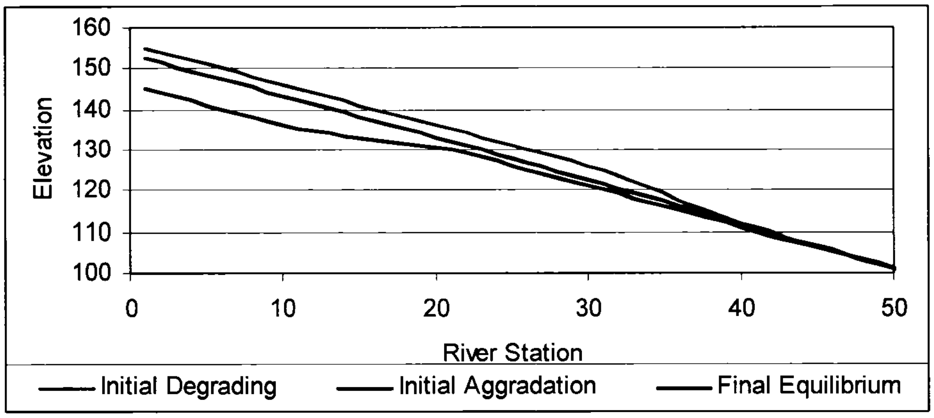

Figure 7-5 Infinite Sink Examples.

Irrespective of the type of imbalance, the channel maintains equilibrium slope from a fixed downstream end. For both the aggrading and degrading example, the infinite sink prevents the impacts from propagating downstream of the imbalanced reach. The upstream reach must respond more to compensate.

Input records identify an immobile channel as a cohesive-controlled reach with a zero scour value in transport potential records. Transport potential fields in non-cohesive classes should report transport capacity as usual. For example, very tough clay material, paved reaches, and culverts can be represented by immobile channels. Fixed boundaries break the sediment linkages in channel-material reservoirs and force all change to be absorbed downstream. The impact is analogous to the infinite sink. For both aggrading and degrading reaches, the immobile boundary halts changes through baselevel and severs the connection to upstream reaches. SIAM will always sever the connection, but will compare the transport potential to wash load and report positive balances in the network wash load deposition table. Figure 7-6 shows an immobile upstream reach. The immobile reach must be steeper than equilibrium; otherwise the bed would contain mobile classes.

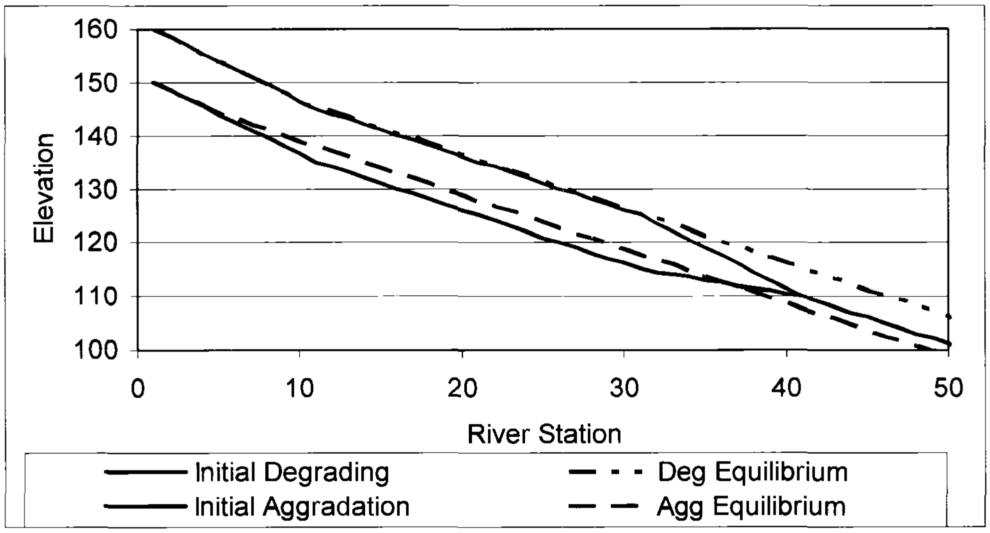

Figure 7-6 Immobile-channel (Bedrock) Examples.

In the degrading imbalance, the fixed boundary forces all adjustment to occur within downstream reaches. Computationally, the downstream fixed boundary occurs by a process of reflection, where a stress equal and opposite to the stress on the fixed reach is applied to all reaches between the fixed boundary and the pivot as well as upstream of the pivot. The reflection cancels the original change and then applies that change to the reaches on the other side of the pivot. The aggradation continues upstream and stops at the immobile reach. Stress is absorbed, not reflected. SIAM cannot predict how far aggradation moves into the immobile reach.

Reaches bracketed between an infinite sink and an immobile boundary are isolated. All impacts would be absorbed by the bracketed reaches and may create unrealistic discontinuities. The implications of using infinite sinks or immobile boundaries should be carefully considered. Modeling a series of grade control structures as fixed boundaries might fail to indicate network instabilities caused through adjustments to sediment transport. Severing the connection prevents the impact from passing through a reach. An immobile bedrock channel, culvert, drop structure, and an impoundment capable of absorbing sediment with negligible change in water surface are all examples that might be modeled as a fixed boundary. If the sediment impacts of a structure or reach are of interest, a fixed boundary may not be appropriate.

7.2.4 Network Balance

The network balance sums the impacts from individual network stresses to obtain the total change for each reach. SIAM uses responsiveness as a surrogate for the feedback processes between geometry, hydraulics, and transport, but does not compute intermediate states. The network accounting demonstration section discusses the strengths and limitations of the current framework.

7.2.5 Network Wash Deposition

The wash deposition table assists in identifying reaches in which the supply of material in wash classes may overwhelm the transport potential of the reach and shift the wash load threshold. SIAM does not include sorting routines. A properly configured model will contain zero network wash material deposition values in all grain classes. Non-zero values indicate an iterative approach is required with a new input data considering the change in wash load threshold.

7.3 Network Accounting Demonstration

7.3.1 Overview

The demonstration of network accounting uses the GSTAR-1D (Huang and Greimann 2005) mobile-boundary hydraulic modeling code to compare a series of five 2,000-ft reaches with constant bed material. Reach 1 is located downstream and reach 5 is upstream. Channel width remained fixed for all simulations. Figure 7-7 shows the cross section used for the GSTAR-1D geometry.

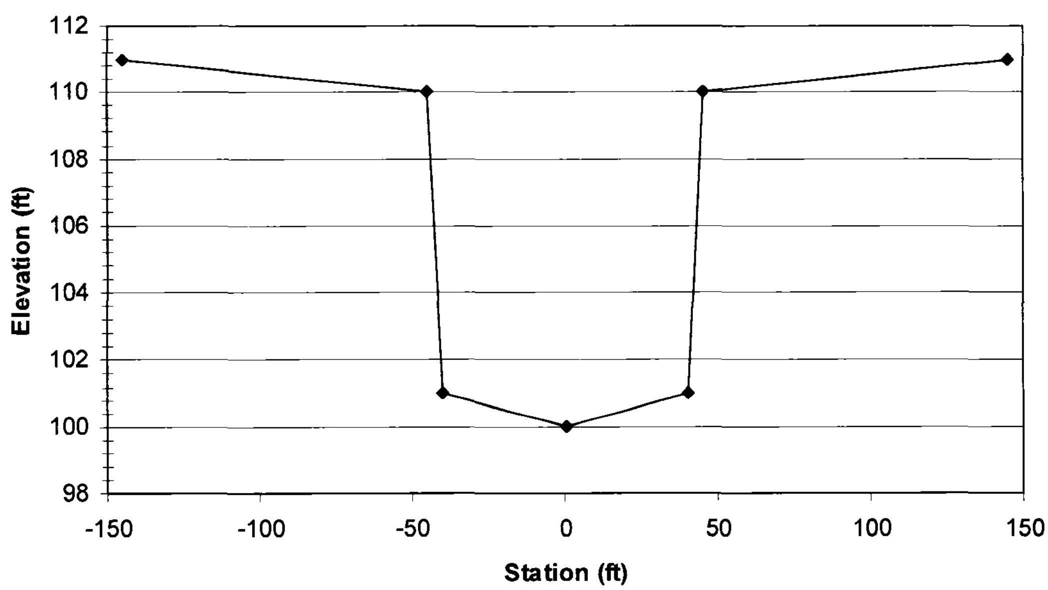

Figure 7-7 Network Balance Comparison GSTAR-1D Cross Section.

GSTAR simulations consisted of steady flow, constant sediment discharge simulations. The upper-most and lower-most reaches were set to a slope of 0.005 ft/ft to maintain equilibrium for an inflowing sediment load of 725 tons/yr. Each of the three middle reaches were adjusted to every combination of flatter, 0.004568 ft/ft, or steeper 0.0057 ft/ft, where the flatter and steeper slopes corresponded to equilibrium for the 650 and 850 tons/d sediment loads. Results were sensitive to the number of significant figures. Simulations applied three inflowing sediment loads at a rate of 650, 725, and 850 tons/d. The test matrix combined all possible combinations of slopes and sediment loads for the three middle reaches for a total of eighty-one simulations. All simulations were run until adjustment ceased.

GSTAR simulations measured change in vertical feet of aggradation or degradation. SIAM simulations measure stress in tons. Stresses in SIAM do not translate directly into geometric adjustment from GSTAR-1D. Comparisons included the net direction of change (aggradation or degradation) and the relative magnitude of change. For GSTAR, the relative magnitude compares average feet of bed change over a reach divided by average feet of bed change in another reach. SIAM relative change compares the amount of stress in one reach versus another.

Network budgeting focuses on the channel material grain classes. The GSTAR-1D demonstration case uses a single class rather than a range of gradations. Wash load was neglected. All reach distances were equal. Boundaries were free. A separate demonstration shows fixed boundary responses.

7.3.2 Responsiveness Calculations

The simplifications to demonstrate network accounting used a constant flow rate, 2,000 ft^3/s and durations long enough to reach equilibrium with a single sediment size class of 1.414 mm. Table 7-1 shows the applied energy calculations for the demonstration conditions.

Table 7-1 Network Accounting Demonstration Applied Energy Calculations.

Case	Reach Length, X (ft)	Duration, t (d)	Fall Velocity, ω (ft/s)	Sediment Transport Capacity, Q_s (tons/d)	Sediment Yield, Y_s (tons)	Water Unit Weight, γ (lbs/ft^3)	Hydraulic Radius, R (ft)	Friction Slope, S_f (ft/ft)	Velocity, v (ft/s)	Wetted Perimeter, P (ft)	Efficiency, v/ω (-)	Applied Stream Power per Unit Length, Ω_A (lbs/s-ft)	Applied Stream Work per Unit Length, Π_A (lbs/ft)	Applied Stream Work on a Reach, $\Pi_A \cdot X$ (tons-ft)
Flat	2000	1	0.459	650	650	62.4	3.57	0.0046	6.71	83.6	14.6	8332.4	7.20E+8	7.20E+8
Med.	2000	1	0.459	725	725	62.4	3.48	0.0050	6.89	83.4	15.0	9361.5	8.09E+8	8.09E+8
Steep	2000	1	0.459	850	850	62.4	3.35	0.0057	7.16	83.4	15.6	11051.3	9.55E+8	9.55E+8

Linear regression between yield and work resulted in a slope, responsiveness, equal to 8.52E-7. SIAM uses responsiveness as a relative quantity measuring differences between reaches, not as an absolute quantity; therefore, with all reaches showing equal responsiveness, a unit quantity of 1 was assumed to simplify calculations in the remainder of the demonstration.

Table 7-2 shows the responsiveness and propagation calculations for the network accounting demonstration. Propagation is independent of network stresses.

Table 7-2 Network Accounting Demonstration Stress Propagation.

	Reach$_i$	ψ_i	$\Sigma\psi_i$	$\psi_{i\to US}$	x_p	$\Sigma\psi_{i+1\to US}$	$\Sigma\psi_{DS\to i-1}$	$\Sigma\psi_{US}$	$\Sigma\psi_{DS}$	$\phi_{US,i}$	$\phi_{DS,i}$	$\phi_{5,i}$	$\phi_{4,i}$	$\phi_{3,i}$	$\phi_{2,i}$	$\phi_{1,i}$
US	5	1	5	1	0.167	0	4	0.83	4.17	0.5	-0.02	**0.48**	0.30	0.20	0.15	0.12
	4	1	5	2	0.333	1	3	1.67	3.33	0.2	-0.05	-0.12	**0.15**	0.20	0.15	0.12
	3	1	5	3	0.500	2	2	2.50	2.50	0.1	-0.1	-0.12	-0.15	**0.00**	0.15	0.12
	2	1	5	4	0.667	3	1	3.33	1.67	0.05	-0.2	-0.12	-0.15	-0.20	**-0.15**	0.12
DS	1	1	5	5	0.833	4	0	4.17	0.83	0.02	-0.5	-0.12	-0.15	-0.20	-0.30	**-0.48**

The pivot point, x_p, is computed from responsiveness and Equation 7-2. For reaches other than the pivot, the fraction of stress absorbed by each reach, ϕ, is computed from half the responsiveness in the current reach divided by the total responsiveness on the same side of the pivot. For pivoting reaches, shown on the diagonal in Table 7-2, the fraction of stress absorbed differs from the net change in the reach. Part of the pivoting reach absorbs stress upstream of the pivot point, $\phi_{US,i}$, and part of the pivoting reach absorbs stress downstream of the pivot point, $\phi_{DS,i}$. The sum of the two stresses is the next change in the pivoting reach. Table 7-2 shows the distribution of stress in the form $\phi_{j,i}$, which shows the impacts from network stress from reach j on reach i.

7.3.3 Supply Stress Scenarios

Two scenarios demonstrate the effects of a perturbing supply on a reach initially at a slope of 0.005 ft/ft. The first scenario decreases supply by 75 tons/yr. The second scenario increases supply by 125 tons. Figure 7-8 shows the GSTAR-1D results.

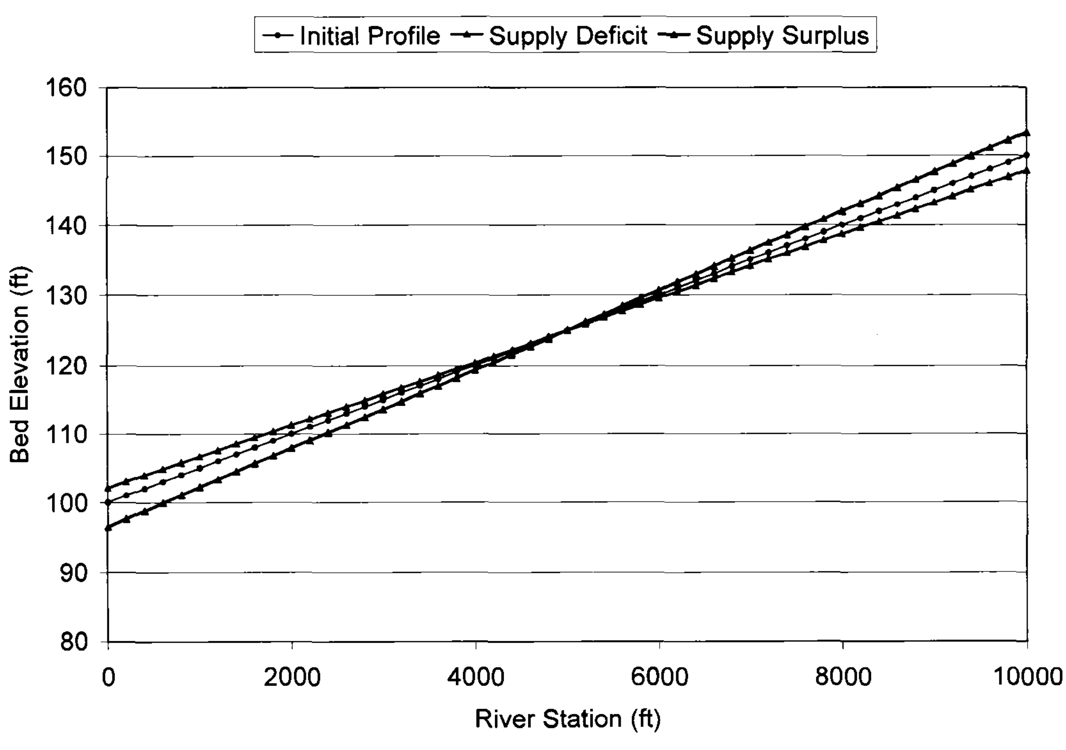

Figure 7-8 GSTAR-1D Supply Stress Scenarios.

The decrease in supply evolves to a stable slope of 0.00456 ft/ft. The increase in supply evolves to a slope of 0.0057 ft/ft. A network stress will occur in each reach because of the change in sediment supply. In SIAM, the change in sediment source will affect each reach. Each reach will create a pivot and each pivot will influence all other reaches. Table 7-3 shows the SIAM calculations for an increase in sediment supply. The subscripts (x, y) indicate the impact of reach x upon reach y.

Table 7-3 Network Accounting Positive (Increase) Supply Scenario Calculations.

	$Reach_i$	$\phi_{5,i}$	$\phi_{4,i}$	$\phi_{3,i}$	$\phi_{2,i}$	$\phi_{1,i}$	$S_{i,N}$	$S_{5,i}$	$S_{4,i}$	$S_{3,i}$	$S_{2,i}$	$S_{1,i}$	**Sum**
US	5	**0.48**	0.30	0.20	0.15	0.12	**125**	60	37.5	25	18.8	15	156
	4	-0.12	0.15	0.20	0.15	0.12	**125**	-15	18.8	25	18.8	15	62.5
	3	-0.12	-0.15	0.00	0.15	0.12	**125**	-15	-18.8	0	18.8	15	0
	2	-0.12	-0.15	-0.20	**-0.15**	0.12	**125**	-15	-18.8	-25	-18.8	15	-62.5
DS	1	-0.12	-0.15	-0.20	-0.30	**-0.48**	**125**	-15	-18.8	-25	-37.5	-60	-156

Table 7-3 uses the fractions from Table 7-2 to compute the distribution of stress. In the example, each reach carries equal responsiveness; therefore, the degree-of-rotation depends on the position upstream and downstream in the network. Figure 7-9 shows the results graphically.

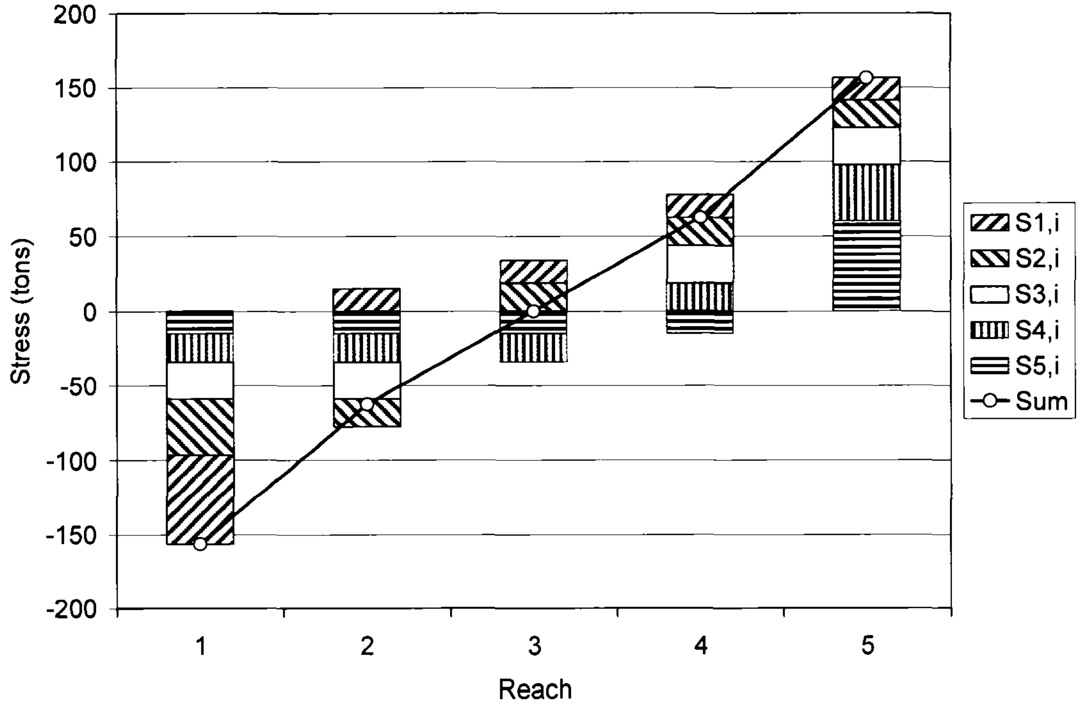

Figure 7-9 Network Accounting Positive (Increase) Supply Scenario.

The rotations for each reach in the network accumulate to result in a final estimate of the ultimate channel adjustment. Reaches exert different impacts depending on whether the influence reach lies upstream or downstream of the pivot point. For example, the influence of Reach 2, shown in green backwards slanted stripes, is larger upon Reach 1 than the other reaches in the network. Table 7-4 shows results for a decrease in supply.

Table 7-4 Network Accounting Negative (Decrease) Supply Scenario Calculations.

	Reach$_i$	$\phi_{5,i}$	$\phi_{4,i}$	$\phi_{3,i}$	$\phi_{2,i}$	$\phi_{1,i}$	$S_{i,N}$	$S_{5,i}$	$S_{4,i}$	$S_{3,i}$	$S_{2,i}$	$S_{1,i}$	Sum
US	5	**0.48**	0.30	0.20	0.15	0.12	**-75**	-36	-22.5	-15	-11.3	-9	-93.8
	4	-0.12	**0.15**	0.20	0.15	0.12	**-75**	9	-11.3	-15	-11.3	-9	-37.5
	3	-0.12	-0.15	**0.00**	0.15	0.12	**-75**	9	11.3	0	-11.3	-9	0
	2	-0.12	-0.15	-0.20	**-0.15**	0.12	**-75**	9	11.3	15	11.3	-9	37.5
DS	1	-0.12	-0.15	-0.20	-0.30	**-0.48**	**-75**	9	11.3	15	22.5	36	93.8

The decrease supply table uses the same propagation fractions. However, the negative stress creates a rotation in the opposite direction. Figure 7-10 shows the results graphically.

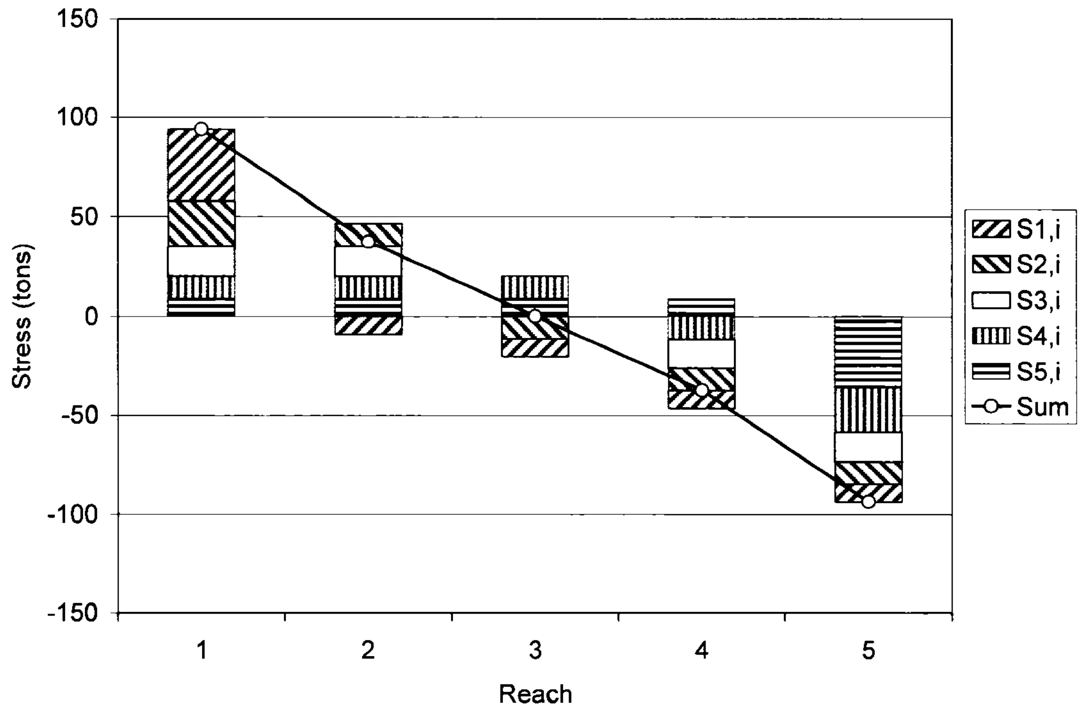

Figure 7-10 Network Accounting Negative (Decrease) Supply Scenario.

The free boundary allows the downstream reach to change at the same rate as the upstream. The network pivots about the middle. Reaches 1 and 5 change twice as much as Reaches 2 and 4 in both the GSTAR-1D and SIAM simulations.

7.3.4 Transport Stress Scenarios

Figure 7-11 shows two examples of transport stress scenarios in GSTAR-1D; one with a degrading imbalance in the center reach, and one with an aggrading imbalance in the center reach.

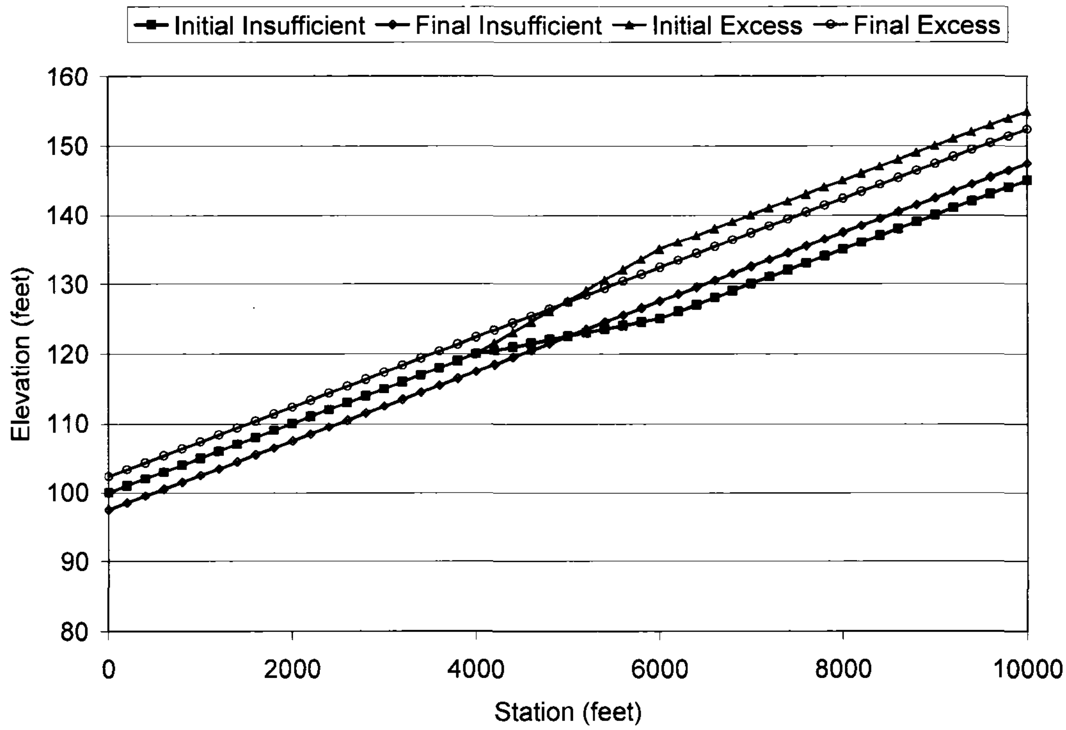

Figure 7-11 GSTAR-1D Profiles for Excess (Aggrading) and Insufficient (Degrading) Transport Stresses.

In both cases, the imbalanced pivoting reach rotates and the equilibrium reaches translate vertically. The equal responsiveness in the upstream and downstream reaches results in a centrally-located pivot point in the imbalanced reach. For the case of excess transport capacity, the supply of 725 tons is less than the transport capacity of 850 tons resulting in a stress of -125 tons. Table 7-5 shows the propagation using the responsiveness calculations from Table 7-2. The propagation fractions remain constant whether a stress originates from supply or transport causes.

Table 7-5 **Network Accounting Excess Transport Scenario Calculations.**

	Reach$_i$	$\phi_{5,i}$	$\phi_{4,i}$	$\phi_{3,i}$	$\phi_{2,i}$	$\phi_{1,i}$	$S_{i,N}$	$S_{5,i}$	$S_{4,i}$	$S_{3,i}$	$S_{2,i}$	$S_{1,i}$	Sum
US	5	**0.48**	0.30	0.20	0.15	0.12	**0**	0	0	-25	0	0	-25
	4	-0.12	**0.15**	0.20	0.15	0.12	**0**	0	0	-25	0	0	-25
	3	-0.12	-0.15	**0.00**	0.15	0.12	**-125**	0	0	0	0	0	0
	2	-0.12	-0.15	-0.20	**-0.15**	0.12	**0**	0	0	25	0	0	25
DS	1	-0.12	-0.15	-0.20	-0.30	**-0.48**	**0**	0	0	25	0	0	25

The only reach with an imbalance is Reach 3. The other reaches have no network accounting effects. Figure 7-12 shows the results graphically.

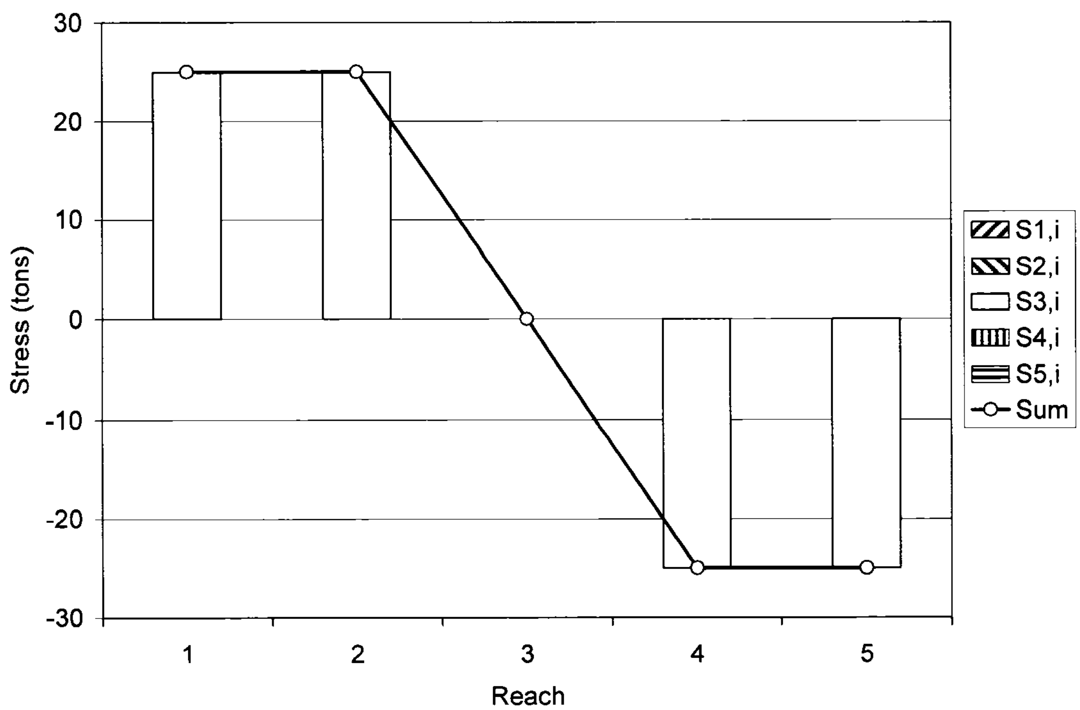

Figure 7-12 Network Accounting Excess Transport Scenario.

The downstream reaches aggrade, while the upstream reaches degrade. For the case of insufficient transport capacity, the network supply of 725 tons is greater than the reach capacity of 650 tons resulting in a positive stress of 75 tons. Table 7-6 lists results and Figure 7-13 shows the results graphically.

Table 7-6 Network Accounting Insufficient Transport Scenario Calculations.

	Reach$_i$	$\phi_{5,i}$	$\phi_{4,i}$	$\phi_{3,i}$	$\phi_{2,i}$	$\phi_{1,i}$	$S_{i,N}$	$S_{5,i}$	$S_{4,i}$	$S_{3,i}$	$S_{2,i}$	$S_{1,i}$	Sum
US	5	**0.48**	0.30	0.20	0.15	0.12	**0**	0	0	15	0	0	15
	4	-0.12	**0.15**	0.20	0.15	0.12	**0**	0	0	15	0	0	15
	3	-0.12	-0.15	**0.00**	0.15	0.12	**75**	0	0	0	0	0	0
	2	-0.12	-0.15	-0.20	**-0.15**	0.12	**0**	0	0	-15	0	0	-15
DS	1	-0.12	-0.15	-0.20	-0.30	**-0.48**	**0**	0	0	-15	0	0	-15

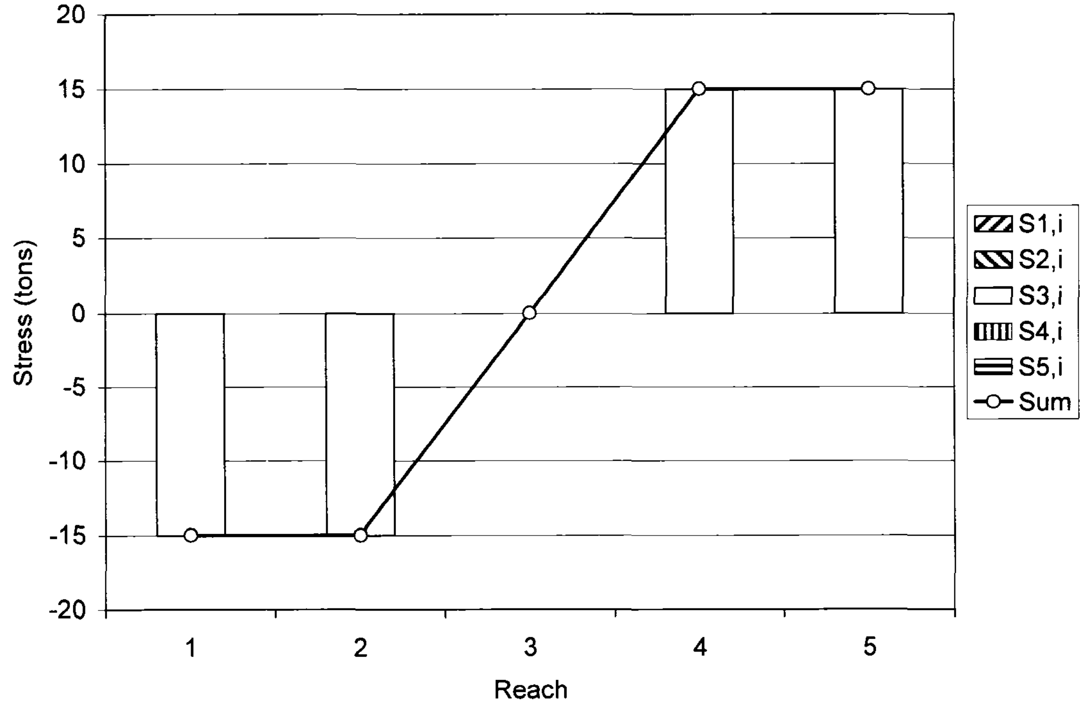

Figure 7-13 Network Accounting Insufficient Transport Scenario.

Results show a reversal of direction and reflect the difference in magnitudes from the excess and insufficient capacity scenarios.

Figure 7-14 shows a comparison of SIAM and GSTAR-1D output for both the degrading and aggrading cases. The difference in measurement units only allows comparison of direction and relative magnitude between reaches.

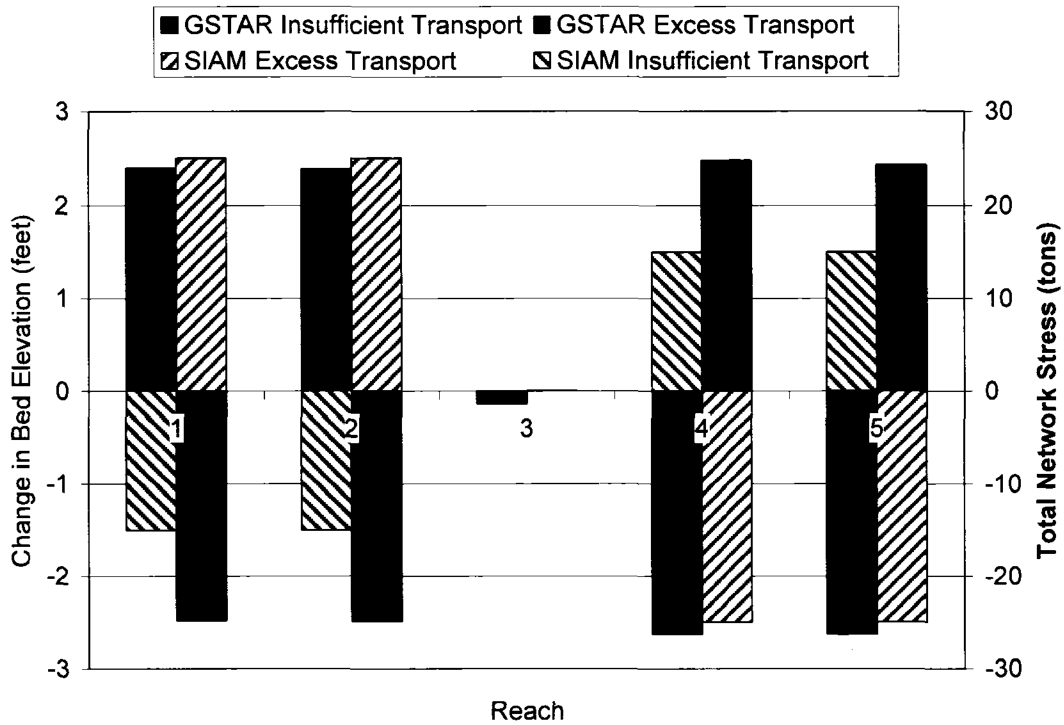

Figure 7-14 SIAM Network Balance versus GSTAR-1D Network Balance.

The direction of change matches between the two approaches. Equal and opposite change on each side of the pivot occurred for both models. GSTAR-1D shows a small negative bed change in Reach 3 from numerical artifacts, not a physical representation of this problem. The problem was designed to be symmetrical.

The preceding examples centered the local imbalance within the network. When the imbalanced reach is located upstream or downstream of the center, the reaches will adjust according to the distance component of the responsiveness. Figure 7-15 shows two GSTAR-1D examples of degrading reaches, one shifted upstream and one shifted downstream.

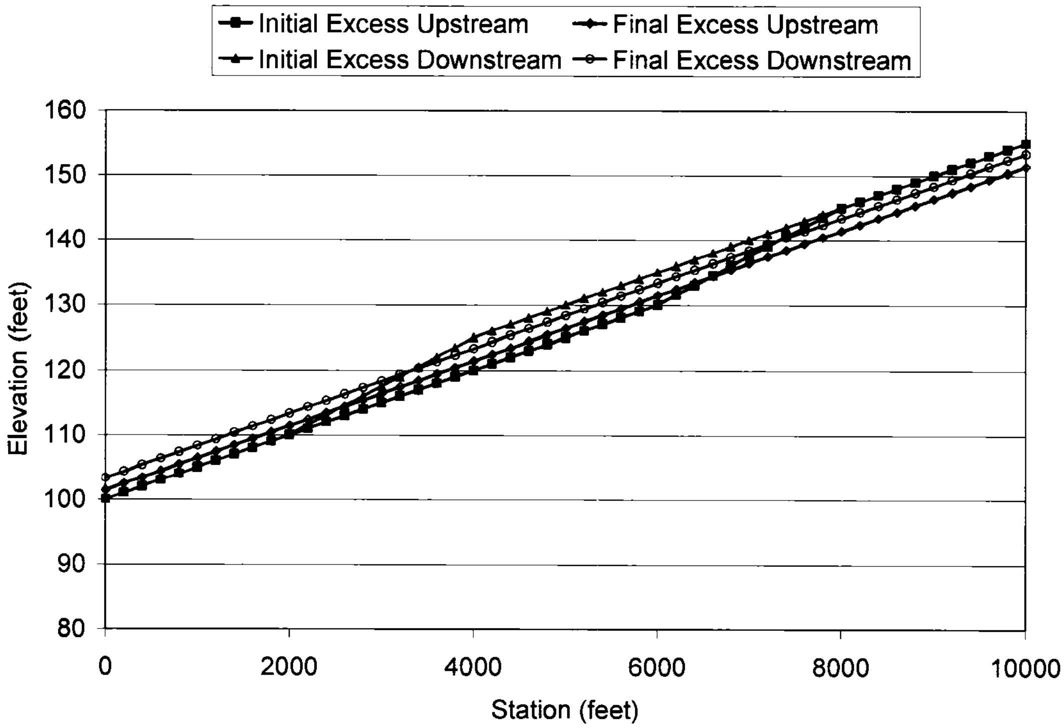

Figure 7-15 GSTAR-1D Profiles for Upstream and Downstream Shifts in Excess Transport Capacity.

GSTAR-1D shows smaller changes in the bed elevation on the side with greatest profile length. The pivot point of the imbalanced reach is located away from the center of the imbalanced reach towards the side with the longest length. In both imbalanced reaches, the pivot intersected the reach 1/3 of distance from the side with the greatest responsiveness. The excess transport of 850 tons compared to a supply of 725 tons results in -125 tons of network stress. Table 7-7 shows the network stress propagation.

Table 7-7 **Upstream and Downstream Shifts in Excess Transport Capacity Imbalance Calculations.**

	Reach$_i$	$S_{i,N}$	$S_{5,i}$	$S_{4,i}$	$S_{3,i}$	$S_{2,i}$	$S_{1,i}$	$S_{i,N}$	$S_{5,i}$	$S_{4,i}$	$S_{3,i}$	$S_{2,i}$	$S_{1,i}$
US	5	**0**	0	-37.5	0	0	0	**0**	0	0	0	-18.8	0
	4	**-125**	0	-18.8	0	0	0	**0**	0	0	0	-18.8	0
	3	**0**	0	18.75	0	0	0	**0**	0	0	0	-18.8	0
	2	**0**	0	18.75	0	0	0	**-125**	0	0	0	18.75	0
DS	1	**0**	0	18.75	0	0	0	**0**	0	0	0	37.5	0

Figure 7-16 displays SIAM network-balance results next to GSTAR-1D average changes in thalweg elevations.

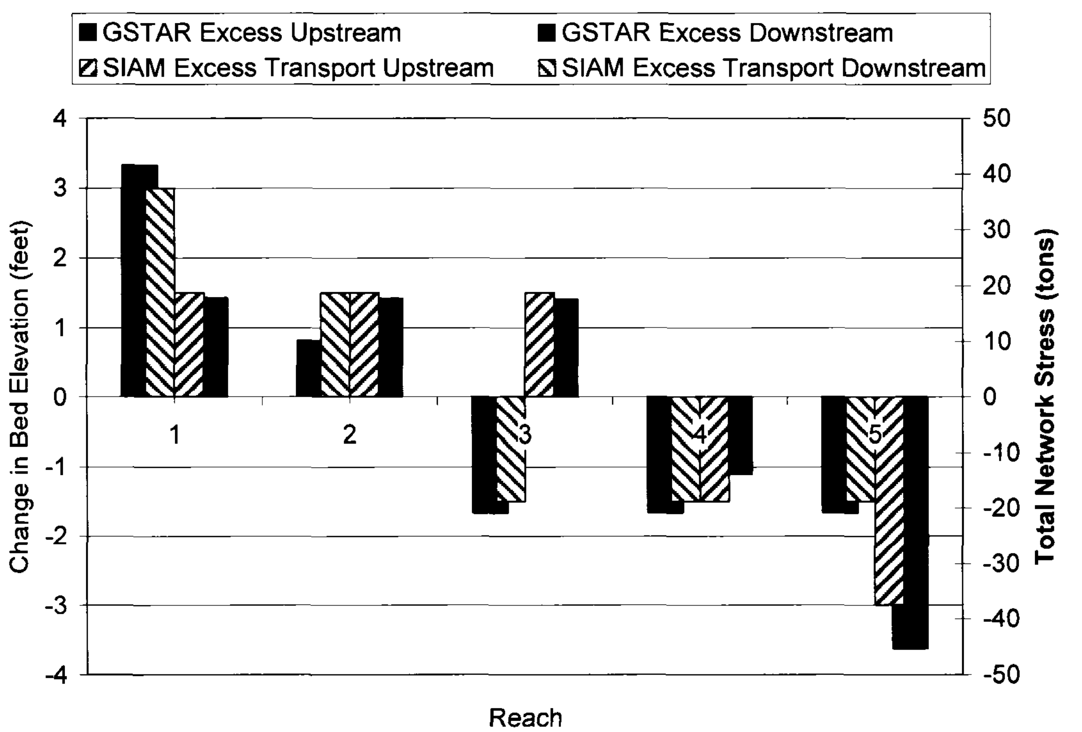

Figure 7-16 SIAM to GSTAR-1D Comparison of Upstream and Downstream Shifts in Degrading Reaches.

The direction of the SIAM results agree with the GSTAR-1D simulation across all reaches. Table 7-8 shows the relative change between reaches predicted by SIAM and GSTAR-1D for the upstream and downstream offset of the excess transport capacity cases. For GSTAR, the relative change between reaches is computed by dividing the average bed elevation in one reach by the average bed elevation in the comparison reach. SIAM relative change calculations divide by the total stresses.

Table 7-8 SIAM to GSTAR-1D Relative Comparison for Upstream and Downstream Shifts in Excess Transport Capacity.

Case	GSTAR Upstream Shift	SIAM Upstream Shift	GSTAR Downstream Shift	SIAM Downstream Shift
Downstream Offset Reach 5 ÷ Reach 4	3.25	2.00	**1.00**	**1.00**
Downstream Offset Reach 5 ÷ Reach 3	**-2.58**	**-2.00**	**1.00**	**1.00**
Downstream Offset Reach 5 ÷ Reach 2	**-2.55**	**-2.00**	-2.05	-1.00
Downstream Offset Reach 5 ÷ Reach 1	**-2.53**	**-2.00**	**-0.50**	**-0.50**
Downstream Offset Reach 4 ÷ Reach 3	-0.79	-1.00	**0.99**	**1.00**
Downstream Offset Reach 4 ÷ Reach 2	-0.78	-1.00	-2.04	-1.00
Downstream Offset Reach 4 ÷ Reach 1	-0.78	-1.00	**-0.50**	**-0.50**
Downstream Offset Reach 3 ÷ Reach 2	**0.99**	**1.00**	-2.05	-1.00
Downstream Offset Reach 3 ÷ Reach 1	**0.98**	**1.00**	**-0.50**	**-0.50**
Downstream Offset Reach 2 ÷ Reach 1	**0.99**	**1.00**	0.25	0.50

The quality of the results depends upon whether the comparison involves a pivoting or non-pivoting reach. Non-pivoting reaches, shown in bold, show good agreement for the downstream offset, 0% error, and mediocre agreement for the upstream offset, 26% error. The problem was designed to yield symmetrical results; however, the GSTAR simulation approached but did not reach symmetry. The asymmetrical simulation is presented to illustrate differences in the numerical iteration methods of mobile-boundary calculations and the algebraic solutions from SIAM. Adjustments to the boundary conditions, time step, and duration of simulation brought results into closer agreement with SIAM network accounting methods, but never reached an exact match.

Reaches 2 and 4 pivot and comparisons with these reaches between SIAM and GSTAR show a disparity. Relative comparisons differ by 50% and the differences could not be explained and reduced by altering GSTAR numerical parameters. SIAM network-balance computations do not well represent the absorption of stress within a pivoting reach relative to the rest of the network. Different methods for representing the net stress in the imbalanced reach included adding the absolute value from each side of the pivot but did not result in good agreement between GSTAR and SIAM. Results are similar for aggrading reaches.

SIAM network accounting routines treat each local imbalance independent of any other imbalances within the network. The final network balance is a summation of local imbalances and may result in attenuation or amplification. Figure 7-17 shows mobile-boundary simulation results from GSTAR-1D for two steep reaches with free boundaries and a simulation with two flat reaches with free boundaries.

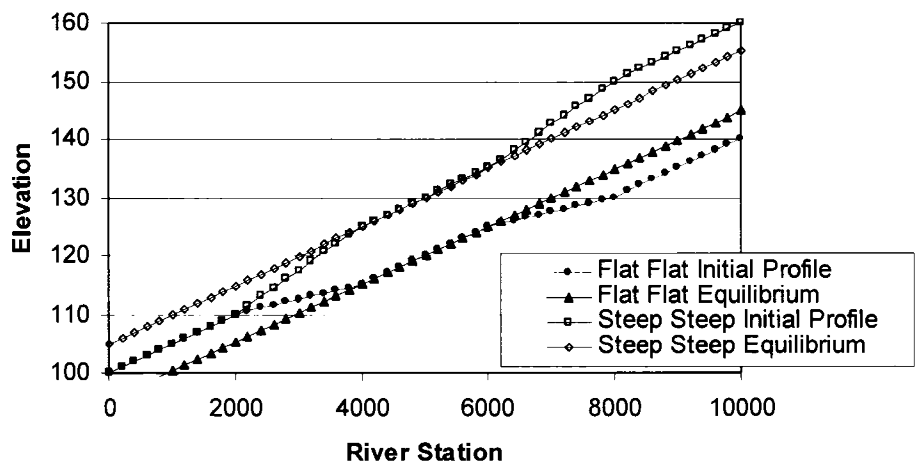

Figure 7-17 GSTAR-1D Profiles for Multiple Equal Imbalances.

In both cases, the final state for the center portion of the network equals the initial profile. The ends of the network adjust farther with two imbalanced reaches than with only one. Within SIAM, the upstream imbalance resulting from the steepened reach results in a clockwise rotation, while the downstream steep imbalance rotates in a counterclockwise direction and cancels the impact on the center reach. Similarly, the flat reaches counteract the influence at the middle and magnify the impact at the two ends. Table 7-9 shows the SIAM calculations.

Table 7-9 SIAM for Multiple Equal Imbalances.

(a)

	Reach$_i$	**$S_{i,N}$**	$S_{5,i}$	$S_{4,i}$	$S_{3,i}$	$S_{2,i}$	$S_{1,i}$	**SIAM Dual Steep**
US	5	**0**	0	-37.5	0	-18.8	0	-56.25
	4	**-125**	0	-18.8	0	-18.8	0	-37.5
	3	**0**	0	18.75	0	-18.8	0	0
	2	**-125**	0	18.75	0	18.75	0	37.5
DS	1	**0**	0	18.75	0	37.5	0	56.25

(b)

	Reach$_i$	**$S_{i,N}$**	$S_{5,i}$	$S_{4,i}$	$S_{3,i}$	$S_{2,i}$	$S_{1,i}$	**SIAM Dual Steep**
US	5	**0**	0	22.5	0	11.25	0	33.75
	4	**75**	0	11.25	0	11.25	0	22.5
	3	**0**	0	-11.3	0	11.25	0	0
	2	**75**	0	-11.3	0	-11.3	0	-22.5
DS	1	**0**	0	-11.3	0	-22.5	0	-33.75

A comparison to GSTAR-1D results in the relative changes shown in Table 7-10.

Table 7-10 GSTAR and SIAM Relative Changes.

Case	GSTAR Dual Steep	SIAM Dual Steep	GSTAR Dual Flat	SIAM Dual Flat
Downstream Offset Reach 5 ÷ Reach 4	1.91	1.50	1.98	1.50
Downstream Offset Reach 5 ÷ Reach 3	20.18	#DIV/0!	190.57	#DIV/0!
Downstream Offset Reach 5 ÷ Reach 2	-2.35	-1.50	-2.01	-1.50
Downstream Offset Reach 5 ÷ Reach 1	-1.10	-1.00	-1.00	-1.00
Downstream Offset Reach 4 ÷ Reach 3	10.59	#DIV/0!	96.46	#DIV/0!
Downstream Offset Reach 4 ÷ Reach 2	-1.23	-1.00	-1.02	-1.00
Downstream Offset Reach 4 ÷ Reach 1	-0.58	-0.67	-0.51	-0.67
Downstream Offset Reach 3 ÷ Reach 2	-0.12	0.00	-0.01	0.00
Downstream Offset Reach 3 ÷ Reach 1	-0.05	0.00	-0.01	0.00
Downstream Offset Reach 2 ÷ Reach 1	0.47	0.67	0.50	0.67

Reach 3 shows no change in SIAM, therefore, the comparison results in a divide by zero error. In GSTAR-1D, the change is very small and generates unrepresentative large numbers. Non-pivoting reaches agree well with GSTAR simulations, while pivoting Reaches 2 and 4 sometimes match poorly.

Figure 7-18 shows amplification in the center reach and attenuation at the upstream and downstream ends resulting in equal but opposite imbalances within a single network.

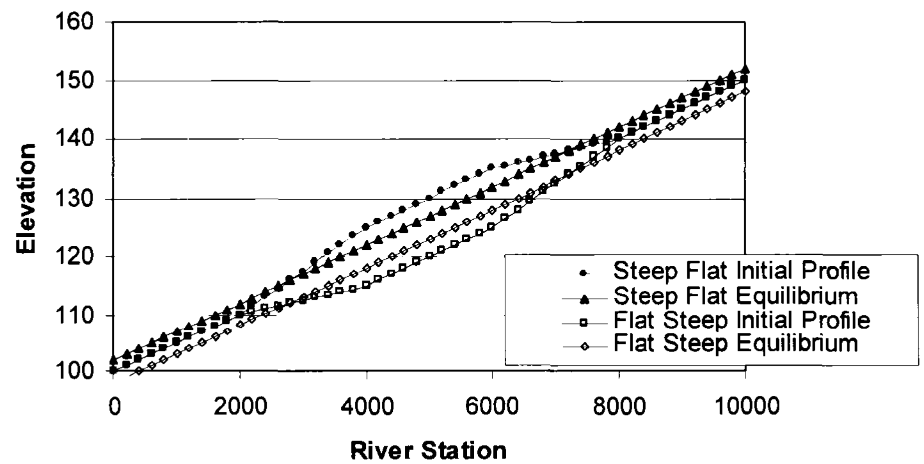

Figure 7-18 GSTAR-1D Profiles for Multiple Equal but Opposite Imbalances.

The ends of the network change less with two imbalances than if only one were present. Calculation methods and comparisons follow the same patterns as for multiple equal imbalances.

An inflowing sediment load of 725 tons/d and adjustments to the middle three reaches results in twenty-seven scenarios. Table 7-11 compares GSTAR direction of change with SIAM direction of change.

Table 7-11 GSTAR and SIAM Interference Scenario Direction.

Scenario	Reach 5 Direction	Reach 4 Direction	Reach 3 Direction	Reach 2 Direction	Reach 1 Direction
BBBBB	TRUE	TRUE	TRUE	TRUE	TRUE
BSBBB	TRUE	TRUE	TRUE	TRUE	TRUE
BBSBB	TRUE	TRUE	TRUE	TRUE	TRUE
BBBSB	TRUE	TRUE	TRUE	TRUE	TRUE
BSSBB	TRUE	TRUE	TRUE	TRUE	TRUE
BBSSB	TRUE	TRUE	TRUE	TRUE	TRUE
BSBSB	TRUE	TRUE	TRUE	TRUE	TRUE
BSSSB	TRUE	TRUE	TRUE	TRUE	TRUE
BFBBB	TRUE	TRUE	TRUE	TRUE	TRUE
BBFBB	TRUE	TRUE	TRUE	TRUE	TRUE
BBBFB	TRUE	TRUE	TRUE	TRUE	TRUE
BFFBB	TRUE	TRUE	TRUE	TRUE	TRUE
BBFFB	TRUE	TRUE	TRUE	TRUE	TRUE
BFFFB	TRUE	TRUE	TRUE	TRUE	TRUE
BFBFB	TRUE	TRUE	TRUE	TRUE	TRUE
BSFBB			TRUE	TRUE	TRUE
BSBFB	TRUE	TRUE	TRUE	TRUE	TRUE
BSFFB	TRUE		TRUE	TRUE	
BSSFB	TRUE	TRUE	TRUE	TRUE	TRUE
BSFSB	TRUE	TRUE	TRUE		TRUE
BFSBB	TRUE	TRUE	TRUE	TRUE	TRUE
BFBSB	TRUE	TRUE	TRUE	TRUE	TRUE
BFSSB	TRUE	TRUE	TRUE	TRUE	TRUE
BFFSB		TRUE	TRUE		TRUE
BFSFB	TRUE	TRUE	TRUE	TRUE	TRUE
BBFSB	TRUE	TRUE	TRUE		
BBSFB	TRUE	TRUE	TRUE	TRUE	TRUE

In the scenario, B represents a reach at equilibrium slope for 725 tons/d, S represents a steep reach, and F represents a flat reach. A value of true indicates agreement between GSTAR and SIAM and false indicates disagreement. In strictly aggrading or strictly degrading scenarios, the direction matched perfectly. When mixing aggrading and degrading reaches, no universal pattern was apparent to explain the discrepancies, but the disparity generally occurred when the change in a reach was small. The relative change between reaches did not agree well with GSTAR results. The disparity between pivot stress and change in a pivoting reach may explain the difficulty in summing across reaches.

7.3.5 Combined Supply and Transport Stress Scenarios

Figure 7-19 shows three GSTAR-1D simulations consisting of a steep reach only, an increase in sediment supply only, and a combined steep reach and increase in sediment supply.

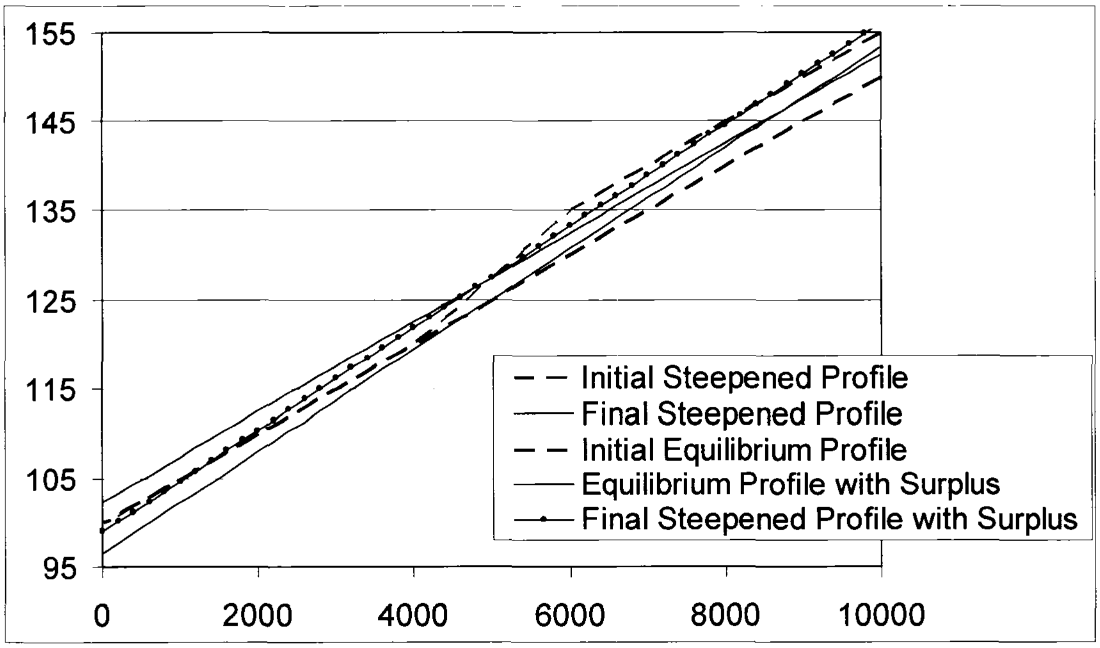

Figure 7-19 GSTAR-1D Oversteepend Reach with a Sediment Surplus.

A sediment surplus alone establishes the profile shown in the solid purple line, assuming a downstream boundary condition free to adjust. The solid brown line shows the adjustment from a local balance alone. The green line represents the combination of the surplus and local balance. The green line rises at the same slope as the sediment surplus alone, but includes the raising and lower adjustment from the local balance. The initial idea behind SIAM would treat stresses independently and sum the cumulative effects. Results met with mixed success and, therefore, cannot be relied upon for predicting stream adjustment.

In SIAM, the steep reach still generates a -125 ton stress, but there is also a +125 ton stress applied to each reach in the network from the sediment supply increase. The middle reach does not generate a network stress. Table 7-12 shows the calculations and Figure 7-20 shows the results graphically.

Table 7-12 Combined Steep Reach and Surplus Supply Calculations.

	Reach$_i$	$S_{i,N}$	$S_{5,i}$	$S_{4,i}$	$S_{3,i}$	$S_{2,i}$	$S_{1,i}$	Sum
US	5	**125**	60	37.5	0	18.75	15	131.3
	4	**125**	-15	18.75	0	18.75	15	37.5
	3	**0**	-15	-18.8	0	18.75	15	0
	2	**125**	-15	-18.8	0	-18.8	15	-37.5
DS	1	**125**	-15	-18.8	0	-37.5	-60	-131

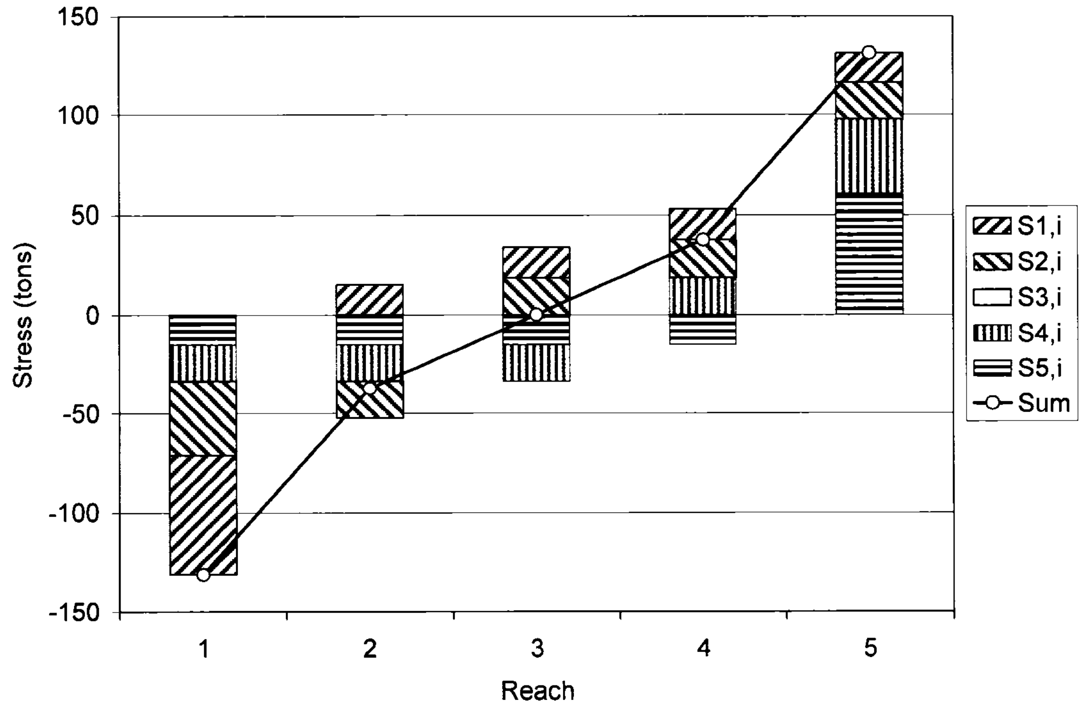

Figure 7-20 SIAM Results from the Combined Effects.

The SIAM results are the addition of stresses in Reaches 1, 2, 4, and 5. The GSTAR and SIAM models are compared graphically in Figure 7-21 and the relative changes in the GSTAR model versus the SIAM model are shown numerically in Table 7-13.

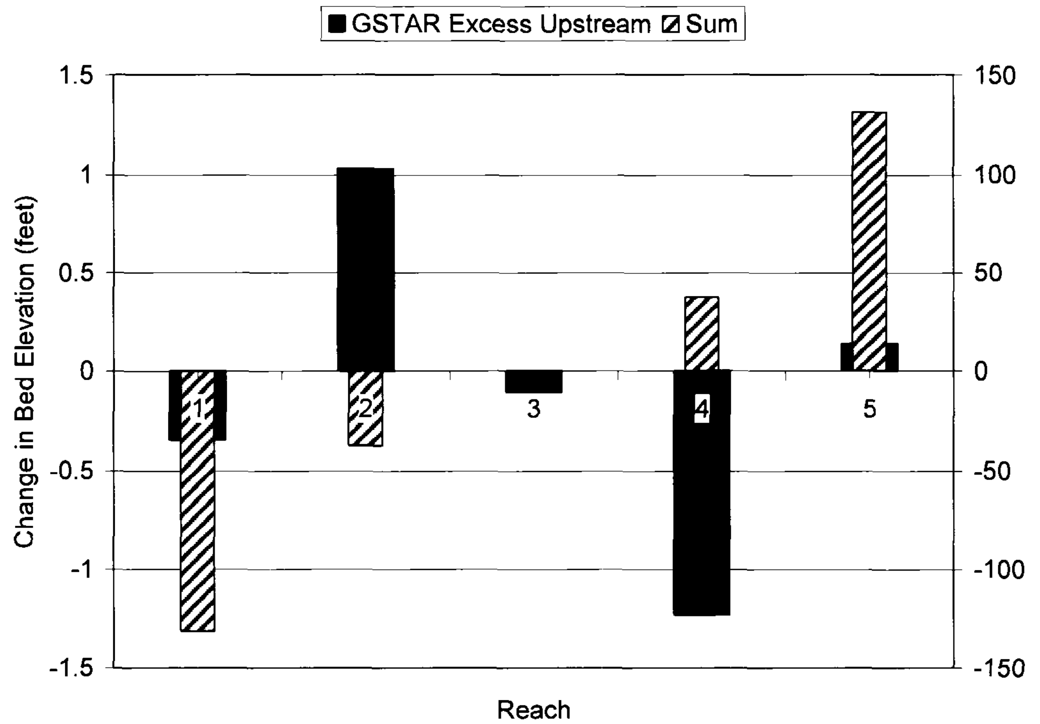

Figure 7-21 GSTAR and SIAM Comparison for Combined Supply and Transport Stresses.

Table 7-13 SIAM to GSTAR-1D Relative Comparison for Combined Supply and Transport Stresses.

Case	GSTAR Excess Transport and Supply Surplus	SIAM Excess Transport and Supply Surplus
Downstream Offset Reach 5 ÷ Reach 4	-0.11	3.50
Downstream Offset Reach 5 ÷ Reach 3	**-1.36**	**#DIV/0!**
Downstream Offset Reach 5 ÷ Reach 2	**0.14**	**-3.50**
Downstream Offset Reach 5 ÷ Reach 1	**-0.41**	**-1.00**
Downstream Offset Reach 4 ÷ Reach 3	11.85	#DIV/0!
Downstream Offset Reach 4 ÷ Reach 2	-1.19	-1.00
Downstream Offset Reach 4 ÷ Reach 1	3.54	-0.29
Downstream Offset Reach 3 ÷ Reach 2	**-0.10**	**0.00**
Downstream Offset Reach 3 ÷ Reach 1	**0.30**	**0.00**
Downstream Offset Reach 2 ÷ Reach 1	**-2.97**	**0.29**

Zero changes result in an error when computing the relative amount of change. SIAM and GSTAR models predict some directions similarly and others opposite. Relative changes match poorly for this example.

The systematic changes due to sediment supply combined with corrections to local imbalances comprise the range of responses available within the SIAM framework. Fifty-four tests were run combining combinations of three profile slopes for the middle three reaches with three upstream sediment loads. Direction comparisons agreed well between SIAM and GSTAR in cases with one change in slope. Other scenarios yielded inconsistent results. Table 7-14 shows direction comparisons for a different slope and a decrease in sediment supply, while Table 7-15 shows direction comparisons for an increase in sediment supply.

Table 7-14 Combined Supply Decrease and Transport Scenarios.

Scenario	Reach 5 Direction	Reach 4 Direction	Reach 3 Direction	Reach 2 Direction	Reach 1 Direction
BBBBB	TRUE	TRUE	TRUE	TRUE	TRUE
BBBFB			TRUE		TRUE
BBBSB	TRUE	TRUE	TRUE	TRUE	TRUE
BBFBB			TRUE		
BBFFB			TRUE		
BBFSB	TRUE		TRUE		TRUE
BBSBB	TRUE	TRUE	TRUE	TRUE	TRUE
BBSFB	TRUE	TRUE	TRUE	TRUE	TRUE
BBSSB	TRUE	TRUE	TRUE	TRUE	TRUE
BFBBB	TRUE		TRUE	TRUE	
BFBFB			TRUE		
BFBSB	TRUE	TRUE	TRUE	TRUE	
BFFBB			TRUE		
BFFFB		TRUE	TRUE	TRUE	
BFFSB	TRUE		TRUE		
BFSBB	TRUE	TRUE	TRUE	TRUE	TRUE
BFSFB		TRUE	TRUE	TRUE	
BFSSB	TRUE	TRUE	TRUE	TRUE	TRUE
BSBBB	TRUE	TRUE	TRUE	TRUE	TRUE
BSBFB		TRUE	TRUE	TRUE	TRUE
BSBSB	TRUE	TRUE	TRUE	TRUE	TRUE
BSFBB	TRUE		TRUE		TRUE
BSFFB			TRUE		TRUE
BSFSB	TRUE	TRUE	TRUE	TRUE	TRUE
BSSBB	TRUE	TRUE	TRUE	TRUE	TRUE
BSSFB	TRUE	TRUE	TRUE	TRUE	TRUE
BSSSB	TRUE	TRUE	TRUE	TRUE	TRUE

Table 7-15 **Combined Supply Increase and Transport Scenarios.**

Scenario	Reach 5 Direction	Reach 4 Direction	Reach 3 Direction	Reach 2 Direction	Reach 1 Direction
BBBBB	TRUE	TRUE	TRUE	TRUE	TRUE
BBBFB	TRUE	TRUE	[redacted]	TRUE	TRUE
BBBSB	[redacted]	TRUE	TRUE	TRUE	TRUE
BBFBB	TRUE	TRUE	TRUE	TRUE	TRUE
BBFFB	TRUE	TRUE	[redacted]	TRUE	TRUE
BBFSB	TRUE	TRUE	TRUE	TRUE	TRUE
BBSBB	TRUE	[redacted]	TRUE	[redacted]	TRUE
BBSFB	TRUE	[redacted]	TRUE	TRUE	TRUE
BBSSB	[redacted]	[redacted]	TRUE	[redacted]	[redacted]
BFBBB	TRUE	TRUE	TRUE	TRUE	TRUE
BFBFB	TRUE	TRUE	TRUE	TRUE	TRUE
BFBSB	TRUE	TRUE	TRUE	TRUE	TRUE
BFFBB	TRUE	TRUE	TRUE	[redacted]	TRUE
BFFFB	TRUE	TRUE	TRUE	TRUE	TRUE
BFFSB	TRUE	TRUE	TRUE	TRUE	TRUE
BFSBB	TRUE	TRUE	TRUE	[redacted]	TRUE
BFSFB	TRUE	TRUE	TRUE	TRUE	TRUE
BFSSB	[redacted]	[redacted]	TRUE	[redacted]	TRUE
BSBBB	TRUE	[redacted]	TRUE	TRUE	[redacted]
BSBFB	TRUE	TRUE	TRUE	TRUE	TRUE
BSBSB	[redacted]	[redacted]	TRUE	[redacted]	[redacted]
BSFBB	TRUE	TRUE	TRUE	TRUE	TRUE
BSFFB	TRUE	TRUE	TRUE	TRUE	TRUE
BSFSB	TRUE	TRUE	TRUE	TRUE	TRUE
BSSBB	[redacted]	[redacted]	TRUE	[redacted]	[redacted]
BSSFB	TRUE	[redacted]	TRUE	[redacted]	[redacted]
BSSSB	[redacted]	TRUE	TRUE	TRUE	[redacted]

The results show that more work is required if applied energy is to provide a useful means of estimating simultaneous interactions between multiple projects.

7.3.6 Fixed Boundary Conditions

The free boundary allows the reach to adjust from both ends. Fixed boundaries represent cases where the channel bed and banks cannot adjust. If one side cannot adjust, all changes occur in one direction. Physical examples include immobile bedrock reaches or impoundments capable of absorbing sediment supply without changing base level.

Boundaries may consist of either downstream or upstream control. Figure 7-22 shows a GSTAR simulation with a downstream boundary created by fixing the downstream water surface elevation rather than using a normal depth computation.

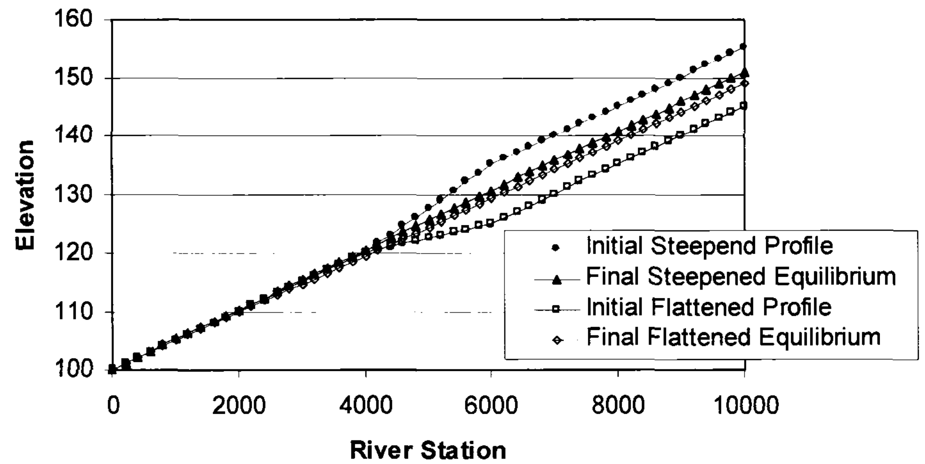

Figure 7-22 GSTAR-1D Profiles for Aggrading and Degrading Imbalances with Fixed Downstream Boundary.

GSTAR-1D shows continuing adjustment in the lower two reaches as the numerical simulation asymptotically approaches but never reaches zero. The pivot reach, Reach 3, shows approximately half the adjustment due to reflection of stress off the downstream boundary.

The fixed downstream boundary forces all changes to occur in the pivot and upstream reaches. In SIAM, a fixed downstream boundary will reflect the stress upstream. Stresses are first distributed in the same manner as with a free boundary. The total stress on the downstream boundary is then distributed upstream according to responsiveness. To absorb the stress from a downstream boundary, the pivot point is located at the downstream end of the imbalanced reach. Figure 7-23 shows a comparison between the GSTAR-1D results and the SIAM predictions.

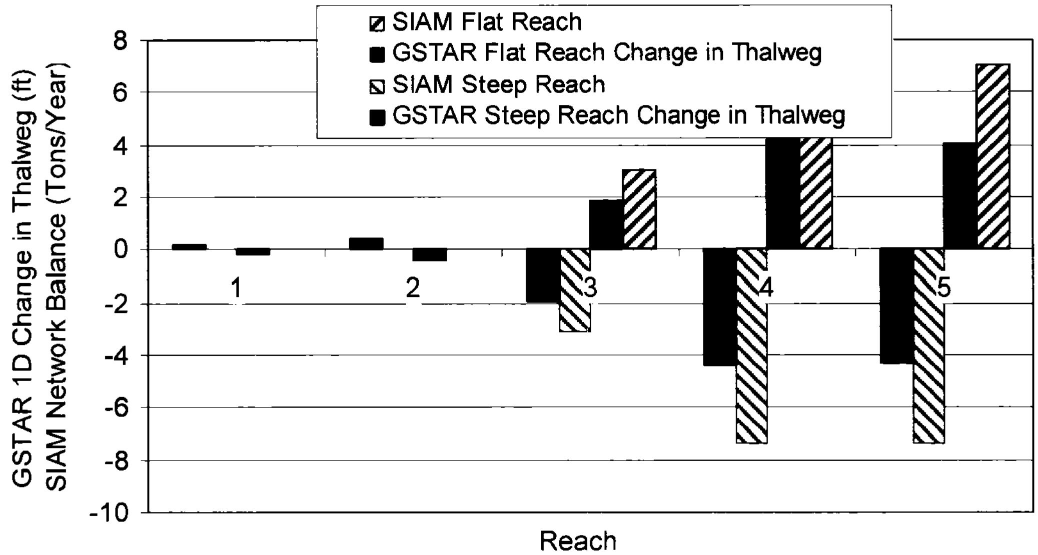

Figure 7-23 Fixed Downstream Boundary SIAM and GSTAR-1D.

Figure 7-24 shows an aggrading and a degrading scenario with the upstream boundary fixed and the downstream boundary free to adjust, created by limiting the vertical erosion in GSTAR-1D.

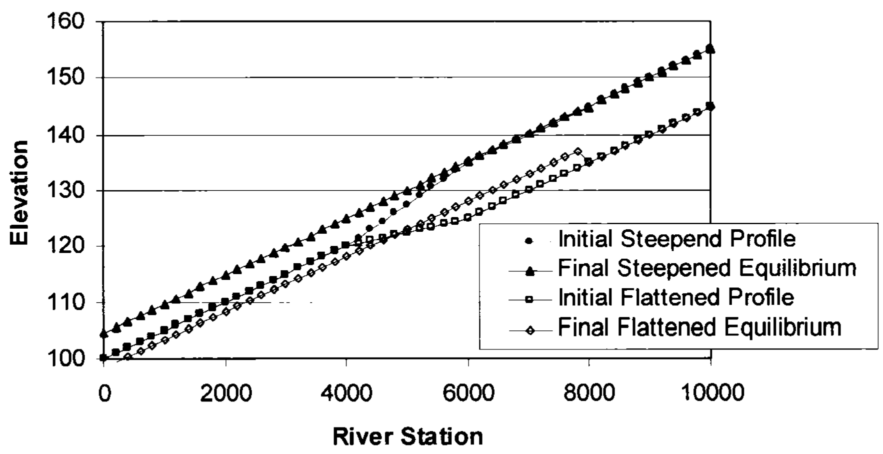

Figure 7-24 GSTAR-1D Profiles for Aggrading and Degrading Imbalances with Fixed Upstream Boundary.

The fixed boundary prevents the degrading pivot from lowering the bed on the upstream side and GSTAR-1D shows all adjustment takes place downstream. A discontinuity occurs on the aggrading pivot. The free reaches adjust as if the model terminated at river station 8,000. In SIAM, a fixed upstream boundary will resist and reflect degradation stresses. A fixed upstream reach cannot adjust to absorb aggradation stresses and will not contribute to the adjustment process. The fixed reach will assume a stress equal to the stress in the downstream reach as a check for a shift in the sediment properties. In physical systems, aggradation may cause deposition on a bed formerly controlled by cohesive scour. Figure 7-25 shows a comparison to SIAM.

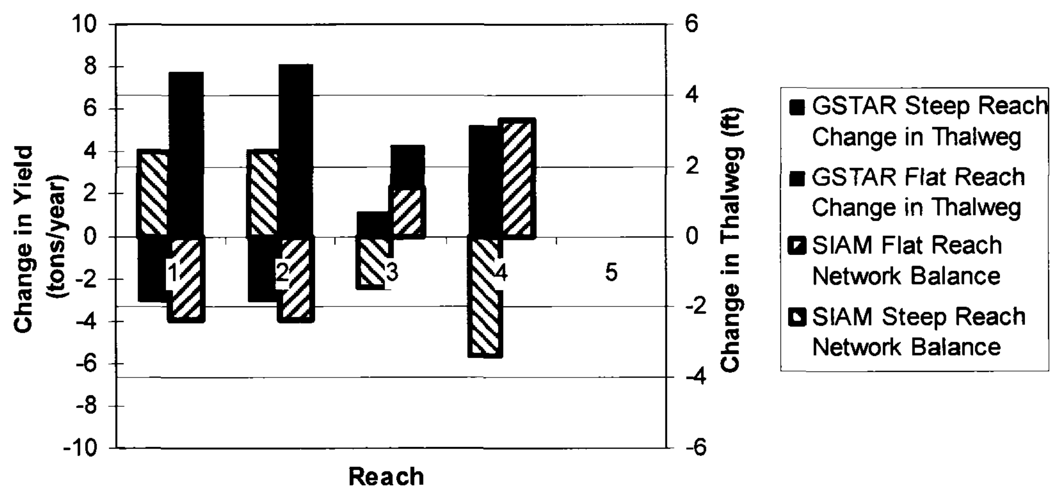

Figure 7-25 SIAM Fixed Upstream Boundary versus GSTAR-1D.

Both models show adjustment downstream of the pivot. SIAM shows degradation in Reach 4, while GSTAR shows no motion. In a physical system, the scour would be expected to progress to the fixed point and then halt as shown in SIAM. In the GSTAR simulation, the model initially begins to adjust as expected. Part way through the simulation, a local expansion allowed a wedge of sediment to form downstream of the fixed reach. The wedge moved the local expansion downstream until eliminating all effects of the adjustment. Longer time steps exacerbated the problem, while a time step short enough to overcome the difficulty required very long computation runs. Adjustments to time step and other mobile-boundary parameters could likely address and overcome the numerical problem. The SIAM model does not replicate the numerical effect. Figure 7-26 shows GSTAR runs with both upstream and downstream boundaries fixed.

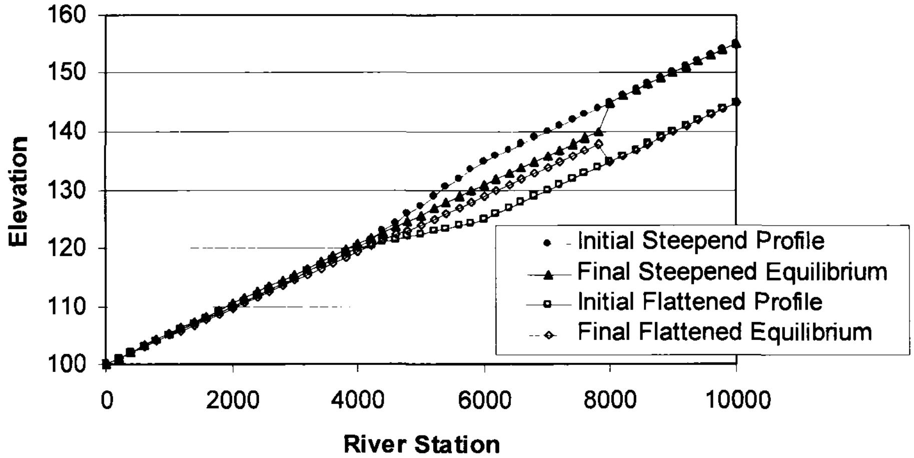

Figure 7-26 GSTAR-1D Profiles for Aggrading and Degrading Reaches with Both Boundaries Fixed.

GSTAR-1D shows the downstream boundary exerting ultimate control on all reaches with a discontinuity connecting to the upstream reach. Long numerical-simulation times still have not achieved equilibrium, but the simulation time was adequate to illustrate the adjustment process. The downstream fixed boundary reflects the stress upstream, canceling the effects of the pivot on the downstream reaches and amplifying the upstream adjustment. The upstream fixed boundary absorbs positive upstream reflection. The GSTAR model was asymptotically approaching equilibrium and terminated after the simulated equivalent of 4.5 yrs. Bracketing a series of reaches with fixed boundaries forces all adjustment to occur between the two boundaries and may create discontinuities.

Fixed downstream boundaries reflect stresses, while fixed upstream boundaries break continuity. Similar to pivoting reaches, SIAM is not well suited to predict the local adjustments within fixed reaches.

7.4 Summary

In physical systems, sediment impacts extend beyond the immediately adjacent reaches. Local accounting measures short-term impacts due to connections between wash reservoirs and transitioning material. Network accounting addresses long-term equilibrium conditions and provides some information on impacts due to connections through the channel reservoirs. However, the analysis presented was unable to develop an absolute method for integrating complex response processes and SIAM results are likely limited to assisting qualitative evaluations that may lead to more detailed numerical modeling.

When compared to a numerical sediment routing model, SIAM appeared to perform well in predicting the impact of single disturbances on a stable network and propagating those effects to the surrounding reaches. However, SIAM failed to match GSTAR results within imbalanced reaches. The inability to account for the pivot prevents accurate assessment of multiple effects, because every pivoting reach must be removed from consideration. However, unlike GSTAR-1D, SIAM links the impact from a single imbalanced reach to the effects on the network. Considering each imbalanced reach independently may identify the most efficient means of treating future instability in a stream network.

The routines at the current level of development may provide guidance on whether a more detailed analysis, such as a mobile boundary study, should be considered. In a stable system, SIAM network balance routines will likely match GSTAR-1D routines and may provide adequate results. In a more unstable system or a system with multiple projects, SIAM is unlikely to yield actionable results, but could provide support for requiring a mobile boundary study. A mobile boundary model can be calibrated to accommodate complex interactions, but there are no calibration parameters in SIAM for network accounting routines.

Future research should address stress in the pivot point. Other errors may arise from temporal and transitory effects altering conditions beyond what can be easily accounted for by extrapolating from trends. For example, a temporary but large boost in transport capacity may invalidate the applied energy relationship. There may be losses or attenuation of stresses with distance. At the present level of development, using the network accounting routines on individual projects in isolation of other changes is likely the limit of usefulness.

Channel adjustment occurs over time and is subject to changes in the driving forces of hydrologic and sediment supply patterns. In physical systems, before equilibrium, the stream boundaries store or release material. The network balance in SIAM provides an estimate for reconciling the long-term interaction between sediment transport, channel adjustment, and hydraulics. There is no method in SIAM to determine the ultimate state of a channel from multiple network interactions through the channel reservoir. SIAM computational routines do not adjust channel boundaries, update sediment sources, or account for time-dependent effects. SIAM cannot estimate the time required for ajustment or incorporate changes in the driving forces over time. Results represent regime-averaged properties and regime-averaged results to provide balances showing trends in a system, but not intermediate or final states. Changes to the regime may alter the physical system before the SIAM predictions occur. Further work in applied energy may develop better methods of combining multiple geomorphic adjustment processes.

CHAPTER 8

WATERSHED IMPLEMENTATION OF SIAM

The watershed application of SIAM demonstrates one method for generating input data, displays a field application of the results, and provides a comparison against traditional analysis techniques. This chapter applies SIAM to the Hickahala Basin.

8.1 Overview

Hickahala Creek drains 230 mi^2 of the Coldwater Basin, north central Mississippi, into Arkabutla Reservoir. Elevations range from 190 ft above sea level at the reservoir to 560 ft above sea level in the upland areas. Land use consists primarily of agriculture, and all major tributaries experienced channelization in the 1960s and subsequent rehabilitation efforts. Figure 8-1 shows the site location and the topographic variability.

Figure 8-1 Location of the Hickahala Basin, Mississippi.

After channelization throughout the main stem of Hickahala and several major tributaries to relieve flooding in the downstream town of Senatobia, the river responded with increased sediment loads and aggradation. Simons, Li & Associates (SLA 1987a, b, c) performed a geomorphic evaluation, setup a mobile-boundary sediment model, and developed a rehabilitation plan. The geomorphic evaluation and mobile-boundary sediment model identified sediment sources, computed hydraulics, evaluated areas of degradation and aggradation, and proposed a rehabilitation plan. The river profile did not increase a second time. Figure 8-2 shows the bed elevation near the mouth of Hickahala Creek over time.

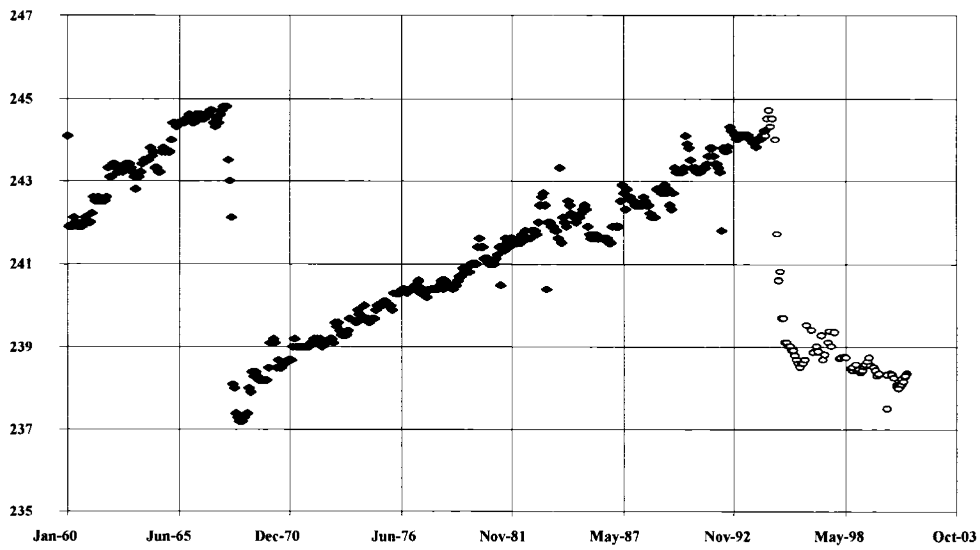

Figure 8-2 Thalweg Elevation near the Mouth of Hickahala (Biedenharn Personal Communication 2003).

The reports by SLA were used to create a SIAM model, and compare results and conclusions from the SLA study. Model application begins by describing the techniques used to generate input.

8.2 1985 Hickahala SIAM Input

8.2.1 Overview

The SIAM data set used a HEC-RAS project for the basin specifying cross-section geometry for major channels within the basin. The locations of surveyed cross sections, visually estimated from marked aerial photographs, provide the topological linkages for sediment features within the basin. Bed material, sediment, hydrologic, hydraulic, and sediment transport characteristics were assigned to each surveyed cross section. Local sources in the watershed were also identified with the nearest surveyed cross section. Reach breaks were determined by comparing the adjacent groups of cross sections for similar bed material, hydrology, hydraulics, transport, and sediment sources. The following sections describe the processes used to adapt the geomorphic evaluation to SIAM and determine the properties for each cross section within the Hickahala Basin.

8.2.2 Global Grain Classes

The Hickahala Basin model used a standard grain class division with the geometric mean for each class and a fall velocity computed according to Julien (1998). Table 8-1 shows the grain classes.

Table 8-1 Global Grain Classes for Hickahala, Mississippi.

Designation	Grain Class Abbreviation	Upper Bound Diameter (mm)	Geometric Mean Diameter (mm)	Fall Velocity (m/s)
Clay	CLAY	0.004	0.0028	0.00001
Silt	CM	0.0625	0.004	0.00006
Very Fine Sand	VFS	0.125	0.088	0.109
Fine Sand	FS	0.25	0.177	0.072
Medium Sand	MS	0.5	0.354	0.048
Coarse Sand	CS	1	0.707	0.033
Very Coarse Sand	VCS	2	1.414	0.029
Very Fine Gravel	VFG	4	2.828	0.039
Fine Gravel	FG	8	5.656	0.042
Medium Gravel	MG	16	11.31	0.044
Coarse Gravel	CG	32	22.63	0.047
Very Coarse Gravel	VCG	64	45.25	0.05

Material finer than 0.0625 was divided into a silt and clay class in order to capture transitions from wash to bed material load for silt particles settling out in the lower reach of Hickahala.

8.2.3 Reach Delineation

The properties of a sediment reach depended on the characteristics of the cross sections associated with the reach. Delineation began at tributary junctions, both modeled and unmodeled, and then added subdivisions where indicated by differences in the different input components. Additional divisions included the limits of the 1968 channelization project, reservoir boundaries, and bridge crossings marking a break in profile grade. Additional sections were added to separate reaches identified by SLA as containing "waterfalls" or any other features in the reports. The upper-most cross sections within a stream were used as boundary conditions and not included in analysis.

8.2.4 Sediment Gradation

Colorado State University (CSU) performed a particle-size analysis on bed, bank, and surface samples taken in the Hickahala Basin by the USACE in 2001. Other gradation information came from the SLA reports and CSU phosphorus sampling. Materials were grouped into categories based on a visual evaluation of similarities between materials. In general, all material within a theissan polygon constructed around the sampling sites was assumed to consist of the same gradation. A specific reach gradation used a combination of the theissan assignment and field notes to assign a gradation. The specific sections where gradations were applied is discussed the distribution results.

8.2.5 Bed Material

Bed material describes the sediment character in the active channel for each reach in the Hickahala Basin. SIAM assigned a bed material to each surveyed cross section within the Hickahala Basin based on proximity to the nearest soil sample. Analysis of the samples identified two categories of bed material: silt or sand. In some cases, silt material represents deposition reaches but, in other cases, silt represents reaches with cohesive scour. Analysis of the gradation alone could not differentiate between reaches. Figure 8-3 shows the bed material categories identified in the basin and the theissan polygons demarking the range of applicability.

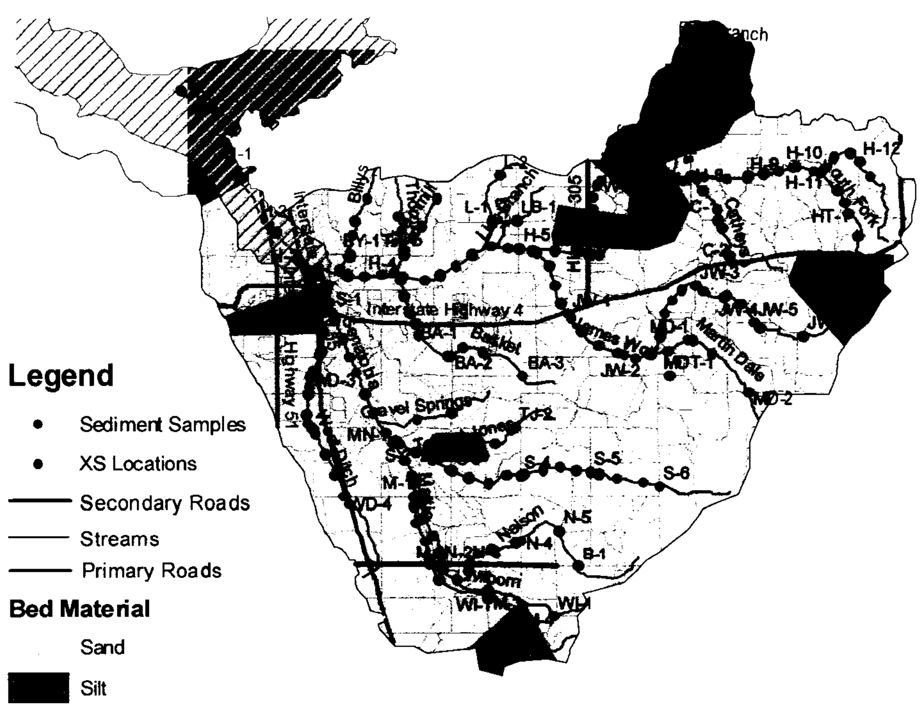

Figure 8-3 Bed Material Gradations within Hickahala, Mississippi.

Each cross section was assigned a gradation based on the location within a polygon and field notes. The bed material for a reach used the gradation which appeared most frequently. Reaches displaying a break in bed composition were subdivided.

8.2.6 Sediment Properties

No armoring was observed in the basin and the density of sediment was assumed to be 1.2 tonnes/m^3. The SIAM model assigned sediment properties based on four types of substrate material:

1. non-cohesive sand (middle reaches);
2. non-cohesive silt (reservoir deposition areas);
3. cohesive control (some upper reaches); and
4. bedrock control (one reach within White's Creek).

SLA identified the bed material as primarily medium to fine sand (SLA 1987a, b). Silt and finer material were considered wash load throughout all non-cohesive reaches except for the downstream-most extent of Hickahala under the influence of the reservoir. Reservoir reaches used clay for the wash load threshold.

The cohesive-control reaches assumed significant cohesive forces in silt and clay material, diameters less than 0.0625. The downstream end of Hickahala, though identified as silty material, was depositional and, therefore, not a cohesive control reach. Cohesive-control reaches were located primarily in the upper reaches of the basin and identified by bed composition. Cohesive material was identified through the sediment sampling regime and verified with SLA geologic controls for exact extents. SLA reaches identified as containing "waterfalls" were considered under cohesive control.

8.2.7 Hydrology

The U.S. Geological Survey (USGS) gage on Hickahala provided daily flow values to create an empirical flow-duration curve. Though the daily flow record only spanned 10 yrs, the peak flow record included 57 yrs. From the relationship between daily discharge and the data for the corresponding day in the peak flow records of the gage records, the empirical curve appeared to capture the 10-yr recurrence interval. The HEC-2 model from the USACE provided instantaneous peak flows for recurrence intervals up to a 100-yr event. To incorporate larger flows, the 25-, 50-, and 100-yr events were added to the flow-duration curve by assuming the discharge occurred on one day out of the recurrence interval. Table 8-2 shows the peak flows, the corresponding daily average, and the daily recurrence probability.

Table 8-2 HEC-2 Discharges and Recurrence Intervals.

Annual Recurrence (yrs)	Peak Discharge (m^3/s)	Mean Daily Discharge (m^3/s)
2	12000	6260
5	16210	8780
10	20330	11300
25	24950	14000
50	30245	17200
100	36125	20700

The SIAM records divided the curve into ten bins on a log scale and assigned the value of the geometric mean. The 10^{th} bin includes storms with a recurrence longer than 100 yrs. The 9^{th} bin includes the 5- through 50-yr events and the 8^{th} bin includes the 2-yr event. Figure 8-4 shows the final flow-duration curve and resulting bins.

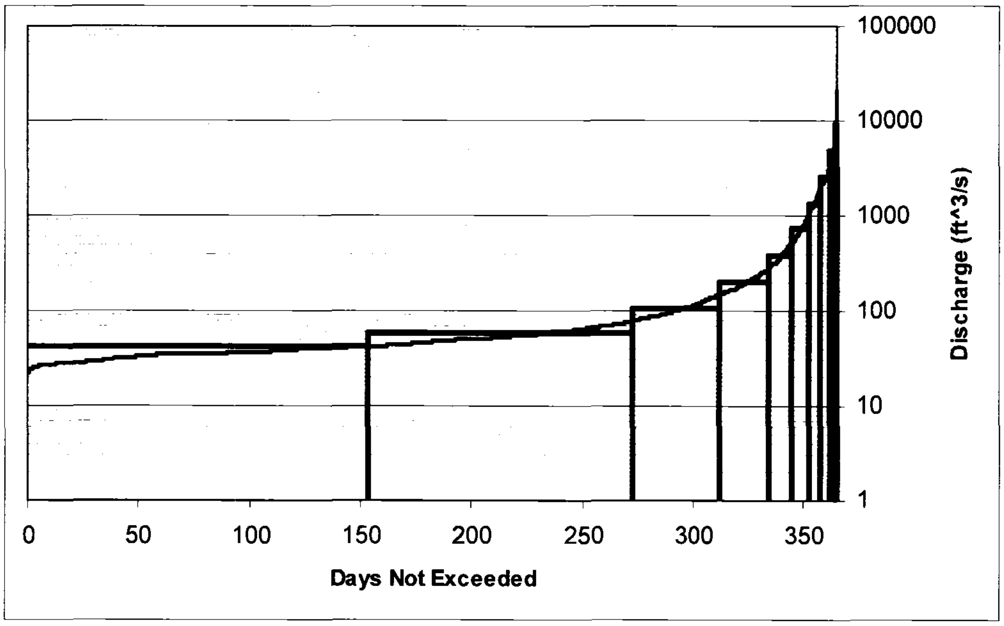

Figure 8-4 Hickahala Flow-duration Curve.

Flows for individual reaches were determined by scaling the magnitude according to drainage area at the reach outlet. An in-house basin delineation program was applied to each reach within the SIAM watershed to compute drainage area at key locations.

8.2.8 Hydraulics

Geometry provided by the USACE was imported into a RAS model. Cross sections were interpolated to bracket tributary junctions as well as through reaches where the distance between cross sections exceeded 1,000 ft. Using the Q_2 bin from the flow-duration hydrology described above, each reach was examined to determine whether further interpolated cross sections were needed to smooth calculation of a water surface profile. At significant changes in the water surface or bed profile, sediment reaches were further divided to capture the differences. Reach hydraulics were created from a length-weighted average, assuming each section represents a midpoint of a stream section. Cross sections surrounding bridges were excluded from the averaging process.

Hydraulic plots show the forces driving the channel network. SIAM averages the hydraulics within a reach to exclude outliers. The data excluded from the averaging process are shown as hollow points. Solid symbols represent included sections. Solid lines represent the reach average. Figure 8-5 shows the main channel versus total discharge.

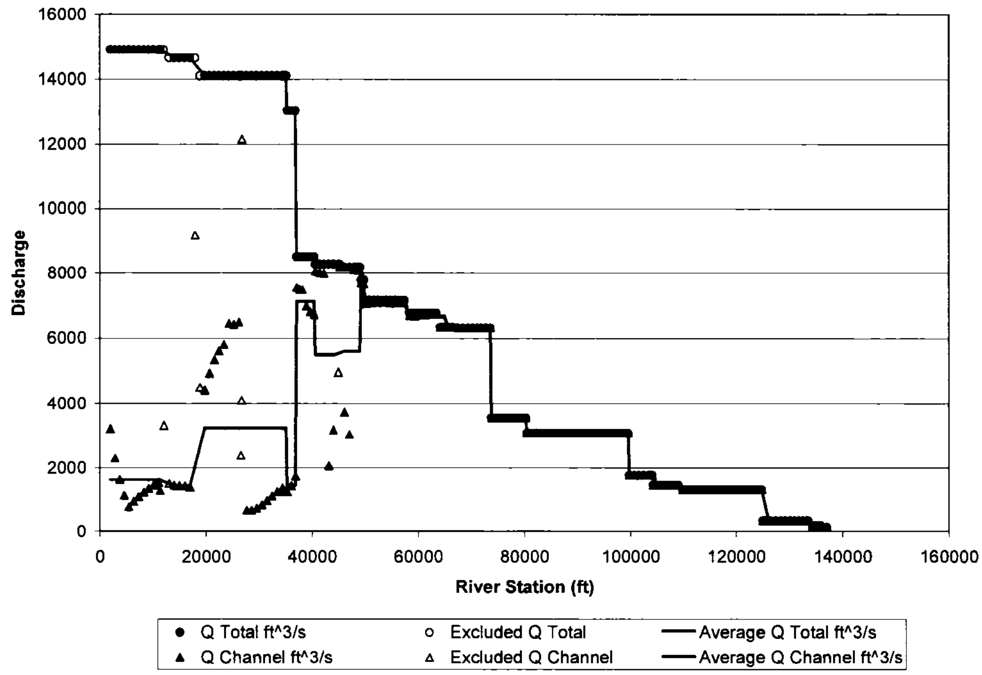

Figure 8-5 Hickahala Q_2 Discharge Hydraulic Profile.

Abrupt vertical increases in discharge represent inflows by tributaries or significant changes in contributing area corresponding to unique reaches. As expected for a stream without significant diversions, total discharge decreases the farther upstream. In the upper reaches, the channel contains the entire flow, but in the lower reach, the in-channel flow falls below the total, indicating expansion into the overbank areas. The channel in the lower reaches contains less flow than the middle reaches of the stream. Figure 8-6 shows channel geometry in terms of width and depth for the 2-yr recurrence hydraulics.

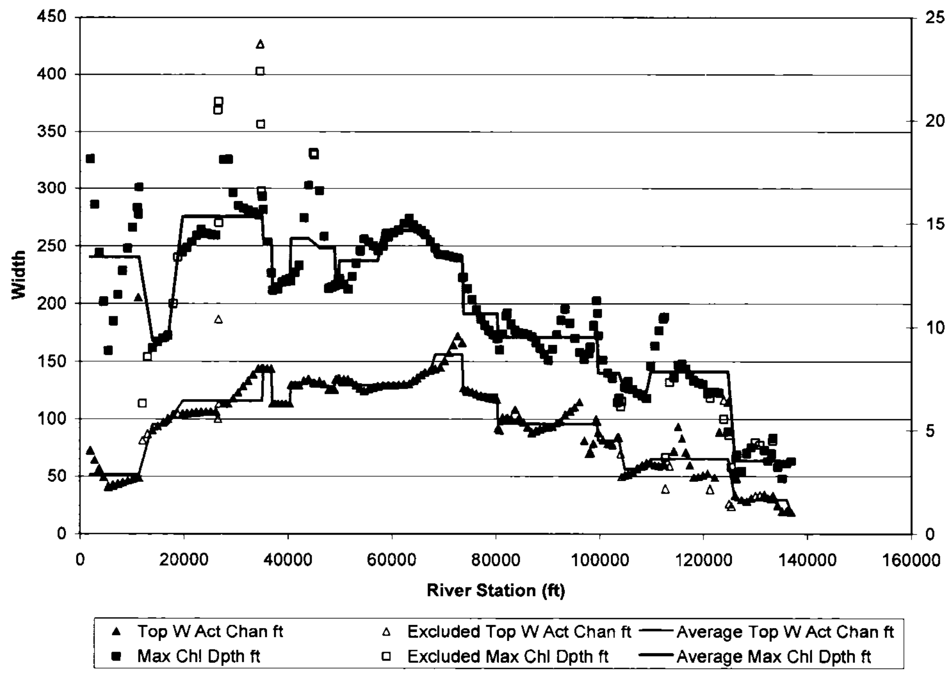

Figure 8-6 Hickahala Q_2 Geometry Hydraulic Profile.

The geometry profile shows width in red triangles on the left axis and depth in blue squares on the right axis. In the upper half of the watershed, depth and width generally increase in a downstream direction. In the lower half of the stream, the width and depth generally decrease. The decrease in width and depth coincide with the increased proportion of flow in the overbank areas. Figure 8-7 shows hydraulic properties related to sediment transport for the 2-yr flow.

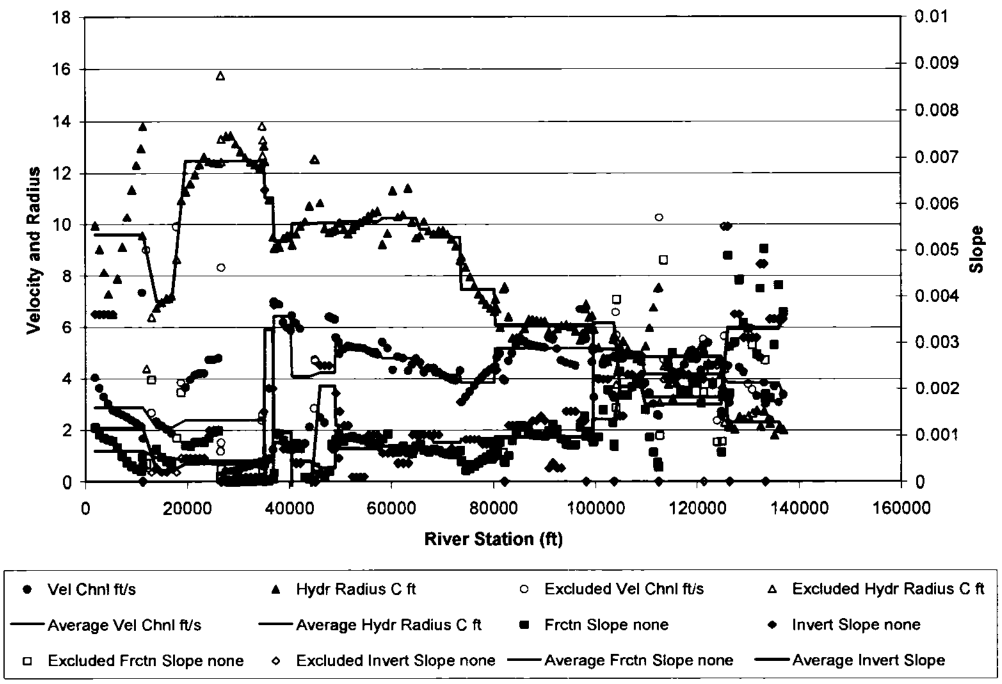

Figure 8-7 Hickahala Q_2 Transport Hydraulic Profile.

The transport hydraulic profiles provide a surrogate for sediment transport and includes a hydraulic explanation for a given sediment transport rate. Increases in velocity, represented by the red circles, generally indicate increased relative sediment transport rates. In general, the hydraulic radius describes the absolute magnitude of the sediment load. Larger hydraulic radii represent larger rivers. Friction slopes measure the rate of energy dissipation and the relation to the invert slope indicates the type of water surface profile. The hydraulic profiles assist in interpreting the sediment accounting plots.

8.2.9 Transport Potential

Development of the transport potential records explored several methods for non-cohesive grain classes; a velocity- and depth-based relationship developed by SLA

(1987a, b, c), Yang's sand and gravel equation (Yang 1973, 1984), Yang's D_{50} equation (1973), and a limited implementation of Yang's equation. The SLA relationship did not account for changes in the wash material load and was discarded. Similarly, Yang's D_{50} relationship also failed to handle transitioning material. Yang's sand and gravel equation's were applied to all classes within the range of validity but generated very large erroneous values for small grain classes.

The smaller silt class was backcalculated using a combination of the ratio present in the bed material and partially compensating for trap efficiency in depositional reaches. Fine transport potential began with the fraction present in the bed and the total load of coarse material. For a reach with 50% silt in the bed, the transport potential of the silt should equal at least twice the potential of the coarse material. For a bed of 60% coarse and 40% silt, if 200 tons of coarse material moves then, 133 tons of silt must move. Equation 8-1 shows the computation of transport potential from the incremental calculations:

$$\phi_s = \frac{Q_{s,d}}{p_{s,t}} \qquad \textbf{Equation 8-1}$$

This method treats fine material as supply limited and may underestimate fine material loads since the transport potential is not a linear relationship to grain size.

The mass of transport for the other materials used Yang's equation and assumed that the mass ratio of silt material in transit to coarse material in transit is the same as the distribution within the bed. However, that percentage represents only a fraction of the total mass of silt in motion. SIAM cannot explicitly account for trap efficiency, but can partially incorporate efficiency into the calculation of transport potential. The amount of material present in the bed represents a fraction of the transport potential consumed in transporting material in that grain class. The actual fraction applied to the transport potential should include the amount passing through, Equation 8-2:

$$P_{s,t} = \frac{P_{s,b}}{e_t} \qquad \textbf{Equation 8-2}$$

where,

$P_{s,t}$ = total amount of material moving though a reach in grain class s;

$P_{s,b}$ = fraction of total material represented in the bed gradation; and

e_t = trap efficiency.

Equation 8-2 shows that for every ton in motion as represented by the bed material, there is another 1-e_t tons in motion that never settled. Transport input assumed 75% trap efficiency based on Julien's (1998) exponential decay function for the clay-silt boundary.

Reaches identified as a cohesive bed used Parthenaides (1965) scour relationship with coefficients calibrated by comparing the thalweg profile from the 1968 channelization plans to the 1985 survey.

8.2.10 Local Sediment Sources

8.2.10.1 Surface Erosion

Surface erosion identified surface material composition and erosion rates. Analysis of the sediment samples from the top of bank identified two classes of surface material: sand and silt. Figure 8-8 shows the surface material designations.

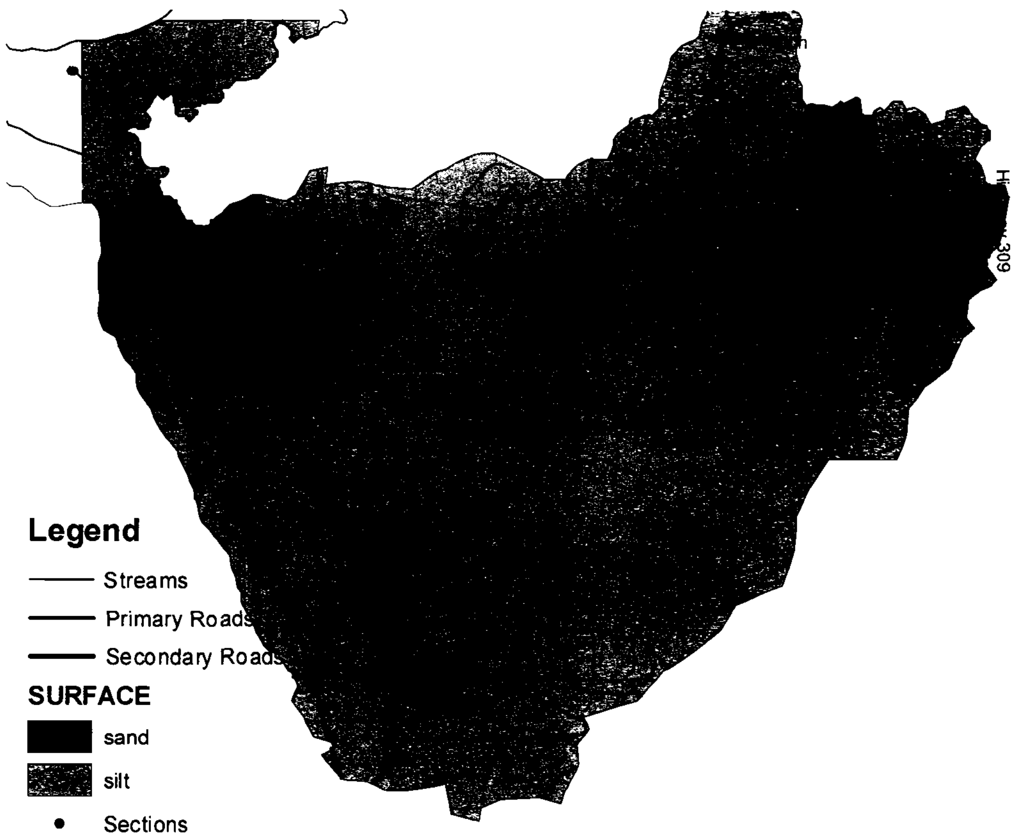

Figure 8-8 Gradation Delineation for Hickahala, Mississippi.

SLA identified a total erosion rate of 4,026 tons/mi^2. Measurements of fine material concentrations at the USGS gage averaged values of 2,700 tons/mi^2 yield. USGS gage values use empirical measurements rather than theoretical calculations and appeared to better match deposition patterns. Input to SIAM assumed an even distribution of delivery over the entire watershed and no dependence on gradation. Sediment gradations were assigned based on an area-weighted average of the two samples identified and divided up according to drainage area per cross section.

8.2.10.2 Upstream Boundary Contribution

The SIAM model accounted for sediment contribution upstream of the model boundary by using a boundary reach to provide bed material load, and a local source consisting of wash material from surface erosion for the upstream catchment area. Upstream boundary hydraulics used the same averaging process as a modeled reach to reduce the impact of local hydraulic conditions on reach averages, but in general, using the final cross section of a stream resulted in a smooth transition from a boundary reach to a modeled reach. Fine material from gullies, bank failure, or other processes upstream of a modeled reach were considered insignificant compared to surface erosion. Available data were insufficient to validate or refute this assumption.

8.2.10.3 Bank Failure

Sample analysis indicated three types of bank materials within the basin: one sand and two silt classes. SLA identified 1,000-m long sites of bank failure and classified them as severe or mild. Estimates of geotechnical failures in the Yalobusha Basin were computed as a function of bank height. The results were divided into bins and showed a bimodal distribution with a peak at 1.5 and a peak at 2.5 m^3/ft of height and length of channel. The two values were used for mild and severe banks. Figure 8-9 shows the location of bank failures and the soil gradations.

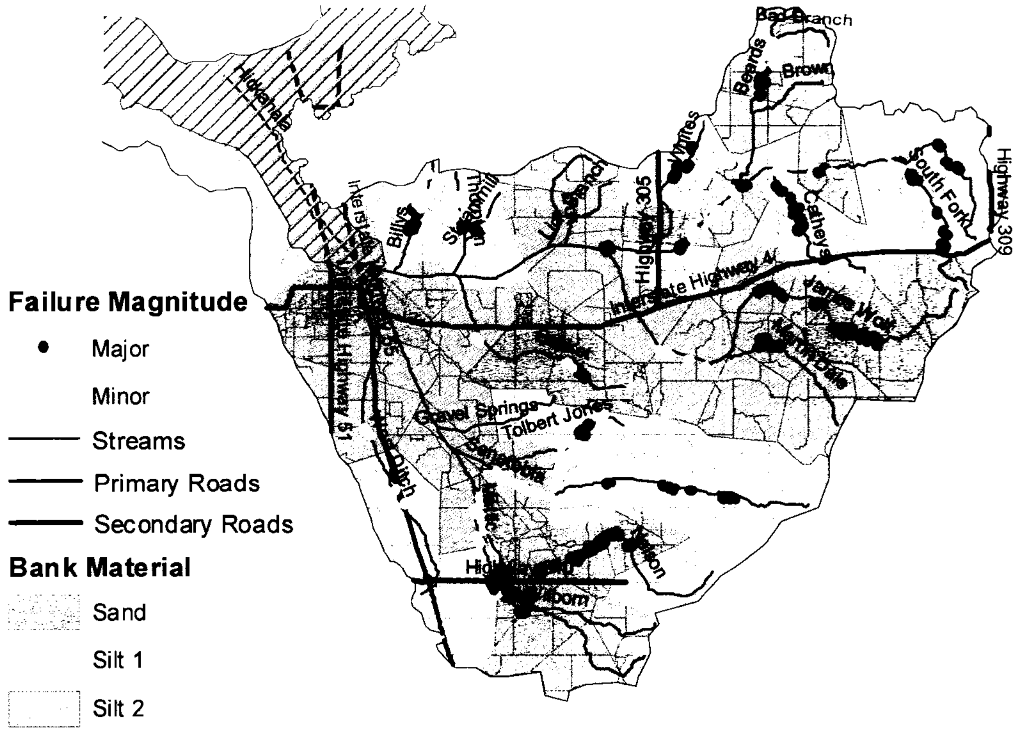

Figure 8-9 Bank Failure in the Hickahala Basin.

8.2.10.4 Gully Formation

SLA located ninety-seven gullies within the Hickahala Creek watershed. The mass of sediment per year that each gully inputs into the channel network was determined from the yearly increase in gully volume and the soil density. Gullies were grouped into three classes according to volume, and an average mass of sediment input per year was calculated for each class. Classes and corresponding volumes are shown in Table 8-3.

Table 8-3 Gully Class and Volume.

Gully Class	Volume Increase (m^3)
Small	< 60
Medium	62 – 106
Large	> 129

This mass was fractioned into grain classes from the three typical grain-size distributions calculated for bank material. Figure 8-10 shows the gullies in the watershed.

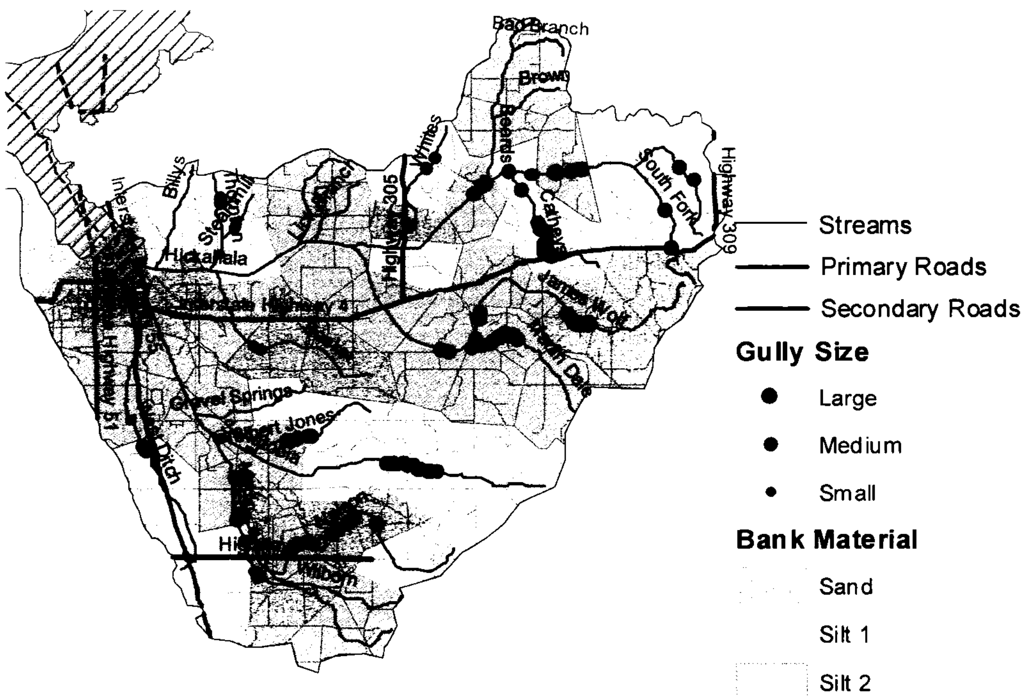

Figure 8-10 Gullies in the Hickahala Basin.

The methodology for determining gully volume was previously developed in the *Demonstration Erosion Control Monitoring Sites, 2001 Evaluation* (Watson *et al.* 2001). Sediment volume from gullies may be calculated from the relationship in Equation 8-3:

$$y_t = 0.5L(0.5W \times D_G + 88.75)$$ **Equation 8-3**

where,

y_t = gully volume (ft^3);

L = gully length (ft);

W = gully top width at downstream extent (ft); and

D_G = gully depth at downstream extent (ft).

The gully top width was determined from the relationship in Equation 8-4:

$$W = 2.7D_G + 22$$ **Equation 8-4**

where,

W = gully top width at downstream extent (ft); and

D_G = gully depth at downstream extent (ft).

Estimates made in the 2001 DEC report included that the gully depth at the downstream extent was equal to the bank height of the stream to which the gully is confluent, and that the upstream gully depth was equal to 5 ft. The cross-sectional area of the gully was assumed to be triangular in shape.

A file of the Hickahala Basin watershed had been created in HEC-RAS prior to the commencement of this task. ARC-INFO was used to locate the HEC-RAS cross section nearest to each gully. This cross section was considered the point of the stream to which the gully was confluent. The bank height at a specific cross section was calculated as the distance from the bank station to the thalweg of the channel. The height of the spoil piles adjacent to the channel was not included in the bank height. Bank heights computed in this manner were used as D_G in Equations 8-3 and 8-4.

To determine an increase in gully volume per year, the length used in Equation 8-3 must be a linear growth rate. This rate was determined by comparing gullies observed on 1975 and 1983 aerial photographs of the Hickahala Creek watershed. For the purpose of observing growth, only gullies that were visible on both the 1975 and 1983 aerial photographs were measured. Measurements of fifty gullies were taken with a 60 Engineering Scale straight-edge. Sinuous gullies were measured in pieces.

The approximate length of each measured gully was determined by scaling the aerial photographs with the distance legend of USGS 7.5-minute topographic maps of the region. Distances between common features were measured to generate a relationship between 60 Engineering Scale tick marks and distance in feet. These measurements yielded an average growth rate of 9 ft/yr.

Using a growth rate of 9 ft/yr, the yearly increase in each gully volume was determined. Gullies were then classified as small, medium, or large according to the increase in volume by observing the range, average, and standard deviation of this parameter.

8.3 Hickahala Local Accounting

The SLA reports used a sediment transport model called KUWASER to simulate aggradation and degradation of reaches within the watershed. SLA used field observations and historic profile data to verify results. Table 8-4 shows a comparison between SLA aggradation and degradation classifications using model and field results versus SIAM local balance results.

Table 8-4 SIAM and SLA Comparison of Aggrading and Degrading Reaches.

Comparison Results	Number of Reaches
Agreement	25
Disagreement Explained	4
Unexplained Disagreement	1

Of the areas available for comparison, SIAM identification of aggrading and degrading reaches matched in twenty-five cases and disagreed in five cases. Eighteen were aggradational and twelve degradational. Four cases were resolved through inclusion or exclusion of tributaries. The discrepancy in the fifth case, Hickahala between Senatobia and Billy's, predicted degradation within the reservoir and could not be explained. SLA modified their transport relationship in this area but the technique could not be replicated for this study. Cases where results agreed were checked for tributary discrepancies and none were identified. For applications of SIAM on previously unmodeled basins, field indicators or historical records may provide validation for results.

Figure 8-11 shows the local balance results for Hickahala Creek and the 2-yr flood sediment continuity study from SLA. Results are not directly comparable due to differences in reach definition, the regime methods in SIAM versus a representative flow from SLA, and different sediment transport relationships. Results permit comparing direction, aggradation versus degradation.

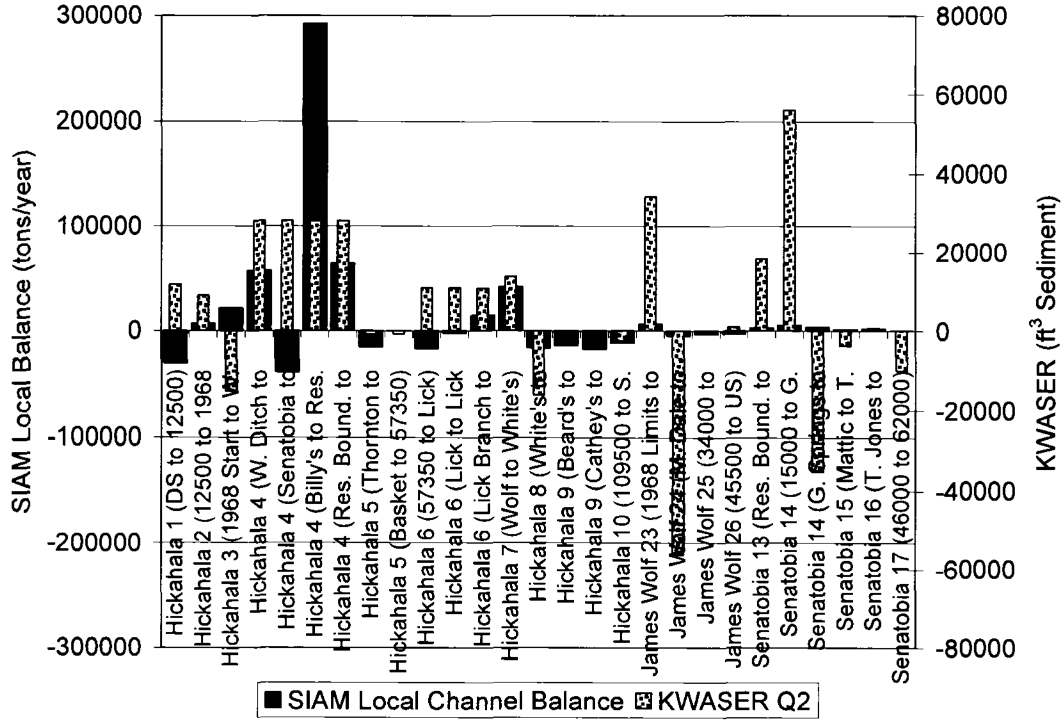

Figure 8-11 Local Balance Results for Hickahala, James Wolf, and Senatobia.

The local balance shows areas of aggradation (positive) and degradation (negative). The SLA study used different reach breaks, therefore columns with repeat values are divided in SIAM. The spike in Hickahala (Billy's to Reservoir Boundary) occurs from the large amount of silt material entering the reservoir boundary as wash load and transitioning to channel load. Upstream of the reservoir, the wash load threshold prevents silts from influencing the local balance calculations. Hickahala (Senatobia to Billy's) KWASER shows a negative local balance and indicates degradation not present in field indicators or KUWASER modeling. The selection of the wash load threshold influences deposition and activation of transport functions. Rather than a single change in wash load threshold, stepping down the wash-threshold diameters or using the SLA approach of applying calibrated equations can smooth the transition.

Such changes should use field identification to justify an alteration of parameters. However, refinement of the model may not be necessary to answer study-specific questions. For this model, field data were unavailable to specify a different wash material threshold, therefore, the abrupt transition was left as an acknowledged model limitation. SLA subsumed this portion of the channel within a larger reach resulting in deposition farther downstream (in the reach from 1968 channelization to West Ditch).

Mobile-boundary modeling by SLA did not classify sources of aggradational material. SIAM local accounting breaks down channel material into supply from immediately adjacent upstream reaches and transitioning material from the local wash load reservoir. In Hickahala (Billy's to Reservoir Boundary), 97% of the local balance occurs in transitioning material classes. The valid presence of transitioning material in a large and positive local balance suggests two conclusions. First, investigating sources upstream in the watershed may provide the most sustainable solutions; and second, with wash material moving on approximately an annual time scale, source reductions will incur rapid results and immediate benefits.

8.4 Hickahala Source Tracking

A source tracking analog was not present in the SLA reports. Total loads and source accumulation estimates can be inferred, but no method for independently verify wash material tracking was discernable. For the same reach shown in the local accounting example, Figure 8-12 shows the results from wash material source tracking.

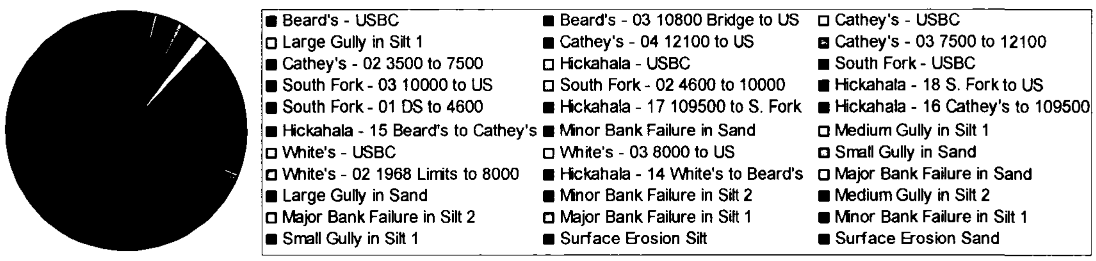

Figure 8-12 Wash Material Source Tracking in Hickahala from Billy's Creek to the Reservoir Boundary for Transitioning Grain Classes.

Figure 8-12 includes a record for every sediment load template and every degrading reach in the basin. The majority originated from surface erosion in silty material, 59% of the total, with 4% from other local sources. The surface erosion input used many rough assumptions, but if accurate, would suggest land management practices could most substantially reduce deposition. Boundary condition assumptions contributed less than 4% of the material transitioning in reach 6. Results in reach 6 are not sensitive to boundary condition assumptions. Degradation in upstream reaches accounts for 1/3 of the deposition. Grade control and stabilization of upper reaches could reduce up to 33% of the depositional material. The inability to distinguish between silty bed material in the upper reaches and the depositional area supports the presence of this linkage.

8.5 Hickahala Applied Energy

A comparison of computed yields between the existing regime and the hypothetical regime curve, for the range of situations represented by reaches on Hickahala Creek, shows the predictive capability for using the hypothetical regime curve to estimate work and yield relationships for changes to the discharge and duration. The comparison included all eighty-four reaches present in the Hickahala SIAM model.

Figure 8-13 shows example hypothetical regime curves and the existing conditions. The vertical axis shows annual yield (tons) and applied work (tons) on the horizontal axis. The red dot shows the existing regime.

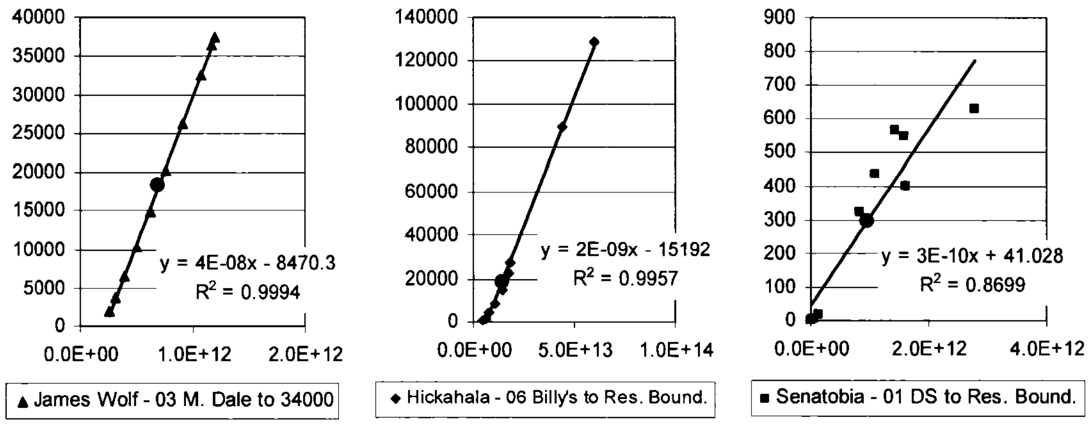

Figure 8-13 Example Applied Energy Comparison of Existing Regime to the Hypothetical Regime Curve.

The R^2 values averaged 0.94 for all reaches with a standard deviation of the yield residuals of 14%. The worst fits occurred in the areas below the full pool elevation of the reservoir. Statistics on reaches outside the reservoir increased the average R^2 to 0.99 and reduced the standard error of the residuals to 12%. Across all reaches, the error between existing and hypothetical conditions averaged 10% with a coefficient of variation of the errors equal to 100%. Neglecting reaches within the reservoir reduced the coefficient of variation of the residuals to 30%.

The plans for channelization in 1968 provide historic geometry and hydraulics to compare against the hypothetical regime curve constructed from existing conditions. Good agreement would support using work energy curves for geometry adjustments as well as discharge duration adjustments. Channelization plans were available for only twenty-one of the reaches. Figure 8-14 shows example plots of the comparison reaches.

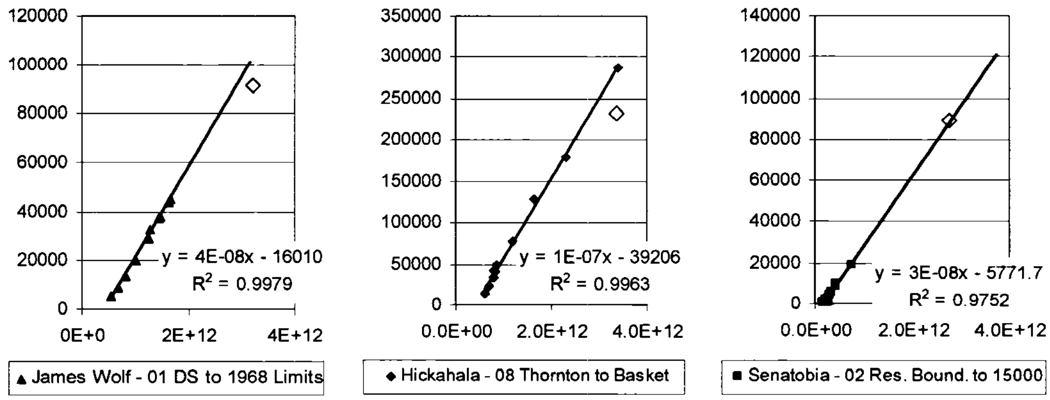

Figure 8-14 Example Applied Energy Comparison of 1968 Geometry to the Hypothetical Regime Curve using 1985 Data.

Of the twenty-one reaches, eleven lie outside the full pool boundaries of Arkubutla reservoir and ten within. Outside of the reservoir boundary, the hypothetical regime curve over-predicted sediment yield by 30% when compared to computations using the channelization plans with a coefficient of variation of the residuals of 60%. Within the reservoir boundary, estimates under-predicted yield by an average of -90% compared to calculations using channelization plans with a coefficient of variation of the residuals of 10%. Computations using the channelization plans did not account for backwater influences. Hydraulics for 1968 assumed normal depth. For Hickahala, normal depth cannot account for reservoir pool elevation and the 1968 channelization plans will over-predict yield. For the Hickahala demonstration, applied energy resulted in order of magnitude accuracy for reaches outside the reservoir boundary.

8.6 Hickahala Network Accounting

The developmental stage of the network accounting routines did not warrant field application to Hickahala. However, the need to assess linkages beyond immediately adjacent reaches can be partially inferred from a KUWASER mobile boundary model of Hickahala Creek (SLA 1987c). In many cases, results from continuity well matched the estimates of ultimate channel adjustment; however, in four reaches the KUWASER model reversed direction and differed from the continuity evaluation. Using local balance calculations alone would result in an incorrect estimate of the ultimate adjustment direction compared to a mobile boundary model.

8.7 Hickahala Rehabilitation Strategies

The SLA (1987c) report developed rehabilitation options to re-establish sediment equilibrium and reduce sediment deposition causing flooding. Components included grade control, bank stabilization, gully stabilization, and channelization. Results from SIAM modeling show that bank stabilization and gully stabilization exert a smaller impact than grade control for delivery of material to the reservoir. An additional solution from SIAM would include modifications to land management practices to reduce sediment loads from surface erosion. However, the methods used to determine surface erosion likely include bank failure and gullies not identified in the geomorphic assessment. Small failure locations and gullies are unlikely to have been mapped.

8.8 Conclusions

Hickahala, Mississippi, provided a field application of the SIAM model to demonstrate input development, validate the utility of SIAM modeling, and show differences compared to numerical modeling and sediment budgets performed by SLA (1987a, b, c).

Hickahala inputs included constructing hydrology from flow-duration curves, hydraulics using HEC-RAS, and transport potential from Yang's 1973 equation. Bed material provided information on the wash load threshold and cohesive controls. Armoring was not applied. Local sources required evaluating supply of material from the watershed and included surface erosion, upstream boundary conditions, bank failure, and gully-formation processes. This Hickahala example is not intended as a best-practices recommendation for developing SIAM input. Every watershed may have different data available and require different processing techniques. Input characterizes sediment transport and sediment sources, and future applications should seek to best represent the site-specific conditions with available analysis resources.

Verification first compared SIAM local accounting routines to prior studies (SLA 1987a, b, c) and found agreement in predictions of aggradation and degradation, but no data sets adequate to compare relative magnitudes. Additional information was provided by SIAM due to the wash and transitional material classifications. A break down of local sources was not available for comparison with SIAM source tracking. The source tracking demonstration illustrated information on causality available by maintaining linkages throughout a network. Land management practices to reduce surface erosion could significantly impact sediment yields. Applied energy showed how a theoretical relationship between channel geometry and work can be generated from a hydrologic regime using both existing conditions and the 1968 channelization plan. The gaps in development of the network accounting routines prevented a meaningful demonstration of network-wide channel material linkages. As a prescriptive tool, analysis of routing wash load provided additional information on the most significant sources for reducing sediment load and could also serve as a method for estimating stable channel dimensions for the proposed dredging work.

Mobile boundary modeling by SLA captured the process of reversible trends of degradation followed by future aggradation. Neither SIAM nor the SLA sediment budget can predict a change in the direction of evolution through time. The inability to change direction limits application of the model to quantitative analysis of single state estimates of stability and may result in erroneous estimates of future conditions if applied without external judgment. For example, an appropriate application of SIAM could predict current instabilities within Hickahala and compare to instabilities immediately after proposed project construction, but using SIAM to compare future state with no action to a future state after a proposed project would require external engineering judgment to support conclusions on the validity of extrapolating SIAM trends. SIAM can estimate the strength of the geomorphic connection to other reaches to identify whether an instability is likely to cause problems beyond the local reach. Identification of a strong unstable connection should be followed with additional study using methods outside of SIAM.

CHAPTER 9

CONCLUSIONS

Sediment Impact Analysis Methods, SIAM, provides a framework to assemble and draw quantitative conclusions from geomorphic data to describe the flow of sediment through a watershed. SIAM conceptualizes a basin as a network of linked reaches that store, release, and convey sediment from sources within the watershed. The methods provide a large-scale evaluation of sediment impacts to efficiently maximize information on erosion, deposition, and geomorphic processes. The techniques identify sediment yield, areas of instabilities, sources of instability, and potential channel adjustment ranges. The results support river-management planning and design. SIAM contributions include:

- a simplified model of sediment movement and the interactions with channel form based on sediment continuity for non-cohesive, cohesive, and armored channels;
- a division of sediment movement into wash versus bed material load to permit discriminating between impacts where immediate benefits can be realized through controlling sediment sources versus impacts from more lengthy geomorphic adjustment processes;

- linkages between sediment sources, both from the watershed as well as geomorphic change, to sediment impacts to identify causality;
- a transformation of a discharge time series into a probabilistic hydrologic regime to eliminate the need for calculating effective discharges or specific design flow events;
- direct algebraic calculations of geomorphic stability without requiring numeric techniques and no numerical solvers or time steps;
- a computational advantage to facilitate sensitivity studies and formulation of what-if scenarios quicker than a numerical model;
- a quantitative picture of a watershed at a single point in time where projects desiring to maintain or operate at a single point of dynamic equilibrium may use SIAM without more complicated numerical modeling;
- conceptualizing channel form and adjustment processes as changes to the way a river expends energy in sediment transport to allow for estimating geomorphic interactions between reaches without the need to determine geometry changes at every point in a channel network or specific estimates of width, depth, or form changes; and
- network accounting routines to provide an initial estimate of the impact from local instabilities on the rest of the channel network, but these methods require improvement to combine effects from multiple projects.

SIAM provides a method for integrating a diverse array of techniques for computing local sediment yields, hydrology, hydraulics, and sediment transport into determinations of channel stability and watershed sediment yield.

9.1 Applicability

Projects desiring to maintain or operate at a single point of dynamic equilibrium may use SIAM without more complicated numerical modeling. SIAM provides a quantitative picture of watershed adjustment at a single state (a single moment in time).

Applications where SIAM provides an analytical advantage include planning and scoping-level studies requiring quick what-if scenarios and sensitivity to determine key areas for future investigation. Areas with limited data can benefit from the ability to estimate conditions and test for sensitivity. More detailed projects can benefit from using SIAM to capture processes outside the study area, which may exert an impact through areas outside the project extents. SIAM offers geomorphic information in addition to watershed yield on reaches at a scale where the processes of aggradation or degradation are likely to remain consistent over the timeframe represented by the hydrologic, hydraulic, and sediment transport regime. The SIAM methodology permits end users to focus efforts on areas where a direct estimate of channel geometry is required and neglect areas of less concern.

The computational advantage facilitates sensitivity studies and formulating what-if scenarios quicker than a numerical model. SIAM permits generating coarse estimates of conditions and checking the sensitivity of assumptions without needing to formulate the complete description required for a numerical simulation. Where significant uncertainty exists, SIAM can perform Monte-carlo simulations. Modeling burden is estimated to be approximately 1/5 of the effort required to formulate a mobile boundary simulation. SIAM is well suited to large areas where the data collection and computational requirements would overwhelm a mobile boundary model. There is little advantage to creating SIAM models for the adjustment of a single homogenous reach.

9.2 Limitiations

SIAM techniques describe the forces acting on a channel but do not explicitly describe the effects. Results apply to main channel processes only and do describe the interaction with the floodplain. Floodplain interactions can be implied through input records, but are not expressly considered as part of the conceptual model. While similar to numerical modeling in some ways, the interpretation of results retains few direct analogs. The shift away from computing geometric adjustment, updating hydraulics, and reassessing sediment movement provides advantages in computational simplicity and modeling effort, but loses the ability to describe time frames and hampers comparing the long-term interactions of multiple projects within a watershed. The disadvantage is a loss of interactions between channel-adjustment processes. Network accounting shows how the relative strength of a sediment imbalance affects other areas of the channel network, but cannot well describe the cumulative effects of interference between geomorphic responses.

Without direct process modeling of adjustment through time, the duration of evolution or time required to realize predicted impacts cannot be determined. Feedback forces and other elements of complex response may temper magnitude before the effects are fully realized. SIAM cannot measure radical departures from existing conditions such as when a large storm event drastically alters channel form followed by a period of recovery as the channel returns to an equilibrium state. Input cannot progress through time to respond to climate changes. The fixed input limits conclusions at small reach scales where the circumstances generating a given trend can change more severely than larger scales. For example, a model of a single point that contained a headcut may become unrepresentative if the headcut migrates. While each temporal state change can be modeled independently and interpreted by the end user, the SIAM framework itself cannot provide a continuous picture.

Alternative methods may be required when local changes are important such as the growth of a single point bar or where time frame and estimates of ultimate geometry play a key role in decision making.

9.3 Sensitivity

As a synthesis tool rather than a mechanistic framework for predicting a specific process, the sensitivity of the results is primarily driven by the input on a case by case basis with few general rules. Users must select grain class bins, transform a continuous river profile into discrete reaches, and divide the flow of water into a series of discrete events within an annual regime. The applied energy and network balance computations contain the only mechanistic computation in SIAM subject to a traditional sensitivity analysis and even in that case depend primarily on input technique.

Sensitivity in yields and source tracking are directly proportional to the contribution from an individual source or sources to the total load. The sensitivity of the results cannot be determined without first running a SIAM model to determine a total load and then comparing the fraction of the total contributed by an individual source. The sensitivity is then equal to the fraction of sediment contributed.

Global grain class templates provide a series of discrete steps where material can transition between wash load and bed material load. Wash load values can grow very large and a transition to bed material load can result in large depostition of sediment. More resolution within wash load transitioning classes and the wash load threshold reduces the impact, but requires more intensive input development to determine the proper threshold for each reach. All results are sensitive to changes in the wash load threshold.

Results are moderately sensitive to reach discretization. Short reaches can contain areas of high transport and a prediction of large instabilities. Longer reaches predict small instabilities. Managing the sensitiviy of the reach length requires interpretation of the results after running a model to determine the appropriate scale for drawing conclusions.

Discretization of the flow hydrograph exerts little impact on results when the input techniques result in the majority of bins capable of transporting sediment. When only a few bins transport material, the results potentially underpredict transport and stability. The techniques should span the same range of probabilities for different storm recurrence intervals. If different reaches use different hydrology techniques spanning different probability ranges, the results may not represent field conditions. For example, if a 10-yr storm is required to move material in both reaches, but only one reach contains 10-yr hydrology only one reach will show motion.

The applied energy routines assume a link between stream power and sediment transport. The sensitivity of the relationship must be evaluated outside of SIAM. After establishing confidence in the stream power assumption, SIAM applied energy results are most sensitive to slope with channel width exerting about half the influence. Changes to width and or slope result in a log-scale sensitivity.

SIAM is a design tool for predicting changes to an existing or hypothesized condition, not a predictive tool for simulating evolution to future states (future conditions).

9.4 Future Development

As a relatively new class of model, there are many areas to explore for future development. Improvements to the development of input techniques for quantifying sources and grouping into reaches would increase the utility of the model. Degradation in streams with coarse material can armor and limit the amount of adjustment. Methods to account for these changes may reduce the risk assigned to large trends in degradation. The use of SIAM in sensitivity studies and the potential for stochastic traces to understand how uncertainty influences sedimentation conclusions can provide information for implications of variability on conclusions for many different types of sediment models. The applied energy concept has the potential to describe many channel processes, while avoiding discussion of width, depth, or form changes. However, engineers and managers will likely require tying the results to geometry changes. Network accounting routines require improvement to combine the effects from multiple projects. The understanding of the model and related uses grows as it is applied outside the Hickahala Basin. Appendix C contains a list of projects and a reference citing SIAM applications.

9.5 Platform and Hardware

SIAM methods were coded using Visual Basic.Net and Microsoft Excel within Windows XP, but the concepts can be quickly coded in other languages if desired. The primary machine used for development contained a 1GHz Intel Centrino processor and 1 gigabyte of RAM, but the algorithms should not impose any hardware requirements for computation power or memory.

CHAPTER 10

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APPENDIX A

EXAMPLE SIAM INPUT FILE FOR HICKAHALA BASIN

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Billy's - 03 1968 Limits to US, 45.3, 6.045, 60, Gage Scaled Flows
Billy's - 03 1968 Limits to US, 89.9, 2.925, 60, Gage Scaled Flows
Billy's - 03 1968 Limits to US, 178.2, 1.17, 60, Gage Scaled Flows
Billy's - 03 1968 Limits to US, 353.4, 0.175, 60, Gage Scaled Flows
Billy's - 03 1968 Limits to US, 446.3, 0.02, 60, Gage Scaled Flows
Billy's - USBC, 0.4, 114.08, 60, Gage Scaled Flows
Billy's - USBC, 0.8, 38.514, 60, Gage Scaled Flows
Billy's - USBC, 1.6, 19.013, 60, Gage Scaled Flows
Billy's - USBC, 3.1, 9.555, 60, Gage Scaled Flows
Billy's - USBC, 6.2, 6.533, 60, Gage Scaled Flows
Billy's - USBC, 12.3, 6.045, 60, Gage Scaled Flows
Billy's - USBC, 24.3, 2.925, 60, Gage Scaled Flows
Billy's - USBC, 48.3, 1.17, 60, Gage Scaled Flows
Billy's - USBC, 95.7, 0.175, 60, Gage Scaled Flows
Billy's - USBC, 120.8, 0.02, 60, Gage Scaled Flows
Cathey's - 01 DS to 3500, 2.2, 114.08, 60, Gage Scaled Flows
Cathey's - 01 DS to 3500, 4.4, 38.514, 60, Gage Scaled Flows
Cathey's - 01 DS to 3500, 8.7, 19.013, 60, Gage Scaled Flows
Cathey's - 01 DS to 3500, 17.2, 9.555, 60, Gage Scaled Flows
Cathey's - 01 DS to 3500, 34.1, 6.533, 60, Gage Scaled Flows
Cathey's - 01 DS to 3500, 67.7, 6.045, 60, Gage Scaled Flows
Cathey's - 01 DS to 3500, 134.3, 2.925, 60, Gage Scaled Flows

Cathey's - 01 DS to 3500, 266.4, 1.17, 60, Gage Scaled Flows
Cathey's - 01 DS to 3500, 528.3, 0.175, 60, Gage Scaled Flows
Cathey's - 01 DS to 3500, 667.1, 0.02, 60, Gage Scaled Flows
Cathey's - 02 3500 to 7500, 2.1, 114.08, 60, Gage Scaled Flows
Cathey's - 02 3500 to 7500, 4.2, 38.514, 60, Gage Scaled Flows
Cathey's - 02 3500 to 7500, 8.3, 19.013, 60, Gage Scaled Flows
Cathey's - 02 3500 to 7500, 16.5, 9.555, 60, Gage Scaled Flows
Cathey's - 02 3500 to 7500, 32.8, 6.533, 60, Gage Scaled Flows
Cathey's - 02 3500 to 7500, 65, 6.045, 60, Gage Scaled Flows
Cathey's - 02 3500 to 7500, 129, 2.925, 60, Gage Scaled Flows
Cathey's - 02 3500 to 7500, 255.8, 1.17, 60, Gage Scaled Flows
Cathey's - 02 3500 to 7500, 507.4, 0.175, 60, Gage Scaled Flows
Cathey's - 02 3500 to 7500, 640.7, 0.02, 60, Gage Scaled Flows
Cathey's - 03 7500 to 12100, 1.8, 114.08, 60, Gage Scaled Flows
Cathey's - 03 7500 to 12100, 3.5, 38.514, 60, Gage Scaled Flows
Cathey's - 03 7500 to 12100, 7, 19.013, 60, Gage Scaled Flows
Cathey's - 03 7500 to 12100, 13.9, 9.555, 60, Gage Scaled Flows
Cathey's - 03 7500 to 12100, 27.5, 6.533, 60, Gage Scaled Flows
Cathey's - 03 7500 to 12100, 54.5, 6.045, 60, Gage Scaled Flows
Cathey's - 03 7500 to 12100, 108.1, 2.925, 60, Gage Scaled Flows
Cathey's - 03 7500 to 12100, 214.3, 1.17, 60, Gage Scaled Flows
Cathey's - 03 7500 to 12100, 425, 0.175, 60, Gage Scaled Flows
Cathey's - 03 7500 to 12100, 536.7, 0.02, 60, Gage Scaled Flows
Cathey's - 04 12100 to US, 1.4, 114.08, 60, Gage Scaled Flows
Cathey's - 04 12100 to US, 2.8, 38.514, 60, Gage Scaled Flows
Cathey's - 04 12100 to US, 5.6, 19.013, 60, Gage Scaled Flows
Cathey's - 04 12100 to US, 11.2, 9.555, 60, Gage Scaled Flows
Cathey's - 04 12100 to US, 22.2, 6.533, 60, Gage Scaled Flows
Cathey's - 04 12100 to US, 43.9, 6.045, 60, Gage Scaled Flows
Cathey's - 04 12100 to US, 87.1, 2.925, 60, Gage Scaled Flows
Cathey's - 04 12100 to US, 172.8, 1.17, 60, Gage Scaled Flows
Cathey's - 04 12100 to US, 342.7; 0.175, 60, Gage Scaled Flows
Cathey's - 04 12100 to US, 432.7, 0.02, 60, Gage Scaled Flows
Cathey's - USBC, 0.6, 114.08, 60, Gage Scaled Flows
Cathey's - USBC, 1.2, 38.514, 60, Gage Scaled Flows
Cathey's - USBC, 2.4, 19.013, 60, Gage Scaled Flows
Cathey's - USBC, 4.8, 9.555, 60, Gage Scaled Flows
Cathey's - USBC, 9.6, 6.533, 60, Gage Scaled Flows
Cathey's - USBC, 19.1, 6.045, 60, Gage Scaled Flows
Cathey's - USBC, 37.8, 2.925, 60, Gage Scaled Flows
Cathey's - USBC, 74.9, 1.17, 60, Gage Scaled Flows
Cathey's - USBC, 148.6, 0.175, 60, Gage Scaled Flows
Cathey's - USBC, 187.7, 0.02, 60, Gage Scaled Flows
Hickahala - 01 DS to 12500, 123.6, 114.08, 60, Gage Scaled Flows
Hickahala - 01 DS to 12500, 245.1, 38.514, 60, Gage Scaled Flows
Hickahala - 01 DS to 12500, 486.1, 19.013, 60, Gage Scaled Flows
Hickahala - 01 DS to 12500, 964, 9.555, 60, Gage Scaled Flows
Hickahala - 01 DS to 12500, 1911.8, 6.533, 60, Gage Scaled Flows
Hickahala - 01 DS to 12500, 3791.5, 6.045, 60, Gage Scaled Flows
Hickahala - 01 DS to 12500, 7519.4, 2.925, 60, Gage Scaled Flows
Hickahala - 01 DS to 12500, 14912.6, 1.17, 60, Gage Scaled Flows
Hickahala - 01 DS to 12500, 29574.9, 0.175, 60, Gage Scaled Flows
Hickahala - 01 DS to 12500, 37346.2, 0.02, 60, Gage Scaled Flows
Hickahala - 02 12500 to 1968 Start, 121.5, 114.08, 60, Gage Scaled Flows
Hickahala - 02 12500 to 1968 Start, 240.9, 38.514, 60, Gage Scaled Flows
Hickahala - 02 12500 to 1968 Start, 477.7, 19.013, 60, Gage Scaled Flows
Hickahala - 02 12500 to 1968 Start, 947.5, 9.555, 60, Gage Scaled Flows
Hickahala - 02 12500 to 1968 Start, 1879, 6.533, 60, Gage Scaled Flows
Hickahala - 02 12500 to 1968 Start, 3726.5, 6.045, 60, Gage Scaled Flows
Hickahala - 02 12500 to 1968 Start, 7390.5, 2.925, 60, Gage Scaled Flows
Hickahala - 02 12500 to 1968 Start, 14657, 1.17, 60, Gage Scaled Flows
Hickahala - 02 12500 to 1968 Start, 29067.9, 0.175, 60, Gage Scaled Flows
Hickahala - 02 12500 to 1968 Start, 36706, 0.02, 60, Gage Scaled Flows
Hickahala - 03 1968 Start to W. Ditch, 116.8, 114.08, 60, Gage Scaled Flows
Hickahala - 03 1968 Start to W. Ditch, 231.7, 38.514, 60, Gage Scaled Flows
Hickahala - 03 1968 Start to W. Ditch, 459.5, 19.013, 60, Gage Scaled Flows
Hickahala - 03 1968 Start to W. Ditch, 911.2, 9.555, 60, Gage Scaled Flows
Hickahala - 03 1968 Start to W. Ditch, 1807.1, 6.533, 60, Gage Scaled Flows
Hickahala - 03 1968 Start to W. Ditch, 3583.8, 6.045, 60, Gage Scaled Flows
Hickahala - 03 1968 Start to W. Ditch, 7107.5, 2.925, 60, Gage Scaled Flows

Hickahala - 03 1968 Start to W. Ditch, 14095.8, 1.17, 60, Gage Scaled Flows
Hickahala - 03 1968 Start to W. Ditch, 27954.9, 0.175, 60, Gage Scaled Flows
Hickahala - 03 1968 Start to W. Ditch, 35300.6, 0.02, 60, Gage Scaled Flows
Hickahala - 04 W. Ditch to Senatobia, 107.7, 114.08, 60, Gage Scaled Flows
Hickahala - 04 W. Ditch to Senatobia, 213.6, 38.514, 60, Gage Scaled Flows
Hickahala - 04 W. Ditch to Senatobia, 423.7, 19.013, 60, Gage Scaled Flows
Hickahala - 04 W. Ditch to Senatobia, 840.3, 9.555, 60, Gage Scaled Flows
Hickahala - 04 W. Ditch to Senatobia, 1666.5, 6.533, 60, Gage Scaled Flows
Hickahala - 04 W. Ditch to Senatobia, 3305.1, 6.045, 60, Gage Scaled Flows
Hickahala - 04 W. Ditch to Senatobia, 6554.6, 2.925, 60, Gage Scaled Flows
Hickahala - 04 W. Ditch to Senatobia, 12999.2, 1.17, 60, Gage Scaled Flows
Hickahala - 04 W. Ditch to Senatobia, 25780.3, 0.175, 60, Gage Scaled Flows
Hickahala - 04 W. Ditch to Senatobia, 32554.5, 0.02, 60, Gage Scaled Flows
Hickahala - 05 Senatobia to Billy's, 70.3, 114.08, 60, Gage Scaled Flows
Hickahala - 05 Senatobia to Billy's, 139.5, 38.514, 60, Gage Scaled Flows
Hickahala - 05 Senatobia to Billy's, 276.6, 19.013, 60, Gage Scaled Flows
Hickahala - 05 Senatobia to Billy's, 548.5, 9.555, 60, Gage Scaled Flows
Hickahala - 05 Senatobia to Billy's, 1087.8, 6.533, 60, Gage Scaled Flows
Hickahala - 05 Senatobia to Billy's, 2157.4, 6.045, 60, Gage Scaled Flows
Hickahala - 05 Senatobia to Billy's, 4278.5, 2.925, 60, Gage Scaled Flows
Hickahala - 05 Senatobia to Billy's, 8485.2, 1.17, 60, Gage Scaled Flows
Hickahala - 05 Senatobia to Billy's, 16827.9, 0.175, 60, Gage Scaled Flows
Hickahala - 05 Senatobia to Billy's, 21249.7, 0.02, 60, Gage Scaled Flows
Hickahala - 06 Billy's to Res. Bound., 68.5, 114.08, 60, Gage Scaled Flows
Hickahala - 06 Billy's to Res. Bound., 135.8, 38.514, 60, Gage Scaled Flows
Hickahala - 06 Billy's to Res. Bound., 269.3, 19.013, 60, Gage Scaled Flows
Hickahala - 06 Billy's to Res. Bound., 534, 9.555, 60, Gage Scaled Flows
Hickahala - 06 Billy's to Res. Bound., 1059.1, 6.533, 60, Gage Scaled Flows
Hickahala - 06 Billy's to Res. Bound., 2100.4, 6.045, 60, Gage Scaled Flows
Hickahala - 06 Billy's to Res. Bound., 4165.5, 2.925, 60, Gage Scaled Flows
Hickahala - 06 Billy's to Res. Bound., 8261.2, 1.17, 60, Gage Scaled Flows
Hickahala - 06 Billy's to Res. Bound., 16383.7, 0.175, 60, Gage Scaled Flows
Hickahala - 06 Billy's to Res. Bound., 20688.7, 0.02, 60, Gage Scaled Flows
Hickahala - 07 Res. Bound. to Thornton, 67.7, 114.08, 60, Gage Scaled Flows
Hickahala - 07 Res. Bound. to Thornton, 134.3, 38.514, 60, Gage Scaled Flows
Hickahala - 07 Res. Bound. to Thornton, 266.3, 19.013, 60, Gage Scaled Flows
Hickahala - 07 Res. Bound. to Thornton, 528.1, 9.555, 60, Gage Scaled Flows
Hickahala - 07 Res. Bound. to Thornton, 1047.4, 6.533, 60, Gage Scaled Flows
Hickahala - 07 Res. Bound. to Thornton, 2077.2, 6.045, 60, Gage Scaled Flows
Hickahala - 07 Res. Bound. to Thornton, 4119.6, 2.925, 60, Gage Scaled Flows
Hickahala - 07 Res. Bound. to Thornton, 8170.1, 1.17, 60, Gage Scaled Flows
Hickahala - 07 Res. Bound. to Thornton, 16203, 0.175, 60, Gage Scaled Flows
Hickahala - 07 Res. Bound. to Thornton, 20460.6, 0.02, 60, Gage Scaled Flows
Hickahala - 08 Thornton to Basket, 64.4, 114.08, 60, Gage Scaled Flows
Hickahala - 08 Thornton to Basket, 127.7, 38.514, 60, Gage Scaled Flows
Hickahala - 08 Thornton to Basket, 253.3, 19.013, 60, Gage Scaled Flows
Hickahala - 08 Thornton to Basket, 502.3, 9.555, 60, Gage Scaled Flows
Hickahala - 08 Thornton to Basket, 996.2, 6.533, 60, Gage Scaled Flows
Hickahala - 08 Thornton to Basket, 1975.6, 6.045, 60, Gage Scaled Flows
Hickahala - 08 Thornton to Basket, 3918.1, 2.925, 60, Gage Scaled Flows
Hickahala - 08 Thornton to Basket, 7770.4, 1.17, 60, Gage Scaled Flows
Hickahala - 08 Thornton to Basket, 15410.4, 0.175, 60, Gage Scaled Flows
Hickahala - 08 Thornton to Basket, 19459.7, 0.02, 60, Gage Scaled Flows
Hickahala - 09 Basket to 57350, 59.2, 114.08, 60, Gage Scaled Flows
Hickahala - 09 Basket to 57350, 117.4, 38.514, 60, Gage Scaled Flows
Hickahala - 09 Basket to 57350, 232.9, 19.013, 60, Gage Scaled Flows
Hickahala - 09 Basket to 57350, 461.9, 9.555, 60, Gage Scaled Flows
Hickahala - 09 Basket to 57350, 916, 6.533, 60, Gage Scaled Flows
Hickahala - 09 Basket to 57350, 1816.6, 6.045, 60, Gage Scaled Flows
Hickahala - 09 Basket to 57350, 3602.8, 2.925, 60, Gage Scaled Flows
Hickahala - 09 Basket to 57350, 7145.1, 1.17, 60, Gage Scaled Flows
Hickahala - 09 Basket to 57350, 14170.3, 0.175, 60, Gage Scaled Flows
Hickahala - 09 Basket to 57350, 17893.8, 0.02, 60, Gage Scaled Flows
Hickahala - 10 57350 to Lick, 56, 114.08, 60, Gage Scaled Flows
Hickahala - 10 57350 to Lick, 111.1, 38.514, 60, Gage Scaled Flows
Hickahala - 10 57350 to Lick, 220.3, 19.013, 60, Gage Scaled Flows
Hickahala - 10 57350 to Lick, 436.9, 9.555, 60, Gage Scaled Flows
Hickahala - 10 57350 to Lick, 866.5, 6.533, 60, Gage Scaled Flows
Hickahala - 10 57350 to Lick, 1718.4, 6.045, 60, Gage Scaled Flows
Hickahala - 10 57350 to Lick, 3408, 2.925, 60, Gage Scaled Flows

Hickahala - 10 57350 to Lick, 6758.8, 1.17, 60, Gage Scaled Flows
Hickahala - 10 57350 to Lick, 13404.2, 0.175, 60, Gage Scaled Flows
Hickahala - 10 57350 to Lick, 16926.4, 0.02, 60, Gage Scaled Flows
Hickahala - 11 Lick to Lick Branch, 52.5, 114.08, 60, Gage Scaled Flows
Hickahala - 11 Lick to Lick Branch, 104.1, 38.514, 60, Gage Scaled Flows
Hickahala - 11 Lick to Lick Branch, 206.4, 19.013, 60, Gage Scaled Flows
Hickahala - 11 Lick to Lick Branch, 409.2, 9.555, 60, Gage Scaled Flows
Hickahala - 11 Lick to Lick Branch, 811.6, 6.533, 60, Gage Scaled Flows
Hickahala - 11 Lick to Lick Branch, 1609.6, 6.045, 60, Gage Scaled Flows
Hickahala - 11 Lick to Lick Branch, 3192.2, 2.925, 60, Gage Scaled Flows
Hickahala - 11 Lick to Lick Branch, 6330.9, 1.17, 60, Gage Scaled Flows
Hickahala - 11 Lick to Lick Branch, 12555.5, 0.175, 60, Gage Scaled Flows
Hickahala - 11 Lick to Lick Branch, 15854.7, 0.02, 60, Gage Scaled Flows
Hickahala - 12 Lick Branch to Wolf, 52.3, 114.08, 60, Gage Scaled Flows
Hickahala - 12 Lick Branch to Wolf, 103.7, 38.514, 60, Gage Scaled Flows
Hickahala - 12 Lick Branch to Wolf, 205.6, 19.013, 60, Gage Scaled Flows
Hickahala - 12 Lick Branch to Wolf, 407.8, 9.555, 60, Gage Scaled Flows
Hickahala - 12 Lick Branch to Wolf, 808.8, 6.533, 60, Gage Scaled Flows
Hickahala - 12 Lick Branch to Wolf, 1604.1, 6.045, 60, Gage Scaled Flows
Hickahala - 12 Lick Branch to Wolf, 3181.2, 2.925, 60, Gage Scaled Flows
Hickahala - 12 Lick Branch to Wolf, 6309, 1.17, 60, Gage Scaled Flows
Hickahala - 12 Lick Branch to Wolf, 12512.1, 0.175, 60, Gage Scaled Flows
Hickahala - 12 Lick Branch to Wolf, 15799.9, 0.02, 60, Gage Scaled Flows
Hickahala - 13 Wolf to White's, 29.4, 114.08, 60, Gage Scaled Flows
Hickahala - 13 Wolf to White's, 58.3, 38.514, 60, Gage Scaled Flows
Hickahala - 13 Wolf to White's, 115.7, 19.013, 60, Gage Scaled Flows
Hickahala - 13 Wolf to White's, 229.4, 9.555, 60, Gage Scaled Flows
Hickahala - 13 Wolf to White's, 454.9, 6.533, 60, Gage Scaled Flows
Hickahala - 13 Wolf to White's, 902.2, 6.045, 60, Gage Scaled Flows
Hickahala - 13 Wolf to White's, 1789.2, 2.925, 60, Gage Scaled Flows
Hickahala - 13 Wolf to White's, 3548.4, 1.17, 60, Gage Scaled Flows
Hickahala - 13 Wolf to White's, 7037.3, 0.175, 60, Gage Scaled Flows
Hickahala - 13 Wolf to White's, 8886.4, 0.02, 60, Gage Scaled Flows
Hickahala - 14 White's to Beard's, 25.5, 114.08, 60, Gage Scaled Flows
Hickahala - 14 White's to Beard's, 50.7, 38.514, 60, Gage Scaled Flows
Hickahala - 14 White's to Beard's, 100.5, 19.013, 60, Gage Scaled Flows
Hickahala - 14 White's to Beard's, 199.3, 9.555, 60, Gage Scaled Flows
Hickahala - 14 White's to Beard's, 395.2, 6.533, 60, Gage Scaled Flows
Hickahala - 14 White's to Beard's, 783.7, 6.045, 60, Gage Scaled Flows
Hickahala - 14 White's to Beard's, 1554.3, 2.925, 60, Gage Scaled Flows
Hickahala - 14 White's to Beard's, 3082.5, 1.17, 60, Gage Scaled Flows
Hickahala - 14 White's to Beard's, 6113.2, 0.175, 60, Gage Scaled Flows
Hickahala - 14 White's to Beard's, 7719.5, 0.02, 60, Gage Scaled Flows
Hickahala - 15 Beard's to Cathey's, 14.6, 114.08, 60, Gage Scaled Flows
Hickahala - 15 Beard's to Cathey's, 29, 38.514, 60, Gage Scaled Flows
Hickahala - 15 Beard's to Cathey's, 57.5, 19.013, 60, Gage Scaled Flows
Hickahala - 15 Beard's to Cathey's, 114, 9.555, 60, Gage Scaled Flows
Hickahala - 15 Beard's to Cathey's, 226, 6.533, 60, Gage Scaled Flows
Hickahala - 15 Beard's to Cathey's, 448.2, 6.045, 60, Gage Scaled Flows
Hickahala - 15 Beard's to Cathey's, 888.9, 2.925, 60, Gage Scaled Flows
Hickahala - 15 Beard's to Cathey's, 1762.9, 1.17, 60, Gage Scaled Flows
Hickahala - 15 Beard's to Cathey's, 3496.3, 0.175, 60, Gage Scaled Flows
Hickahala - 15 Beard's to Cathey's, 4415, 0.02, 60, Gage Scaled Flows
Hickahala - 16 Cathey's to 109500, 12.1, 114.08, 60, Gage Scaled Flows
Hickahala - 16 Cathey's to 109500, 23.9, 38.514, 60, Gage Scaled Flows
Hickahala - 16 Cathey's to 109500, 47.5, 19.013, 60, Gage Scaled Flows
Hickahala - 16 Cathey's to 109500, 94.2, 9.555, 60, Gage Scaled Flows
Hickahala - 16 Cathey's to 109500, 186.8, 6.533, 60, Gage Scaled Flows
Hickahala - 16 Cathey's to 109500, 370.4, 6.045, 60, Gage Scaled Flows
Hickahala - 16 Cathey's to 109500, 734.5, 2.925, 60, Gage Scaled Flows
Hickahala - 16 Cathey's to 109500, 1456.8, 1.17, 60, Gage Scaled Flows
Hickahala - 16 Cathey's to 109500, 2889.1, 0.175, 60, Gage Scaled Flows
Hickahala - 16 Cathey's to 109500, 3648.2, 0.02, 60, Gage Scaled Flows
Hickahala - 17 109500 to S. Fork, 10.9, 114.08, 60, Gage Scaled Flows
Hickahala - 17 109500 to S. Fork, 21.6, 38.514, 60, Gage Scaled Flows
Hickahala - 17 109500 to S. Fork, 42.8, 19.013, 60, Gage Scaled Flows
Hickahala - 17 109500 to S. Fork, 84.9, 9.555, 60, Gage Scaled Flows
Hickahala - 17 109500 to S. Fork, 168.3, 6.533, 60, Gage Scaled Flows
Hickahala - 17 109500 to S. Fork, 333.8, 6.045, 60, Gage Scaled Flows
Hickahala - 17 109500 to S. Fork, 661.9, 2.925, 60, Gage Scaled Flows

Hickahala - 17 109500 to S. Fork, 1312.8, 1.17, 60, Gage Scaled Flows
Hickahala - 17 109500 to S. Fork, 2603.5, 0.175, 60, Gage Scaled Flows
Hickahala - 17 109500 to S. Fork, 3287.6, 0.02, 60, Gage Scaled Flows
Hickahala - 18 S. Fork to US, 2.8, 114.08, 60, Gage Scaled Flows
Hickahala - 18 S. Fork to US, 5.5, 38.514, 60, Gage Scaled Flows
Hickahala - 18 S. Fork to US, 11, 19.013, 60, Gage Scaled Flows
Hickahala - 18 S. Fork to US, 21.7, 9.555, 60, Gage Scaled Flows
Hickahala - 18 S. Fork to US, 43.1, 6.533, 60, Gage Scaled Flows
Hickahala - 18 S. Fork to US, 85.5, 6.045, 60, Gage Scaled Flows
Hickahala - 18 S. Fork to US, 169.7, 2.925, 60, Gage Scaled Flows
Hickahala - 18 S. Fork to US, 336.5, 1.17, 60, Gage Scaled Flows
Hickahala - 18 S. Fork to US, 667.3, 0.175, 60, Gage Scaled Flows
Hickahala - 18 S. Fork to US, 842.6, 0.02, 60, Gage Scaled Flows
Hickahala - USBC, 1.1, 114.08, 60, Gage Scaled Flows
Hickahala - USBC, 2.3, 38.514, 60, Gage Scaled Flows
Hickahala - USBC, 4.5, 19.013, 60, Gage Scaled Flows
Hickahala - USBC, 8.9, 9.555, 60, Gage Scaled Flows
Hickahala - USBC, 17.7, 6.533, 60, Gage Scaled Flows
Hickahala - USBC, 35.2, 6.045, 60, Gage Scaled Flows
Hickahala - USBC, 69.8, 2.925, 60, Gage Scaled Flows
Hickahala - USBC, 138.4, 1.17, 60, Gage Scaled Flows
Hickahala - USBC, 274.4, 0.175, 60, Gage Scaled Flows
Hickahala - USBC, 346.5, 0.02, 60, Gage Scaled Flows
James Wolf - 01 DS to 1968 Limits, 21.9, 114.08, 60, Gage Scaled Flows
James Wolf - 01 DS to 1968 Limits, 43.4, 38.514, 60, Gage Scaled Flows
James Wolf - 01 DS to 1968 Limits, 86.2, 19.013, 60, Gage Scaled Flows
James Wolf - 01 DS to 1968 Limits, 170.9, 9.555, 60, Gage Scaled Flows
James Wolf - 01 DS to 1968 Limits, 338.9, 6.533, 60, Gage Scaled Flows
James Wolf - 01 DS to 1968 Limits, 672.1, 6.045, 60, Gage Scaled Flows
James Wolf - 01 DS to 1968 Limits, 1332.9, 2.925, 60, Gage Scaled Flows
James Wolf - 01 DS to 1968 Limits, 2643.4, 1.17, 60, Gage Scaled Flows
James Wolf - 01 DS to 1968 Limits, 5242.5, 0.175, 60, Gage Scaled Flows
James Wolf - 01 DS to 1968 Limits, 6620.1, 0.02, 60, Gage Scaled Flows
James Wolf - 02 1968 Limits to M. Dale, 16.9, 114.08, 60, Gage Scaled Flows
James Wolf - 02 1968 Limits to M. Dale, 33.5, 38.514, 60, Gage Scaled Flows
James Wolf - 02 1968 Limits to M. Dale, 66.3, 19.013, 60, Gage Scaled Flows
James Wolf - 02 1968 Limits to M. Dale, 131.6, 9.555, 60, Gage Scaled Flows
James Wolf - 02 1968 Limits to M. Dale, 261, 6.533, 60, Gage Scaled Flows
James Wolf - 02 1968 Limits to M. Dale, 517.5, 6.045, 60, Gage Scaled Flows
James Wolf - 02 1968 Limits to M. Dale, 1026.4, 2.925, 60, Gage Scaled Flows
James Wolf - 02 1968 Limits to M. Dale, 2035.6, 1.17, 60, Gage Scaled Flows
James Wolf - 02 1968 Limits to M. Dale, 4037, 0.175, 60, Gage Scaled Flows
James Wolf - 02 1968 Limits to M. Dale, 5097.7, 0.02, 60, Gage Scaled Flows
James Wolf - 03 M. Dale to 34000, 8.5, 114.08, 60, Gage Scaled Flows
James Wolf - 03 M. Dale to 34000, 16.8, 38.514, 60, Gage Scaled Flows
James Wolf - 03 M. Dale to 34000, 33.3, 19.013, 60, Gage Scaled Flows
James Wolf - 03 M. Dale to 34000, 66.1, 9.555, 60, Gage Scaled Flows
James Wolf - 03 M. Dale to 34000, 131.1, 6.533, 60, Gage Scaled Flows
James Wolf - 03 M. Dale to 34000, 260.1, 6.045, 60, Gage Scaled Flows
James Wolf - 03 M. Dale to 34000, 515.8, 2.925, 60, Gage Scaled Flows
James Wolf - 03 M. Dale to 34000, 1022.9, 1.17, 60, Gage Scaled Flows
James Wolf - 03 M. Dale to 34000, 2028.7, 0.175, 60, Gage Scaled Flows
James Wolf - 03 M. Dale to 34000, 2561.7, 0.02, 60, Gage Scaled Flows
James Wolf - 04 34000 to 45500, 7.5, 114.08, 60, Gage Scaled Flows
James Wolf - 04 34000 to 45500, 14.9, 38.514, 60, Gage Scaled Flows
James Wolf - 04 34000 to 45500, 29.6, 19.013, 60, Gage Scaled Flows
James Wolf - 04 34000 to 45500, 58.8, 9.555, 60, Gage Scaled Flows
James Wolf - 04 34000 to 45500, 116.6, 6.533, 60, Gage Scaled Flows
James Wolf - 04 34000 to 45500, 231.3, 6.045, 60, Gage Scaled Flows
James Wolf - 04 34000 to 45500, 458.6, 2.925, 60, Gage Scaled Flows
James Wolf - 04 34000 to 45500, 909.5, 1.17, 60, Gage Scaled Flows
James Wolf - 04 34000 to 45500, 1803.8, 0.175, 60, Gage Scaled Flows
James Wolf - 04 34000 to 45500, 2277.8, 0.02, 60, Gage Scaled Flows
James Wolf - 05 45500 to US, 6, 114.08, 60, Gage Scaled Flows
James Wolf - 05 45500 to US, 11.9, 38.514, 60, Gage Scaled Flows
James Wolf - 05 45500 to US, 23.6, 19.013, 60, Gage Scaled Flows
James Wolf - 05 45500 to US, 46.9, 9.555, 60, Gage Scaled Flows
James Wolf - 05 45500 to US, 93, 6.533, 60, Gage Scaled Flows
James Wolf - 05 45500 to US, 184.4, 6.045, 60, Gage Scaled Flows
James Wolf - 05 45500 to US, 365.8, 2.925, 60, Gage Scaled Flows

James Wolf - 05 45500 to US, 725.4, 1.17, 60, Gage Scaled Flows
James Wolf - 05 45500 to US, 1438.6, 0.175, 60, Gage Scaled Flows
James Wolf - 05 45500 to US, 1816.6, 0.02, 60, Gage Scaled Flows
James Wolf - USBC, 3.9, 114.08, 60, Gage Scaled Flows
James Wolf - USBC, 7.8, 38.514, 60, Gage Scaled Flows
James Wolf - USBC, 15.4, 19.013, 60, Gage Scaled Flows
James Wolf - USBC, 30.6, 9.555, 60, Gage Scaled Flows
James Wolf - USBC, 60.6, 6.533, 60, Gage Scaled Flows
James Wolf - USBC, 120.3, 6.045, 60, Gage Scaled Flows
James Wolf - USBC, 238.5, 2.925, 60, Gage Scaled Flows
James Wolf - USBC, 473, 1.17, 60, Gage Scaled Flows
James Wolf - USBC, 938.1, 0.175, 60, Gage Scaled Flows
James Wolf - USBC, 1184.6, 0.02, 60, Gage Scaled Flows
Martin Dale - 01 DS to 4500, 5.8, 114.08, 60, Gage Scaled Flows
Martin Dale - 01 DS to 4500, 11.4, 38.514, 60, Gage Scaled Flows
Martin Dale - 01 DS to 4500, 22.7, 19.013, 60, Gage Scaled Flows
Martin Dale - 01 DS to 4500, 45, 9.555, 60, Gage Scaled Flows
Martin Dale - 01 DS to 4500, 89.2, 6.533, 60, Gage Scaled Flows
Martin Dale - 01 DS to 4500, 177, 6.045, 60, Gage Scaled Flows
Martin Dale - 01 DS to 4500, 351, 2.925, 60, Gage Scaled Flows
Martin Dale - 01 DS to 4500, 696.1, 1.17, 60, Gage Scaled Flows
Martin Dale - 01 DS to 4500, 1380.6, 0.175, 60, Gage Scaled Flows
Martin Dale - 01 DS to 4500, 1743.3, 0.02, 60, Gage Scaled Flows
Martin Dale - 02 4500 to US, 2.5, 114.08, 60, Gage Scaled Flows
Martin Dale - 02 4500 to US, 5, 38.514, 60, Gage Scaled Flows
Martin Dale - 02 4500 to US, 10, 19.013, 60, Gage Scaled Flows
Martin Dale - 02 4500 to US, 19.8, 9.555, 60, Gage Scaled Flows
Martin Dale - 02 4500 to US, 39.2, 6.533, 60, Gage Scaled Flows
Martin Dale - 02 4500 to US, 77.8, 6.045, 60, Gage Scaled Flows
Martin Dale - 02 4500 to US, 154.3, 2.925, 60, Gage Scaled Flows
Martin Dale - 02 4500 to US, 305.9, 1.17, 60, Gage Scaled Flows
Martin Dale - 02 4500 to US, 606.7, 0.175, 60, Gage Scaled Flows
Martin Dale - 02 4500 to US, 766.1, 0.02, 60, Gage Scaled Flows
Martin Dale - USBC, 1.7, 114.08, 60, Gage Scaled Flows
Martin Dale - USBC, 3.5, 38.514, 60, Gage Scaled Flows
Martin Dale - USBC, 6.9, 19.013, 60, Gage Scaled Flows
Martin Dale - USBC, 13.6, 9.555, 60, Gage Scaled Flows
Martin Dale - USBC, 27, 6.533, 60, Gage Scaled Flows
Martin Dale - USBC, 53.5, 6.045, 60, Gage Scaled Flows
Martin Dale - USBC, 106.1, 2.925, 60, Gage Scaled Flows
Martin Dale - USBC, 210.5, 1.17, 60, Gage Scaled Flows
Martin Dale - USBC, 417.5, 0.175, 60, Gage Scaled Flows
Martin Dale - USBC, 527.2, 0.02, 60, Gage Scaled Flows
Mattic - 01 DS to Nelson, 15.2, 114.08, 60, Gage Scaled Flows
Mattic - 01 DS to Nelson, 30.2, 38.514, 60, Gage Scaled Flows
Mattic - 01 DS to Nelson, 59.9, 19.013, 60, Gage Scaled Flows
Mattic - 01 DS to Nelson, 118.8, 9.555, 60, Gage Scaled Flows
Mattic - 01 DS to Nelson, 235.5, 6.533, 60, Gage Scaled Flows
Mattic - 01 DS to Nelson, 467.1, 6.045, 60, Gage Scaled Flows
Mattic - 01 DS to Nelson, 926.4, 2.925, 60, Gage Scaled Flows
Mattic - 01 DS to Nelson, 1837.3, 1.17, 60, Gage Scaled Flows
Mattic - 01 DS to Nelson, 3643.7, 0.175, 60, Gage Scaled Flows
Mattic - 01 DS to Nelson, 4601.2, 0.02, 60, Gage Scaled Flows
Mattic - 02 Nelson to 13000, 6.8, 114.08, 60, Gage Scaled Flows
Mattic - 02 Nelson to 13000, 13.6, 38.514, 60, Gage Scaled Flows
Mattic - 02 Nelson to 13000, 26.9, 19.013, 60, Gage Scaled Flows
Mattic - 02 Nelson to 13000, 53.3, 9.555, 60, Gage Scaled Flows
Mattic - 02 Nelson to 13000, 105.7, 6.533, 60, Gage Scaled Flows
Mattic - 02 Nelson to 13000, 209.7, 6.045, 60, Gage Scaled Flows
Mattic - 02 Nelson to 13000, 415.8, 2.925, 60, Gage Scaled Flows
Mattic - 02 Nelson to 13000, 824.7, 1.17, 60, Gage Scaled Flows
Mattic - 02 Nelson to 13000, 1635.6, 0.175, 60, Gage Scaled Flows
Mattic - 02 Nelson to 13000, 2065.3, 0.02, 60, Gage Scaled Flows
Mattic - 03 13000 to US, 5.9, 114.08, 60, Gage Scaled Flows
Mattic - 03 13000 to US, 11.8, 38.514, 60, Gage Scaled Flows
Mattic - 03 13000 to US, 23.3, 19.013, 60, Gage Scaled Flows
Mattic - 03 13000 to US, 46.3, 9.555, 60, Gage Scaled Flows
Mattic - 03 13000 to US, 91.8, 6.533, 60, Gage Scaled Flows
Mattic - 03 13000 to US, 182.1, 6.045, 60, Gage Scaled Flows
Mattic - 03 13000 to US, 361.1, 2.925, 60, Gage Scaled Flows

Mattic - 03 13000 to US, 716.1, 1.17, 60, Gage Scaled Flows
Mattic - 03 13000 to US, 1420.2, 0.175, 60, Gage Scaled Flows
Mattic - 03 13000 to US, 1793.3, 0.02, 60, Gage Scaled Flows
Mattic - USBC, 4, 114.08, 60, Gage Scaled Flows
Mattic - USBC, 7.9, 38.514, 60, Gage Scaled Flows
Mattic - USBC, 15.7, 19.013, 60, Gage Scaled Flows
Mattic - USBC, 31.1, 9.555, 60, Gage Scaled Flows
Mattic - USBC, 61.6, 6.533, 60, Gage Scaled Flows
Mattic - USBC, 122.2, 6.045, 60, Gage Scaled Flows
Mattic - USBC, 242.4, 2.925, 60, Gage Scaled Flows
Mattic - USBC, 480.8, 1.17, 60, Gage Scaled Flows
Mattic - USBC, 953.6, 0.175, 60, Gage Scaled Flows
Mattic - USBC, 1204.1, 0.02, 60, Gage Scaled Flows
Nelson - 01 DS to Wilborn, 7.9, 114.08, 60, Gage Scaled Flows
Nelson - 01 DS to Wilborn, 15.6, 38.514, 60, Gage Scaled Flows
Nelson - 01 DS to Wilborn, 30.9, 19.013, 60, Gage Scaled Flows
Nelson - 01 DS to Wilborn, 61.3, 9.555, 60, Gage Scaled Flows
Nelson - 01 DS to Wilborn, 121.5, 6.533, 60, Gage Scaled Flows
Nelson - 01 DS to Wilborn, 240.9, 6.045, 60, Gage Scaled Flows
Nelson - 01 DS to Wilborn, 477.8, 2.925, 60, Gage Scaled Flows
Nelson - 01 DS to Wilborn, 947.7, 1.17, 60, Gage Scaled Flows
Nelson - 01 DS to Wilborn, 1879.4, 0.175, 60, Gage Scaled Flows
Nelson - 01 DS to Wilborn, 2373.3, 0.02, 60, Gage Scaled Flows
Nelson - 02 Wilborn to US, 4, 114.08, 60, Gage Scaled Flows
Nelson - 02 Wilborn to US, 7.9, 38.514, 60, Gage Scaled Flows
Nelson - 02 Wilborn to US, 15.6, 19.013, 60, Gage Scaled Flows
Nelson - 02 Wilborn to US, 30.9, 9.555, 60, Gage Scaled Flows
Nelson - 02 Wilborn to US, 61.3, 6.533, 60, Gage Scaled Flows
Nelson - 02 Wilborn to US, 121.5, 6.045, 60, Gage Scaled Flows
Nelson - 02 Wilborn to US, 241, 2.925, 60, Gage Scaled Flows
Nelson - 02 Wilborn to US, 478, 1.17, 60, Gage Scaled Flows
Nelson - 02 Wilborn to US, 948.1, 0.175, 60, Gage Scaled Flows
Nelson - 02 Wilborn to US, 1197.2, 0.02, 60, Gage Scaled Flows
Nelson - USBC, 2.8, 114.08, 60, Gage Scaled Flows
Nelson - USBC, 5.5, 38.514, 60, Gage Scaled Flows
Nelson - USBC, 10.9, 19.013, 60, Gage Scaled Flows
Nelson - USBC, 21.7, 9.555, 60, Gage Scaled Flows
Nelson - USBC, 43, 6.533, 60, Gage Scaled Flows
Nelson - USBC, 85.3, 6.045, 60, Gage Scaled Flows
Nelson - USBC, 169.2, 2.925, 60, Gage Scaled Flows
Nelson - USBC, 335.5, 1.17, 60, Gage Scaled Flows
Nelson - USBC, 665.3, 0.175, 60, Gage Scaled Flows
Nelson - USBC, 840.2, 0.02, 60, Gage Scaled Flows
Senatobia - 01 DS to Res. Bound., 36.9, 114.08, 60, Gage Scaled Flows
Senatobia - 01 DS to Res. Bound., 73.2, 38.514, 60, Gage Scaled Flows
Senatobia - 01 DS to Res. Bound., 145.2, 19.013, 60, Gage Scaled Flows
Senatobia - 01 DS to Res. Bound., 287.9, 9.555, 60, Gage Scaled Flows
Senatobia - 01 DS to Res. Bound., 571, 6.533, 60, Gage Scaled Flows
Senatobia - 01 DS to Res. Bound., 1132.5, 6.045, 60, Gage Scaled Flows
Senatobia - 01 DS to Res. Bound., 2245.9, 2.925, 60, Gage Scaled Flows
Senatobia - 01 DS to Res. Bound., 4454.2, 1.17, 60, Gage Scaled Flows
Senatobia - 01 DS to Res. Bound., 8833.6, 0.175, 60, Gage Scaled Flows
Senatobia - 01 DS to Res. Bound., 11154.8, 0.02, 60, Gage Scaled Flows
Senatobia - 02 Res. Bound. to 15000, 35.7, 114.08, 60, Gage Scaled Flows
Senatobia - 02 Res. Bound. to 15000, 70.9, 38.514, 60, Gage Scaled Flows
Senatobia - 02 Res. Bound. to 15000, 140.6, 19.013, 60, Gage Scaled Flows
Senatobia - 02 Res. Bound. to 15000, 278.8, 9.555, 60, Gage Scaled Flows
Senatobia - 02 Res. Bound. to 15000, 553, 6.533, 60, Gage Scaled Flows
Senatobia - 02 Res. Bound. to 15000, 1096.7, 6.045, 60, Gage Scaled Flows
Senatobia - 02 Res. Bound. to 15000, 2175, 2.925, 60, Gage Scaled Flows
Senatobia - 02 Res. Bound. to 15000, 4313.6, 1.17, 60, Gage Scaled Flows
Senatobia - 02 Res. Bound. to 15000, 8554.7, 0.175, 60, Gage Scaled Flows
Senatobia - 02 Res. Bound. to 15000, 10802.6, 0.02, 60, Gage Scaled Flows
Senatobia - 03 15000 to G. Springs, 35.3, 114.08, 60, Gage Scaled Flows
Senatobia - 03 15000 to G. Springs, 70, 38.514, 60, Gage Scaled Flows
Senatobia - 03 15000 to G. Springs, 138.8, 19.013, 60, Gage Scaled Flows
Senatobia - 03 15000 to G. Springs, 275.3, 9.555, 60, Gage Scaled Flows
Senatobia - 03 15000 to G. Springs, 545.9, 6.533, 60, Gage Scaled Flows
Senatobia - 03 15000 to G. Springs, 1082.7, 6.045, 60, Gage Scaled Flows
Senatobia - 03 15000 to G. Springs, 2147.2, 2.925, 60, Gage Scaled Flows

Senatobia - 03 15000 to G. Springs, 4258.4, 1.17, 60, Gage Scaled Flows
Senatobia - 03 15000 to G. Springs, 8445.3, 0.175, 60, Gage Scaled Flows
Senatobia - 03 15000 to G. Springs, 10664.4, 0.02, 60, Gage Scaled Flows
Senatobia - 04 G. Springs to Mattic, 31.7, 114.08, 60, Gage Scaled Flows
Senatobia - 04 G. Springs to Mattic, 62.8, 38.514, 60, Gage Scaled Flows
Senatobia - 04 G. Springs to Mattic, 124.6, 19.013, 60, Gage Scaled Flows
Senatobia - 04 G. Springs to Mattic, 247.1, 9.555, 60, Gage Scaled Flows
Senatobia - 04 G. Springs to Mattic, 490.1, 6.533, 60, Gage Scaled Flows
Senatobia - 04 G. Springs to Mattic, 971.9, 6.045, 60, Gage Scaled Flows
Senatobia - 04 G. Springs to Mattic, 1927.4, 2.925, 60, Gage Scaled Flows
Senatobia - 04 G. Springs to Mattic, 3822.5, 1.17, 60, Gage Scaled Flows
Senatobia - 04 G. Springs to Mattic, 7580.9, 0.175, 60, Gage Scaled Flows
Senatobia - 04 G. Springs to Mattic, 9572.9, 0.02, 60, Gage Scaled Flows
Senatobia - 05 Mattic to T. Jones, 15.3, 114.08, 60, Gage Scaled Flows
Senatobia - 05 Mattic to T. Jones, 30.4, 38.514, 60, Gage Scaled Flows
Senatobia - 05 Mattic to T. Jones, 60.3, 19.013, 60, Gage Scaled Flows
Senatobia - 05 Mattic to T. Jones, 119.7, 9.555, 60, Gage Scaled Flows
Senatobia - 05 Mattic to T. Jones, 237.3, 6.533, 60, Gage Scaled Flows
Senatobia - 05 Mattic to T. Jones, 470.7, 6.045, 60, Gage Scaled Flows
Senatobia - 05 Mattic to T. Jones, 933.5, 2.925, 60, Gage Scaled Flows
Senatobia - 05 Mattic to T. Jones, 1851.4, 1.17, 60, Gage Scaled Flows
Senatobia - 05 Mattic to T. Jones, 3671.7, 0.175, 60, Gage Scaled Flows
Senatobia - 05 Mattic to T. Jones, 4636.5, 0.02, 60, Gage Scaled Flows
Senatobia - 06 T. Jones to 46000, 12.1, 114.08, 60, Gage Scaled Flows
Senatobia - 06 T. Jones to 46000, 24, 38.514, 60, Gage Scaled Flows
Senatobia - 06 T. Jones to 46000, 47.5, 19.013, 60, Gage Scaled Flows
Senatobia - 06 T. Jones to 46000, 94.2, 9.555, 60, Gage Scaled Flows
Senatobia - 06 T. Jones to 46000, 186.9, 6.533, 60, Gage Scaled Flows
Senatobia - 06 T. Jones to 46000, 370.7, 6.045, 60, Gage Scaled Flows
Senatobia - 06 T. Jones to 46000, 735.2, 2.925, 60, Gage Scaled Flows
Senatobia - 06 T. Jones to 46000, 1458, 1.17, 60, Gage Scaled Flows
Senatobia - 06 T. Jones to 46000, 2891.5, 0.175, 60, Gage Scaled Flows
Senatobia - 06 T. Jones to 46000, 3651.3, 0.02, 60, Gage Scaled Flows
Senatobia - 07 46000 to 62000, 9.4, 114.08, 60, Gage Scaled Flows
Senatobia - 07 46000 to 62000, 18.7, 38.514, 60, Gage Scaled Flows
Senatobia - 07 46000 to 62000, 37, 19.013, 60, Gage Scaled Flows
Senatobia - 07 46000 to 62000, 73.4, 9.555, 60, Gage Scaled Flows
Senatobia - 07 46000 to 62000, 145.6, 6.533, 60, Gage Scaled Flows
Senatobia - 07 46000 to 62000, 288.7, 6.045, 60, Gage Scaled Flows
Senatobia - 07 46000 to 62000, 572.7, 2.925, 60, Gage Scaled Flows
Senatobia - 07 46000 to 62000, 1135.7, 1.17, 60, Gage Scaled Flows
Senatobia - 07 46000 to 62000, 2252.3, 0.175, 60, Gage Scaled Flows
Senatobia - 07 46000 to 62000, 2844.2, 0.02, 60, Gage Scaled Flows
Senatobia - 08 62000 to US, 5.7, 114.08, 60, Gage Scaled Flows
Senatobia - 08 62000 to US, 11.3, 38.514, 60, Gage Scaled Flows
Senatobia - 08 62000 to US, 22.5, 19.013, 60, Gage Scaled Flows
Senatobia - 08 62000 to US, 44.6, 9.555, 60, Gage Scaled Flows
Senatobia - 08 62000 to US, 88.5, 6.533, 60, Gage Scaled Flows
Senatobia - 08 62000 to US, 175.5, 6.045, 60, Gage Scaled Flows
Senatobia - 08 62000 to US, 348.1, 2.925, 60, Gage Scaled Flows
Senatobia - 08 62000 to US, 690.4, 1.17, 60, Gage Scaled Flows
Senatobia - 08 62000 to US, 1369.2, 0.175, 60, Gage Scaled Flows
Senatobia - 08 62000 to US, 1729, 0.02, 60, Gage Scaled Flows
Senatobia - USBC, 3, 114.08, 60, Gage Scaled Flows
Senatobia - USBC, 5.9, 38.514, 60, Gage Scaled Flows
Senatobia - USBC, 11.7, 19.013, 60, Gage Scaled Flows
Senatobia - USBC, 23.3, 9.555, 60, Gage Scaled Flows
Senatobia - USBC, 46.1, 6.533, 60, Gage Scaled Flows
Senatobia - USBC, 91.5, 6.045, 60, Gage Scaled Flows
Senatobia - USBC, 181.5, 2.925, 60, Gage Scaled Flows
Senatobia - USBC, 360, 1.17, 60, Gage Scaled Flows
Senatobia - USBC, 713.9, 0.175, 60, Gage Scaled Flows
Senatobia - USBC, 901.5, 0.02, 60, Gage Scaled Flows
South Fork - 01 DS to 4600, 2.8, 114.08, 60, Gage Scaled Flows
South Fork - 01 DS to 4600, 5.5, 38.514, 60, Gage Scaled Flows
South Fork - 01 DS to 4600, 11, 19.013, 60, Gage Scaled Flows
South Fork - 01 DS to 4600, 21.8, 9.555, 60, Gage Scaled Flows
South Fork - 01 DS to 4600, 43.2, 6.533, 60, Gage Scaled Flows
South Fork - 01 DS to 4600, 85.6, 6.045, 60, Gage Scaled Flows
South Fork - 01 DS to 4600, 169.9, 2.925, 60, Gage Scaled Flows

South Fork - 01 DS to 4600, 336.9, 1.17, 60, Gage Scaled Flows
South Fork - 01 DS to 4600, 668.1, 0.175, 60, Gage Scaled Flows
South Fork - 01 DS to 4600, 843.6, 0.02, 60, Gage Scaled Flows
South Fork - 02 4600 to 10000, 2.5, 114.08, 60, Gage Scaled Flows
South Fork - 02 4600 to 10000, 4.9, 38.514, 60, Gage Scaled Flows
South Fork - 02 4600 to 10000, 9.7, 19.013, 60, Gage Scaled Flows
South Fork - 02 4600 to 10000, 19.2, 9.555, 60, Gage Scaled Flows
South Fork - 02 4600 to 10000, 38, 6.533, 60, Gage Scaled Flows
South Fork - 02 4600 to 10000, 75.4, 6.045, 60, Gage Scaled Flows
South Fork - 02 4600 to 10000, 149.6, 2.925, 60, Gage Scaled Flows
South Fork - 02 4600 to 10000, 296.7, 1.17, 60, Gage Scaled Flows
South Fork - 02 4600 to 10000, 588.5, 0.175, 60, Gage Scaled Flows
South Fork - 02 4600 to 10000, 743.1, 0.02, 60, Gage Scaled Flows
South Fork - 03 10000 to US, 1.6, 114.08, 60, Gage Scaled Flows
South Fork - 03 10000 to US, 3.1, 38.514, 60, Gage Scaled Flows
South Fork - 03 10000 to US, 6.2, 19.013, 60, Gage Scaled Flows
South Fork - 03 10000 to US, 12.2, 9.555, 60, Gage Scaled Flows
South Fork - 03 10000 to US, 24.2, 6.533, 60, Gage Scaled Flows
South Fork - 03 10000 to US, 48, 6.045, 60, Gage Scaled Flows
South Fork - 03 10000 to US, 95.2, 2.925, 60, Gage Scaled Flows
South Fork - 03 10000 to US, 188.8, 1.17, 60, Gage Scaled Flows
South Fork - 03 10000 to US, 374.4, 0.175, 60, Gage Scaled Flows
South Fork - 03 10000 to US, 472.8, 0.02, 60, Gage Scaled Flows
South Fork - USBC, 1.1, 114.08, 60, Gage Scaled Flows
South Fork - USBC, 2.2, 38.514, 60, Gage Scaled Flows
South Fork - USBC, 4.4, 19.013, 60, Gage Scaled Flows
South Fork - USBC, 8.7, 9.555, 60, Gage Scaled Flows
South Fork - USBC, 17.3, 6.533, 60, Gage Scaled Flows
South Fork - USBC, 34.3, 6.045, 60, Gage Scaled Flows
South Fork - USBC, 68, 2.925, 60, Gage Scaled Flows
South Fork - USBC, 134.9, 1.17, 60, Gage Scaled Flows
South Fork - USBC, 267.5, 0.175, 60, Gage Scaled Flows
South Fork - USBC, 337.8, 0.02, 60, Gage Scaled Flows
Steammill - 01 DS to 5200, 1.3, 114.08, 60, Gage Scaled Flows
Steammill - 01 DS to 5200, 2.5, 38.514, 60, Gage Scaled Flows
Steammill - 01 DS to 5200, 5, 19.013, 60, Gage Scaled Flows
Steammill - 01 DS to 5200, 9.9, 9.555, 60, Gage Scaled Flows
Steammill - 01 DS to 5200, 19.6, 6.533, 60, Gage Scaled Flows
Steammill - 01 DS to 5200, 39, 6.045, 60, Gage Scaled Flows
Steammill - 01 DS to 5200, 77.3, 2.925, 60, Gage Scaled Flows
Steammill - 01 DS to 5200, 153.2, 1.17, 60, Gage Scaled Flows
Steammill - 01 DS to 5200, 303.9, 0.175, 60, Gage Scaled Flows
Steammill - 01 DS to 5200, 383.8, 0.02, 60, Gage Scaled Flows
Steammill - 02 5200 to US, 0.9, 114.08, 60, Gage Scaled Flows
Steammill - 02 5200 to US, 1.8, 38.514, 60, Gage Scaled Flows
Steammill - 02 5200 to US, 3.6, 19.013, 60, Gage Scaled Flows
Steammill - 02 5200 to US, 7.1, 9.555, 60, Gage Scaled Flows
Steammill - 02 5200 to US, 14.1, 6.533, 60, Gage Scaled Flows
Steammill - 02 5200 to US, 28, 6.045, 60, Gage Scaled Flows
Steammill - 02 5200 to US, 55.5, 2.925, 60, Gage Scaled Flows
Steammill - 02 5200 to US, 110.1, 1.17, 60, Gage Scaled Flows
Steammill - 02 5200 to US, 218.3, 0.175, 60, Gage Scaled Flows
Steammill - 02 5200 to US, 275.6, 0.02, 60, Gage Scaled Flows
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Thornton - 02 1968 Limits to Steammill, 4.5, 38.514, 60, Gage Scaled Flows
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Thornton - 03 Steammill to US, 257.3, 0.02, 60, Gage Scaled Flows
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Beard's - 01 DS to 1968 Limits, PF 08, 687.9, 7.13, 240.8, 3.05, 4.77, 45.3, 49.6, 0.00087, 0.00161, 0.04, 878.3,

Beard's - 01 DS to 1968 Limits, PF 09, 1364.4, 10.56, 412.8, 3.49, 6.69, 54, 60.9, 0.00073, 0.00161, 0.04, 878.3,
Beard's - 01 DS to 1968 Limits, PF 10, 1722.9, 12.09, 499.2, 3.62, 7.47, 58, 66.1, 0.00067, 0.00161, 0.04, 878.3,
Beard's - 02 DS to 10800 Bridge, PF 01, 4.8, 0.48, 5.7, 0.95, 0.34, 16.2, 16.4, 0.00173, 0.00188, 0.04, 930.5,
Beard's - 02 DS to 10800 Bridge, PF 02, 9.5, 0.67, 8.8, 1.2, 0.51, 16.6, 17, 0.0017, 0.00188, 0.04, 930.5,
Beard's - 02 DS to 10800 Bridge, PF 03, 18.8, 0.95, 13.7, 1.47, 0.75, 17.2, 17.9, 0.00165, 0.00188, 0.04, 930.5,
Beard's - 02 DS to 10800 Bridge, PF 04, 37.3, 1.4, 21.7, 1.78, 1.11, 18.3, 19.2, 0.0016, 0.00188, 0.04, 930.5,
Beard's - 02 DS to 10800 Bridge, PF 05, 74, 2.07, 34.8, 2.14, 1.61, 19.9, 21.3, 0.00157, 0.00188, 0.04, 930.5,
Beard's - 02 DS to 10800 Bridge, PF 06, 146.7, 3.09, 56.3, 2.58, 2.27, 22.3, 24.5, 0.00157, 0.00188, 0.04, 930.5,
Beard's - 02 DS to 10800 Bridge, PF 07, 291, 4.57, 92.2, 3.11, 3.09, 26.5, 29.6, 0.00164, 0.00188, 0.04, 930.5,
Beard's - 02 DS to 10800 Bridge, PF 08, 577.1, 6.56, 150.8, 3.76, 4, 33.2, 37.6, 0.00176, 0.00188, 0.04, 930.5,
Beard's - 02 DS to 10800 Bridge, PF 09, 1144.5, 9.33, 266.1, 4.25, 4.66, 51.7, 57.1, 0.00182, 0.00188, 0.04, 930.5,
Beard's - 02 DS to 10800 Bridge, PF 10, 1445.2, 10.37, 322.7, 4.42, 5.19, 56, 62.1, 0.00171, 0.00188, 0.04, 930.5,
Beard's - 03 10800 Bridge to US, PF 01, 3.1, 0.61, 3.4, 0.98, 0.32, 10.5, 10.7, 0.00289, 0.00285, 0.04, 821.6,
Beard's - 03 10800 Bridge to US, PF 02, 6.1, 0.79, 5.3, 1.21, 0.46, 11.3, 11.6, 0.0029, 0.00285, 0.04, 821.6,
Beard's - 03 10800 Bridge to US, PF 03, 12, 1.05, 8.2, 1.5, 0.66, 12.1, 12.6, 0.00291, 0.00285, 0.04, 821.6,
Beard's - 03 10800 Bridge to US, PF 04, 23.9, 1.42, 13, 1.87, 0.93, 13.3, 14.1, 0.00292, 0.00285, 0.04, 821.6,
Beard's - 03 10800 Bridge to US, PF 05, 47.4, 1.96, 20.4, 2.34, 1.29, 14.8, 16, 0.00292, 0.00285, 0.04, 821.6,
Beard's - 03 10800 Bridge to US, PF 06, 93.9, 2.73, 32.5, 2.91, 1.76, 16.7, 18.5, 0.00292, 0.00285, 0.04, 821.6,
Beard's - 03 10800 Bridge to US, PF 07, 186.3, 3.85, 52.3, 3.59, 2.4, 19.2, 21.9, 0.0029, 0.00285, 0.04, 821.6,
Beard's - 03 10800 Bridge to US, PF 08, 369.5, 5.46, 85.9, 4.34, 3.2, 23, 26.9, 0.00288, 0.00285, 0.04, 821.6,
Beard's - 03 10800 Bridge to US, PF 09, 732.2, 7.75, 146.8, 5.07, 4.09, 30.4, 35.8, 0.00285, 0.00285, 0.04, 821.6,
Beard's - 03 10800 Bridge to US, PF 10, 898.6, 8.51, 171.1, 5.33, 4.4, 33, 38.8, 0.00283, 0.00285, 0.04, 821.6,
Beard's - 04 USBC, PF 01, 3.1, 0.75, 3.8, 0.82, 0.32, 11.5, 12, 0.00213, 0.0022, 0.04, 826,
Beard's - 04 USBC, PF 02, 6.1, 0.93, 5.8, 1.04, 0.47, 11.8, 12.5, 0.00213, 0.0022, 0.04, 826,
Beard's - 04 USBC, PF 03, 12, 1.19, 9, 1.33, 0.69, 12.3, 13.2, 0.00212, 0.0022, 0.04, 826,
Beard's - 04 USBC, PF 04, 23.9, 1.59, 14.1, 1.69, 0.99, 13, 14.2, 0.00211, 0.0022, 0.04, 826,
Beard's - 04 USBC, PF 05, 47.4, 2.2, 22.3, 2.13, 1.41, 14, 15.9, 0.00209, 0.0022, 0.04, 826,
Beard's - 04 USBC, PF 06, 93.9, 3.1, 35.7, 2.63, 1.95, 15.6, 18.3, 0.00207, 0.0022, 0.04, 826,
Beard's - 04 USBC, PF 07, 186.3, 4.42, 57.8, 3.23, 2.65, 17.9, 21.8, 0.00208, 0.0022, 0.04, 826,
Beard's - 04 USBC, PF 08, 369.5, 6.28, 94.3, 3.92, 3.52, 21.2, 26.7, 0.0021, 0.0022, 0.04, 826,
Beard's - 04 USBC, PF 09, 732.8, 8.9, 161.8, 4.53, 4.29, 30.6, 37.7, 0.00212, 0.0022, 0.04, 826,
Beard's - 04 USBC, PF 10, 923.5, 9.79, 190, 4.86, 4.64, 33.2, 40.9, 0.00223, 0.0022, 0.04, 826,
Billy's - 01 DS to Res. Bound., PF 01, 1.6, 0.35, 3.4, 0.86, 0.2, 15.4, 15.4, 0.0016, 0.00345, 0.045, 779.1,
Billy's - 01 DS to Res. Bound., PF 02, 3.2, 0.45, 5.3, 0.99, 0.27, 17.6, 17.7, 0.00166, 0.00345, 0.045, 779.1,
Billy's - 01 DS to Res. Bound., PF 03, 6.3, 0.61, 8.3, 1.01, 0.4, 19.5, 19.7, 0.00171, 0.00345, 0.045, 779.1,
Billy's - 01 DS to Res. Bound., PF 04, 12.5, 0.89, 14.1, 0.99, 0.61, 22.2, 22.4, 0.00139, 0.00345, 0.045, 779.1,
Billy's - 01 DS to Res. Bound., PF 05, 24.7, 1.46, 28.7, 1.26, 1.06, 24.9, 25.4, 0.00096, 0.00345, 0.045, 779.1,
Billy's - 01 DS to Res. Bound., PF 06, 45.1, 2.75, 66.5, 0.99, 1.93, 31.6, 32.7, 0.00027, 0.00345, 0.045, 779.1,
Billy's - 01 DS to Res. Bound., PF 07, 62.8, 5.31, 159.6, 0.5, 3.79, 40.2, 42.1, 0.00004, 0.00345, 0.045, 779.1,
Billy's - 01 DS to Res. Bound., PF 08, 66.4, 7.78, 263.9, 0.28, 5.92, 43.4, 45.5, 0.00002, 0.00345, 0.045, 779.1,
Billy's - 01 DS to Res. Bound., PF 09, 81.7, 9.7, 347.1, 0.25, 7.75, 43.4, 45.5, 0.00002, 0.00345, 0.045, 779.1,
Billy's - 01 DS to Res. Bound., PF 10, 88.2, 10.49, 381.5, 0.24, 8.5, 43.4, 45.5, 0.00002, 0.00345, 0.045, 779.1,
Billy's - 02 Res. Bound to 1968 Limits, PF 01, 1.6, 0.28, 3.3, 0.5, 0.14, 22.9, 23.1, 0.00228, 0.00218, 0.045, 778.1,
Billy's - 02 Res. Bound to 1968 Limits, PF 02, 3.1, 0.35, 5, 0.62, 0.21, 23.7, 23.9, 0.00226, 0.00218, 0.045, 778.1,
Billy's - 02 Res. Bound to 1968 Limits, PF 03, 6.2, 0.47, 7.9, 0.79, 0.32, 24.1, 24.3, 0.00227, 0.00218, 0.045, 778.1,
Billy's - 02 Res. Bound to 1968 Limits, PF 04, 12.3, 0.65, 12.3, 1, 0.49, 24.6, 25, 0.00223, 0.00218, 0.045, 778.1,
Billy's - 02 Res. Bound to 1968 Limits, PF 05, 24.4, 0.92, 18.9, 1.3, 0.73, 25.5, 26.1, 0.00218, 0.00218, 0.045, 778.1,
Billy's - 02 Res. Bound to 1968 Limits, PF 06, 48.3, 1.35, 30.3, 1.61, 1.09, 26.9, 27.7, 0.00214, 0.00218, 0.045, 778.1,
Billy's - 02 Res. Bound to 1968 Limits, PF 07, 95.9, 1.99, 48.4, 2.02, 1.6, 28.9, 30.3, 0.00177, 0.00218, 0.045, 778.1,
Billy's - 02 Res. Bound to 1968 Limits, PF 08, 187.9, 3.31, 93.7, 2.27, 2.45, 35.2, 37.3, 0.00112, 0.00218, 0.045, 778.1,
Billy's - 02 Res. Bound to 1968 Limits, PF 09, 328.1, 4.83, 155.1, 2.59, 3.4, 41.4, 44.3, 0.00085, 0.00218, 0.045, 778.1,
Billy's - 02 Res. Bound to 1968 Limits, PF 10, 379.9, 5.41, 182.1, 2.71, 3.83, 42.8, 45.9, 0.0007, 0.00218, 0.045, 778.1,
Billy's - 03 1968 Limits to 12000, PF 01, 1, 0.24, 2, 0.53, 0.13, 14.9, 15, 0.00386, 0.00389, 0.045, 971.1,
Billy's - 03 1968 Limits to 12000, PF 02, 2, 0.3, 3, 0.69, 0.18, 15.4, 15.6, 0.00386, 0.00389, 0.045, 971.1,
Billy's - 03 1968 Limits to 12000, PF 03, 4.1, 0.4, 4.7, 0.91, 0.27, 16.2, 16.4, 0.00385, 0.00389, 0.045, 971.1,
Billy's - 03 1968 Limits to 12000, PF 04, 8, 0.54, 7.2, 1.14, 0.39, 17, 17.3, 0.00384, 0.00389, 0.045, 971.1,
Billy's - 03 1968 Limits to 12000, PF 05, 15.9, 0.76, 11.1, 1.41, 0.57, 18.1, 18.7, 0.00382, 0.00389, 0.045, 971.1,
Billy's - 03 1968 Limits to 12000, PF 06, 31.7, 1.07, 17.1, 1.77, 0.83, 19.2, 19.9, 0.00378, 0.00389, 0.045, 971.1,
Billy's - 03 1968 Limits to 12000, PF 07, 62.8, 1.54, 26.7, 2.25, 1.2, 20.2, 21.3, 0.00373, 0.00389, 0.045, 971.1,
Billy's - 03 1968 Limits to 12000, PF 08, 124.5, 2.25, 42.2, 2.84, 1.73, 21.6, 23.4, 0.00367, 0.00389, 0.045, 971.1,
Billy's - 03 1968 Limits to 12000, PF 09, 247, 3.34, 67.4, 3.6, 2.45, 23.5, 26.3, 0.00359, 0.00389, 0.045, 971.1,
Billy's - 03 1968 Limits to 12000, PF 10, 311.9, 3.82, 79.6, 3.89, 2.74, 24.5, 27.7, 0.00357, 0.00389, 0.045, 971.1,
Billy's - 04 USBC, PF 01, 0.4, 0.13, 0.6, 0.67, 0.07, 9.1, 9.1, 0.00475, 0.0048, 0.045, 930,
Billy's - 04 USBC, PF 02, 0.8, 0.16, 0.9, 0.94, 0.09, 9.4, 9.5, 0.00471, 0.0048, 0.045, 930,
Billy's - 04 USBC, PF 03, 1.6, 0.2, 1.3, 1.27, 0.13, 10, 10, 0.00467, 0.0048, 0.045, 930,
Billy's - 04 USBC, PF 04, 3.1, 0.29, 2.2, 1.4, 0.2, 11.1, 11.2, 0.00464, 0.0048, 0.045, 930,
Billy's - 04 USBC, PF 05, 6.2, 0.45, 4.1, 1.5, 0.31, 13, 13.2, 0.00465, 0.0048, 0.045, 930,
Billy's - 04 USBC, PF 06, 12.3, 0.68, 7.5, 1.64, 0.46, 15.9, 16.2, 0.00471, 0.0048, 0.045, 930,
Billy's - 04 USBC, PF 07, 24.3, 0.95, 12, 2.02, 0.65, 18.1, 18.5, 0.00468, 0.0048, 0.045, 930,
Billy's - 04 USBC, PF 08, 48.3, 1.26, 17.8, 2.71, 0.91, 18.9, 19.6, 0.0045, 0.0048, 0.045, 930,

Billy's - 04 USBC, PF 09, 95.7, 1.73, 27, 3.55, 1.27, 20.2, 21.1, 0.00422, 0.0048, 0.045, 930,
Billy's - 04 USBC, PF 10, 120.8, 1.96, 31.7, 3.82, 1.44, 20.8, 21.9, 0.00414, 0.0048, 0.045, 930,
Cathey's - 01 DS to 3500, PF 01, 2.2, 0.4, 2.6, 1.23, 0.25, 9.8, 9.8, 0.00308, 0.00356, 0.045, 728.4,
Cathey's - 01 DS to 3500, PF 02, 4.4, 0.56, 4.3, 1.46, 0.36, 11.1, 11.2, 0.00289, 0.00356, 0.045, 728.4,
Cathey's - 01 DS to 3500, PF 03, 8.7, 0.77, 7.2, 1.72, 0.51, 12.9, 13.1, 0.00276, 0.00356, 0.045, 728.4,
Cathey's - 01 DS to 3500, PF 04, 17.2, 1.09, 11.9, 2.02, 0.7, 15.5, 15.8, 0.00269, 0.00356, 0.045, 728.4,
Cathey's - 01 DS to 3500, PF 05, 34.1, 1.51, 19.5, 2.35, 0.95, 18.9, 19.3, 0.00274, 0.00356, 0.045, 728.4,
Cathey's - 01 DS to 3500, PF 06, 67.7, 2.05, 31.6, 2.81, 1.3, 22.5, 23.1, 0.00282, 0.00356, 0.045, 728.4,
Cathey's - 01 DS to 3500, PF 07, 134.3, 2.83, 50.9, 3.19, 1.81, 26, 27, 0.00284, 0.00356, 0.045, 728.4,
Cathey's - 01 DS to 3500, PF 08, 266.4, 4.11, 87.9, 3.35, 2.61, 31.2, 32.8, 0.00256, 0.00356, 0.045, 728.4,
Cathey's - 01 DS to 3500, PF 09, 528.3, 6.13, 161.5, 3.69, 3.79, 38.3, 41.2, 0.00205, 0.00356, 0.045, 728.4,
Cathey's - 01 DS to 3500, PF 10, 667.1, 7.11, 202.9, 3.75, 4.28, 42.2, 45.7, 0.0018, 0.00356, 0.045, 728.4,
Cathey's - 02 3500 to 7500, PF 01, 2.1, 0.42, 3.4, 0.66, 0.22, 15.1, 15.2, 0.00287, 0.00281, 0.045, 955.5,
Cathey's - 02 3500 to 7500, PF 02, 4.2, 0.55, 5.4, 0.81, 0.32, 16.6, 16.7, 0.00287, 0.00281, 0.045, 955.5,
Cathey's - 02 3500 to 7500, PF 03, 8.4, 0.72, 8.4, 1.01, 0.46, 18, 18.2, 0.00287, 0.00281, 0.045, 955.5,
Cathey's - 02 3500 to 7500, PF 04, 16.7, 0.97, 13.1, 1.28, 0.67, 19.2, 19.6, 0.00287, 0.00281, 0.045, 955.5,
Cathey's - 02 3500 to 7500, PF 05, 33.1, 1.34, 20.4, 1.63, 0.96, 20.6, 21.2, 0.00286, 0.00281, 0.045, 955.5,
Cathey's - 02 3500 to 7500, PF 06, 65.6, 1.86, 31.7, 2.07, 1.36, 22.4, 23.2, 0.00287, 0.00281, 0.045, 955.5,
Cathey's - 02 3500 to 7500, PF 07, 130.3, 2.63, 49.7, 2.62, 1.91, 24.8, 26.1, 0.00288, 0.00281, 0.045, 955.5,
Cathey's - 02 3500 to 7500, PF 08, 258.3, 3.74, 79.4, 3.26, 2.6, 28.7, 30.6, 0.00288, 0.00281, 0.045, 955.5,
Cathey's - 02 3500 to 7500, PF 09, 512.4, 5.37, 132.1, 3.89, 3.37, 36.5, 39.2, 0.00289, 0.00281, 0.045, 955.5,
Cathey's - 02 3500 to 7500, PF 10, 647, 6.06, 158.5, 4.1, 3.66, 40.3, 43.3, 0.0029, 0.00281, 0.045, 955.5,
Cathey's - 03 7500 to 12100, PF 01, 1.8, 0.42, 2.9, 0.64, 0.23, 12.8, 12.9, 0.00242, 0.00246, 0.045, 893.5,
Cathey's - 03 7500 to 12100, PF 02, 3.5, 0.54, 4.6, 0.78, 0.31, 14.5, 14.6, 0.0024, 0.00246, 0.045, 893.5,
Cathey's - 03 7500 to 12100, PF 03, 7, 0.72, 7.3, 0.97, 0.44, 16.2, 16.4, 0.00239, 0.00246, 0.045, 893.5,
Cathey's - 03 7500 to 12100, PF 04, 13.9, 0.96, 11.5, 1.22, 0.63, 17.7, 18, 0.00238, 0.00246, 0.045, 893.5,
Cathey's - 03 7500 to 12100, PF 05, 27.5, 1.31, 17.8, 1.56, 0.92, 18.8, 19.3, 0.00237, 0.00246, 0.045, 893.5,
Cathey's - 03 7500 to 12100, PF 06, 54.4, 1.83, 28, 1.96, 1.31, 20.5, 21.3, 0.00234, 0.00246, 0.045, 893.5,
Cathey's - 03 7500 to 12100, PF 07, 108, 2.59, 44.6, 2.44, 1.84, 22.8, 24.1, 0.00232, 0.00246, 0.045, 893.5,
Cathey's - 03 7500 to 12100, PF 08, 214.1, 3.71, 72.3, 2.97, 2.52, 26.6, 28.6, 0.00229, 0.00246, 0.045, 893.5,
Cathey's - 03 7500 to 12100, PF 09, 424.5, 5.33, 120, 3.54, 3.3, 33.3, 36.3, 0.00231, 0.00246, 0.045, 893.5,
Cathey's - 03 7500 to 12100, PF 10, 536.1, 6.02, 144, 3.72, 3.55, 37.2, 40.6, 0.00233, 0.00246, 0.045, 893.5,
Cathey's - 04 12100 to USBC, PF 01, 1.4, 0.46, 2, 0.73, 0.26, 7.6, 7.7, 0.00318, 0.0031, 0.045, 950,
Cathey's - 04 12100 to USBC, PF 02, 2.8, 0.61, 3.2, 0.9, 0.36, 8.9, 9, 0.00321, 0.0031, 0.045, 950,
Cathey's - 04 12100 to USBC, PF 03, 5.6, 0.81, 5.2, 1.1, 0.48, 10.6, 10.8, 0.00324, 0.0031, 0.045, 950,
Cathey's - 04 12100 to USBC, PF 04, 11.2, 1.09, 8.4, 1.35, 0.64, 12.8, 13.1, 0.00327, 0.0031, 0.045, 950,
Cathey's - 04 12100 to USBC, PF 05, 22.2, 1.45, 13.4, 1.66, 0.86, 15.1, 15.6, 0.00332, 0.0031, 0.045, 950,
Cathey's - 04 12100 to USBC, PF 06, 43.9, 1.93, 21.5, 2.05, 1.15, 18, 18.6, 0.00335, 0.0031, 0.045, 950,
Cathey's - 04 12100 to USBC, PF 07, 87.1, 2.6, 34.2, 2.55, 1.59, 20.4, 21.5, 0.00334, 0.0031, 0.045, 950,
Cathey's - 04 12100 to USBC, PF 08, 172.8, 3.55, 55.8, 3.1, 2.13, 24.7, 26.3, 0.00329, 0.0031, 0.045, 950,
Cathey's - 04 12100 to USBC, PF 09, 342.7, 4.88, 92.9, 3.69, 2.78, 31.1, 33.4, 0.00314, 0.0031, 0.045, 950,
Cathey's - 04 12100 to USBC, PF 10, 432.7, 5.42, 110.2, 3.93, 3.09, 33.1, 35.7, 0.00306, 0.0031, 0.045, 950,
Cathey's - 05 USBC, PF 01, 1.4, 0.49, 1.5, 0.93, 0.24, 6.2, 6.3, 0.00307, 0.0031, 0.045, 950,
Cathey's - 05 USBC, PF 02, 2.8, 0.65, 2.7, 1.04, 0.32, 8.3, 8.4, 0.00306, 0.0031, 0.045, 950,
Cathey's - 05 USBC, PF 03, 5.6, 0.87, 4.8, 1.17, 0.43, 11, 11.2, 0.00306, 0.0031, 0.045, 950,
Cathey's - 05 USBC, PF 04, 11.2, 1.14, 8.3, 1.36, 0.59, 13.8, 14.1, 0.00302, 0.0031, 0.045, 950,
Cathey's - 05 USBC, PF 05, 22.2, 1.5, 13.6, 1.64, 0.85, 15.6, 16, 0.00297, 0.0031, 0.045, 950,
Cathey's - 05 USBC, PF 06, 43.9, 2.01, 22.1, 1.99, 1.2, 17.8, 18.4, 0.00297, 0.0031, 0.045, 950,
Cathey's - 05 USBC, PF 07, 87.1, 2.67, 34.6, 2.52, 1.63, 20.3, 21.3, 0.00302, 0.0031, 0.045, 950,
Cathey's - 05 USBC, PF 08, 172.8, 3.61, 55.2, 3.13, 2.18, 23.8, 25.3, 0.00306, 0.0031, 0.045, 950,
Cathey's - 05 USBC, PF 09, 342.7, 4.94, 90.3, 3.79, 2.91, 28.9, 31.1, 0.00317, 0.0031, 0.045, 950,
Cathey's - 05 USBC, PF 10, 432.7, 5.48, 106.8, 4.05, 3.19, 31, 33.4, 0.00317, 0.0031, 0.045, 950,
Hickahala - 01 DS to 12500, PF 01, 120.2, 5.32, 165.5, 1.38, 3.56, 37.9, 41.2, 0.00155, 0.00114, 0.055, 864.3,
Hickahala - 01 DS to 12500, PF 02, 231.8, 6.5, 212.4, 1.74, 4.42, 40.6, 44.2, 0.00154, 0.00114, 0.055, 864.3,
Hickahala - 01 DS to 12500, PF 03, 366.8, 7.78, 264.6, 2, 5.35, 43.4, 47.3, 0.00145, 0.00114, 0.055, 864.3,
Hickahala - 01 DS to 12500, PF 04, 558.2, 8.93, 314.1, 2.18, 6.1, 46.5, 50.8, 0.00123, 0.00114, 0.055, 864.3,
Hickahala - 01 DS to 12500, PF 05, 821.3, 10.17, 376.5, 2.27, 6.89, 49.8, 54.5, 0.0009, 0.00114, 0.055, 864.3,
Hickahala - 01 DS to 12500, PF 06, 1007, 11.27, 438.2, 2.23, 7.71, 51.5, 56.4, 0.00062, 0.00114, 0.055, 864.3,
Hickahala - 01 DS to 12500, PF 07, 1230.9, 12.17, 484.8, 2.45, 8.53, 51.5, 56.4, 0.00061, 0.00114, 0.055, 864.3,
Hickahala - 01 DS to 12500, PF 08, 1621.9, 13.33, 544.2, 2.84, 9.59, 51.5, 56.4, 0.00066, 0.00114, 0.055, 864.3,
Hickahala - 01 DS to 12500, PF 09, 2247.7, 14.98, 626.5, 3.35, 11.08, 51.5, 56.4, 0.00072, 0.00114, 0.055, 864.3,
Hickahala - 01 DS to 12500, PF 10, 2564.8, 15.66, 660, 3.6, 11.7, 51.5, 56.4, 0.00076, 0.00114, 0.055, 864.3,
Hickahala - 02 12500 to 1968 Start, PF 01, 121.5, 3.35, 157.3, 0.78, 2.14, 73.1, 73.6, 0.00034, 0.00025, 0.055, 983.3,
Hickahala - 02 12500 to 1968 Start, PF 02, 210.5, 4.3, 230.8, 0.92, 2.84, 80.5, 81.3, 0.00035, 0.00025, 0.055, 983.3,
Hickahala - 02 12500 to 1968 Start, PF 03, 269.7, 5.08, 294.3, 0.92, 3.45, 84, 85.2, 0.00028, 0.00025, 0.055, 983.3,
Hickahala - 02 12500 to 1968 Start, PF 04, 359.5, 5.65, 343.9, 1.05, 3.92, 86.3, 87.7, 0.00028, 0.00025, 0.055, 983.3,
Hickahala - 02 12500 to 1968 Start, PF 05, 460.7, 6.31, 400.9, 1.15, 4.43, 88.8, 90.6, 0.00025, 0.00025, 0.055, 983.3,
Hickahala - 02 12500 to 1968 Start, PF 06, 642.8, 7.01, 464, 1.39, 4.96, 91.5, 93.6, 0.00034, 0.00025, 0.055, 983.3,
Hickahala - 02 12500 to 1968 Start, PF 07, 917.1, 8, 556.8, 1.66, 5.72, 94.8, 97.3, 0.0004, 0.00025, 0.055, 983.3,
Hickahala - 02 12500 to 1968 Start, PF 08, 1417.9, 9.32, 682.9, 2.09, 6.99, 95, 97.6, 0.00051, 0.00025, 0.055, 983.3,

Hickahala - 02 12500 to 1968 Start, PF 09, 2221.2, 11.54, 894, 2.5, 9.15, 95, 97.6, 0.00048, 0.00025, 0.055, 983.3,
Hickahala - 02 12500 to 1968 Start, PF 10, 2533.9, 13.01, 1033.2, 2.46, 10.58, 95, 97.6, 0.00037, 0.00025, 0.055, 983.3,
Hickahala - 03 1968 Start to W. Ditch, PF 01, 91.5, 2.94, 140.8, 0.66, 1.66, 83.8, 84.4, 0.00035, 0.0004, 0.055, 928.7,
Hickahala - 03 1968 Start to W. Ditch, PF 02, 178, 3.76, 213.6, 0.83, 2.31, 91.4, 92.3, 0.00035, 0.0004, 0.055, 928.7,
Hickahala - 03 1968 Start to W. Ditch, PF 03, 340.8, 4.9, 321.4, 1.05, 3.23, 98.2, 99.6, 0.00036, 0.0004, 0.055, 928.7,
Hickahala - 03 1968 Start to W. Ditch, PF 04, 632.3, 6.52, 485.4, 1.3, 4.53, 105, 107.4, 0.00037, 0.0004, 0.055, 928.7,
Hickahala - 03 1968 Start to W. Ditch, PF 05, 1047.3, 8.84, 739.5, 1.45, 6.36, 113, 116.5, 0.00037, 0.0004, 0.055, 928.7,
Hickahala - 03 1968 Start to W. Ditch, PF 06, 1805.4, 11.82, 1082, 1.77, 9.1, 115.6, 119.4, 0.0004, 0.0004, 0.055, 928.7,
Hickahala - 03 1968 Start to W. Ditch, PF 07, 2593.2, 13.92, 1328.6, 2.12, 11.13, 115.7, 119.5, 0.00043, 0.0004, 0.055, 928.7,
Hickahala - 03 1968 Start to W. Ditch, PF 08, 3238.5, 15.3, 1490.6, 2.38, 12.46, 115.7, 119.5, 0.00044, 0.0004, 0.055, 928.7,
Hickahala - 03 1968 Start to W. Ditch, PF 09, 4218.8, 16.98, 1688, 2.73, 14.09, 115.7, 119.5, 0.00046, 0.0004, 0.055, 928.7,
Hickahala - 03 1968 Start to W. Ditch, PF 10, 4663, 17.61, 1761.1, 2.88, 14.7, 115.7, 119.5, 0.00047, 0.0004, 0.055, 928.7,
Hickahala - 04 W. Ditch to Senatobia, PF 01, 107.7, 2.47, 123.6, 1.03, 1.28, 92.9, 93.6, 0.00069, 0.00327, 0.055, 575.6,
Hickahala - 04 W. Ditch to Senatobia, PF 02, 213.6, 3.26, 204.9, 1.16, 1.86, 107, 108, 0.00058, 0.00327, 0.055, 575.6,
Hickahala - 04 W. Ditch to Senatobia, PF 03, 423.7, 4.33, 326.3, 1.39, 2.69, 118.9, 120.6, 0.00052, 0.00327, 0.055, 575.6,
Hickahala - 04 W. Ditch to Senatobia, PF 04, 840.3, 5.75, 497.5, 1.75, 3.96, 122.8, 125.4, 0.00052, 0.00327, 0.055, 575.6,
Hickahala - 04 W. Ditch to Senatobia, PF 05, 1396.1, 7.33, 695.5, 2.13, 5.29, 127.5, 131.1, 0.00041, 0.00327, 0.055, 575.6,
Hickahala - 04 W. Ditch to Senatobia, PF 06, 898.9, 10, 1050.5, 0.93, 7.35, 137.5, 142.5, 0.00004, 0.00327, 0.055, 575.6,
Hickahala - 04 W. Ditch to Senatobia, PF 07, 925.7, 12.45, 1395.3, 0.69, 9.4, 142.8, 148.3, 0.00002, 0.00327, 0.055, 575.6,
Hickahala - 04 W. Ditch to Senatobia, PF 08, 1442, 14.18, 1643.4, 0.9, 11.03, 143.3, 148.9, 0.00003, 0.00327, 0.055, 575.6,
Hickahala - 04 W. Ditch to Senatobia, PF 09, 2334.3, 16.43, 1966.2, 1.2, 13.2, 143.3, 148.9, 0.00005, 0.00327, 0.055, 575.6,
Hickahala - 04 W. Ditch to Senatobia, PF 10, 2789.9, 17.3, 2090.1, 1.35, 14.03, 143.3, 148.9, 0.00006, 0.00327, 0.055, 575.6,
Hickahala - 05 Senatobia to Billys, PF 01, 70.3, 2.04, 64.7, 1.09, 0.69, 93, 93.5, 0.0009, 0.00106, 0.03, 622,
Hickahala - 05 Senatobia to Billys, PF 02, 139.5, 2.4, 98.8, 1.41, 1.04, 94.6, 95.2, 0.00086, 0.00106, 0.03, 622,
Hickahala - 05 Senatobia to Billys, PF 03, 276.6, 2.99, 154.7, 1.79, 1.59, 95.9, 97.1, 0.00074, 0.00106, 0.03, 622,
Hickahala - 05 Senatobia to Billys, PF 04, 548.5, 3.97, 250.7, 2.2, 2.5, 98, 100.2, 0.00059, 0.00106, 0.03, 622,
Hickahala - 05 Senatobia to Billys, PF 05, 1087.8, 5.5, 402.7, 2.71, 3.83, 101.3, 105, 0.00051, 0.00106, 0.03, 622,
Hickahala - 05 Senatobia to Billys, PF 06, 2157.4, 7.43, 601.9, 3.59, 5.42, 105.4, 111.1, 0.00054, 0.00106, 0.03, 622,
Hickahala - 05 Senatobia to Billys, PF 07, 4220.2, 9.91, 874.7, 4.83, 7.33, 113, 119.3, 0.00063, 0.00106, 0.03, 622,
Hickahala - 05 Senatobia to Billys, PF 08, 7127.1, 12.03, 1114.5, 6.4, 9.34, 113, 119.3, 0.00082, 0.00106, 0.03, 622,
Hickahala - 05 Senatobia to Billys, PF 09, 9364.4, 14.12, 1350.5, 6.94, 11.32, 113, 119.3, 0.00073, 0.00106, 0.03, 622,
Hickahala - 05 Senatobia to Billys, PF 10, 10353.7, 14.96, 1445.2, 7.17, 12.11, 113, 119.3, 0.00071, 0.00106, 0.03, 622,
Hickahala - 06 Billys to Res. Bound., PF 01, 68.5, 3.44, 149.9, 0.63, 1.94, 86.3, 88, 0.00032, -0.00056, 0.03, 779,
Hickahala - 06 Billys to Res. Bound., PF 02, 135.8, 3.85, 185.7, 0.89, 2.24, 90, 91.9, 0.00034, -0.00056, 0.03, 779,
Hickahala - 06 Billys to Res. Bound., PF 03, 269.3, 4.46, 240.5, 1.24, 2.68, 93.6, 95.9, 0.00036, -0.00056, 0.03, 779,
Hickahala - 06 Billys to Res. Bound., PF 04, 534, 5.36, 326.9, 1.72, 3.31, 99.4, 102.3, 0.00039, -0.00056, 0.03, 779,
Hickahala - 06 Billys to Res. Bound., PF 05, 1059.1, 6.75, 470.9, 2.3, 4.29, 107.8, 111.6, 0.0004, -0.00056, 0.03, 779,
Hickahala - 06 Billys to Res. Bound., PF 06, 2057.1, 8.76, 694.5, 2.99, 5.8, 115.2, 120.3, 0.00041, -0.00056, 0.03, 779,
Hickahala - 06 Billys to Res. Bound., PF 07, 3320.8, 11.49, 1027.9, 3.26, 7.7, 127.5, 133.6, 0.00035, -0.00056, 0.03, 779,
Hickahala - 06 Billys to Res. Bound., PF 08, 5471.6, 14.23, 1382.9, 4.08, 10.01, 131.1, 138.1, 0.00044, -0.00056, 0.03, 779,
Hickahala - 06 Billys to Res. Bound., PF 09, 9864.2, 17.28, 1785.3, 5.95, 12.81, 131.6, 139.1, 0.00079, -0.00056, 0.03, 779,
Hickahala - 06 Billys to Res. Bound., PF 10, 12126.5, 18.74, 1979.1, 6.75, 14.19, 131.6, 139.1, 0.00094, -0.00056, 0.03, 779,
Hickahala - 07 Res. Bound to Thornton, PF 01, 67.7, 2.27, 119, 1.06, 1.63, 78.8, 79.5, 0.00037, 0.00205, 0.03, 814.8,
Hickahala - 07 Res. Bound to Thornton, PF 02, 134.3, 2.72, 154.7, 1.11, 1.97, 82, 82.9, 0.00033, 0.00205, 0.03, 814.8,
Hickahala - 07 Res. Bound to Thornton, PF 03, 266.3, 3.4, 211.6, 1.43, 2.5, 86.2, 87.5, 0.00029, 0.00205, 0.03, 814.8,
Hickahala - 07 Res. Bound to Thornton, PF 04, 528.1, 4.45, 304.9, 1.84, 3.28, 92.4, 94.3, 0.00027, 0.00205, 0.03, 814.8,
Hickahala - 07 Res. Bound to Thornton, PF 05, 1047.4, 6.01, 456.9, 2.35, 4.44, 100.9, 103.8, 0.00027, 0.00205, 0.03, 814.8,
Hickahala - 07 Res. Bound to Thornton, PF 06, 2077.2, 8.21, 686.3, 3.05, 6.1, 108.3, 112.6, 0.0003, 0.00205, 0.03, 814.8,
Hickahala - 07 Res. Bound to Thornton, PF 07, 3887, 10.95, 1000.6, 3.9, 7.9, 121.1, 126.7, 0.00035, 0.00205, 0.03, 814.8,
Hickahala - 07 Res. Bound to Thornton, PF 08, 5574.8, 13.77, 1353.7, 4.22, 10.04, 128.2, 134.7, 0.00032, 0.00205, 0.03, 814.8,
Hickahala - 07 Res. Bound to Thornton, PF 09, 9045, 17.86, 1881.4, 5, 13.79, 129, 136.2, 0.00029, 0.00205, 0.03, 814.8,
Hickahala - 07 Res. Bound to Thornton, PF 10, 7846.7, 20.34, 2200.7, 3.66, 16.14, 129, 136.2, 0.00012, 0.00205, 0.03, 814.8,
Hickahala - 08 Thornton to Basket, PF 01, 64.4, 1.02, 65.5, 1.06, 0.64, 101.9, 102.2, 0.00123, 0.0012, 0.04, 312.5,
Hickahala - 08 Thornton to Basket, PF 02, 127.7, 1.35, 100.4, 1.32, 0.97, 102.9, 103.5, 0.00117, 0.0012, 0.04, 312.5,
Hickahala - 08 Thornton to Basket, PF 03, 253.3, 1.88, 154.8, 1.66, 1.47, 104.6, 105.5, 0.00109, 0.0012, 0.04, 312.5,
Hickahala - 08 Thornton to Basket, PF 04, 502.3, 2.75, 246.4, 2.05, 2.27, 107.3, 108.7, 0.00092, 0.0012, 0.04, 312.5,
Hickahala - 08 Thornton to Basket, PF 05, 996.2, 4.17, 402.5, 2.48, 3.53, 111.8, 114.1, 0.00074, 0.0012, 0.04, 312.5,
Hickahala - 08 Thornton to Basket, PF 06, 1975.6, 6.33, 652.3, 3.03, 5.32, 119.1, 122.6, 0.00065, 0.0012, 0.04, 312.5,
Hickahala - 08 Thornton to Basket, PF 07, 3918.1, 9.2, 1007.3, 3.89, 7.54, 128.5, 133.7, 0.00069, 0.0012, 0.04, 312.5,
Hickahala - 08 Thornton to Basket, PF 08, 7676.8, 12.15, 1397.3, 5.5, 9.92, 134.3, 141, 0.00096, 0.0012, 0.04, 312.5,
Hickahala - 08 Thornton to Basket, PF 09, 14505.2, 16.23, 1946.6, 7.46, 13.78, 134.5, 141.2, 0.00111, 0.0012, 0.04, 312.5,
Hickahala - 08 Thornton to Basket, PF 10, 14755.6, 17.97, 2179.4, 6.78, 15.43, 134.5, 141.2, 0.00073, 0.0012, 0.04, 312.5,
Hickahala - 09 Basket to 57350, PF 01, 59.2, 1.39, 74.5, 0.81, 0.78, 95.4, 96.3, 0.0007, 0.00071, 0.04, 787,
Hickahala - 09 Basket to 57350, PF 02, 117.4, 1.79, 112.2, 1.06, 1.15, 96.4, 97.6, 0.0007, 0.00071, 0.04, 787,
Hickahala - 09 Basket to 57350, PF 03, 232.9, 2.38, 169.1, 1.39, 1.7, 97.7, 99.4, 0.00072, 0.00071, 0.04, 787,
Hickahala - 09 Basket to 57350, PF 04, 461.9, 3.25, 255.3, 1.82, 2.51, 99.6, 102.1, 0.00073, 0.00071, 0.04, 787,
Hickahala - 09 Basket to 57350, PF 05, 916, 4.57, 388.1, 2.37, 3.67, 102.6, 106.1, 0.00073, 0.00071, 0.04, 787,
Hickahala - 09 Basket to 57350, PF 06, 1816.6, 6.57, 598.6, 3.04, 5.32, 107.8, 112.8, 0.00072, 0.00071, 0.04, 787,
Hickahala - 09 Basket to 57350, PF 07, 3602.8, 9.51, 930.8, 3.87, 7.41, 119.1, 125.6, 0.00075, 0.00071, 0.04, 787,
Hickahala - 09 Basket to 57350, PF 08, 7079.4, 13.16, 1385.6, 5.11, 10.08, 129, 137.5, 0.00088, 0.00071, 0.04, 787,

Hickahala - 09 Basket to 57350, PF 09, 13089.6, 17.76, 1979.7, 6.62, 14.38, 129.2, 137.7, 0.00094, 0.00071, 0.04, 787,
Hickahala - 09 Basket to 57350, PF 10, 13965.4, 18.91, 2129.3, 6.56, 15.46, 129.2, 137.7, 0.00082, 0.00071, 0.04, 787,
Hickahala - 10 57350 to Lick, PF 01, 55.3, 2.08, 63.1, 1.21, 1.16, 50.1, 50.6, 0.00078, 0.00061, 0.04, 953.1,
Hickahala - 10 57350 to Lick, PF 02, 109.6, 2.73, 99.6, 1.44, 1.52, 60.4, 61.1, 0.00082, 0.00061, 0.04, 953.1,
Hickahala - 10 57350 to Lick, PF 03, 217.4, 3.54, 155.5, 1.7, 1.97, 74.6, 75.6, 0.00084, 0.00061, 0.04, 953.1,
Hickahala - 10 57350 to Lick, PF 04, 431.1, 4.55, 237.8, 2.05, 2.59, 88.3, 89.6, 0.00086, 0.00061, 0.04, 953.1,
Hickahala - 10 57350 to Lick, PF 05, 855.1, 5.89, 363.4, 2.52, 3.6, 97.9, 99.8, 0.00084, 0.00061, 0.04, 953.1,
Hickahala - 10 57350 to Lick, PF 06, 1695.7, 7.85, 567.3, 3.09, 5.02, 109.7, 112.5, 0.00081, 0.00061, 0.04, 953.1,
Hickahala - 10 57350 to Lick, PF 07, 3363, 10.68, 893.8, 3.82, 7.15, 120.4, 124.8, 0.00077, 0.00061, 0.04, 953.1,
Hickahala - 10 57350 to Lick, PF 08, 6622.2, 14.61, 1392.6, 4.78, 10.22, 130.2, 136.2, 0.00075, 0.00061, 0.04, 953.1,
Hickahala - 10 57350 to Lick, PF 09, 12732.1, 19.52, 2031.6, 6.29, 14.92, 130.2, 136.2, 0.00077, 0.00061, 0.04, 953.1,
Hickahala - 10 57350 to Lick, PF 10, 15102.6, 20.49, 2158.4, 7.02, 15.85, 130.2, 136.2, 0.00087, 0.00061, 0.04, 953.1,
Hickahala - 11 Lick to Lick Branch, PF 01, 52.4, 1.84, 58.6, 0.94, 0.85, 70.4, 71, 0.00069, 0.001, 0.04, 845.9,
Hickahala - 11 Lick to Lick Branch, PF 02, 104, 2.42, 100.7, 1.08, 1.24, 79.2, 80.1, 0.00058, 0.001, 0.04, 845.9,
Hickahala - 11 Lick to Lick Branch, PF 03, 206.1, 3.18, 164.4, 1.3, 1.86, 86.3, 87.5, 0.00054, 0.001, 0.04, 845.9,
Hickahala - 11 Lick to Lick Branch, PF 04, 408.7, 4.23, 258.9, 1.61, 2.74, 92.4, 94.2, 0.00053, 0.001, 0.04, 845.9,
Hickahala - 11 Lick to Lick Branch, PF 05, 810.6, 5.6, 388.5, 2.11, 3.88, 97.2, 99.8, 0.00059, 0.001, 0.04, 845.9,
Hickahala - 11 Lick to Lick Branch, PF 06, 1607.6, 7.56, 588.1, 2.75, 5.32, 106.9, 110.6, 0.00065, 0.001, 0.04, 845.9,
Hickahala - 11 Lick to Lick Branch, PF 07, 3188.1, 10.38, 912.1, 3.5, 7.21, 121.7, 126.6, 0.00068, 0.001, 0.04, 845.9,
Hickahala - 11 Lick to Lick Branch, PF 08, 6321, 14.34, 1433, 4.41, 9.8, 140, 146.2, 0.0007, 0.001, 0.04, 845.9,
Hickahala - 11 Lick to Lick Branch, PF 09, 12240.9, 19.35, 2134.8, 5.74, 14.57, 140.3, 146.5, 0.00068, 0.001, 0.04, 845.9,
Hickahala - 11 Lick to Lick Branch, PF 10, 15309.7, 20.9, 2352.9, 6.51, 16.06, 140.3, 146.5, 0.00078, 0.001, 0.04, 845.9,
Hickahala - 12 Lick Branch to Wolf, PF 01, 52.3, 1.22, 59.8, 0.9, 0.8, 74.2, 74.5, 0.00077, 0.00083, 0.04, 881.2,
Hickahala - 12 Lick Branch to Wolf, PF 02, 103.7, 1.66, 94, 1.13, 1.13, 83, 83.5, 0.00077, 0.00083, 0.04, 881.2,
Hickahala - 12 Lick Branch to Wolf, PF 03, 205.6, 2.27, 148.2, 1.41, 1.58, 92.7, 93.5, 0.00076, 0.00083, 0.04, 881.2,
Hickahala - 12 Lick Branch to Wolf, PF 04, 407.8, 3.17, 235.2, 1.75, 2.29, 101.7, 102.9, 0.00072, 0.00083, 0.04, 881.2,
Hickahala - 12 Lick Branch to Wolf, PF 05, 808.8, 4.46, 371.1, 2.2, 3.37, 108.4, 110.4, 0.00067, 0.00083, 0.04, 881.2,
Hickahala - 12 Lick Branch to Wolf, PF 06, 1604.1, 6.4, 589.2, 2.73, 4.92, 116.9, 120, 0.00064, 0.00083, 0.04, 881.2,
Hickahala - 12 Lick Branch to Wolf, PF 07, 3181.2, 9.26, 942.8, 3.38, 6.99, 130.6, 135.3, 0.00061, 0.00083, 0.04, 881.2,
Hickahala - 12 Lick Branch to Wolf, PF 08, 6309, 13.37, 1531.9, 4.13, 9.47, 155.6, 162, 0.00062, 0.00083, 0.04, 881.2,
Hickahala - 12 Lick Branch to Wolf, PF 09, 12324.3, 18.4, 2333.4, 5.3, 13.9, 160.8, 168.2, 0.00061, 0.00083, 0.04, 881.2,
Hickahala - 12 Lick Branch to Wolf, PF 10, 15418.6, 20.23, 2629.5, 5.88, 15.58, 161.5, 169.2, 0.00065, 0.00083, 0.04, 881.2,
Hickahala - 13 Wolf to Whites, PF 01, 29.4, 1.02, 30.8, 0.96, 0.52, 58, 58.5, 0.00095, 0.00091, 0.03, 766.5,
Hickahala - 13 Wolf to Whites, PF 02, 58.3, 1.33, 51.1, 1.14, 0.69, 73.5, 74.2, 0.00092, 0.00091, 0.03, 766.5,
Hickahala - 13 Wolf to Whites, PF 03, 115.7, 1.7, 78.5, 1.48, 1.04, 74.5, 75.5, 0.00086, 0.00091, 0.03, 766.5,
Hickahala - 13 Wolf to Whites, PF 04, 229.4, 2.28, 122.1, 1.89, 1.58, 76.2, 77.5, 0.0008, 0.00091, 0.03, 766.5,
Hickahala - 13 Wolf to Whites, PF 05, 454.9, 3.17, 191.4, 2.4, 2.37, 78.8, 80.8, 0.00075, 0.00091, 0.03, 766.5,
Hickahala - 13 Wolf to Whites, PF 06, 902.2, 4.61, 310.2, 2.94, 3.5, 85.9, 88.5, 0.00067, 0.00091, 0.03, 766.5,
Hickahala - 13 Wolf to Whites, PF 07, 1789.2, 6.96, 529, 3.43, 5.07, 100.6, 103.9, 0.00055, 0.00091, 0.03, 766.5,
Hickahala - 13 Wolf to Whites, PF 08, 3548.4, 10.61, 938.3, 3.83, 7.45, 120.8, 125.7, 0.00042, 0.00091, 0.03, 766.5,
Hickahala - 13 Wolf to Whites, PF 09, 7031.6, 15.56, 1614.7, 4.39, 10.22, 151.2, 157.9, 0.00036, 0.00091, 0.03, 766.5,
Hickahala - 13 Wolf to Whites, PF 10, 8858.8, 17.46, 1902.3, 4.69, 12.04, 151.3, 158, 0.00033, 0.00091, 0.03, 766.5,
Hickahala - 14 Whites to Beards, PF 01, 25.5, 1.22, 23.6, 1.2, 0.7, 35.2, 35.5, 0.00096, 0.00094, 0.03, 750.6,
Hickahala - 14 Whites to Beards, PF 02, 50.7, 1.6, 37.1, 1.46, 0.93, 40.7, 41.1, 0.00097, 0.00094, 0.03, 750.6,
Hickahala - 14 Whites to Beards, PF 03, 100.5, 2.1, 58.3, 1.79, 1.25, 46.7, 47.4, 0.00098, 0.00094, 0.03, 750.6,
Hickahala - 14 Whites to Beards, PF 04, 199.3, 2.78, 92, 2.22, 1.7, 53.4, 54.4, 0.00099, 0.00094, 0.03, 750.6,
Hickahala - 14 Whites to Beards, PF 05, 395.2, 3.71, 144.5, 2.79, 2.36, 60, 61.4, 0.00099, 0.00094, 0.03, 750.6,
Hickahala - 14 Whites to Beards, PF 06, 783.7, 5.04, 231.2, 3.44, 3.21, 70.3, 72.2, 0.001, 0.00094, 0.03, 750.6,
Hickahala - 14 Whites to Beards, PF 07, 1554.3, 6.88, 371.2, 4.24, 4.4, 81.7, 84.5, 0.00099, 0.00094, 0.03, 750.6,
Hickahala - 14 Whites to Beards, PF 08, 3082.5, 9.5, 602.6, 5.17, 6.07, 95.4, 99.4, 0.00097, 0.00094, 0.03, 750.6,
Hickahala - 14 Whites to Beards, PF 09, 6112.9, 13.24, 994.3, 6.24, 8.45, 111.5, 117.8, 0.00092, 0.00094, 0.03, 750.6,
Hickahala - 14 Whites to Beards, PF 10, 7707.4, 14.76, 1167.9, 6.71, 9.53, 115.1, 122.6, 0.00091, 0.00094, 0.03, 750.6,
Hickahala - 15 Beards to Catheys, PF 01, 14.6, 1.02, 14.7, 1.35, 0.55, 31.7, 31.9, 0.00248, 0.00342, 0.04, 769.3,
Hickahala - 15 Beards to Catheys, PF 02, 29, 1.37, 24.8, 1.54, 0.7, 37.9, 38.4, 0.00238, 0.00342, 0.04, 769.3,
Hickahala - 15 Beards to Catheys, PF 03, 57.5, 1.82, 42.6, 1.63, 0.85, 49.5, 50.1, 0.00227, 0.00342, 0.04, 769.3,
Hickahala - 15 Beards to Catheys, PF 04, 114, 2.32, 68.7, 1.8, 1.16, 57.8, 58.8, 0.0021, 0.00342, 0.04, 769.3,
Hickahala - 15 Beards to Catheys, PF 05, 226, 2.95, 106.4, 2.23, 1.7, 60.6, 62, 0.00189, 0.00342, 0.04, 769.3,
Hickahala - 15 Beards to Catheys, PF 06, 448.2, 3.93, 167.5, 2.79, 2.51, 64.1, 66.3, 0.0017, 0.00342, 0.04, 769.3,
Hickahala - 15 Beards to Catheys, PF 07, 888.9, 5.46, 270.4, 3.4, 3.61, 71.1, 74.3, 0.00152, 0.00342, 0.04, 769.3,
Hickahala - 15 Beards to Catheys, PF 08, 1762.9, 7.74, 444.1, 4.06, 5.13, 80.9, 86, 0.00134, 0.00342, 0.04, 769.3,
Hickahala - 15 Beards to Catheys, PF 09, 3496.3, 11.15, 745.5, 4.75, 7.21, 95.2, 103.2, 0.00115, 0.00342, 0.04, 769.3,
Hickahala - 15 Beards to Catheys, PF 10, 4414.6, 12.64, 893.1, 5, 8.13, 100.5, 109.7, 0.00108, 0.00342, 0.04, 769.3,
Hickahala - 16 Catheys to 109500, PF 01, 12.1, 0.55, 12.4, 1.05, 0.41, 29.9, 30, 0.00201, 0.00203, 0.04, 817.2,
Hickahala - 16 Catheys to 109500, PF 02, 23.9, 0.78, 19.3, 1.26, 0.6, 31.6, 31.9, 0.00198, 0.00203, 0.04, 817.2,
Hickahala - 16 Catheys to 109500, PF 03, 47.5, 1.12, 30.5, 1.57, 0.88, 34.2, 34.6, 0.00196, 0.00203, 0.04, 817.2,
Hickahala - 16 Catheys to 109500, PF 04, 94.2, 1.61, 48.3, 1.97, 1.27, 37.7, 38.2, 0.00193, 0.00203, 0.04, 817.2,
Hickahala - 16 Catheys to 109500, PF 05, 186.8, 2.32, 76.4, 2.46, 1.8, 41.7, 42.6, 0.00193, 0.00203, 0.04, 817.2,
Hickahala - 16 Catheys to 109500, PF 06, 370.4, 3.32, 120, 3.09, 2.55, 45.8, 47.2, 0.00196, 0.00203, 0.04, 817.2,
Hickahala - 16 Catheys to 109500, PF 07, 734.5, 4.75, 188.6, 3.9, 3.6, 49.9, 52.5, 0.002, 0.00203, 0.04, 817.2,
Hickahala - 16 Catheys to 109500, PF 08, 1456.8, 6.87, 299.9, 4.86, 5, 55.9, 60.1, 0.00204, 0.00203, 0.04, 817.2,

Hickahala - 16 Catheys to 109500, PF 09, 2889.1, 9.98, 491, 5.89, 6.72, 67.5, 73.6, 0.00204, 0.00203, 0.04, 817.2,
Hickahala - 16 Catheys to 109500, PF 10, 3648.2, 11.34, 587, 6.23, 7.38, 73.3, 80.1, 0.00203, 0.00203, 0.04, 817.2,
Hickahala - 17 109500 to S. Fork, PF 01, 10.9, 1.05, 19.2, 0.94, 0.72, 25.1, 25.6, 0.00167, 0.00165, 0.04, 808.9,
Hickahala - 17 109500 to S. Fork, PF 02, 21.6, 1.37, 27, 1.18, 0.93, 27.6, 28.2, 0.00168, 0.00165, 0.04, 808.9,
Hickahala - 17 109500 to S. Fork, PF 03, 42.8, 1.8, 38.9, 1.47, 1.23, 30.4, 31.1, 0.00169, 0.00165, 0.04, 808.9,
Hickahala - 17 109500 to S. Fork, PF 04, 84.9, 2.41, 57.8, 1.79, 1.59, 35, 36.1, 0.00171, 0.00165, 0.04, 808.9,
Hickahala - 17 109500 to S. Fork, PF 05, 168.3, 3.22, 87.9, 2.19, 2.05, 41.5, 42.9, 0.00174, 0.00165, 0.04, 808.9,
Hickahala - 17 109500 to S. Fork, PF 06, 333.8, 4.26, 133.4, 2.74, 2.73, 47, 49, 0.00177, 0.00165, 0.04, 808.9,
Hickahala - 17 109500 to S. Fork, PF 07, 661.9, 5.72, 206.2, 3.41, 3.66, 54.1, 57, 0.0018, 0.00165, 0.04, 808.9,
Hickahala - 17 109500 to S. Fork, PF 08, 1312.8, 7.81, 328.8, 4.16, 4.85, 65.3, 69.5, 0.00181, 0.00165, 0.04, 808.9,
Hickahala - 17 109500 to S. Fork, PF 09, 2602, 10.7, 530.5, 5.07, 6.41, 79.1, 85, 0.00184, 0.00165, 0.04, 808.9,
Hickahala - 17 109500 to S. Fork, PF 10, 3208.1, 11.84, 621.5, 5.34, 7.02, 84.4, 91.1, 0.00182, 0.00165, 0.04, 808.9,
Hickahala - 18 S. Fork to US, PF 01, 2.3, 0.33, 2.9, 1.12, 0.23, 11.3, 11.4, 0.00279, 0.00329, 0.041, 763.5,
Hickahala - 18 S. Fork to US, PF 02, 4.5, 0.46, 4.6, 1.33, 0.31, 13.5, 13.7, 0.00286, 0.00329, 0.041, 763.5,
Hickahala - 18 S. Fork to US, PF 03, 9.1, 0.63, 7.1, 1.63, 0.44, 14.8, 15.1, 0.00293, 0.00329, 0.041, 763.5,
Hickahala - 18 S. Fork to US, PF 04, 17.9, 0.87, 11, 1.97, 0.62, 16.4, 16.8, 0.00303, 0.00329, 0.041, 763.5,
Hickahala - 18 S. Fork to US, PF 05, 35.5, 1.22, 17.1, 2.42, 0.87, 18.2, 18.8, 0.00316, 0.00329, 0.041, 763.5,
Hickahala - 18 S. Fork to US, PF 06, 70.5, 1.74, 27.3, 2.79, 1.23, 20.8, 21.6, 0.00327, 0.00329, 0.041, 763.5,
Hickahala - 18 S. Fork to US, PF 07, 140, 2.5, 44.5, 3.23, 1.7, 24.4, 25.6, 0.00331, 0.00329, 0.041, 763.5,
Hickahala - 18 S. Fork to US, PF 08, 277.5, 3.54, 72.8, 3.84, 2.3, 29.6, 31.3, 0.00333, 0.00329, 0.041, 763.5,
Hickahala - 18 S. Fork to US, PF 09, 550.4, 4.96, 119.6, 4.6, 3.06, 36.3, 38.7, 0.00323, 0.00329, 0.041, 763.5,
Hickahala - 18 S. Fork to US, PF 10, 695, 5.55, 141.7, 4.89, 3.4, 38.4, 41.2, 0.0032, 0.00329, 0.041, 763.5,
Hickahala - 19 USBC, PF 01, 1.1, 0.47, 2.1, 0.53, 0.29, 7, 7.2, 0.00379, 0.0035, 0.045, 877.5,
Hickahala - 19 USBC, PF 02, 2.3, 0.63, 3.2, 0.71, 0.41, 7.6, 7.9, 0.00386, 0.0035, 0.045, 877.5,
Hickahala - 19 USBC, PF 03, 4.5, 0.84, 5, 0.91, 0.56, 8.4, 8.8, 0.00392, 0.0035, 0.045, 877.5,
Hickahala - 19 USBC, PF 04, 8.9, 1.13, 7.6, 1.18, 0.75, 9.5, 10.1, 0.00397, 0.0035, 0.045, 877.5,
Hickahala - 19 USBC, PF 05, 17.7, 1.53, 11.6, 1.52, 0.98, 11.1, 11.9, 0.00405, 0.0035, 0.045, 877.5,
Hickahala - 19 USBC, PF 06, 35.2, 1.97, 16.8, 2.09, 1.22, 12.7, 13.8, 0.00393, 0.0035, 0.045, 877.5,
Hickahala - 19 USBC, PF 07, 69.8, 2.59, 25.5, 2.74, 1.54, 15.1, 16.5, 0.00373, 0.0035, 0.045, 877.5,
Hickahala - 19 USBC, PF 08, 138.4, 3.51, 41.1, 3.36, 2, 18.7, 20.6, 0.00366, 0.0035, 0.045, 877.5,
Hickahala - 19 USBC, PF 09, 274.4, 4.83, 69.1, 3.97, 2.62, 23.7, 26.4, 0.00376, 0.0035, 0.045, 877.5,
Hickahala - 19 USBC, PF 10, 346.5, 5.38, 82.5, 4.2, 2.87, 25.8, 28.7, 0.00382, 0.0035, 0.045, 877.5,
James Wolf - 01 DS to 1968 Limits, PF 01, 21.6, 0.97, 19.5, 1.14, 0.52, 38.3, 38.5, 0.00121, 0.00121, 0.03, 807.3,
James Wolf - 01 DS to 1968 Limits, PF 02, 42.8, 1.25, 30.9, 1.43, 0.73, 42.6, 42.9, 0.0012, 0.00121, 0.03, 807.3,
James Wolf - 01 DS to 1968 Limits, PF 03, 85.1, 1.65, 48.7, 1.78, 1.03, 47, 47.4, 0.00118, 0.00121, 0.03, 807.3,
James Wolf - 01 DS to 1968 Limits, PF 04, 168.6, 2.23, 77.2, 2.23, 1.47, 52.1, 52.8, 0.00116, 0.00121, 0.03, 807.3,
James Wolf - 01 DS to 1968 Limits, PF 05, 334.4, 3.05, 121.6, 2.81, 2.11, 56.7, 57.7, 0.00114, 0.00121, 0.03, 807.3,
James Wolf - 01 DS to 1968 Limits, PF 06, 663.2, 4.28, 195.9, 3.45, 2.99, 64, 65.5, 0.0011, 0.00121, 0.03, 807.3,
James Wolf - 01 DS to 1968 Limits, PF 07, 1314.7, 6.15, 328.2, 4.1, 4.11, 77.3, 79.5, 0.00105, 0.00121, 0.03, 807.3,
James Wolf - 01 DS to 1968 Limits, PF 08, 2494.7, 8.9, 573.2, 4.55, 5.57, 99.5, 102.8, 0.00094, 0.00121, 0.03, 807.3,
James Wolf - 01 DS to 1968 Limits, PF 09, 4441.4, 12.51, 967.9, 4.93, 7.92, 118.8, 123.6, 0.00082, 0.00121, 0.03, 807.3,
James Wolf - 01 DS to 1968 Limits, PF 10, 5174.7, 13.93, 1137.9, 4.96, 8.97, 123.7, 129.1, 0.00078, 0.00121, 0.03, 807.3,
James Wolf - 02 1968 Limits to M. Dale, PF 01, 16.9, 0.76, 16.9, 1.15, 0.4, 49.7, 50, 0.00145, 0.00157, 0.03, 756.7,
James Wolf - 02 1968 Limits to M. Dale, PF 02, 33.5, 0.96, 25.4, 1.48, 0.58, 51, 51.3, 0.0015, 0.00157, 0.03, 756.7,
James Wolf - 02 1968 Limits to M. Dale, PF 03, 66.3, 1.27, 39.7, 1.86, 0.84, 52.9, 53.3, 0.00152, 0.00157, 0.03, 756.7,
James Wolf - 02 1968 Limits to M. Dale, PF 04, 131.6, 1.73, 63.6, 2.35, 1.22, 55.6, 56.3, 0.00149, 0.00157, 0.03, 756.7,
James Wolf - 02 1968 Limits to M. Dale, PF 05, 261, 2.44, 103.9, 2.92, 1.72, 60.8, 61.8, 0.00147, 0.00157, 0.03, 756.7,
James Wolf - 02 1968 Limits to M. Dale, PF 06, 517.5, 3.42, 168.1, 3.53, 2.46, 66.3, 67.9, 0.00148, 0.00157, 0.03, 756.7,
James Wolf - 02 1968 Limits to M. Dale, PF 07, 1026.4, 4.88, 272.2, 4.32, 3.52, 73, 75.5, 0.00144, 0.00157, 0.03, 756.7,
James Wolf - 02 1968 Limits to M. Dale, PF 08, 2035.6, 6.94, 438.2, 5.29, 4.86, 83.1, 87.1, 0.00139, 0.00157, 0.03, 756.7,
James Wolf - 02 1968 Limits to M. Dale, PF 09, 4037, 9.73, 685.6, 6.53, 6.76, 92.6, 98.8, 0.00136, 0.00157, 0.03, 756.7,
James Wolf - 02 1968 Limits to M. Dale, PF 10, 5097.7, 10.95, 802.6, 6.97, 7.41, 98.8, 105.9, 0.00135, 0.00157, 0.03, 756.7,
James Wolf - 03 M. Dale to 34000, PF 01, 8.5, 0.73, 10.3, 0.84, 0.45, 23.6, 23.8, 0.002, 0.00192, 0.045, 797,
James Wolf - 03 M. Dale to 34000, PF 02, 16.8, 0.97, 16.3, 1.04, 0.62, 26.6, 26.8, 0.00202, 0.00192, 0.045, 797,
James Wolf - 03 M. Dale to 34000, PF 03, 33.3, 1.31, 25.6, 1.31, 0.87, 29.4, 29.8, 0.00201, 0.00192, 0.045, 797,
James Wolf - 03 M. Dale to 34000, PF 04, 66.1, 1.79, 40.2, 1.66, 1.21, 32.6, 33.2, 0.00202, 0.00192, 0.045, 797,
James Wolf - 03 M. Dale to 34000, PF 05, 131.1, 2.47, 64.5, 2.05, 1.65, 38.3, 39.2, 0.00203, 0.00192, 0.045, 797,
James Wolf - 03 M. Dale to 34000, PF 06, 260.1, 3.41, 103.4, 2.54, 2.27, 44.5, 45.8, 0.00202, 0.00192, 0.045, 797,
James Wolf - 03 M. Dale to 34000, PF 07, 515.8, 4.75, 169.3, 3.08, 3.05, 54, 55.9, 0.002, 0.00192, 0.045, 797,
James Wolf - 03 M. Dale to 34000, PF 08, 1022.9, 6.62, 284.4, 3.61, 3.86, 71.2, 74.1, 0.00199, 0.00192, 0.045, 797,
James Wolf - 03 M. Dale to 34000, PF 09, 2028.7, 9.13, 479.9, 4.24, 5.21, 88.9, 93.5, 0.00185, 0.00192, 0.045, 797,
James Wolf - 03 M. Dale to 34000, PF 10, 2561.7, 10.22, 582.8, 4.41, 5.57, 101, 106.3, 0.00181, 0.00192, 0.045, 797,
James Wolf - 04 34000 to 45500, PF 01, 7.2, 0.59, 9.9, 0.84, 0.36, 28.6, 28.7, 0.00187, 0.00193, 0.045, 808.6,
James Wolf - 04 34000 to 45500, PF 02, 14.3, 0.81, 15.9, 0.97, 0.51, 32.3, 32.5, 0.00187, 0.00193, 0.045, 808.6,
James Wolf - 04 34000 to 45500, PF 03, 28.3, 1.1, 25.3, 1.18, 0.72, 35.9, 36.3, 0.00186, 0.00193, 0.045, 808.6,
James Wolf - 04 34000 to 45500, PF 04, 56.3, 1.5, 39.9, 1.47, 1.02, 39.3, 39.8, 0.00186, 0.00193, 0.045, 808.6,
James Wolf - 04 34000 to 45500, PF 05, 111.6, 2.07, 62.9, 1.83, 1.45, 42.9, 43.8, 0.00184, 0.00193, 0.045, 808.6,
James Wolf - 04 34000 to 45500, PF 06, 221.4, 2.9, 100.4, 2.27, 2.02, 48.4, 49.7, 0.00183, 0.00193, 0.045, 808.6,
James Wolf - 04 34000 to 45500, PF 07, 439.1, 4.07, 160.4, 2.8, 2.81, 54.9, 56.8, 0.00181, 0.00193, 0.045, 808.6,
James Wolf - 04 34000 to 45500, PF 08, 870.8, 5.72, 257.7, 3.45, 3.94, 62.3, 65.1, 0.00177, 0.00193, 0.045, 808.6,

James Wolf - 04 34000 to 45500, PF 09, 1726.9, 7.99, 408.6, 4.28, 5.42, 71, 75.2, 0.00177, 0.00193, 0.045, 808.6,
James Wolf - 04 34000 to 45500, PF 10, 2180.7, 8.98, 481, 4.58, 6.03, 74.9, 79.7, 0.00176, 0.00193, 0.045, 808.6,
James Wolf - 05 45500 to US, PF 01, 3.9, 0.39, 9, 0.44, 0.27, 33, 33.3, 0.00328, 0.0028, 0.045, 587.5,
James Wolf - 05 45500 to US, PF 02, 7.8, 0.52, 13.4, 0.58, 0.4, 33.4, 33.7, 0.00339, 0.0028, 0.045, 587.5,
James Wolf - 05 45500 to US, PF 03, 15.4, 0.71, 19.8, 0.78, 0.57, 33.9, 34.4, 0.00357, 0.0028, 0.045, 587.5,
James Wolf - 05 45500 to US, PF 04, 30.6, 0.99, 29.2, 1.05, 0.83, 34.7, 35.4, 0.00382, 0.0028, 0.045, 587.5,
James Wolf - 05 45500 to US, PF 05, 60.6, 1.38, 43.2, 1.4, 1.17, 35.8, 36.8, 0.00412, 0.0028, 0.045, 587.5,
James Wolf - 05 45500 to US, PF 06, 120.3, 1.85, 60.2, 2, 1.57, 37.1, 38.5, 0.0043, 0.0028, 0.045, 587.5,
James Wolf - 05 45500 to US, PF 07, 238.5, 2.53, 86, 2.77, 2.1, 39, 40.9, 0.00446, 0.0028, 0.045, 587.5,
James Wolf - 05 45500 to US, PF 08, 473, 3.51, 125.9, 3.76, 2.84, 41.8, 44.4, 0.00469, 0.0028, 0.045, 587.5,
James Wolf - 05 45500 to US, PF 09, 938.1, 4.91, 186.8, 5.02, 3.78, 45.7, 49.4, 0.00495, 0.0028, 0.045, 587.5,
James Wolf - 05 45500 to US, PF 10, 1184.6, 5.49, 214.1, 5.53, 4.15, 47.5, 51.6, 0.00499, 0.0028, 0.045, 587.5,
James Wolf - 06 USBC, PF 01, 3.9, 0.39, 9, 0.44, 0.27, 33, 33.3, 0.00328, 0.0028, 0.045, 200,
James Wolf - 06 USBC, PF 02, 7.8, 0.52, 13.4, 0.58, 0.4, 33.4, 33.7, 0.00339, 0.0028, 0.045, 200,
James Wolf - 06 USBC, PF 03, 15.4, 0.71, 19.8, 0.78, 0.57, 33.9, 34.4, 0.00357, 0.0028, 0.045, 200,
James Wolf - 06 USBC, PF 04, 30.6, 0.99, 29.2, 1.05, 0.83, 34.7, 35.4, 0.00382, 0.0028, 0.045, 200,
James Wolf - 06 USBC, PF 05, 60.6, 1.38, 43.2, 1.4, 1.17, 35.8, 36.8, 0.00412, 0.0028, 0.045, 200,
James Wolf - 06 USBC, PF 06, 120.3, 1.85, 60.2, 2, 1.57, 37.1, 38.5, 0.0043, 0.0028, 0.045, 200,
James Wolf - 06 USBC, PF 07, 238.5, 2.53, 86, 2.77, 2.1, 39, 40.9, 0.00446, 0.0028, 0.045, 200,
James Wolf - 06 USBC, PF 08, 473, 3.51, 125.9, 3.76, 2.84, 41.8, 44.4, 0.00469, 0.0028, 0.045, 200,
James Wolf - 06 USBC, PF 09, 938.1, 4.91, 186.8, 5.02, 3.78, 45.7, 49.4, 0.00495, 0.0028, 0.045, 200,
James Wolf - 06 USBC, PF 10, 1184.6, 5.49, 214.1, 5.53, 4.15, 47.5, 51.6, 0.00499, 0.0028, 0.045, 200,
Martin Dale - 01 DS to 4500, PF 01, 5.3, 0.63, 5, 1.17, 0.38, 12.8, 12.9, 0.00363, 0.00352, 0.045, 839.5,
Martin Dale - 01 DS to 4500, PF 02, 10.4, 0.84, 7.9, 1.45, 0.54, 14.3, 14.5, 0.00361, 0.00352, 0.045, 839.5,
Martin Dale - 01 DS to 4500, PF 03, 20.6, 1.14, 12.6, 1.72, 0.76, 16.2, 16.5, 0.00357, 0.00352, 0.045, 839.5,
Martin Dale - 01 DS to 4500, PF 04, 40.9, 1.58, 20.3, 2.05, 1.05, 18.9, 19.3, 0.00354, 0.00352, 0.045, 839.5,
Martin Dale - 01 DS to 4500, PF 05, 81.1, 2.21, 33.2, 2.45, 1.43, 22.6, 23.3, 0.00348, 0.00352, 0.045, 839.5,
Martin Dale - 01 DS to 4500, PF 06, 160.9, 3.08, 55, 2.93, 1.92, 27.8, 28.8, 0.0034, 0.00352, 0.045, 839.5,
Martin Dale - 01 DS to 4500, PF 07, 319, 4.26, 91.4, 3.48, 2.59, 33.9, 35.4, 0.00328, 0.00352, 0.045, 839.5,
Martin Dale - 01 DS to 4500, PF 08, 632.6, 5.9, 152.7, 4.13, 3.51, 41.4, 43.6, 0.00309, 0.00352, 0.045, 839.5,
Martin Dale - 01 DS to 4500, PF 09, 1254.7, 8.16, 256.6, 4.89, 4.81, 49.8, 53.2, 0.00285, 0.00352, 0.045, 839.5,
Martin Dale - 01 DS to 4500, PF 10, 1584.3, 9.11, 305.2, 5.21, 5.43, 52, 56.1, 0.00275, 0.00352, 0.045, 839.5,
Martin Dale - 02 4500 to US, PF 01, 2, 0.56, 2.3, 1.03, 0.28, 8.2, 8.3, 0.00312, 0.00315, 0.045, 824.9,
Martin Dale - 02 4500 to US, PF 02, 4, 0.75, 4, 1.08, 0.37, 10.6, 10.7, 0.00311, 0.00315, 0.045, 824.9,
Martin Dale - 02 4500 to US, PF 03, 8, 0.97, 6.7, 1.24, 0.49, 13.2, 13.4, 0.0031, 0.00315, 0.045, 824.9,
Martin Dale - 02 4500 to US, PF 04, 15.8, 1.27, 11, 1.46, 0.66, 16.2, 16.5, 0.00309, 0.00315, 0.045, 824.9,
Martin Dale - 02 4500 to US, PF 05, 31.4, 1.65, 17.9, 1.76, 0.89, 19.7, 20.1, 0.00308, 0.00315, 0.045, 824.9,
Martin Dale - 02 4500 to US, PF 06, 62.2, 2.17, 29.2, 2.13, 1.2, 23.6, 24.2, 0.00304, 0.00315, 0.045, 824.9,
Martin Dale - 02 4500 to US, PF 07, 123.3, 2.88, 47.7, 2.58, 1.64, 28.2, 29.1, 0.00299, 0.00315, 0.045, 824.9,
Martin Dale - 02 4500 to US, PF 08, 244.5, 3.88, 79, 3.08, 2.22, 34.4, 35.7, 0.00289, 0.00315, 0.045, 824.9,
Martin Dale - 02 4500 to US, PF 09, 485, 5.3, 134, 3.62, 2.94, 43.3, 45.3, 0.00274, 0.00315, 0.045, 824.9,
Martin Dale - 02 4500 to US, PF 10, 612.4, 5.88, 160, 3.84, 3.27, 46.1, 48.5, 0.00268, 0.00315, 0.045, 824.9,
Martin Dale - 03 USBC, PF 01, 1.7, 0.46, 1.9, 0.9, 0.23, 8.2, 8.4, 0.00319, 0.0034, 0.045, 852.5,
Martin Dale - 03 USBC, PF 02, 3.5, 0.64, 3.7, 0.94, 0.32, 11.6, 11.7, 0.00323, 0.0034, 0.045, 852.5,
Martin Dale - 03 USBC, PF 03, 6.9, 0.86, 6.6, 1.04, 0.42, 15.4, 15.6, 0.00324, 0.0034, 0.045, 852.5,
Martin Dale - 03 USBC, PF 04, 13.6, 1.1, 10.8, 1.26, 0.58, 18.2, 18.5, 0.0032, 0.0034, 0.045, 852.5,
Martin Dale - 03 USBC, PF 05, 27, 1.44, 17.4, 1.55, 0.8, 21.3, 21.7, 0.00314, 0.0034, 0.045, 852.5,
Martin Dale - 03 USBC, PF 06, 53.5, 1.89, 28.1, 1.9, 1.08, 25.6, 26.1, 0.00311, 0.0034, 0.045, 852.5,
Martin Dale - 03 USBC, PF 07, 106.1, 2.52, 46, 2.31, 1.43, 31.4, 32.1, 0.00307, 0.0034, 0.045, 852.5,
Martin Dale - 03 USBC, PF 08, 210.5, 3.31, 72.2, 2.92, 2.03, 34.4, 35.6, 0.00306, 0.0034, 0.045, 852.5,
Martin Dale - 03 USBC, PF 09, 417.5, 4.44, 112.9, 3.7, 2.84, 37.8, 39.7, 0.00314, 0.0034, 0.045, 852.5,
Martin Dale - 03 USBC, PF 10, 527.2, 4.92, 131.4, 4.01, 3.17, 39.1, 41.4, 0.00318, 0.0034, 0.045, 852.5,
Mattic - 01 DS to Nelson, PF 01, 26.9, 1.24, 27.3, 1.08, 0.73, 37.1, 37.6, 0.00234, 0.00244, 0.035, 816.4,
Mattic - 01 DS to Nelson, PF 02, 0.2, 0.19, 1, 0.35, 0.09, 11.3, 11.3, 0.00174, 0.00244, 0.035, 816.4,
Mattic - 01 DS to Nelson, PF 03, 9.7, 0.81, 13.2, 0.83, 0.46, 29.1, 29.4, 0.00142, 0.00244, 0.035, 816.4,
Mattic - 01 DS to Nelson, PF 04, 13.7, 0.93, 16.9, 0.91, 0.53, 31.7, 32.1, 0.0011, 0.00244, 0.035, 816.4,
Mattic - 01 DS to Nelson, PF 05, 27.1, 1.25, 27.5, 1.05, 0.73, 37.1, 37.7, 0.00095, 0.00244, 0.035, 816.4,
Mattic - 01 DS to Nelson, PF 06, 53.7, 1.73, 46.6, 1.17, 1.12, 40.7, 41.6, 0.00067, 0.00244, 0.035, 816.4,
Mattic - 01 DS to Nelson, PF 07, 106.5, 2.58, 82.9, 1.35, 1.83, 43.6, 45, 0.00054, 0.00244, 0.035, 816.4,
Mattic - 01 DS to Nelson, PF 08, 211.2, 3.93, 146.8, 1.6, 2.85, 48.3, 50.4, 0.00046, 0.00244, 0.035, 816.4,
Mattic - 01 DS to Nelson, PF 09, 418.9, 6.47, 282.4, 1.66, 4.61, 55.9, 59.7, 0.00026, 0.00244, 0.035, 816.4,
Mattic - 01 DS to Nelson, PF 10, 830.7, 10.22, 518.1, 1.72, 6.82, 68.8, 74.8, 0.00017, 0.00244, 0.035, 816.4,
Mattic - 02 Nelson to 13000, PF 01, 11, 1.2, 8.2, 1.36, 0.67, 11.6, 12.1, 0.00179, 0.00164, 0.035, 792,
Mattic - 02 Nelson to 13000, PF 02, 0.1, 0.2, 0.3, 0.37, 0.1, 3.5, 3.6, 0.0017, 0.00164, 0.035, 792,
Mattic - 02 Nelson to 13000, PF 03, 4, 0.81, 4.1, 0.99, 0.44, 9.2, 9.5, 0.00178, 0.00164, 0.035, 792,
Mattic - 02 Nelson to 13000, PF 04, 5.6, 0.92, 5.2, 1.1, 0.5, 10, 10.4, 0.00179, 0.00164, 0.035, 792,
Mattic - 02 Nelson to 13000, PF 05, 11.1, 1.2, 8.2, 1.36, 0.68, 11.6, 12.2, 0.00179, 0.00164, 0.035, 792,
Mattic - 02 Nelson to 13000, PF 06, 22, 1.59, 13.1, 1.68, 0.9, 13.8, 14.5, 0.00177, 0.00164, 0.035, 792,
Mattic - 02 Nelson to 13000, PF 07, 43.6, 2.16, 22.2, 1.98, 1.17, 17.9, 18.9, 0.00177, 0.00164, 0.035, 792,
Mattic - 02 Nelson to 13000, PF 08, 86.6, 2.91, 41.7, 2.08, 1.23, 32.7, 34, 0.00183, 0.00164, 0.035, 792,

Mattic - 02 Nelson to 13000, PF 09, 171.7, 3.61, 65.6, 2.61, 1.75, 35.9, 37.5, 0.0018, 0.00164, 0.035, 792,
Mattic - 02 Nelson to 13000, PF 10, 340.5, 4.66, 105.9, 3.21, 2.44, 41.3, 43.5, 0.00176, 0.00164, 0.035, 792,
Mattic - 03 13000 to US, PF 01, 9.6, 1.29, 11.2, 0.91, 0.6, 19, 19.5, 0.00141, 0.00145, 0.046, 861.2,
Mattic - 03 13000 to US, PF 02, 0.1, 0.22, 0.3, 0.3, 0.1, 2.7, 2.8, 0.00146, 0.00145, 0.046, 861.2,
Mattic - 03 13000 to US, PF 03, 3.5, 0.89, 5.3, 0.72, 0.4, 13.9, 14.2, 0.00143, 0.00145, 0.046, 861.2,
Mattic - 03 13000 to US, PF 04, 4.8, 1, 6.7, 0.79, 0.46, 15.4, 15.8, 0.00142, 0.00145, 0.046, 861.2,
Mattic - 03 13000 to US, PF 05, 9.7, 1.29, 11.3, 0.91, 0.6, 19.1, 19.6, 0.00141, 0.00145, 0.046, 861.2,
Mattic - 03 13000 to US, PF 06, 19.1, 1.65, 18.4, 1.08, 0.83, 21.9, 22.6, 0.0014, 0.00145, 0.046, 861.2,
Mattic - 03 13000 to US, PF 07, 37.8, 2.15, 30.1, 1.29, 1.14, 25.5, 26.4, 0.00139, 0.00145, 0.046, 861.2,
Mattic - 03 13000 to US, PF 08, 75, 2.81, 48.5, 1.57, 1.55, 30.2, 31.5, 0.00137, 0.00145, 0.046, 861.2,
Mattic - 03 13000 to US, PF 09, 148.8, 3.69, 76.2, 1.97, 2.15, 33.9, 35.8, 0.00139, 0.00145, 0.046, 861.2,
Mattic - 03 13000 to US, PF 10, 295.1, 4.93, 121.3, 2.46, 2.91, 39.2, 41.8, 0.00141, 0.00145, 0.046, 861.2,
Mattic - 04 USBC, PF 01, 6.9, 1.06, 11, 0.63, 0.53, 20.7, 20.9, 0.00144, 0.0013, 0.05, 892.5,
Mattic - 04 USBC, PF 02, 0.1, 0.16, 0.3, 0.22, 0.08, 3.2, 3.2, 0.00131, 0.0013, 0.05, 892.5,
Mattic - 04 USBC, PF 03, 2.5, 0.74, 5.3, 0.47, 0.37, 14.4, 14.5, 0.00143, 0.0013, 0.05, 892.5,
Mattic - 04 USBC, PF 04, 3.5, 0.84, 6.9, 0.51, 0.42, 16.4, 16.5, 0.00145, 0.0013, 0.05, 892.5,
Mattic - 04 USBC, PF 05, 7, 1.07, 11.1, 0.63, 0.53, 20.8, 21, 0.00144, 0.0013, 0.05, 892.5,
Mattic - 04 USBC, PF 06, 13.8, 1.3, 16.5, 0.84, 0.7, 23.2, 23.5, 0.00138, 0.0013, 0.05, 892.5,
Mattic - 04 USBC, PF 07, 27.4, 1.67, 25.2, 1.09, 1.02, 24.1, 24.6, 0.00131, 0.0013, 0.05, 892.5,
Mattic - 04 USBC, PF 08, 54.3, 2.24, 39.1, 1.39, 1.48, 25.4, 26.4, 0.00133, 0.0013, 0.05, 892.5,
Mattic - 04 USBC, PF 09, 107.6, 3.08, 61.3, 1.76, 2.11, 27.3, 29.1, 0.00131, 0.0013, 0.05, 892.5,
Mattic - 04 USBC, PF 10, 213.4, 4.34, 97.6, 2.19, 2.95, 30.2, 33.1, 0.00125, 0.0013, 0.05, 892.5,
Nelson - 01 DS to Wilborn, PF 01, 4.7, 0.66, 5.8, 0.94, 0.35, 17.3, 17.5, 0.00156, 0.00192, 0.035, 849.5,
Nelson - 01 DS to Wilborn, PF 02, 6.6, 0.75, 7.4, 1.03, 0.41, 18.9, 19.2, 0.00202, 0.00192, 0.035, 849.5,
Nelson - 01 DS to Wilborn, PF 03, 13.3, 0.99, 12.1, 1.26, 0.55, 22.3, 22.6, 0.0016, 0.00192, 0.035, 849.5,
Nelson - 01 DS to Wilborn, PF 04, 26.3, 1.3, 19.6, 1.54, 0.75, 25.7, 26.1, 0.00162, 0.00192, 0.035, 849.5,
Nelson - 01 DS to Wilborn, PF 05, 52.1, 1.73, 31.6, 1.88, 1.03, 29.5, 30.1, 0.00162, 0.00192, 0.035, 849.5,
Nelson - 01 DS to Wilborn, PF 06, 103.3, 2.32, 50.8, 2.29, 1.42, 34.2, 35.1, 0.00162, 0.00192, 0.035, 849.5,
Nelson - 01 DS to Wilborn, PF 07, 204.8, 3.14, 81.7, 2.72, 1.94, 40.2, 41.4, 0.00162, 0.00192, 0.035, 849.5,
Nelson - 01 DS to Wilborn, PF 08, 406.4, 4.27, 130.7, 3.28, 2.7, 46.2, 48, 0.0016, 0.00192, 0.035, 849.5,
Nelson - 01 DS to Wilborn, PF 09, 805.9, 5.84, 209, 4.01, 3.75, 52.7, 55.3, 0.00156, 0.00192, 0.035, 849.5,
Nelson - 01 DS to Wilborn, PF 10, 1598.1, 8.09, 337.1, 4.86, 5.15, 61.2, 65.1, 0.00151, 0.00192, 0.035, 849.5,
Nelson - 02 Wilborn to US, PF 01, 2.3, 0.41, 3.6, 0.67, 0.21, 18, 18.1, 0.00192, 0.00194, 0.035, 850,
Nelson - 02 Wilborn to US, PF 02, 3.3, 0.47, 4.7, 0.73, 0.24, 20.2, 20.3, 0.00192, 0.00194, 0.035, 850,
Nelson - 02 Wilborn to US, PF 03, 6.5, 0.6, 7.5, 0.88, 0.32, 24.3, 24.5, 0.00191, 0.00194, 0.035, 850,
Nelson - 02 Wilborn to US, PF 04, 13, 0.79, 12.1, 1.09, 0.45, 27.5, 27.7, 0.0019, 0.00194, 0.035, 850,
Nelson - 02 Wilborn to US, PF 05, 25.7, 1.03, 19.1, 1.36, 0.62, 30.8, 31.1, 0.00189, 0.00194, 0.035, 850,
Nelson - 02 Wilborn to US, PF 06, 51, 1.38, 30.3, 1.7, 0.88, 34.4, 34.8, 0.00188, 0.00194, 0.035, 850,
Nelson - 02 Wilborn to US, PF 07, 101, 1.88, 48.2, 2.12, 1.24, 38.7, 39.3, 0.00186, 0.00194, 0.035, 850,
Nelson - 02 Wilborn to US, PF 08, 200.2, 2.59, 77.3, 2.61, 1.73, 44.3, 45.2, 0.00185, 0.00194, 0.035, 850,
Nelson - 02 Wilborn to US, PF 09, 397.1, 3.6, 125.2, 3.18, 2.39, 52.4, 53.8, 0.00182, 0.00194, 0.035, 850,
Nelson - 02 Wilborn to US, PF 10, 787.6, 5.04, 206.9, 3.8, 3.2, 64.1, 66.2, 0.00176, 0.00194, 0.035, 850,
Nelson - 03 USBC, PF 01, 1.8, 0.24, 4.4, 0.41, 0.12, 37.1, 37.1, 0.00176, 0.002, 0.035, 820,
Nelson - 03 USBC, PF 02, 2.5, 0.27, 5.7, 0.44, 0.13, 42.1, 42.2, 0.00173, 0.002, 0.035, 820,
Nelson - 03 USBC, PF 03, 4.9, 0.35, 9.5, 0.51, 0.17, 54.7, 54.8, 0.00165, 0.002, 0.035, 820,
Nelson - 03 USBC, PF 04, 9.8, 0.45, 15.7, 0.62, 0.25, 63, 63.1, 0.00153, 0.002, 0.035, 820,
Nelson - 03 USBC, PF 05, 19.3, 0.59, 24.7, 0.78, 0.39, 63.6, 63.8, 0.00138, 0.002, 0.035, 820,
Nelson - 03 USBC, PF 06, 38.4, 0.82, 39.3, 0.98, 0.6, 64.6, 64.9, 0.00124, 0.002, 0.035, 820,
Nelson - 03 USBC, PF 07, 76.1, 1.17, 61.9, 1.23, 0.93, 66.1, 66.5, 0.00113, 0.002, 0.035, 820,
Nelson - 03 USBC, PF 08, 150.9, 1.65, 94.6, 1.6, 1.37, 68.2, 68.9, 0.00107, 0.002, 0.035, 820,
Nelson - 03 USBC, PF 09, 299.3, 2.4, 146.6, 2.04, 2.03, 71.4, 72.4, 0.00101, 0.002, 0.035, 820,
Nelson - 03 USBC, PF 10, 593.5, 3.48, 226.1, 2.62, 2.92, 76.1, 77.5, 0.00104, 0.002, 0.035, 820,
Senatobia - 01 DS to Res. Bound., PF 01, 23.5, 1.28, 45.6, 0.63, 0.66, 68.4, 68.8, 0.00069, 0.00154, 0.045, 829.4,
Senatobia - 01 DS to Res. Bound., PF 02, 33.1, 1.46, 57.8, 0.61, 0.78, 73.2, 73.8, 0.00066, 0.00154, 0.045, 829.4,
Senatobia - 01 DS to Res. Bound., PF 03, 65.6, 1.89, 90.3, 0.74, 1.15, 78.3, 79.1, 0.00055, 0.00154, 0.045, 829.4,
Senatobia - 01 DS to Res. Bound., PF 04, 129.7, 2.6, 148.3, 0.89, 1.77, 83.4, 84.6, 0.00041, 0.00154, 0.045, 829.4,
Senatobia - 01 DS to Res. Bound., PF 05, 253.3, 3.82, 251.9, 1.02, 2.84, 87.1, 89.1, 0.00028, 0.00154, 0.045, 829.4,
Senatobia - 01 DS to Res. Bound., PF 06, 470.5, 5.48, 401.1, 1.19, 4.23, 91.8, 95, 0.0002, 0.00154, 0.045, 829.4,
Senatobia - 01 DS to Res. Bound., PF 07, 503.8, 7.49, 592, 0.88, 5.78, 98.2, 102.4, 0.00007, 0.00154, 0.045, 829.4,
Senatobia - 01 DS to Res. Bound., PF 08, 565.9, 9.16, 758.5, 0.77, 7.16, 101.5, 106.2, 0.00004, 0.00154, 0.045, 829.4,
Senatobia - 01 DS to Res. Bound., PF 09, 661.2, 11.38, 986.7, 0.68, 9.19, 103, 107.8, 0.00003, 0.00154, 0.045, 829.4,
Senatobia - 01 DS to Res. Bound., PF 10, 1116.8, 12.32, 1083, 1.05, 10.06, 103.1, 108, 0.00005, 0.00154, 0.045, 829.4,
Senatobia - 02 Res. Bound to 15000, PF 01, 22.8, 1.34, 36.1, 0.78, 0.7, 54, 54.2, 0.00062, 0.00056, 0.045, 815.3,
Senatobia - 02 Res. Bound to 15000, PF 02, 32.1, 1.53, 46.6, 0.75, 0.79, 61.8, 62.1, 0.00063, 0.00056, 0.045, 815.3,
Senatobia - 02 Res. Bound to 15000, PF 03, 63.6, 1.97, 74.6, 0.91, 1.12, 67.7, 68.1, 0.00064, 0.00056, 0.045, 815.3,
Senatobia - 02 Res. Bound to 15000, PF 04, 126.1, 2.59, 118.4, 1.14, 1.57, 74.2, 74.8, 0.00065, 0.00056, 0.045, 815.3,
Senatobia - 02 Res. Bound to 15000, PF 05, 250, 3.46, 186.8, 1.41, 2.25, 81.5, 82.3, 0.00064, 0.00056, 0.045, 815.3,
Senatobia - 02 Res. Bound to 15000, PF 06, 488.4, 4.75, 298.3, 1.7, 3.21, 91.2, 92.5, 0.00059, 0.00056, 0.045, 815.3,
Senatobia - 02 Res. Bound to 15000, PF 07, 926.5, 6.39, 455.7, 2.09, 4.45, 100.2, 102.1, 0.00058, 0.00056, 0.045, 815.3,
Senatobia - 02 Res. Bound to 15000, PF 08, 1685.9, 8.24, 648.8, 2.64, 5.81, 108.7, 111.5, 0.00064, 0.00056, 0.045, 815.3,

Senatobia - 02 Res. Bound to 15000, PF 09, 2735.9, 10.28, 880.1, 3.14, 7.25, 117.6, 121.3, 0.00067, 0.00056, 0.045, 815.3,
Senatobia - 02 Res. Bound to 15000, PF 10, 4184.7, 12.01, 1087, 3.86, 8.67, 121.4, 125.3, 0.00078, 0.00056, 0.045, 815.3,
Senatobia - 03 15000 to G. Springs, PF 01, 22.5, 0.98, 32.5, 0.72, 0.54, 60.6, 60.8, 0.00068, 0.00078, 0.036, 844.5,
Senatobia - 03 15000 to G. Springs, PF 02, 31.6, 1.14, 41.9, 0.78, 0.63, 66.9, 67.1, 0.00066, 0.00078, 0.036, 844.5,
Senatobia - 03 15000 to G. Springs, PF 03, 62.8, 1.49, 66.5, 0.97, 0.93, 72, 72.3, 0.00063, 0.00078, 0.036, 844.5,
Senatobia - 03 15000 to G. Springs, PF 04, 124.5, 2.02, 105.7, 1.22, 1.38, 76.1, 76.6, 0.00058, 0.00078, 0.036, 844.5,
Senatobia - 03 15000 to G. Springs, PF 05, 246.8, 2.81, 167.7, 1.52, 2.04, 81, 81.8, 0.00055, 0.00078, 0.036, 844.5,
Senatobia - 03 15000 to G. Springs, PF 06, 489.5, 3.97, 266, 1.9, 2.99, 87.2, 88.5, 0.0005, 0.00078, 0.036, 844.5,
Senatobia - 03 15000 to G. Springs, PF 07, 970.8, 5.65, 418.4, 2.37, 4.32, 94.5, 96.6, 0.00048, 0.00078, 0.036, 844.5,
Senatobia - 03 15000 to G. Springs, PF 08, 1923.6, 7.98, 650.5, 2.99, 6.03, 104.7, 107.8, 0.00048, 0.00078, 0.036, 844.5,
Senatobia - 03 15000 to G. Springs, PF 09, 3755.3, 10.79, 962.4, 3.91, 7.88, 117.9, 122.3, 0.00058, 0.00078, 0.036, 844.5,
Senatobia - 03 15000 to G. Springs, PF 10, 6461.8, 13.3, 1275.4, 5.06, 9.5, 128.9, 134.5, 0.00074, 0.00078, 0.036, 844.5,
Senatobia - 04 G. Springs to Mattic, PF 01, 20.2, 1, 33.8, 0.69, 0.56, 59.7, 59.9, 0.00047, 0.00044, 0.035, 810.4,
Senatobia - 04 G. Springs to Mattic, PF 02, 28.4, 1.13, 41.9, 0.75, 0.66, 61.8, 62, 0.00047, 0.00044, 0.035, 810.4,
Senatobia - 04 G. Springs to Mattic, PF 03, 56.3, 1.47, 63.5, 0.94, 0.97, 64.8, 65.1, 0.00049, 0.00044, 0.035, 810.4,
Senatobia - 04 G. Springs to Mattic, PF 04, 111.7, 1.96, 95.9, 1.2, 1.4, 67.5, 68.2, 0.00051, 0.00044, 0.035, 810.4,
Senatobia - 04 G. Springs to Mattic, PF 05, 221.6, 2.67, 144.1, 1.56, 2.03, 70.1, 71.2, 0.00055, 0.00044, 0.035, 810.4,
Senatobia - 04 G. Springs to Mattic, PF 06, 439.4, 3.67, 216, 2.05, 2.88, 73.5, 75.2, 0.0006, 0.00044, 0.035, 810.4,
Senatobia - 04 G. Springs to Mattic, PF 07, 871.5, 5.14, 327.3, 2.67, 4.02, 79.3, 81.9, 0.00064, 0.00044, 0.035, 810.4,
Senatobia - 04 G. Springs to Mattic, PF 08, 1728.3, 7.32, 511.4, 3.39, 5.45, 90.6, 94.4, 0.00067, 0.00044, 0.035, 810.4,
Senatobia - 04 G. Springs to Mattic, PF 09, 3427.6, 10.45, 839.7, 4.1, 6.84, 117.7, 122.7, 0.00071, 0.00044, 0.035, 810.4,
Senatobia - 04 G. Springs to Mattic, PF 10, 6796.2, 14.09, 1303.1, 5.23, 9.04, 137.7, 144.1, 0.0008, 0.00044, 0.035, 810.4,
Senatobia - 05 Mattic to T. Jones, PF 01, 9.8, 0.72, 13.9, 0.76, 0.43, 34.4, 34.6, 0.00124, 0.00144, 0.042, 731.8,
Senatobia - 05 Mattic to T. Jones, PF 02, 13.8, 0.84, 18.1, 0.84, 0.48, 39.1, 39.3, 0.00124, 0.00144, 0.042, 731.8,
Senatobia - 05 Mattic to T. Jones, PF 03, 27.3, 1.11, 29.5, 1, 0.62, 47.5, 47.8, 0.00125, 0.00144, 0.042, 731.8,
Senatobia - 05 Mattic to T. Jones, PF 04, 54.1, 1.44, 45.7, 1.27, 0.89, 50.8, 51.2, 0.00127, 0.00144, 0.042, 731.8,
Senatobia - 05 Mattic to T. Jones, PF 05, 107.3, 1.91, 70.4, 1.62, 1.3, 53.6, 54.2, 0.0013, 0.00144, 0.042, 731.8,
Senatobia - 05 Mattic to T. Jones, PF 06, 212.8, 2.62, 109.1, 2.07, 1.88, 57, 57.9, 0.00134, 0.00144, 0.042, 731.8,
Senatobia - 05 Mattic to T. Jones, PF 07, 422.1, 3.68, 172.3, 2.51, 2.74, 61.4, 62.9, 0.00137, 0.00144, 0.042, 731.8,
Senatobia - 05 Mattic to T. Jones, PF 08, 837.1, 5.34, 279.6, 3.04, 3.99, 67.5, 69.9, 0.00122, 0.00144, 0.042, 731.8,
Senatobia - 05 Mattic to T. Jones, PF 09, 1660.1, 7.93, 466.7, 3.61, 5.74, 77.2, 81.1, 0.00106, 0.00144, 0.042, 731.8,
Senatobia - 05 Mattic to T. Jones, PF 10, 3292.3, 11.51, 765, 4.35, 8.01, 89.2, 95.5, 0.00098, 0.00144, 0.042, 731.8,
Senatobia - 06 T. Jones to 46000, PF 01, 7.7, 0.61, 9.9, 0.81, 0.38, 26.2, 26.4, 0.00147, 0.00145, 0.04, 803.2,
Senatobia - 06 T. Jones to 46000, PF 02, 10.8, 0.71, 12.6, 0.88, 0.45, 28.4, 28.7, 0.00147, 0.00145, 0.04, 803.2,
Senatobia - 06 T. Jones to 46000, PF 03, 21.5, 0.97, 20.2, 1.08, 0.64, 31.8, 32.1, 0.00146, 0.00145, 0.04, 803.2,
Senatobia - 06 T. Jones to 46000, PF 04, 42.6, 1.32, 31.7, 1.36, 0.91, 34.6, 35.1, 0.00145, 0.00145, 0.04, 803.2,
Senatobia - 06 T. Jones to 46000, PF 05, 84.5, 1.82, 49.8, 1.71, 1.29, 38, 38.7, 0.00145, 0.00145, 0.04, 803.2,
Senatobia - 06 T. Jones to 46000, PF 06, 167.6, 2.54, 79.1, 2.13, 1.8, 43.1, 44.2, 0.00146, 0.00145, 0.04, 803.2,
Senatobia - 06 T. Jones to 46000, PF 07, 332.4, 3.56, 126, 2.65, 2.49, 49.3, 50.8, 0.00147, 0.00145, 0.04, 803.2,
Senatobia - 06 T. Jones to 46000, PF 08, 659.2, 4.99, 202.9, 3.26, 3.4, 57.9, 60.2, 0.00147, 0.00145, 0.04, 803.2,
Senatobia - 06 T. Jones to 46000, PF 09, 1307.4, 7.05, 335.2, 3.91, 4.5, 71.6, 74.8, 0.00145, 0.00145, 0.04, 803.2,
Senatobia - 06 T. Jones to 46000, PF 10, 2592.8, 9.91, 563.9, 4.61, 6.06, 88.7, 93.4, 0.00135, 0.00145, 0.04, 803.2,
Senatobia - 07 46000 to 62000, PF 01, 5.9, 0.58, 7.3, 0.85, 0.33, 22.7, 22.8, 0.00194, 0.00201, 0.04, 845.4,
Senatobia - 07 46000 to 62000, PF 02, 8.2, 0.66, 9.3, 0.93, 0.39, 24.6, 24.7, 0.00194, 0.00201, 0.04, 845.4,
Senatobia - 07 46000 to 62000, PF 03, 16.4, 0.88, 15, 1.13, 0.53, 28.1, 28.3, 0.00192, 0.00201, 0.04, 845.4,
Senatobia - 07 46000 to 62000, PF 04, 32.6, 1.19, 24.5, 1.36, 0.73, 33.4, 33.7, 0.00191, 0.00201, 0.04, 845.4,
Senatobia - 07 46000 to 62000, PF 05, 64.6, 1.61, 39.7, 1.65, 1.01, 39.1, 39.5, 0.0019, 0.00201, 0.04, 845.4,
Senatobia - 07 46000 to 62000, PF 06, 128.1, 2.19, 63.9, 2.02, 1.4, 45.3, 45.8, 0.00188, 0.00201, 0.04, 845.4,
Senatobia - 07 46000 to 62000, PF 07, 253.5, 3, 103.3, 2.47, 1.94, 52.8, 53.7, 0.00185, 0.00201, 0.04, 845.4,
Senatobia - 07 46000 to 62000, PF 08, 498.6, 4.14, 169.9, 2.94, 2.59, 64.9, 66.1, 0.0018, 0.00201, 0.04, 845.4,
Senatobia - 07 46000 to 62000, PF 09, 983.2, 5.75, 287.8, 3.43, 3.34, 86.2, 87.9, 0.00176, 0.00201, 0.04, 845.4,
Senatobia - 07 46000 to 62000, PF 10, 1943.2, 7.72, 481.7, 4.05, 4.35, 109.9, 112.2, 0.00175, 0.00201, 0.04, 845.4,
Senatobia - 08 62000 to US, PF 01, 2.7, 0.44, 4.3, 0.72, 0.23, 18.2, 18.3, 0.00193, 0.00195, 0.04, 887.7,
Senatobia - 08 62000 to US, PF 02, 3.9, 0.51, 5.5, 0.75, 0.26, 20.4, 20.5, 0.00193, 0.00195, 0.04, 887.7,
Senatobia - 08 62000 to US, PF 03, 7.7, 0.67, 9.3, 0.86, 0.35, 25.8, 25.9, 0.00192, 0.00195, 0.04, 887.7,
Senatobia - 08 62000 to US, PF 04, 15.3, 0.87, 14.9, 1.03, 0.48, 30.6, 30.7, 0.00192, 0.00195, 0.04, 887.7,
Senatobia - 08 62000 to US, PF 05, 30.3, 1.14, 24.3, 1.24, 0.66, 36.4, 36.6, 0.0019, 0.00195, 0.04, 887.7,
Senatobia - 08 62000 to US, PF 06, 60.2, 1.52, 39.1, 1.52, 0.92, 42, 42.2, 0.00189, 0.00195, 0.04, 887.7,
Senatobia - 08 62000 to US, PF 07, 119.3, 2.02, 62, 1.9, 1.28, 47.2, 47.6, 0.00189, 0.00195, 0.04, 887.7,
Senatobia - 08 62000 to US, PF 08, 236.7, 2.74, 98.4, 2.38, 1.82, 52.8, 53.4, 0.00188, 0.00195, 0.04, 887.7,
Senatobia - 08 62000 to US, PF 09, 469.5, 3.77, 157.1, 2.97, 2.57, 59.4, 60.5, 0.00185, 0.00195, 0.04, 887.7,
Senatobia - 08 62000 to US, PF 10, 931.1, 5.36, 261.6, 3.53, 3.34, 76.4, 78.1, 0.00183, 0.00195, 0.04, 887.7,
Senatobia - 09 USBC, PF 01, 1.9, 0.37, 2.4, 0.79, 0.18, 13, 13.2, 0.00194, 0.0021, 0.04, 900,
Senatobia - 09 USBC, PF 02, 2.7, 0.44, 3.4, 0.79, 0.22, 15.4, 15.6, 0.00196, 0.0021, 0.04, 900,
Senatobia - 09 USBC, PF 03, 5.3, 0.6, 6.2, 0.85, 0.3, 20.7, 20.9, 0.00198, 0.0021, 0.04, 900,
Senatobia - 09 USBC, PF 04, 10.5, 0.78, 10.3, 1.02, 0.44, 23.2, 23.6, 0.002, 0.0021, 0.04, 900,
Senatobia - 09 USBC, PF 05, 20.9, 1.05, 17, 1.23, 0.62, 26.9, 27.4, 0.00204, 0.0021, 0.04, 900,
Senatobia - 09 USBC, PF 06, 41.5, 1.42, 27.9, 1.49, 0.85, 31.9, 32.6, 0.00207, 0.0021, 0.04, 900,
Senatobia - 09 USBC, PF 07, 82.2, 1.92, 45.4, 1.81, 1.14, 38.7, 39.7, 0.00208, 0.0021, 0.04, 900,
Senatobia - 09 USBC, PF 08, 163.1, 2.57, 73.6, 2.22, 1.51, 47.4, 48.7, 0.0021, 0.0021, 0.04, 900,

Senatobia - 09 USBC, PF 09, 323.5, 3.4, 114, 2.84, 2.19, 50.3, 52.1, 0.00208, 0.0021, 0.04, 900,
Senatobia - 09 USBC, PF 10, 641.6, 4.63, 178.4, 3.6, 3.12, 54.5, 57.2, 0.00208, 0.0021, 0.04, 900,
South Fork - 01 DS to 4600, PF 01, 2.8, 0.56, 4.3, 0.66, 0.35, 12.6, 12.7, 0.00211, 0.00209, 0.05, 863.3,
South Fork - 01 DS to 4600, PF 02, 5.5, 0.75, 6.8, 0.83, 0.49, 14, 14.2, 0.00211, 0.00209, 0.05, 863.3,
South Fork - 01 DS to 4600, PF 03, 11, 1.02, 10.8, 1.04, 0.69, 15.6, 16, 0.00211, 0.00209, 0.05, 863.3,
South Fork - 01 DS to 4600, PF 04, 21.8, 1.41, 17.1, 1.3, 0.97, 17.4, 17.9, 0.00211, 0.00209, 0.05, 863.3,
South Fork - 01 DS to 4600, PF 05, 43.2, 1.96, 27.2, 1.62, 1.35, 19.5, 20.3, 0.00212, 0.00209, 0.05, 863.3,
South Fork - 01 DS to 4600, PF 06, 85.6, 2.75, 43.6, 2, 1.86, 22.3, 23.6, 0.00214, 0.00209, 0.05, 863.3,
South Fork - 01 DS to 4600, PF 07, 169.9, 3.88, 70.9, 2.44, 2.53, 26.2, 28.1, 0.00215, 0.00209, 0.05, 863.3,
South Fork - 01 DS to 4600, PF 08, 336.9, 5.46, 116.9, 2.94, 3.37, 31.9, 34.7, 0.00212, 0.00209, 0.05, 863.3,
South Fork - 01 DS to 4600, PF 09, 668.1, 7.63, 192.3, 3.52, 4.55, 37.8, 42.2, 0.00201, 0.00209, 0.05, 863.3,
South Fork - 01 DS to 4600, PF 10, 843.6, 8.52, 226.6, 3.77, 5.07, 39.3, 44.6, 0.00201, 0.00209, 0.05, 863.3,
South Fork - 02 4600 to 10000, PF 01, 2.4, 0.52, 3.2, 0.75, 0.29, 10.9, 11, 0.00284, 0.00283, 0.05, 838.5,
South Fork - 02 4600 to 10000, PF 02, 4.6, 0.68, 5.1, 0.94, 0.41, 12.1, 12.3, 0.00284, 0.00283, 0.05, 838.5,
South Fork - 02 4600 to 10000, PF 03, 9.1, 0.9, 7.9, 1.17, 0.57, 13.4, 13.7, 0.00283, 0.00283, 0.05, 838.5,
South Fork - 02 4600 to 10000, PF 04, 18.1, 1.22, 12.5, 1.47, 0.81, 14.7, 15.2, 0.00281, 0.00283, 0.05, 838.5,
South Fork - 02 4600 to 10000, PF 05, 35.8, 1.69, 19.8, 1.83, 1.14, 16.6, 17.3, 0.00279, 0.00283, 0.05, 838.5,
South Fork - 02 4600 to 10000, PF 06, 71, 2.37, 31.8, 2.24, 1.6, 18.7, 19.9, 0.00276, 0.00283, 0.05, 838.5,
South Fork - 02 4600 to 10000, PF 07, 140.8, 3.35, 51.7, 2.73, 2.2, 21.6, 23.5, 0.00274, 0.00283, 0.05, 838.5,
South Fork - 02 4600 to 10000, PF 08, 279.3, 4.75, 84.1, 3.31, 2.99, 25, 28.1, 0.00274, 0.00283, 0.05, 838.5,
South Fork - 02 4600 to 10000, PF 09, 553.9, 6.76, 138.3, 3.99, 3.98, 29.8, 34.8, 0.00279, 0.00283, 0.05, 838.5,
South Fork - 02 4600 to 10000, PF 10, 699.4, 7.6, 163.8, 4.25, 4.38, 31.7, 37.4, 0.00281, 0.00283, 0.05, 838.5,
South Fork - 03 10000 to US, PF 01, 1.6, 0.54, 2.2, 0.75, 0.27, 7.9, 8.1, 0.00399, 0.004, 0.05, 810,
South Fork - 03 10000 to US, PF 02, 3.1, 0.7, 3.6, 0.88, 0.34, 10.2, 10.4, 0.00401, 0.004, 0.05, 810,
South Fork - 03 10000 to US, PF 03, 6.2, 0.89, 5.7, 1.11, 0.48, 11.4, 11.7, 0.00401, 0.004, 0.05, 810,
South Fork - 03 10000 to US, PF 04, 12.2, 1.16, 8.8, 1.4, 0.69, 12.3, 12.7, 0.00402, 0.004, 0.05, 810,
South Fork - 03 10000 to US, PF 05, 24.2, 1.54, 13.7, 1.77, 0.97, 13.4, 14.1, 0.00401, 0.004, 0.05, 810,
South Fork - 03 10000 to US, PF 06, 48, 2.09, 21.5, 2.24, 1.33, 15, 16.1, 0.00401, 0.004, 0.05, 810,
South Fork - 03 10000 to US, PF 07, 95.2, 2.87, 34, 2.8, 1.83, 17, 18.6, 0.00396, 0.004, 0.05, 810,
South Fork - 03 10000 to US, PF 08, 188.8, 3.99, 54.5, 3.46, 2.49, 19.4, 21.9, 0.00385, 0.004, 0.05, 810,
South Fork - 03 10000 to US, PF 09, 374.4, 5.65, 89.2, 4.2, 3.36, 22.5, 26.5, 0.00362, 0.004, 0.05, 810,
South Fork - 03 10000 to US, PF 10, 472.8, 6.41, 106.9, 4.42, 3.69, 24.4, 29, 0.00352, 0.004, 0.05, 810,
South Fork - 04 USBC, PF 01, 1.6, 0.49, 2, 0.8, 0.24, 8.2, 8.4, 0.00391, 0.004, 0.05, 810,
South Fork - 04 USBC, PF 02, 3.1, 0.62, 3.2, 0.96, 0.3, 10.4, 10.6, 0.00388, 0.004, 0.05, 810,
South Fork - 04 USBC, PF 03, 6.2, 0.8, 5.4, 1.16, 0.41, 12.9, 13.2, 0.00387, 0.004, 0.05, 810,
South Fork - 04 USBC, PF 04, 12.2, 1.04, 8.5, 1.44, 0.61, 13.5, 14, 0.00384, 0.004, 0.05, 810,
South Fork - 04 USBC, PF 05, 24.2, 1.4, 13.5, 1.79, 0.89, 14.4, 15.1, 0.00383, 0.004, 0.05, 810,
South Fork - 04 USBC, PF 06, 48, 1.95, 21.7, 2.21, 1.29, 15.7, 16.8, 0.00387, 0.004, 0.05, 810,
South Fork - 04 USBC, PF 07, 95.2, 2.74, 34.9, 2.73, 1.81, 17.6, 19.3, 0.00386, 0.004, 0.05, 810,
South Fork - 04 USBC, PF 08, 188.8, 3.88, 56.5, 3.34, 2.47, 20.4, 22.9, 0.00385, 0.004, 0.05, 810,
South Fork - 04 USBC, PF 09, 374.4, 5.48, 92.2, 4.06, 3.31, 24.1, 27.8, 0.0038, 0.004, 0.05, 810,
South Fork - 04 USBC, PF 10, 472.8, 6.16, 109.1, 4.33, 3.67, 25.3, 29.7, 0.00377, 0.004, 0.05, 810,
Steammill - 01 DS to 5200, PF 01, 1.2, 0.4, 2, 0.65, 0.2, 10.1, 10.3, 0.00301, 0.00295, 0.045, 797.9,
Steammill - 01 DS to 5200, PF 02, 2.4, 0.51, 3.2, 0.8, 0.28, 11.5, 11.8, 0.00301, 0.00295, 0.045, 797.9,
Steammill - 01 DS to 5200, PF 03, 4.8, 0.66, 5, 1.03, 0.39, 12.6, 13, 0.00298, 0.00295, 0.045, 797.9,
Steammill - 01 DS to 5200, PF 04, 9.4, 0.88, 7.7, 1.3, 0.56, 13.4, 13.9, 0.00297, 0.00295, 0.045, 797.9,
Steammill - 01 DS to 5200, PF 05, 18.7, 1.19, 12, 1.64, 0.8, 14.3, 15, 0.00294, 0.00295, 0.045, 797.9,
Steammill - 01 DS to 5200, PF 06, 37.2, 1.66, 19, 2.04, 1.12, 15.7, 16.9, 0.00291, 0.00295, 0.045, 797.9,
Steammill - 01 DS to 5200, PF 07, 73.7, 2.34, 30.1, 2.54, 1.59, 16.9, 18.7, 0.00284, 0.00295, 0.045, 797.9,
Steammill - 01 DS to 5200, PF 08, 146.2, 3.4, 49.6, 3.04, 2.21, 19.5, 22.3, 0.00269, 0.00295, 0.045, 797.9,
Steammill - 01 DS to 5200, PF 09, 290, 5.07, 85.3, 3.54, 3.1, 22.8, 27.1, 0.00241, 0.00295, 0.045, 797.9,
Steammill - 01 DS to 5200, PF 10, 366.2, 5.77, 101.9, 3.73, 3.43, 24.4, 29.3, 0.00238, 0.00295, 0.045, 797.9,
Steammill - 02 5200 to US, PF 01, 0.9, 0.22, 1.2, 0.76, 0.2, 6, 6.2, 0.00444, 0.0045, 0.045, 882,
Steammill - 02 5200 to US, PF 02, 1.8, 0.34, 1.9, 0.94, 0.3, 6.3, 6.6, 0.00444, 0.0045, 0.045, 882,
Steammill - 02 5200 to US, PF 03, 3.6, 0.52, 3.1, 1.19, 0.43, 6.8, 7.2, 0.00444, 0.0045, 0.045, 882,
Steammill - 02 5200 to US, PF 04, 7.1, 0.77, 4.9, 1.49, 0.6, 7.5, 8.1, 0.00444, 0.0045, 0.045, 882,
Steammill - 02 5200 to US, PF 05, 14.1, 1.14, 7.8, 1.84, 0.83, 8.4, 9.4, 0.00445, 0.0045, 0.045, 882,
Steammill - 02 5200 to US, PF 06, 28, 1.67, 12.6, 2.25, 1.12, 9.8, 11.2, 0.00448, 0.0045, 0.045, 882,
Steammill - 02 5200 to US, PF 07, 55.5, 2.39, 20.5, 2.72, 1.46, 12.1, 14.1, 0.00455, 0.0045, 0.045, 882,
Steammill - 02 5200 to US, PF 08, 110.1, 3.35, 33.1, 3.32, 1.92, 14.6, 17.3, 0.00463, 0.0045, 0.045, 882,
Steammill - 02 5200 to US, PF 09, 218.3, 4.62, 53.6, 4.07, 2.48, 17.9, 21.6, 0.00463, 0.0045, 0.045, 882,
Steammill - 02 5200 to US, PF 10, 275.6, 5.14, 63.2, 4.36, 2.71, 19.2, 23.3, 0.00459, 0.0045, 0.045, 882,
Steammill - 03 USBC, PF 01, 0.9, 0.16, 1.4, 0.62, 0.15, 9.3, 9.4, 0.0045, 0.0045, 0.045, 882,
Steammill - 03 USBC, PF 02, 1.8, 0.22, 2, 0.89, 0.21, 9.4, 9.6, 0.00444, 0.0045, 0.045, 882,
Steammill - 03 USBC, PF 03, 3.6, 0.32, 3, 1.19, 0.31, 9.6, 9.9, 0.00437, 0.0045, 0.045, 882,
Steammill - 03 USBC, PF 04, 7.1, 0.5, 4.7, 1.5, 0.46, 9.9, 10.4, 0.00431, 0.0045, 0.045, 882,
Steammill - 03 USBC, PF 05, 14.1, 0.78, 7.6, 1.87, 0.68, 10.4, 11.1, 0.00425, 0.0045, 0.045, 882,
Steammill - 03 USBC, PF 06, 28, 1.21, 12.2, 2.3, 0.99, 11.2, 12.3, 0.00419, 0.0045, 0.045, 882,
Steammill - 03 USBC, PF 07, 55.5, 1.87, 20, 2.77, 1.42, 12.4, 14.1, 0.00416, 0.0045, 0.045, 882,
Steammill - 03 USBC, PF 08, 110.1, 2.83, 32.8, 3.36, 1.96, 14.1, 16.7, 0.00406, 0.0045, 0.045, 882,

Steammill - 03 USBC, PF 09, 218.3, 4.26, 54.7, 3.99, 2.67, 16.6, 20.5, 0.0041, 0.0045, 0.045, 882,
Steammill - 03 USBC, PF 10, 275.6, 4.84, 64.6, 4.27, 2.92, 17.7, 22.1, 0.00415, 0.0045, 0.045, 882,
Thornton - 01 DS to 1968 Limits, PF 01, 2.6, 0.5, 4.7, 0.67, 0.34, 13.5, 13.8, 0.00152, 0.00171, 0.045, 673.7,
Thornton - 01 DS to 1968 Limits, PF 02, 5.1, 0.68, 8.1, 0.88, 0.48, 16.2, 16.6, 0.00144, 0.00171, 0.045, 673.7,
Thornton - 01 DS to 1968 Limits, PF 03, 10.1, 0.98, 14.7, 1.41, 0.72, 17.3, 17.8, 0.00117, 0.00171, 0.045, 673.7,
Thornton - 01 DS to 1968 Limits, PF 04, 20, 1.52, 27.2, 1.64, 1.11, 19.5, 20.4, 0.0011, 0.00171, 0.045, 673.7,
Thornton - 01 DS to 1968 Limits, PF 05, 39.7, 2.52, 54.1, 1.19, 1.71, 26.6, 28, 0.0009, 0.00171, 0.045, 673.7,
Thornton - 01 DS to 1968 Limits, PF 06, 78.8, 4.19, 111, 1.13, 2.69, 34.6, 37, 0.00047, 0.00171, 0.045, 673.7,
Thornton - 01 DS to 1968 Limits, PF 07, 150.5, 6.86, 221.6, 0.93, 4.23, 45.5, 49.3, 0.00015, 0.00171, 0.045, 673.7,
Thornton - 01 DS to 1968 Limits, PF 08, 227.8, 9.89, 369.1, 0.79, 6.51, 50.1, 55.2, 0.00008, 0.00171, 0.045, 673.7,
Thornton - 01 DS to 1968 Limits, PF 09, 127.3, 14.25, 590.5, 0.23, 10.31, 50.8, 56.5, 0.00002, 0.00171, 0.045, 673.7,
Thornton - 01 DS to 1968 Limits, PF 10, 122.4, 15.7, 664.1, 0.19, 11.61, 50.8, 56.5, 0.00001, 0.00171, 0.045, 673.7,
Thornton - 02 1968 Limits to Steammill, PF 01, 2.4, 0.32, 4, 0.66, 0.23, 16.8, 17, 0.00236, 0.00211, 0.045, 468.3,
Thornton - 02 1968 Limits to Steammill, PF 02, 4.6, 0.45, 6.2, 0.81, 0.35, 17, 17.4, 0.00241, 0.00211, 0.045, 468.3,
Thornton - 02 1968 Limits to Steammill, PF 03, 9.2, 0.64, 9.5, 1.01, 0.53, 17.4, 17.9, 0.00234, 0.00211, 0.045, 468.3,
Thornton - 02 1968 Limits to Steammill, PF 04, 18.2, 0.92, 14.5, 1.3, 0.77, 17.9, 18.7, 0.00223, 0.00211, 0.045, 468.3,
Thornton - 02 1968 Limits to Steammill, PF 05, 36.2, 1.36, 22.4, 1.65, 1.12, 18.8, 20, 0.00208, 0.00211, 0.045, 468.3,
Thornton - 02 1968 Limits to Steammill, PF 06, 71.8, 2.04, 35.7, 2.06, 1.62, 20.2, 21.9, 0.00194, 0.00211, 0.045, 468.3,
Thornton - 02 1968 Limits to Steammill, PF 07, 142.4, 3.2, 60.6, 2.41, 2.38, 22.5, 25.3, 0.00154, 0.00211, 0.045, 468.3,
Thornton - 02 1968 Limits to Steammill, PF 08, 282.4, 5.29, 115.6, 2.54, 3.38, 29.4, 34.1, 0.00102, 0.00211, 0.045, 468.3,
Thornton - 02 1968 Limits to Steammill, PF 09, 428.5, 8.78, 236.5, 1.98, 4.93, 40.1, 47.6, 0.00037, 0.00211, 0.045, 468.3,
Thornton - 02 1968 Limits to Steammill, PF 10, 311.3, 9.97, 285.8, 1.32, 5.73, 42, 49.7, 0.00016, 0.00211, 0.045, 468.3,
Thornton - 03 Steammill to US, PF 01, 0.7, 0.42, 1, 1.07, 0.21, 4.1, 4.2, 0.00427, 0.00415, 0.053, 659.6,
Thornton - 03 Steammill to US, PF 02, 1.4, 0.59, 1.7, 0.87, 0.29, 5.7, 5.9, 0.00434, 0.00415, 0.053, 659.6,
Thornton - 03 Steammill to US, PF 03, 2.7, 0.76, 2.9, 0.95, 0.37, 7.5, 7.7, 0.00434, 0.00415, 0.053, 659.6,
Thornton - 03 Steammill to US, PF 04, 5.5, 0.99, 4.8, 1.14, 0.49, 9.5, 9.8, 0.00431, 0.00415, 0.053, 659.6,
Thornton - 03 Steammill to US, PF 05, 10.9, 1.27, 7.6, 1.42, 0.68, 10.8, 11.2, 0.00425, 0.00415, 0.053, 659.6,
Thornton - 03 Steammill to US, PF 06, 21.6, 1.66, 12.2, 1.76, 0.94, 12.3, 13, 0.00417, 0.00415, 0.053, 659.6,
Thornton - 03 Steammill to US, PF 07, 42.9, 2.23, 19.7, 2.17, 1.3, 14.1, 15.1, 0.00404, 0.00415, 0.053, 659.6,
Thornton - 03 Steammill to US, PF 08, 85.2, 3.06, 32.7, 2.62, 1.78, 16.7, 18.2, 0.00378, 0.00415, 0.053, 659.6,
Thornton - 03 Steammill to US, PF 09, 168.9, 4.39, 58.4, 2.97, 2.42, 21.4, 23.8, 0.00329, 0.00415, 0.053, 659.6,
Thornton - 03 Steammill to US, PF 10, 213.1, 4.96, 71.9, 3.04, 2.63, 24.2, 26.9, 0.00319, 0.00415, 0.053, 659.6,
Thornton - 04 USBC, PF 01, 0.5, 0.28, 1.7, 0.3, 0.17, 9.6, 9.7, 0.00406, 0.004, 0.055, 878.3,
Thornton - 04 USBC, PF 02, 1.1, 0.35, 2.4, 0.47, 0.24, 9.8, 9.9, 0.00392, 0.004, 0.055, 878.3,
Thornton - 04 USBC, PF 03, 2.1, 0.44, 3.2, 0.66, 0.31, 10.1, 10.3, 0.00381, 0.004, 0.055, 878.3,
Thornton - 04 USBC, PF 04, 4.2, 0.6, 4.8, 0.87, 0.44, 10.6, 10.9, 0.00375, 0.004, 0.055, 878.3,
Thornton - 04 USBC, PF 05, 8.3, 0.84, 7.5, 1.1, 0.64, 11.4, 11.8, 0.00375, 0.004, 0.055, 878.3,
Thornton - 04 USBC, PF 06, 16.4, 1.2, 11.9, 1.38, 0.9, 12.5, 13.2, 0.00378, 0.004, 0.055, 878.3,
Thornton - 04 USBC, PF 07, 32.5, 1.73, 18.9, 1.72, 1.25, 14.2, 15.1, 0.00385, 0.004, 0.055, 878.3,
Thornton - 04 USBC, PF 08, 64.6, 2.46, 30.1, 2.14, 1.68, 16.5, 17.9, 0.00391, 0.004, 0.055, 878.3,
Thornton - 04 USBC, PF 09, 128, 3.45, 48, 2.67, 2.22, 19.7, 21.6, 0.00395, 0.004, 0.055, 878.3,
Thornton - 04 USBC, PF 10, 161.7, 3.87, 56.4, 2.87, 2.43, 21, 23.2, 0.00395, 0.004, 0.055, 878.3,
Tolbert-Jones - 01 DS to 3000, PF 01, 1.6, 0.19, 3.3, 0.55, 0.18, 21, 21.1, 0.00191, 0.0022, 0.045, 670,
Tolbert-Jones - 01 DS to 3000, PF 02, 2.2, 0.23, 4, 0.59, 0.22, 21.2, 21.3, 0.00186, 0.0022, 0.045, 670,
Tolbert-Jones - 01 DS to 3000, PF 03, 4.4, 0.36, 6.5, 0.7, 0.33, 21.8, 22, 0.00176, 0.0022, 0.045, 670,
Tolbert-Jones - 01 DS to 3000, PF 04, 8.7, 0.55, 10.5, 0.84, 0.49, 22.7, 22.9, 0.00163, 0.0022, 0.045, 670,
Tolbert-Jones - 01 DS to 3000, PF 05, 17.3, 0.84, 17, 1.02, 0.73, 23.9, 24.3, 0.00151, 0.0022, 0.045, 670,
Tolbert-Jones - 01 DS to 3000, PF 06, 34.3, 1.29, 27.9, 1.23, 1.09, 25.5, 26.2, 0.0014, 0.0022, 0.045, 670,
Tolbert-Jones - 01 DS to 3000, PF 07, 68, 1.95, 45.4, 1.5, 1.58, 27.9, 29, 0.00139, 0.0022, 0.045, 670,
Tolbert-Jones - 01 DS to 3000, PF 08, 134.8, 2.87, 72.5, 1.87, 2.22, 31.1, 32.8, 0.00153, 0.0022, 0.045, 670,
Tolbert-Jones - 01 DS to 3000, PF 09, 267.4, 4.09, 113.1, 2.37, 3, 35.3, 37.7, 0.00171, 0.0022, 0.045, 670,
Tolbert-Jones - 01 DS to 3000, PF 10, 530.3, 5.91, 183, 2.9, 4.09, 41.2, 44.8, 0.00134, 0.0022, 0.045, 670,
Tolbert-Jones - 02 3000 to 12350, PF 01, 1.4, 0.43, 2.6, 0.65, 0.22, 12.6, 12.8, 0.00245, 0.00245, 0.045, 799.4,
Tolbert-Jones - 02 3000 to 12350, PF 02, 1.9, 0.49, 3.2, 0.7, 0.25, 13.5, 13.7, 0.00245, 0.00245, 0.045, 799.4,
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Tolbert-Jones - 02 3000 to 12350, PF 05, 14.7, 1.09, 12.3, 1.24, 0.64, 18.9, 19.5, 0.00243, 0.00245, 0.045, 799.4,
Tolbert-Jones - 02 3000 to 12350, PF 06, 29.2, 1.45, 19.4, 1.53, 0.9, 20.9, 21.7, 0.0024, 0.00245, 0.045, 799.4,
Tolbert-Jones - 02 3000 to 12350, PF 07, 57.8, 1.97, 30.7, 1.9, 1.27, 23.1, 24.1, 0.00237, 0.00245, 0.045, 799.4,
Tolbert-Jones - 02 3000 to 12350, PF 08, 114.7, 2.72, 49.1, 2.35, 1.78, 25.8, 27.4, 0.00236, 0.00245, 0.045, 799.4,
Tolbert-Jones - 02 3000 to 12350, PF 09, 227.5, 3.81, 79.5, 2.87, 2.46, 29.5, 31.9, 0.00235, 0.00245, 0.045, 799.4,
Tolbert-Jones - 02 3000 to 12350, PF 10, 451.1, 5.36, 129.2, 3.5, 3.38, 34.2, 37.9, 0.00234, 0.00245, 0.045, 799.4,
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Tolbert-Jones - 03 USBC, PF 02, 1.1, 0.52, 1.6, 0.68, 0.25, 6.3, 6.6, 0.00204, 0.002, 0.045, 875,
Tolbert-Jones - 03 USBC, PF 03, 2.1, 0.68, 2.8, 0.74, 0.33, 8.3, 8.6, 0.00208, 0.002, 0.045, 875,
Tolbert-Jones - 03 USBC, PF 04, 4.2, 0.9, 4.9, 0.85, 0.43, 11, 11.4, 0.00215, 0.002, 0.045, 875,
Tolbert-Jones - 03 USBC, PF 05, 8.2, 1.16, 8.2, 1, 0.56, 14.1, 14.7, 0.00219, 0.002, 0.045, 875,
Tolbert-Jones - 03 USBC, PF 06, 16.3, 1.48, 13.4, 1.22, 0.71, 18.1, 18.8, 0.00222, 0.002, 0.045, 875,
Tolbert-Jones - 03 USBC, PF 07, 32.4, 1.86, 20.8, 1.56, 0.99, 20, 21, 0.0022, 0.002, 0.045, 875,
Tolbert-Jones - 03 USBC, PF 08, 64.3, 2.43, 32.5, 1.98, 1.43, 21.4, 22.8, 0.00215, 0.002, 0.045, 875,

Tolbert-Jones - 03 USBC, PF 09, 127.5, 3.28, 51.7, 2.47, 2.02, 23.5, 25.6, 0.00215, 0.002, 0.045, 875,
Tolbert-Jones - 03 USBC, PF 10, 252.8, 4.53, 82.7, 3.06, 2.8, 26.6, 29.5, 0.00221, 0.002, 0.045, 875,
West Ditch - 01 DS to Res. Bound., PF 01, 7.9, 1.89, 20.9, 0.76, 1.1, 14.8, 15.6, 0.00047, 0.00073, 0.03, 823.1,
West Ditch - 01 DS to Res. Bound., PF 02, 15.7, 2.47, 31.6, 0.91, 1.44, 17.4, 18.5, 0.00045, 0.00073, 0.03, 823.1,
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West Ditch - 02 Res. Bound. To 24300, PF 01, 5.7, 0.76, 5.4, 1.2, 0.47, 11.4, 11.8, 0.00195, 0.00195, 0.037, 782.9,
West Ditch - 02 Res. Bound. To 24300, PF 02, 11.2, 1.03, 8.7, 1.39, 0.64, 13.2, 13.7, 0.00195, 0.00195, 0.037, 782.9,
West Ditch - 02 Res. Bound. To 24300, PF 03, 22.3, 1.42, 14.1, 1.65, 0.87, 15.7, 16.5, 0.00195, 0.00195, 0.037, 782.9,
West Ditch - 02 Res. Bound. To 24300, PF 04, 44.2, 1.94, 23.1, 1.97, 1.16, 19.3, 20.3, 0.00195, 0.00195, 0.037, 782.9,
West Ditch - 02 Res. Bound. To 24300, PF 05, 87.6, 2.65, 37.9, 2.37, 1.51, 23.9, 25.4, 0.00196, 0.00195, 0.037, 782.9,
West Ditch - 02 Res. Bound. To 24300, PF 06, 173.8, 3.62, 63.8, 2.79, 2.04, 29.6, 31.8, 0.00188, 0.00195, 0.037, 782.9,
West Ditch - 02 Res. Bound. To 24300, PF 07, 344.6, 4.99, 107, 3.3, 2.87, 34.9, 38.1, 0.00175, 0.00195, 0.037, 782.9,
West Ditch - 02 Res. Bound. To 24300, PF 08, 683.5, 6.9, 176, 3.96, 4.04, 39.6, 44.4, 0.00162, 0.00195, 0.037, 782.9,
West Ditch - 02 Res. Bound. To 24300, PF 09, 1355, 9.52, 285.2, 4.8, 5.43, 46.4, 53.2, 0.00155, 0.00195, 0.037, 782.9,
West Ditch - 02 Res. Bound. To 24300, PF 10, 1705.8, 10.52, 332.9, 5.17, 5.87, 50, 57.4, 0.00158, 0.00195, 0.037, 782.9,
West Ditch - 03 24300 to US, PF 01, 3, 0.54, 4.1, 0.79, 0.3, 14, 14.3, 0.00249, 0.00248, 0.045, 915.8,
West Ditch - 03 24300 to US, PF 02, 6.1, 0.72, 6.4, 0.97, 0.43, 14.9, 15.3, 0.00248, 0.00248, 0.045, 915.8,
West Ditch - 03 24300 to US, PF 03, 12, 0.96, 10, 1.22, 0.61, 16, 16.5, 0.00247, 0.00248, 0.045, 915.8,
West Ditch - 03 24300 to US, PF 04, 23.8, 1.32, 15.7, 1.52, 0.86, 17.4, 18.1, 0.00247, 0.00248, 0.045, 915.8,
West Ditch - 03 24300 to US, PF 05, 47.3, 1.85, 25.1, 1.88, 1.22, 19.2, 20.3, 0.00244, 0.00248, 0.045, 915.8,
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White's - 02 1968 to 8000, PF 05, 42.1, 1.95, 28.1, 1.8, 1.23, 23.5, 24.5, 0.00172, 0.00198, 0.045, 689.7,
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White's - 02 1968 to 8000, PF 07, 165.6, 3.66, 73.8, 2.68, 2.23, 31.1, 33.2, 0.00178, 0.00198, 0.045, 689.7,
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White's - 03 8000 to US, PF 01, 1.3, 0.47, 1.9, 0.82, 0.23, 8.8, 9, 0.00251, 0.00257, 0.045, 900.6,
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White's - 03 8000 to US, PF 10, 380.9, 5.78, 117.4, 3.27, 3.36, 31.4, 34.6, 0.00187, 0.00257, 0.045, 900.6,
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White's - 04 USBC, PF 02, 1.9, 0.37, 2.7, 0.69, 0.21, 13.1, 13.3, 0.00218, 0.0023, 0.045, 825,
White's - 04 USBC, PF 03, 3.8, 0.51, 4.5, 0.84, 0.33, 13.5, 13.7, 0.00217, 0.0023, 0.045, 825,
White's - 04 USBC, PF 04, 7.6, 0.71, 7.3, 1.04, 0.5, 14, 14.4, 0.00219, 0.0023, 0.045, 825,
White's - 04 USBC, PF 05, 15, 1, 11.6, 1.3, 0.75, 14.9, 15.5, 0.00219, 0.0023, 0.045, 825,
White's - 04 USBC, PF 06, 29.8, 1.44, 18.4, 1.62, 1.08, 16.1, 17, 0.00216, 0.0023, 0.045, 825,
White's - 04 USBC, PF 07, 59.1, 2.09, 29.4, 2.01, 1.53, 17.9, 19.2, 0.00211, 0.0023, 0.045, 825,
White's - 04 USBC, PF 08, 117.3, 3.03, 47.4, 2.47, 2.11, 20.5, 22.5, 0.00208, 0.0023, 0.045, 825,
White's - 04 USBC, PF 09, 232.6, 4.37, 77.5, 3, 2.85, 24.3, 27.2, 0.00206, 0.0023, 0.045, 825,
White's - 04 USBC, PF 10, 293.7, 4.94, 91.6, 3.21, 3.14, 25.9, 29.2, 0.00209, 0.0023, 0.045, 825,
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Basket - 01 DS to 4000, PF 03, , 4.87, 9.58, 65.26, 13.79, 5.17, 2.86, 1.04, 0, 0, 0, 0, 0,
Basket - 01 DS to 4000, PF 04, , 13.88, 27.47, 153.9, 34.81, 14.8, 10.18, 3.08, 0, 0, 0, 0, 0,
Basket - 01 DS to 4000, PF 05, , 28.2, 56.12, 268.64, 64.85, 30.04, 22.9, 12.75, 0, 0, 0, 0, 0,
Basket - 01 DS to 4000, PF 06, , 27.04, 54.06, 219.37, 57.61, 28.92, 23.81, 14.9, 0, 0, 0, 0, 0,
Basket - 01 DS to 4000, PF 07, , 5.98, 12.01, 40.91, 12.06, 6.45, 5.4, 4.8, 0, 0, 0, 0, 0,
Basket - 01 DS to 4000, PF 08, , 1.03, 2.07, 7.19, 2.3, 1.2, 0.81, 0, 0, 0, 0, 0, 0,
Basket - 01 DS to 4000, PF 09, , 0, 0, 0.01, 0, 0, 0, 0, 0, 0, 0, 0, 0,
Basket - 01 DS to 4000, PF 10, , 0, 0, 0.01, 0, 0, 0, 0, 0, 0, 0, 0, 0,
Basket - 02 4000 to 1968 Limits, PF 01, , 0.34, 0.65, 8.87, 1.54, 0.32, 0, 0, 0, 0, 0, 0, 0,
Basket - 02 4000 to 1968 Limits, PF 02, , 1.6, 3.1, 27.55, 5.34, 1.68, 0.6, 0, 0, 0, 0, 0, 0,
Basket - 02 4000 to 1968 Limits, PF 03, , 6.22, 12.23, 82.68, 17.23, 6.53, 3.82, 2, 0, 0, 0, 0, 0,
Basket - 02 4000 to 1968 Limits, PF 04, , 21.52, 42.56, 246.84, 54.04, 22.71, 15.73, 7.13, 0, 0, 0, 0, 0,
Basket - 02 4000 to 1968 Limits, PF 05, , 67.87, 134.64, 713.27, 160.71, 71.35, 53.04, 36.37, 0.04, 0, 0, 0, 0,
Basket - 02 4000 to 1968 Limits, PF 06, , 202.37, 402.1, 2024.86, 463.99, 212.41, 163.06, 130.85, 1.54, 0, 0, 0, 0,
Basket - 02 4000 to 1968 Limits, PF 07, , 543.39, 1080.86, 5255.39, 1220.73, 570.36, 445.46, 386.64, 6.31, 1.97, 0, 0, 0,
Basket - 02 4000 to 1968 Limits, PF 08, , 1202.52, 2394.33, 11255.26, 2672.82, 1278.83, 963.41, 928.25, 13.49, 10.96, 0, 0, 0,
Basket - 02 4000 to 1968 Limits, PF 09, , 1859.7, 3711.7, 16024.39, 3975.32, 1981.33, 1552.46, 1559.31, 15.94, 16.48, 1.96, 0, 0,
Basket - 02 4000 to 1968 Limits, PF 10, , 2057.32, 4108.89, 17294.59, 4348.72, 2193.55, 1736.28, 1762.22, 15.43, 16.47, 2.61, 0, 0,
Basket - 03 1968 to 15400, PF 01, , 0.71, 1.36, 14.17, 2.6, 0.73, 0.16, 0, 0, 0, 0, 0, 0,
Basket - 03 1968 to 15400, PF 02, , 2.9, 5.67, 43.68, 8.67, 3.04, 1.54, 0.39, 0, 0, 0, 0, 0,
Basket - 03 1968 to 15400, PF 03, , 10.21, 20.1, 130.79, 27.29, 10.74, 6.85, 1.7, 0, 0, 0, 0, 0,
Basket - 03 1968 to 15400, PF 04, , 33.1, 65.43, 384.13, 82.59, 34.69, 24.31, 13.87, 0, 0, 0, 0, 0,
Basket - 03 1968 to 15400, PF 05, , 102.92, 203.85, 1130.51, 247.18, 107.65, 78.76, 57.38, 0.45, 0, 0, 0, 0,
Basket - 03 1968 to 15400, PF 06, , 301.63, 597.99, 3227.61, 711.24, 315.34, 234.56, 189.29, 3.36, 0.17, 0, 0, 0,
Basket - 03 1968 to 15400, PF 07, , 808.96, 1603.82, 8647.89, 1914, 856.16, 602.58, 542.52, 10.42, 6.38, 0, 0, 0,
Basket - 03 1968 to 15400, PF 08, , 2083.34, 4131.8, 22048.26, 4896.91, 2202.09, 1566.45, 1437, 24.24, 25.67, 6.52, 0, 0,
Basket - 03 1968 to 15400, PF 09, , 5084.52, 10087.05, 53319.29, 11893.24, 5371, 3849.31, 3565.74, 47.45, 63.87, 53.34, 0, 0,
Basket - 03 1968 to 15400, PF 10, , 6847.69, 13586.08, 71635.49, 15999.24, 7232.59, 5193.11, 4819.71, 58.48, 83.08, 82.37, 2.52, 0,
Basket - 04 15400 to US, PF 01, , 0.88, 1.7, 16.62, 3, 0.9, 0.33, 0, 0, 0, 0, 0, 0,
Basket - 04 15400 to US, PF 02, , 2.85, 5.56, 43.86, 8.43, 2.93, 1.56, 0.66, 0, 0, 0, 0, 0,
Basket - 04 15400 to US, PF 03, , 7.76, 15.24, 106.25, 21.39, 8.11, 4.98, 1.02, 0, 0, 0, 0, 0,
Basket - 04 15400 to US, PF 04, , 21.22, 41.85, 261.41, 54.77, 22.21, 14.93, 7, 0, 0, 0, 0, 0,
Basket - 04 15400 to US, PF 05, , 56.29, 111.35, 639.24, 138.39, 58.97, 42.01, 26.59, 0, 0, 0, 0, 0,
Basket - 04 15400 to US, PF 06, , 148.04, 293.46, 1586.62, 351.75, 155.17, 114.57, 84.94, 0.58, 0, 0, 0, 0,
Basket - 04 15400 to US, PF 07, , 373.46, 741.36, 3846.39, 867.27, 391.72, 295.48, 239.78, 2.72, 0.09, 0, 0, 0,
Basket - 04 15400 to US, PF 08, , 898.56, 1784.65, 9107.51, 2081.08, 955.91, 684.51, 626.52, 7.5, 4.02, 0, 0, 0,
Basket - 04 15400 to US, PF 09, , 2120.89, 4215.85, 20951.89, 4844.54, 2254.56, 1644.78, 1545.2, 16.14, 15.73, 1.4, 0, 0,
Basket - 04 15400 to US, PF 10, , 2836.62, 5639.87, 27815.34, 6454.31, 3014.7, 2210.73, 2090.3, 20.37, 22.34, 6.38, 0, 0,
Basket - 05 USBC, PF 01, , 0.06, 0.09, 3.31, 0.41, 0, 0, 0, 0, 0, 0, 0, 0,
Basket - 05 USBC, PF 02, , 0.38, 0.71, 11.92, 1.92, 0.3, 0, 0, 0, 0, 0, 0, 0,
Basket - 05 USBC, PF 03, , 1.8, 3.45, 36.86, 6.73, 1.85, 0.35, 0, 0, 0, 0, 0, 0,
Basket - 05 USBC, PF 04, , 7.37, 14.39, 113.86, 22.37, 7.73, 3.83, 0, 0, 0, 0, 0, 0,
Basket - 05 USBC, PF 05, , 28.08, 55.27, 362.41, 74.78, 29.44, 18.93, 6.02, 0, 0, 0, 0, 0,
Basket - 05 USBC, PF 06, , 92.8, 183.35, 1090.03, 231.11, 96.89, 68.01, 43.9, 0.06, 0, 0, 0, 0,

Basket - 05 USBC, PF 07, , 275.94, 546.05, 3107.44, 667.45, 287.87, 208.28, 159.97, 2.32, 0, 0, 0, 0,
Basket - 05 USBC, PF 08, , 771.67, 1527.4, 8636.89, 1868.58, 815.95, 557.19, 487.27, 7.97, 4.05, 0, 0, 0,
Basket - 05 USBC, PF 09, , 2206.63, 4367.35, 24752.61, 5338.68, 2328.4, 1598.36, 1418.6, 19.51, 19.85, 4.16, 0, 0,
Basket - 05 USBC, PF 10, , 3090.05, 6115.53, 34705.34, 7476.61, 3258.22, 2239.74, 1992.86, 25.65, 29.41, 13.53, 0, 0,
Beard's - 01 DS to 1968 Limits, PF 01, , 0.53, 1.02, 11.44, 2.11, 0.55, 0.06, 0, 0, 0, 0, 0, 0,
Beard's - 01 DS to 1968 Limits, PF 02, , 2.23, 4.36, 33.06, 6.73, 2.36, 1.14, 0.06, 0, 0, 0, 0, 0,
Beard's - 01 DS to 1968 Limits, PF 03, , 7.27, 14.34, 87.57, 19.01, 7.65, 4.88, 3.29, 0, 0, 0, 0, 0,
Beard's - 01 DS to 1968 Limits, PF 04, , 21.39, 42.42, 227.38, 51.72, 22.65, 16.39, 8.55, 0, 0, 0, 0, 0,
Beard's - 01 DS to 1968 Limits, PF 05, , 60.66, 120.66, 587.24, 138.2, 63.99, 49.52, 35.97, 0.05, 0, 0, 0, 0,
Beard's - 01 DS to 1968 Limits, PF 06, , 157.53, 313.95, 1427.68, 345.12, 165.95, 133.4, 111.62, 0.97, 0, 0, 0, 0,
Beard's - 01 DS to 1968 Limits, PF 07, , 378.53, 755.53, 3253.81, 805.29, 398.63, 328.8, 298.28, 3.41, 0.65, 0, 0, 0,
Beard's - 01 DS to 1968 Limits, PF 08, , 821.47, 1641.97, 6697.38, 1700.42, 865.22, 730.29, 699.96, 7.47, 5.24, 0, 0, 0,
Beard's - 01 DS to 1968 Limits, PF 09, , 1569.75, 3141.4, 12213.74, 3193.02, 1672.77, 1377.27, 1448.81, 12.99, 13.62, 1.36, 0, 0,
Beard's - 01 DS to 1968 Limits, PF 10, , 1909, 3822.5, 14513.42, 3838.43, 2033.49, 1693.6, 1803.42, 15.03, 17.02, 3.69, 0, 0,
Beard's - 02 DS to 10800 Bridge, PF 01, , 1.22, 2.37, 20.77, 3.92, 1.26, 0.54, 0, 0, 0, 0, 0, 0,
Beard's - 02 DS to 10800 Bridge, PF 02, , 4.57, 8.98, 61.33, 12.46, 4.74, 2.9, 1.92, 0, 0, 0, 0, 0,
Beard's - 02 DS to 10800 Bridge, PF 03, , 13.94, 27.54, 164.69, 35.14, 14.59, 10.12, 5.51, 0, 0, 0, 0, 0,
Beard's - 02 DS to 10800 Bridge, PF 04, , 38.8, 76.9, 419.17, 92.73, 40.65, 29.98, 21.12, 0.07, 0, 0, 0, 0,
Beard's - 02 DS to 10800 Bridge, PF 05, , 104.45, 207.41, 1063.52, 241.27, 109.49, 83.49, 66.59, 0.92, 0, 0, 0, 0,
Beard's - 02 DS to 10800 Bridge, PF 06, , 280.92, 558.46, 2765.36, 636.64, 294.7, 228.29, 194.88, 3.23, 0.64, 0, 0, 0,
Beard's - 02 DS to 10800 Bridge, PF 07, , 761.69, 1514.09, 7520.47, 1737.62, 809.24, 592.17, 554.44, 8.3, 5.96, 0, 0, 0,
Beard's - 02 DS to 10800 Bridge, PF 08, , 2127.48, 4227.63, 21221.95, 4870.19, 2256.3, 1649.07, 1553.61, 19.96, 22.28, 7.35, 0, 0,
Beard's - 02 DS to 10800 Bridge, PF 09, , 5146.44, 10223.24, 51887.26, 11833.51, 5451.36, 3971.83, 3737.07, 43.22, 56.01, 39.53, 0, 0,
Beard's - 02 DS to 10800 Bridge, PF 10, , 6327.27, 12576.24, 62651.56, 14426.71, 6706.14, 4931.52, 4682.41, 49.62, 67.16, 54.84, 0, 0,
Beard's - 03 10800 Bridge to US, PF 01, , 1.23, 1.91, 33.29, 6.13, 2, 0.94, 0.2, 0, 0, 0, 0, 0,
Beard's - 03 10800 Bridge to US, PF 02, , 3.64, 5.73, 93.57, 18.26, 6.73, 4.03, 0.8, 0, 0, 0, 0, 0,
Beard's - 03 10800 Bridge to US, PF 03, , 10.5, 16.68, 261.02, 52.88, 20.97, 13.9, 7.24, 0, 0, 0, 0, 0,
Beard's - 03 10800 Bridge to US, PF 04, , 29.84, 47.69, 726.62, 150.61, 62.25, 43.3, 29.32, 0.2, 0, 0, 0, 0,
Beard's - 03 10800 Bridge to US, PF 05, , 82.26, 131.89, 1980.16, 415.47, 175.63, 124.85, 95.08, 1.83, 0, 0, 0, 0,
Beard's - 03 10800 Bridge to US, PF 06, , 219.59, 352.45, 5265.13, 1110.65, 474.58, 318.95, 274.47, 6.26, 3.26, 0, 0, 0,
Beard's - 03 10800 Bridge to US, PF 07, , 565.87, 908.88, 13534.9, 2861.91, 1228.53, 834.86, 732.9, 15.18, 14.95, 2.52, 0, 0,
Beard's - 03 10800 Bridge to US, PF 08, , 1404.02, 2255.41, 33564.48, 7100.57, 3050.48, 2082.56, 1841.35, 31.08, 39.44, 28.88, 0, 0,
Beard's - 03 10800 Bridge to US, PF 09, , 3296.88, 5296.03, 78818.17, 16675.34, 7159.65, 4894.89, 4333.78, 58.53, 83.86, 90.39, 18.58, 0,
Beard's - 03 10800 Bridge to US, PF 10, , 4259.06, 6840.92, 101861.56, 21539.64, 9241.91, 6318.92, 5593.29, 71.06, 104.9, 122.46, 47.4, 0,
Beard's - 04 USBC, PF 01, , 0.52, 0.79, 14.34, 2.58, 0.73, 0.19, 0, 0, 0, 0, 0, 0,
Beard's - 04 USBC, PF 02, , 1.71, 2.7, 44.05, 8.69, 3.09, 1.66, 0.7, 0, 0, 0, 0, 0,
Beard's - 04 USBC, PF 03, , 5.37, 8.57, 131.51, 27.4, 10.95, 7.21, 2.84, 0, 0, 0, 0, 0,
Beard's - 04 USBC, PF 04, , 15.92, 25.63, 378.22, 81.34, 34.53, 24.58, 15.89, 0.01, 0, 0, 0, 0,
Beard's - 04 USBC, PF 05, , 44.62, 72.17, 1040.68, 228.17, 100.15, 73.86, 56.59, 0.74, 0, 0, 0, 0,
Beard's - 04 USBC, PF 06, , 118.5, 192.15, 2736.31, 606.35, 270.81, 202.63, 167.58, 3.11, 0.76, 0, 0, 0,
Beard's - 04 USBC, PF 07, , 313.89, 509.29, 7231.85, 1608.23, 723.24, 512.69, 466.68, 8.47, 6.74, 0, 0, 0,
Beard's - 04 USBC, PF 08, , 814.07, 1320.79, 18758.79, 4168.5, 1875.47, 1335.93, 1228.77, 18.99, 22.1, 10.09, 0, 0,
Beard's - 04 USBC, PF 09, , 1965.75, 3187.14, 45414.84, 10056.27, 4509.88, 3210.9, 2955.8, 39.62, 53.67, 46.3, 0, 0,
Beard's - 04 USBC, PF 10, , 2866.77, 4641.14, 66599.7, 14641.5, 6519.13, 4612.5, 4220.91, 51.95, 74.01, 75.33, 5.46, 0,
Billy's - 01 DS to Res. Bound., PF 01, , 0.16, 0.24, 4.55, 0.78, 0.2, 0.03, 0, 0, 0, 0, 0, 0,
Billy's - 01 DS to Res. Bound., PF 02, , 0.5, 0.78, 13.56, 2.51, 0.8, 0.35, 0, 0, 0, 0, 0, 0,
Billy's - 01 DS to Res. Bound., PF 03, , 1.14, 1.78, 29.61, 5.76, 1.97, 0.97, 0.21, 0, 0, 0, 0, 0,
Billy's - 01 DS to Res. Bound., PF 04, , 1.64, 2.59, 40.92, 8.47, 3.07, 1.61, 0.38, 0, 0, 0, 0, 0,
Billy's - 01 DS to Res. Bound., PF 05, , 3.04, 4.95, 69.42, 15.92, 6.87, 4.81, 3.88, 0, 0, 0, 0, 0,
Billy's - 01 DS to Res. Bound., PF 06, , 0.44, 0.72, 9.38, 2.42, 1.05, 0.61, 0.02, 0, 0, 0, 0, 0,
Billy's - 01 DS to Res. Bound., PF 07, , 0, 0, 0.02, 0, 0, 0, 0, 0, 0, 0, 0, 0,
Billy's - 01 DS to Res. Bound., PF 08, , 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,
Billy's - 01 DS to Res. Bound., PF 09, , 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,
Billy's - 01 DS to Res. Bound., PF 10, , 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,
Billy's - 02 Res. Bound to 1968 Limits, PF 01, , 0.04, 0.06, 2.37, 0.25, 0, 0, 0, 0, 0, 0, 0, 0,
Billy's - 02 Res. Bound to 1968 Limits, PF 02, , 0.25, 0.45, 8.8, 1.32, 0.17, 0, 0, 0, 0, 0, 0, 0,
Billy's - 02 Res. Bound to 1968 Limits, PF 03, , 1.4, 2.69, 29.55, 5.28, 1.43, 0.29, 0, 0, 0, 0, 0, 0,
Billy's - 02 Res. Bound to 1968 Limits, PF 04, , 5.94, 11.6, 89.67, 17.69, 6.23, 3.24, 0, 0, 0, 0, 0, 0,
Billy's - 02 Res. Bound to 1968 Limits, PF 05, , 21.26, 41.9, 267.09, 55.88, 22.33, 14.62, 5.16, 0, 0, 0, 0, 0,
Billy's - 02 Res. Bound to 1968 Limits, PF 06, , 63.35, 125.34, 715.97, 155.79, 66.47, 47.29, 28.86, 0, 0, 0, 0, 0,
Billy's - 02 Res. Bound to 1968 Limits, PF 07, , 145.24, 288.28, 1501.72, 339.05, 152.42, 114.81, 87.74, 0.71, 0, 0, 0, 0,
Billy's - 02 Res. Bound to 1968 Limits, PF 08, , 191.77, 382.21, 1737.66, 419.24, 201.87, 162.52, 139.3, 1.55, 0, 0, 0, 0,
Billy's - 02 Res. Bound to 1968 Limits, PF 09, , 293.24, 585.77, 2447.54, 614.3, 308.64, 258.72, 239.69, 3.17, 0.66, 0, 0, 0,

Billy's - 02 Res. Bound to 1968 Limits, PF 10, , 281.48, 562.97, 2241.55, 575.3, 296, 254.13, 244.41, 3.69, 1.32, 0, 0, 0,
Billy's - 03 1968 Limits to 12000, PF 01, , 0.09, 0.14, 5.01, 0.6, 0.01, 0, 0, 0, 0, 0, 0, 0,
Billy's - 03 1968 Limits to 12000, PF 02, , 0.63, 1.17, 18.12, 2.81, 0.56, 0, 0, 0, 0, 0, 0, 0,
Billy's - 03 1968 Limits to 12000, PF 03, , 3.22, 6.22, 60.96, 10.72, 3.25, 1.33, 0, 0, 0, 0, 0, 0,
Billy's - 03 1968 Limits to 12000, PF 04, , 11.11, 21.68, 173.39, 32.57, 11.45, 6.43, 0.3, 0, 0, 0, 0, 0,
Billy's - 03 1968 Limits to 12000, PF 05, , 34.36, 67.43, 474.35, 93.07, 35.51, 22.52, 9.82, 0, 0, 0, 0, 0,
Billy's - 03 1968 Limits to 12000, PF 06, , 101.39, 199.63, 1297.75, 261.88, 105.01, 70.7, 44.37, 0.12, 0, 0, 0, 0,
Billy's - 03 1968 Limits to 12000, PF 07, , 280.97, 553.9, 3495.53, 717.54, 296.06, 188.08, 149.42, 2.11, 0, 0, 0, 0,
Billy's - 03 1968 Limits to 12000, PF 08, , 758.93, 1497.7, 9195.62, 1905.85, 798.36, 521.94, 438.03, 7.58, 3.45, 0, 0, 0,
Billy's - 03 1968 Limits to 12000, PF 09, , 1983.41, 3915.84, 23764.22, 4941.98, 2082.72, 1383.04, 1189.19, 19.09, 18.8, 3.47, 0, 0,
Billy's - 03 1968 Limits to 12000, PF 10, , 2738.09, 5405.98, 32778.61, 6816.37, 2873.51, 1913.06, 1650.83, 24.88, 27.63, 11.72, 0, 0,
Billy's - 04 USBC, PF 01, , 0.1, 0.19, 4.3, 0.55, 0.06, 0, 0, 0, 0, 0, 0, 0,
Billy's - 04 USBC, PF 02, , 0.74, 1.39, 17.92, 2.71, 0.69, 0.22, 0, 0, 0, 0, 0, 0,
Billy's - 04 USBC, PF 03, , 3.3, 6.37, 62.14, 10.2, 3.22, 1.7, 1.01, 0, 0, 0, 0, 0,
Billy's - 04 USBC, PF 04, , 8.09, 15.72, 136.97, 23.67, 8.03, 4.61, 3.25, 0, 0, 0, 0, 0,
Billy's - 04 USBC, PF 05, , 18.89, 36.86, 294.65, 53.38, 19.12, 11.58, 5.66, 0, 0, 0, 0, 0,
Billy's - 04 USBC, PF 06, , 45.29, 88.69, 657.79, 123.67, 46.24, 29.22, 16.3, 0, 0, 0, 0, 0,
Billy's - 04 USBC, PF 07, , 124.58, 244.52, 1717.38, 329.74, 127.62, 83.66, 55.75, 1.12, 0, 0, 0, 0,
Billy's - 04 USBC, PF 08, , 362.16, 711.59, 4874.32, 941.57, 371.12, 247.58, 184.73, 8.82, 2.7, 0, 0, 0,
Billy's - 04 USBC, PF 09, , 942.88, 1852.8, 12659.08, 2452.77, 974.99, 621.8, 512.56, 27.77, 25.58, 3.33, 0, 0,
Billy's - 04 USBC, PF 10, , 1275.14, 2506.41, 17009.75, 3306.42, 1318.79, 844.85, 700.89, 34.99, 36.52, 12.61, 0, 0,
Cathey's - 01 DS to 3500, PF 01, , 2.48, 4.83, 40.11, 7.26, 2.5, 1.41, 0.88, 0, 0, 0, 0, 0,
Cathey's - 01 DS to 3500, PF 02, , 6.69, 13.1, 95.98, 18.23, 6.8, 4.28, 3.36, 0, 0, 0, 0, 0,
Cathey's - 01 DS to 3500, PF 03, , 16.98, 33.39, 226.12, 44.47, 17.47, 11.67, 7.38, 0.03, 0, 0, 0, 0,
Cathey's - 01 DS to 3500, PF 04, , 43.07, 84.87, 541.08, 109.2, 44.45, 30.77, 22.01, 0.65, 0, 0, 0, 0,
Cathey's - 01 DS to 3500, PF 05, , 112.21, 221.41, 1364.54, 279.44, 116.05, 81.7, 62.45, 2.53, 0.01, 0, 0, 0,
Cathey's - 01 DS to 3500, PF 06, , 300.14, 592.67, 3581.07, 739.52, 310.82, 220.47, 176.38, 7.19, 2.96, 0, 0, 0,
Cathey's - 01 DS to 3500, PF 07, , 707.39, 1397.64, 8315.04, 1742.68, 742.61, 501.74, 435.66, 12.68, 9.44, 0, 0, 0,
Cathey's - 01 DS to 3500, PF 08, , 1318.26, 2610.35, 14590.24, 3168.63, 1392.13, 962.85, 858.26, 14.26, 12.34, 0.12, 0, 0,
Cathey's - 01 DS to 3500, PF 09, , 2273.62, 4513.47, 23392.96, 5286.5, 2410.29, 1729, 1600.38, 18.89, 20.26, 5.37, 0, 0,
Cathey's - 01 DS to 3500, PF 10, , 2516.79, 5002.2, 24958.65, 5752.35, 2672.05, 1952.68, 1840.19, 19.93, 22.23, 7.25, 0, 0,
Cathey's - 02 3500 to 7500, PF 01, , 0.34, 0.5, 10.37, 1.63, 0.29, 0, 0, 0, 0, 0, 0, 0,
Cathey's - 02 3500 to 7500, PF 02, , 1.14, 1.74, 31.75, 5.66, 1.6, 0.45, 0, 0, 0, 0, 0, 0,
Cathey's - 02 3500 to 7500, PF 03, , 3.58, 5.61, 93.34, 18.06, 6.29, 3.3, 0, 0, 0, 0, 0, 0,
Cathey's - 02 3500 to 7500, PF 04, , 10.93, 17.35, 272.08, 55.44, 21.58, 13.74, 4.39, 0, 0, 0, 0, 0,
Cathey's - 02 3500 to 7500, PF 05, , 32.11, 51.42, 776.37, 163.22, 67.47, 46.56, 27.72, 0, 0, 0, 0, 0,
Cathey's - 02 3500 to 7500, PF 06, , 91.97, 147.93, 2188.75, 467.77, 199.6, 142.62, 103.7, 0.86, 0, 0, 0, 0,
Cathey's - 02 3500 to 7500, PF 07, , 254.14, 409.44, 6011.66, 1294.54, 560.9, 376.93, 322.51, 4.39, 1.03, 0, 0, 0,
Cathey's - 02 3500 to 7500, PF 08, , 672.46, 1084.14, 15865.67, 3423.09, 1491.36, 1017.98, 896.2, 12.37, 9.96, 0, 0, 0,
Cathey's - 02 3500 to 7500, PF 09, , 1673.27, 2697.68, 39477.75, 8513.42, 3710.95, 2547.8, 2264.44, 27.1, 30.71, 13.29, 0, 0,
Cathey's - 02 3500 to 7500, PF 10, , 2254.59, 3634.84, 53195.3, 11470.78, 4999.18, 3435, 3056.65, 34.07, 41.11, 24.11, 0, 0,
Cathey's - 03 7500 to 12100, PF 01, , 0.19, 0.29, 6.04, 0.94, 0.14, 0, 0, 0, 0, 0, 0, 0,
Cathey's - 03 7500 to 12100, PF 02, , 0.64, 0.97, 17.99, 3.18, 0.85, 0.16, 0, 0, 0, 0, 0, 0,
Cathey's - 03 7500 to 12100, PF 03, , 2.05, 3.21, 53.71, 10.38, 3.53, 1.73, 0.38, 0, 0, 0, 0, 0,
Cathey's - 03 7500 to 12100, PF 04, , 6.33, 10.05, 157.35, 32.23, 12.47, 7.82, 1.82, 0, 0, 0, 0, 0,
Cathey's - 03 7500 to 12100, PF 05, , 18.93, 30.37, 454.58, 96.59, 40.19, 27.89, 16, 0, 0, 0, 0, 0,
Cathey's - 03 7500 to 12100, PF 06, , 52.75, 85.12, 1240.11, 269.55, 116.65, 84.63, 61.08, 0.42, 0, 0, 0, 0,
Cathey's - 03 7500 to 12100, PF 07, , 142.12, 229.98, 3307.14, 728.12, 321.92, 220.68, 190.34, 2.61, 0.14, 0, 0, 0,
Cathey's - 03 7500 to 12100, PF 08, , 364.9, 591.59, 8432.1, 1870.46, 836.36, 584.79, 523.96, 7.54, 4.46, 0, 0, 0,
Cathey's - 03 7500 to 12100, PF 09, , 917.41, 1488.05, 21161.13, 4701.8, 2108.99, 1487.1, 1353.06, 17.3, 17.12, 2.36, 0, 0,
Cathey's - 03 7500 to 12100, PF 10, , 1249.16, 2025.82, 28831.03, 6400.34, 2868.75, 2023.44, 1843.62, 22.32, 24.02, 6.96, 0, 0,
Cathey's - 04 12100 to USBC, PF 01, , 0.34, 0.52, 10.05, 1.69, 0.4, 0.03, 0, 0, 0, 0, 0, 0,
Cathey's - 04 12100 to USBC, PF 02, , 1.12, 1.73, 30.33, 5.58, 1.76, 0.74, 0, 0, 0, 0, 0, 0,
Cathey's - 04 12100 to USBC, PF 03, , 3.34, 5.24, 86.56, 16.81, 6.04, 3.42, 0, 0, 0, 0, 0, 0,
Cathey's - 04 12100 to USBC, PF 04, , 9.74, 15.44, 244.35, 49.11, 19.05, 12.19, 4.82, 0, 0, 0, 0, 0,
Cathey's - 04 12100 to USBC, PF 05, , 27.46, 43.77, 674.53, 138.56, 56.18, 38.12, 22.81, 0, 0, 0, 0, 0,
Cathey's - 04 12100 to USBC, PF 06, , 75.23, 120.35, 1825.74, 379.8, 158.03, 110.32, 78.12, 0.74, 0, 0, 0, 0,
Cathey's - 04 12100 to USBC, PF 07, , 200.91, 322.01, 4842.44, 1016.48, 429.91, 282.06, 235.25, 3.66, 0.59, 0, 0, 0,
Cathey's - 04 12100 to USBC, PF 08, , 505.67, 811.5, 12132.29, 2558.93, 1091.2, 728.75, 627.06, 10.11, 6.9, 0, 0, 0,
Cathey's - 04 12100 to USBC, PF 09, , 1175.8, 1889.25, 28084.08, 5955.29, 2556.7, 1729.78, 1514.58, 22.3, 23.07, 5.91, 0, 0,
Cathey's - 04 12100 to USBC, PF 10, , 1548.35, 2489.5, 36894.39, 7847.64, 3379.98, 2298.27, 2023.7, 28.16, 32.02, 14.55, 0, 0,
Cathey's - 05 USBC, PF 01, , 0.54, 0.83, 15.07, 2.64, 0.79, 0.32, 0, 0, 0, 0, 0, 0,
Cathey's - 05 USBC, PF 02, , 1.37, 2.13, 36.69, 6.77, 2.27, 1.15, 0.45, 0, 0, 0, 0, 0,
Cathey's - 05 USBC, PF 03, , 3.43, 5.38, 89.02, 17.16, 6.21, 3.62, 0.46, 0, 0, 0, 0, 0,
Cathey's - 05 USBC, PF 04, , 8.77, 13.89, 220.45, 44.14, 17.07, 10.93, 4.44, 0, 0, 0, 0, 0,
Cathey's - 05 USBC, PF 05, , 23.06, 36.81, 563.55, 116.62, 47.58, 32.5, 19.38, 0, 0, 0, 0, 0,
Cathey's - 05 USBC, PF 06, , 60.84, 97.62, 1460.32, 308.6, 130.1, 91.96, 64.99, 0.49, 0, 0, 0, 0,
Cathey's - 05 USBC, PF 07, , 172.82, 277.63, 4130.41, 877.07, 375.02, 248.87, 209.33, 3.26, 0.42, 0, 0, 0,

Cathey's - 05 USBC, PF 08, , 465.87, 748.75, 11117.4, 2361.46, 1014.49, 683.7, 593.33, 10.05, 7.09, 0, 0, 0,
Cathey's - 05 USBC, PF 09, , 1225.66, 1969.28, 29279.86, 6207.49, 2664.24, 1802.88, 1579.63, 22.28, 24.07, 8.26, 0, 0,
Cathey's - 05 USBC, PF 10, , 1684.53, 2705.96, 40273.79, 8528.01, 3656.7, 2476.52, 2173.07, 28.95, 34.13, 18.65, 0, 0,
Hickahala - 01 DS to 12500, PF 01, , 37.49, 62.09, 795.65, 201.56, 96.72, 61.14, 36.28, 0, 0, 0, 0, 0,
Hickahala - 01 DS to 12500, PF 02, , 101.59, 168.85, 2124.34, 542.37, 267.64, 186.75, 153.31, 0.02, 0, 0, 0, 0,
Hickahala - 01 DS to 12500, PF 03, , 183.8, 306.36, 3797.36, 979.49, 492.14, 359.15, 323.26, 0.22, 0, 0, 0, 0,
Hickahala - 01 DS to 12500, PF 04, , 254.17, 425.24, 5165.34, 1355.1, 695.24, 526.23, 497.78, 0.57, 0, 0, 0, 0,
Hickahala - 01 DS to 12500, PF 05, , 259.77, 437.47, 5125.63, 1388.85, 737.01, 582.79, 575.71, 0.85, 0, 0, 0, 0,
Hickahala - 01 DS to 12500, PF 06, , 186.49, 316.59, 3543.13, 1000.84, 552.9, 457.11, 467.55, 0.72, 0, 0, 0, 0,
Hickahala - 01 DS to 12500, PF 07, , 257.19, 436.88, 4872.6, 1377.8, 764.94, 641.7, 674.79, 1.39, 0.11, 0, 0, 0,
Hickahala - 01 DS to 12500, PF 08, , 468, 793.5, 8946.36, 2499.92, 1377.9, 1158.82, 1238.05, 3.12, 1.64, 0, 0, 0,
Hickahala - 01 DS to 12500, PF 09, , 924.71, 1563.87, 17889.95, 4926.06, 2685.05, 2252.16, 2418.71, 6.59, 6.5, 0.08, 0, 0,
Hickahala - 01 DS to 12500, PF 10, , 1251.89, 2113.69, 24408.41, 6660.65, 3602.15, 3006.53, 3219.34, 8.78, 10.01, 2.09, 0, 0,
Hickahala - 02 12500 to 1968 Start, PF 01, , 1.05, 1.71, 24.13, 5.95, 2.13, 0.48, 0, 0, 0, 0, 0, 0,
Hickahala - 02 12500 to 1968 Start, PF 02, , 3.08, 5.12, 64.75, 17.22, 7.67, 4.52, 0, 0, 0, 0, 0, 0,
Hickahala - 02 12500 to 1968 Start, PF 03, , 2.73, 4.55, 55.72, 15.35, 7.04, 4.23, 0, 0, 0, 0, 0, 0,
Hickahala - 02 12500 to 1968 Start, PF 04, , 5.01, 8.45, 98.42, 27.96, 13.98, 10.39, 0, 0, 0, 0, 0, 0,
Hickahala - 02 12500 to 1968 Start, PF 05, , 6.54, 11.1, 124.44, 36.28, 19.08, 15.53, 1.65, 0, 0, 0, 0, 0,
Hickahala - 02 12500 to 1968 Start, PF 06, , 21.25, 36.19, 397.82, 115.77, 63.34, 55.95, 32.92, 0, 0, 0, 0, 0,
Hickahala - 02 12500 to 1968 Start, PF 07, , 55.1, 93.95, 1025.29, 297.38, 165.68, 150.96, 120.42, 0, 0, 0, 0, 0,
Hickahala - 02 12500 to 1968 Start, PF 08, , 176.12, 299.9, 3297.12, 943.36, 527.06, 483.28, 449.34, 0.7, 0, 0, 0, 0,
Hickahala - 02 12500 to 1968 Start, PF 09, , 343.79, 586.72, 6366.94, 1842.95, 1048.32, 906.83, 980.81, 2.38, 0.29, 0, 0, 0,
Hickahala - 02 12500 to 1968 Start, PF 10, , 266.33, 457.88, 4751.74, 1426.12, 839.22, 808.4, 836.22, 1.82, 0.15, 0, 0, 0,
Hickahala - 03 1968 Start to W. Ditch, PF 01, , 0.53, 0.83, 13.4, 2.98, 0.7, 0, 0, 0, 0, 0, 0, 0,
Hickahala - 03 1968 Start to W. Ditch, PF 02, , 1.92, 3.14, 42.5, 10.79, 4.25, 1.67, 0, 0, 0, 0, 0, 0,
Hickahala - 03 1968 Start to W. Ditch, PF 03, , 6.78, 11.36, 137.13, 37.58, 18.2, 13.15, 0, 0, 0, 0, 0, 0,
Hickahala - 03 1968 Start to W. Ditch, PF 04, , 20.93, 35.5, 398.99, 114.41, 61.05, 52.1, 23.46, 0, 0, 0, 0, 0,
Hickahala - 03 1968 Start to W. Ditch, PF 05, , 45.1, 77.11, 827.38, 245.52, 137.56, 124.48, 81.51, 0, 0, 0, 0, 0,
Hickahala - 03 1968 Start to W. Ditch, PF 06, , 127.4, 218.98, 2275.72, 688.84, 400.18, 377.67, 324.65, 0.05, 0, 0, 0, 0,
Hickahala - 03 1968 Start to W. Ditch, PF 07, , 268.38, 461.36, 4790.43, 1449.72, 850.96, 738.53, 784.98, 0.6, 0, 0, 0, 0,
Hickahala - 03 1968 Start to W. Ditch, PF 08, , 416.22, 715.47, 7431.15, 2242.61, 1318.9, 1159.28, 1271.85, 1.39, 0.02, 0, 0, 0,
Hickahala - 03 1968 Start to W. Ditch, PF 09, , 720.27, 1236.74, 12934.33, 3870.87, 2268.04, 2007.6, 2249.19, 3.14, 1.32, 0, 0, 0,
Hickahala - 03 1968 Start to W. Ditch, PF 10, , 873.04, 1498.37, 15714.73, 4687.95, 2742.12, 2431.97, 2738.73, 4.08, 2.42, 0, 0, 0,
Hickahala - 04 W. Ditch to Senatobia, PF 01, , 5.38, 8.76, 122.19, 28.81, 12, 7.39, 3.19, 0, 0, 0, 0, 0,
Hickahala - 04 W. Ditch to Senatobia, PF 02, , 10.41, 17.2, 223.7, 56.24, 25.9, 18.74, 2.62, 0, 0, 0, 0, 0,
Hickahala - 04 W. Ditch to Senatobia, PF 03, , 25.47, 42.61, 517.65, 137.05, 68.74, 56.15, 31.03, 0, 0, 0, 0, 0,
Hickahala - 04 W. Ditch to Senatobia, PF 04, , 77.39, 130.59, 1513.4, 414.08, 220.06, 193.04, 157.39, 0.08, 0, 0, 0, 0,
Hickahala - 04 W. Ditch to Senatobia, PF 05, , 127.1, 216.06, 2400.01, 678.19, 377.02, 347.24, 333.05, 1.36, 0, 0, 0, 0,
Hickahala - 04 W. Ditch to Senatobia, PF 06, , 0.37, 0.64, 6.71, 2.21, 1.11, 0.59, 0, 0, 0, 0, 0, 0,
Hickahala - 04 W. Ditch to Senatobia, PF 07, , 0.04, 0.07, 0.86, 0.27, 0.05, 0, 0, 0, 0, 0, 0, 0,
Hickahala - 04 W. Ditch to Senatobia, PF 08, , 0.4, 0.7, 6.93, 2.41, 1.26, 0.65, 0, 0, 0, 0, 0, 0,
Hickahala - 04 W. Ditch to Senatobia, PF 09, , 3.12, 5.52, 47.55, 17.26, 11.17, 11.14, 11.6, 0, 0, 0, 0, 0,
Hickahala - 04 W. Ditch to Senatobia, PF 10, , 6.45, 11.44, 96.46, 35.06, 23.39, 24.8, 30.89, 0, 0, 0, 0, 0,
Hickahala - 05 Senatobia to Billys, PF 01, , 5.55, 8.91, 133.69, 28.99, 11.31, 6.73, 3.26, 0, 0, 0, 0, 0,
Hickahala - 05 Senatobia to Billys, PF 02, , 17.6, 28.71, 397.78, 91.76, 40.67, 29.88, 26.79, 0, 0, 0, 0, 0,
Hickahala - 05 Senatobia to Billys, PF 03, , 42.69, 70.42, 921.61, 223.57, 107.06, 86.26, 68.31, 0.29, 0, 0, 0, 0,
Hickahala - 05 Senatobia to Billys, PF 04, , 86.66, 144.48, 1788.42, 455.44, 231.54, 197.98, 182.22, 3.16, 0, 0, 0, 0,
Hickahala - 05 Senatobia to Billys, PF 05, , 197.54, 331.67, 3951.41, 1039.96, 549.72, 486.59, 486.57, 10.22, 3.63, 0, 0, 0,
Hickahala - 05 Senatobia to Billys, PF 06, , 656.71, 1102.01, 13169.23, 3449.84, 1825.22, 1608.41, 1662.38, 34.86, 38.7, 7.05, 0, 0,
Hickahala - 05 Senatobia to Billys, PF 07, , 2442.32, 4077.1, 50119.83, 12801.07, 6620.14, 5484.99, 5831, 100.14, 155.57, 169.06, 9.01, 0,
Hickahala - 05 Senatobia to Billys, PF 08, , 8762.84, 14498.53, 186800.94, 45655.07, 22596.43, 17923.52, 18288.86, 225.1, 395.14, 611.25, 621.33, 0,
Hickahala - 05 Senatobia to Billys, PF 09, , 10941.55, 18155.25, 230453.25, 57153.32, 28663.58, 23026.86, 23774.44, 246.94, 449.22, 742.66, 911.08, 120.03,
Hickahala - 05 Senatobia to Billys, PF 10, , 12166.29, 20199.84, 255583.63, 63589.63, 31977.55, 25752.88, 26646.08, 258.69, 476.13, 804.95, 1048.28, 283.56,
Hickahala - 06 Billys to Res. Bound., PF 01, , 0.32, 0.5, 8.16, 1.83, 0.41, 0, 0, 0, 0, 0, 0, 0,
Hickahala - 06 Billys to Res. Bound., PF 02, , 1.61, 2.65, 35.17, 9.01, 3.74, 1.84, 0, 0, 0, 0, 0, 0,
Hickahala - 06 Billys to Res. Bound., PF 03, , 7.38, 12.38, 147.7, 39.92, 19.96, 15.91, 14.31, 0, 0, 0, 0, 0,
Hickahala - 06 Billys to Res. Bound., PF 04, , 30.59, 51.64, 596.36, 163.53, 87.23, 77.28, 64.65, 0.04, 0, 0, 0, 0,
Hickahala - 06 Billys to Res. Bound., PF 05, , 105.11, 177.9, 2025.95, 557.68, 304.94, 278.32, 275.34, 2.9, 0, 0, 0, 0,
Hickahala - 06 Billys to Res. Bound., PF 06, , 320.62, 543.15, 6153.93, 1695.76, 936.61, 860.92, 905.18, 13.42, 9.04, 0, 0, 0,
Hickahala - 06 Billys to Res. Bound., PF 07, , 475.18, 809.52, 8876.32, 2518.1, 1430.65, 1347.34, 1466.82, 17.77, 16.55, 0, 0, 0,
Hickahala - 06 Billys to Res. Bound., PF 08, , 1528.51, 2591.03, 29248.31, 8100.39, 4499.11, 3955.29, 4441.7, 40.15, 55.56, 35.71, 0, 0,

Hickahala - 06 Billys to Res. Bound., PF 09, , 10084.45, 16819.53, 207753.08, 53007.99, 27155.5, 22045.31, 23000.54, 132.48, 229.8, 339.31, 277.82, 0,

Hickahala - 06 Billys to Res. Bound., PF 10, , 18298.46, 30358.63, 385615.91, 95861.75, 47815.66, 37803.45, 38400.26, 179.59, 321.48, 519.48, 605.56, 23.73,

Hickahala - 07 Res. Bound to Thornton, PF 01, , 2.75, 5.47, 27.16, 6.83, 3.01, 1.95, 0.84, 0, 0, 0, 0, 0,

Hickahala - 07 Res. Bound to Thornton, PF 02, , 5.58, 11.13, 50.27, 13.07, 6.07, 4.29, 2.66, 0, 0, 0, 0, 0,

Hickahala - 07 Res. Bound to Thornton, PF 03, , 17.28, 34.61, 129.94, 35.37, 18.27, 15.5, 15.95, 0, 0, 0, 0, 0,

Hickahala - 07 Res. Bound to Thornton, PF 04, , 53.23, 106.86, 361.45, 101.25, 55.57, 51.07, 60, 0.19, 0, 0, 0, 0,

Hickahala - 07 Res. Bound to Thornton, PF 05, , 168.93, 339.45, 1099.04, 312.18, 176.59, 167.44, 175.62, 2.85, 0.01, 0, 0, 0,

Hickahala - 07 Res. Bound to Thornton, PF 06, , 602.88, 1211.56, 3901.75, 1105.6, 629.26, 597.61, 655.95, 13.04, 9.71, 0, 0, 0,

Hickahala - 07 Res. Bound to Thornton, PF 07, , 2104.96, 4226.7, 14159.4, 3931.81, 2201.02, 2044.69, 2247.71, 39.1, 51.35, 24.93, 0, 0,

Hickahala - 07 Res. Bound to Thornton, PF 08, , 2976.37, 5981.52, 19232.49, 5451.42, 3110.32, 2934.09, 3291.98, 45.32, 66.31, 50.72, 0, 0,

Hickahala - 07 Res. Bound to Thornton, PF 09, , 5678.88, 11417.68, 35912.52, 10295.58, 5935.22, 5628.61, 6413.4, 66.07, 112.29, 139.42, 24.22, 0,

Hickahala - 07 Res. Bound to Thornton, PF 10, , 971.98, 1963.59, 4684.75, 1530.82, 998.54, 1074.44, 1361.63, 13.71, 17.83, 4.89, 0, 0,

Hickahala - 08 Thornton to Basket, PF 01, , 14.73, 28.97, 194.96, 41.11, 15.56, 8.9, 3.95, 0, 0, 0, 0, 0,

Hickahala - 08 Thornton to Basket, PF 02, , 47.8, 94.65, 529.11, 118.81, 50.72, 35.45, 14.5, 0, 0, 0, 0, 0,

Hickahala - 08 Thornton to Basket, PF 03, , 141.48, 281.33, 1381.99, 324.56, 149.35, 114.82, 79.76, 0.01, 0, 0, 0, 0,

Hickahala - 08 Thornton to Basket, PF 04, , 332.3, 662.78, 2932.29, 719.1, 350.18, 285.45, 239.8, 2, 0, 0, 0, 0,

Hickahala - 08 Thornton to Basket, PF 05, , 690.79, 1381.23, 5560.72, 1423.18, 727.33, 620.08, 578.68, 6.85, 0.61, 0, 0, 0,

Hickahala - 08 Thornton to Basket, PF 06, , 1604.3, 3212.44, 12187.15, 3204.61, 1687.94, 1475.57, 1467.77, 16.75, 11.7, 0, 0, 0,

Hickahala - 08 Thornton to Basket, PF 07, , 4942.6, 9892.39, 38272.61, 10011.78, 5258.17, 4358.66, 4627.66, 43.49, 54.85, 25.64, 0, 0,

Hickahala - 08 Thornton to Basket, PF 08, , 22822.86, 45556.2, 195877.52, 48583.02, 24241.58, 19176.29, 19523.4, 138.37, 227.48, 302.22, 160.61, 0,

Hickahala - 08 Thornton to Basket, PF 09, , 72638.58, 144747.38, 661630.75, 159254.11, 77037.2, 59226.18, 58498.75, 287.11, 519.91, 876.82, 1190, 531.17,

Hickahala - 08 Thornton to Basket, PF 10, , 41150.61, 82272.79, 332423.81, 85064.63, 43691.51, 35619.41, 37278.49, 191.8, 350.32, 577.82, 689.35, 35.16,

Hickahala - 09 Basket to 57350, PF 01, , 2.39, 4.65, 40.14, 8.45, 2.63, 0.56, 0, 0, 0, 0, 0, 0,

Hickahala - 09 Basket to 57350, PF 02, , 12.8, 25.35, 142.32, 33.19, 13.79, 8.61, 4.2, 0, 0, 0, 0, 0,

Hickahala - 09 Basket to 57350, PF 03, , 51.97, 103.52, 478.99, 118.12, 55.53, 42.82, 22.85, 0, 0, 0, 0, 0,

Hickahala - 09 Basket to 57350, PF 04, , 183.77, 367.11, 1532.71, 389.65, 194.44, 161.63, 129.77, 0.28, 0, 0, 0, 0,

Hickahala - 09 Basket to 57350, PF 05, , 583.43, 1167, 4630.2, 1196.19, 614.96, 526.51, 486.17, 4.39, 0.04, 0, 0, 0,

Hickahala - 09 Basket to 57350, PF 06, , 1703.35, 3409.16, 13194.04, 3438.22, 1793.59, 1551.13, 1523.77, 15.59, 10.94, 0, 0, 0,

Hickahala - 09 Basket to 57350, PF 07, , 5022.36, 10047.68, 39567.55, 10267.33, 5346.72, 4387.67, 4615.34, 40.66, 50.76, 22.97, 0, 0,

Hickahala - 09 Basket to 57350, PF 08, , 17266.47, 34500.03, 142756.27, 36124.87, 18360.92, 14756.31, 15256.59, 101.25, 161.52, 195.09, 50.35, 0,

Hickahala - 09 Basket to 57350, PF 09, , 47466.33, 94768.93, 403876.06, 100809.81, 50451.4, 39975.48, 40697, 179.72, 320.23, 511.55, 573.91, 0.19,

Hickahala - 09 Basket to 57350, PF 10, , 43029.42, 85997.65, 352510.72, 89714.8, 45746.4, 36913.55, 38250.59, 163.87, 294.47, 472.63, 524.97, 0,

Hickahala - 10 57350 to Lick, PF 01, , 9.81, 19.47, 102.01, 23.91, 10.41, 7.26, 5.56, 0, 0, 0, 0, 0,

Hickahala - 10 57350 to Lick, PF 02, , 31.02, 61.73, 294.93, 71.21, 33.01, 25.25, 14.43, 0, 0, 0, 0, 0,

Hickahala - 10 57350 to Lick, PF 03, , 91.78, 182.99, 819.09, 201.68, 97.15, 77.98, 57.61, 0.03, 0, 0, 0, 0,

Hickahala - 10 57350 to Lick, PF 04, , 265.77, 530.57, 2269.32, 566.72, 280.41, 231.66, 196.49, 1.3, 0, 0, 0, 0,

Hickahala - 10 57350 to Lick, PF 05, , 722.38, 1443.63, 5934.55, 1503.84, 760.98, 641.44, 592.76, 6.39, 0.89, 0, 0, 0,

Hickahala - 10 57350 to Lick, PF 06, , 1879.34, 3758.31, 15035.82, 3853.02, 1979.05, 1685.86, 1635.75, 17.72, 13.21, 0, 0, 0,

Hickahala - 10 57350 to Lick, PF 07, , 4689.53, 9380.53, 37147.14, 9613.04, 4992.87, 4086, 4285.19, 38.73, 47.23, 18.86, 0, 0,

Hickahala - 10 57350 to Lick, PF 08, , 12313.7, 24634.25, 97075.89, 25173.82, 13098.69, 10763.07, 11365.79, 76.37, 118.1, 127.06, 4.2, 0,

Hickahala - 10 57350 to Lick, PF 09, , 34809.44, 69601.04, 280229.97, 71932.96, 37004.44, 30122.47, 31492.73, 145.04, 258.01, 402.39, 401.43, 0,

Hickahala - 10 57350 to Lick, PF 10, , 54082.21, 108011.97, 454846.94, 114192.93, 57469.11, 45827.57, 46917.6, 198.17, 361.13, 602.04, 760.48, 142.94,

Hickahala - 11 Lick to Lick Branch, PF 01, , 3.54, 6.95, 47.52, 10.49, 3.86, 1.82, 0, 0, 0, 0, 0, 0,

Hickahala - 11 Lick to Lick Branch, PF 02, , 8.96, 17.77, 95.44, 22.72, 9.67, 6.23, 3.3, 0, 0, 0, 0, 0,

Hickahala - 11 Lick to Lick Branch, PF 03, , 26.69, 53.24, 235.6, 59.68, 28.37, 21.83, 19.64, 0, 0, 0, 0, 0,

Hickahala - 11 Lick to Lick Branch, PF 04, , 83.8, 167.64, 661.05, 174.51, 89.11, 75.29, 55.61, 0, 0, 0, 0, 0,

Hickahala - 11 Lick to Lick Branch, PF 05, , 327.64, 656.23, 2462.29, 656.77, 345.87, 302.74, 274.97, 1.42, 0, 0, 0, 0,

Hickahala - 11 Lick to Lick Branch, PF 06, , 1137.45, 2278.52, 8501.71, 2260.41, 1198.21, 1052.69, 1031.06, 8.66, 3.55, 0, 0, 0,

Hickahala - 11 Lick to Lick Branch, PF 07, , 3420.5, 6848.88, 26033.29, 6884.85, 3645.28, 3030.59, 3218.52, 26.56, 28.3, 3.22, 0, 0,

Hickahala - 11 Lick to Lick Branch, PF 08, , 9647.67, 19313.7, 74031.71, 19471.55, 10266.51, 8533.15, 9105.93, 62.39, 91.02, 79.59, 0, 0,

Hickahala - 11 Lick to Lick Branch, PF 09, , 25890.85, 51826.08, 199435.53, 52364.28, 27531.27, 22865.09, 24387.08, 115.54, 200.21, 288.96, 204.43, 0,
Hickahala - 11 Lick to Lick Branch, PF 10, , 44090.66, 88157.87, 355080.59, 91182.48, 46884.25, 38123.37, 39799.93, 163.58, 294.56, 472.17, 516.7, 0,
Hickahala - 12 Lick Branch to Wolf, PF 01, , 3.75, 7.36, 53.24, 11.53, 4.09, 1.74, 0, 0, 0, 0, 0, 0,
Hickahala - 12 Lick Branch to Wolf, PF 02, , 15.19, 30.11, 164.24, 38.22, 16.22, 10.73, 6.95, 0, 0, 0, 0, 0,
Hickahala - 12 Lick Branch to Wolf, PF 03, , 50.3, 100.14, 471.89, 115.04, 53.64, 41.14, 22.65, 0, 0, 0, 0, 0,
Hickahala - 12 Lick Branch to Wolf, PF 04, , 146.81, 293.16, 1243.33, 314.12, 155.41, 128.13, 99.74, 0.12, 0, 0, 0, 0,
Hickahala - 12 Lick Branch to Wolf, PF 05, , 409.13, 818.48, 3227.87, 837.81, 431.43, 370.38, 335.72, 2.64, 0, 0, 0, 0,
Hickahala - 12 Lick Branch to Wolf, PF 06, , 1089.47, 2181.96, 8211.52, 2172.14, 1147.02, 1005.78, 984.02, 9.7, 3.72, 0, 0, 0,
Hickahala - 12 Lick Branch to Wolf, PF 07, , 2844.18, 5697.8, 21196.58, 5663.63, 3029.42, 2547.06, 2728.06, 24.49, 24.21, 0.56, 0, 0,
Hickahala - 12 Lick Branch to Wolf, PF 08, , 7594.28, 15215.04, 56397.12, 15080.76, 8079.51, 6819.63, 7377.58, 53.78, 73.9, 49.82, 0, 0,
Hickahala - 12 Lick Branch to Wolf, PF 09, , 20626.81, 41324, 153422.08, 40993.94, 21929.05, 18516.02, 20070.82, 103.23, 173.44, 228.09, 92.47, 0,
Hickahala - 12 Lick Branch to Wolf, PF 10, , 31866.59, 63806.89, 242487.11, 64068.08, 33880.69, 28301.69, 30349.43, 136.19, 239.57, 356.53, 284.56, 0,
Hickahala - 13 Wolf to Whites, PF 01, , 3.08, 6.03, 46.59, 9.55, 3.29, 1.47, 0, 0, 0, 0, 0, 0,
Hickahala - 13 Wolf to Whites, PF 02, , 10.15, 20.01, 124.29, 27.01, 10.71, 6.64, 3.88, 0, 0, 0, 0, 0,
Hickahala - 13 Wolf to Whites, PF 03, , 35, 69.52, 355.77, 82.09, 36.67, 27.32, 25.22, 0, 0, 0, 0, 0,
Hickahala - 13 Wolf to Whites, PF 04, , 104.11, 207.41, 956.24, 229.68, 109.48, 87.98, 71.58, 0.65, 0, 0, 0, 0,
Hickahala - 13 Wolf to Whites, PF 05, , 291.97, 582.79, 2504.98, 618.26, 306.45, 255.66, 234.69, 5.64, 0.13, 0, 0, 0,
Hickahala - 13 Wolf to Whites, PF 06, , 704.47, 1408.26, 5720.44, 1447.74, 739.06, 631.97, 618, 15.39, 9.09, 0, 0, 0,
Hickahala - 13 Wolf to Whites, PF 07, , 1403.3, 2809.78, 10688.64, 2792.1, 1471.94, 1293.35, 1325.5, 27.58, 27.76, 1.35, 0, 0,
Hickahala - 13 Wolf to Whites, PF 08, , 2318.25, 4651.32, 16165.58, 4414.58, 2428.69, 2216.12, 2383.9, 37.85, 47.88, 19.8, 0, 0,
Hickahala - 13 Wolf to Whites, PF 09, , 4727.98, 9495.35, 31537.04, 8807.03, 4949.96, 4593.28, 5077.33, 62.92, 94.91, 83.64, 0, 0,
Hickahala - 13 Wolf to Whites, PF 10, , 5915.58, 11886.67, 38485.39, 10884.39, 6190.62, 5799.87, 6500, 70.29, 113.13, 121.67, 0.14, 0,
Hickahala - 14 Whites to Beards, PF 01, , 2.69, 4.33, 64.17, 13.98, 5.65, 3.65, 2.49, 0, 0, 0, 0, 0,
Hickahala - 14 Whites to Beards, PF 02, , 8.09, 13.15, 185.27, 41.92, 18.35, 13.39, 12.08, 0, 0, 0, 0, 0,
Hickahala - 14 Whites to Beards, PF 03, , 23.78, 38.88, 532.3, 123.4, 56.67, 43.91, 33.42, 0.18, 0, 0, 0, 0,
Hickahala - 14 Whites to Beards, PF 04, , 68.8, 112.95, 1514.58, 356.64, 168.62, 134.61, 115.78, 2.88, 0, 0, 0, 0,
Hickahala - 14 Whites to Beards, PF 05, , 197.19, 324.49, 4299.1, 1021.52, 491.07, 397.17, 364.37, 11.93, 5.05, 0, 0, 0,
Hickahala - 14 Whites to Beards, PF 06, , 537.62, 885.52, 11675.44, 2784.51, 1347.95, 1092.67, 1034.06, 31.62, 30.59, 1.74, 0, 0,
Hickahala - 14 Whites to Beards, PF 07, , 1416.1, 2332.87, 30731.84, 7344.04, 3565.75, 2776.37, 2776.43, 68.76, 91.69, 65.08, 0, 0,
Hickahala - 14 Whites to Beards, PF 08, , 3545.33, 5843.54, 76780.36, 18399.31, 8952.06, 6985.58, 7017.94, 129.91, 203.62, 243.17, 69.34, 0,
Hickahala - 14 Whites to Beards, PF 09, , 8354.94, 13784.99, 180183.66, 43424.48, 21209.14, 16605.05, 16734.04, 220.43, 380.05, 570.81, 535.14, 0,
Hickahala - 14 Whites to Beards, PF 10, , 11382.53, 18780.76, 245450.98, 59178.78, 28891.87, 22604.12, 22754.64, 261.73, 463.15, 736.38, 831.96, 17.64,
Hickahala - 15 Beards to Catheys, PF 01, , 8.45, 13.39, 211.62, 42.59, 16.53, 10.62, 4.31, 0, 0, 0, 0, 0,
Hickahala - 15 Beards to Catheys, PF 02, , 19.73, 31.47, 483.56, 99.83, 40.42, 27.43, 15.33, 0, 0, 0, 0, 0,
Hickahala - 15 Beards to Catheys, PF 03, , 40.07, 64.22, 965.84, 203.78, 84.69, 59.04, 36.1, 0, 0, 0, 0, 0,
Hickahala - 15 Beards to Catheys, PF 04, , 83.15, 134.19, 1954.61, 425.68, 183.65, 132.85, 91.17, 0.27, 0, 0, 0, 0,
Hickahala - 15 Beards to Catheys, PF 05, , 198.03, 321.69, 4541.51, 1017.53, 456.42, 343.2, 272.17, 3.47, 0, 0, 0, 0,
Hickahala - 15 Beards to Catheys, PF 06, , 468.2, 763.95, 10556.09, 2416.64, 1114.12, 805.13, 739.04, 12.02, 5.08, 0, 0, 0,
Hickahala - 15 Beards to Catheys, PF 07, , 1052.01, 1723.33, 23354.72, 5445.85, 2562.06, 1900.14, 1808.93, 26.49, 24.68, 0.84, 0, 0,
Hickahala - 15 Beards to Catheys, PF 08, , 2216.27, 3644.78, 48435.62, 11511.59, 5519.49, 4185.06, 4087.1, 48.24, 60.89, 35.53, 0, 0,
Hickahala - 15 Beards to Catheys, PF 09, , 4406.6, 7277.32, 94668.38, 22975.21, 11235.03, 8701.65, 8683.08, 78.99, 117.14, 119.91, 2.31, 0,
Hickahala - 15 Beards to Catheys, PF 10, , 5462.83, 9037.19, 116524.92, 28526.18, 14061.77, 10981.02, 11044.88, 90.88, 140.36, 160.15, 27.47, 0,
Hickahala - 16 Catheys to 109500, PF 01, , 3.1, 4.86, 80.46, 15.64, 5.47, 2.89, 1.13, 0, 0, 0, 0, 0,
Hickahala - 16 Catheys to 109500, PF 02, , 8.76, 13.94, 216.63, 44.63, 17.47, 11.17, 3.44, 0, 0, 0, 0, 0,
Hickahala - 16 Catheys to 109500, PF 03, , 25.19, 40.5, 600.87, 128.79, 54.13, 38.07, 22.69, 0, 0, 0, 0, 0,
Hickahala - 16 Catheys to 109500, PF 04, , 70.37, 113.83, 1640.5, 360.36, 157.86, 116.26, 86.09, 0.8, 0, 0, 0, 0,
Hickahala - 16 Catheys to 109500, PF 05, , 195.81, 317.78, 4506.55, 1003.39, 449.5, 337.8, 276.38, 5, 0.36, 0, 0, 0,
Hickahala - 16 Catheys to 109500, PF 06, , 544.66, 884.9, 12485.23, 2795.27, 1264.71, 901.29, 822.47, 15.25, 10.6, 0, 0, 0,
Hickahala - 16 Catheys to 109500, PF 07, , 1508.42, 2450.75, 34575.39, 7736.29, 3503.49, 2511.38, 2323.59, 35.42, 41.06, 18.09, 0, 0,
Hickahala - 16 Catheys to 109500, PF 08, , 4024.3, 6533.76, 92487.84, 20623.7, 9305.08, 6666.25, 6173.67, 70.76, 101.61, 104.29, 7.69, 0,

Hickahala - 16 Catheys to 109500, PF 09, , 10053.71, 16311.61, 231668.91, 51502.03, 23135.29, 16528.68, 15248.61, 129.14, 205.92, 278.86, 205.54, 0,
Hickahala - 16 Catheys to 109500, PF 10, , 13392.96, 21730.13, 308574.88, 68622.84, 30817.33, 22015.06, 20296.08, 155.08, 252.99, 360.92, 324.53, 0,
Hickahala - 17 109500 to S. Fork, PF 01, , 1.76, 2.79, 43.98, 9.16, 3.31, 1.67, 0, 0, 0, 0, 0, 0,
Hickahala - 17 109500 to S. Fork, PF 02, , 5.49, 8.83, 130.94, 28.6, 11.65, 7.57, 1.14, 0, 0, 0, 0, 0,
Hickahala - 17 109500 to S. Fork, PF 03, , 16.42, 26.62, 379.05, 85.2, 37.06, 26.65, 14.43, 0, 0, 0, 0, 0,
Hickahala - 17 109500 to S. Fork, PF 04, , 45.98, 74.91, 1043.67, 238.26, 107.22, 80.48, 56.87, 0.1, 0, 0, 0, 0,
Hickahala - 17 109500 to S. Fork, PF 05, , 126.86, 207.11, 2854.14, 656.22, 300.74, 230.14, 183.57, 1.53, 0, 0, 0, 0,
Hickahala - 17 109500 to S. Fork, PF 06, , 356.79, 582.83, 8009.18, 1845.88, 854.2, 615.43, 563.66, 6.85, 2.54, 0, 0, 0,
Hickahala - 17 109500 to S. Fork, PF 07, , 976.74, 1595.56, 21924.01, 5045.7, 2339.85, 1703.65, 1595.84, 19.25, 17.96, 0.74, 0, 0,
Hickahala - 17 109500 to S. Fork, PF 08, , 2538.05, 4144.5, 57052.23, 13099.54, 6066.41, 4432.39, 4181.77, 42.72, 54.38, 35.45, 0, 0,
Hickahala - 17 109500 to S. Fork, PF 09, , 6511.58, 10623.22, 146901.19, 33575.49, 15473.58, 11286.98, 10633.95, 85.74, 128.12, 144.03, 30.83, 0,
Hickahala - 17 109500 to S. Fork, PF 10, , 8437.8, 13768.24, 190221.02, 43520.71, 20067.96, 14652.86, 13813.77, 101.66, 156.84, 191.78, 79.14, 0,
Hickahala - 18 S. Fork to US, PF 01, , 1.11, 1.71, 30.04, 5.4, 1.79, 0.94, 0.45, 0, 0, 0, 0, 0,
Hickahala - 18 S. Fork to US, PF 02, , 3.18, 4.98, 83.57, 15.65, 5.66, 3.41, 2.46, 0, 0, 0, 0, 0,
Hickahala - 18 S. Fork to US, PF 03, , 9.31, 14.68, 238.08, 46.11, 17.75, 11.6, 6.85, 0, 0, 0, 0, 0,
Hickahala - 18 S. Fork to US, PF 04, , 26.21, 41.52, 658, 130.2, 51.96, 35.29, 24.51, 0.68, 0, 0, 0, 0,
Hickahala - 18 S. Fork to US, PF 05, , 74.69, 118.66, 1856.08, 371.53, 151.24, 104.51, 79.1, 3.87, 0.15, 0, 0, 0,
Hickahala - 18 S. Fork to US, PF 06, , 186, 296.42, 4573.81, 929.09, 384.05, 267.83, 210, 8.09, 3.15, 0, 0, 0,
Hickahala - 18 S. Fork to US, PF 07, , 449.98, 718.56, 10988, 2257.54, 943.79, 625.31, 533.57, 15.62, 11.95, 0, 0, 0,
Hickahala - 18 S. Fork to US, PF 08, , 1107.72, 1770.49, 26962.03, 5563.5, 2336.09, 1558.32, 1345.76, 30.93, 33.52, 12.48, 0, 0,
Hickahala - 18 S. Fork to US, PF 09, , 2631.92, 4208.93, 63938.85, 13227.14, 5567.48, 3734.95, 3247.85, 60.19, 79.48, 68.76, 0, 0,
Hickahala - 18 S. Fork to US, PF 10, , 3518.44, 5628.19, 85392.53, 17690.79, 7453.67, 5008.17, 4361.38, 72.85, 100.82, 100.57, 8.82, 0,
Hickahala - 19 USBC, PF 01, , 0.18, 0.26, 5.72, 0.85, 0.09, 0, 0, 0, 0, 0, 0, 0,
Hickahala - 19 USBC, PF 02, , 0.77, 1.17, 21.61, 3.86, 1.02, 0.16, 0, 0, 0, 0, 0, 0,
Hickahala - 19 USBC, PF 03, , 2.53, 3.96, 66.25, 12.82, 4.35, 2.1, 0, 0, 0, 0, 0, 0,
Hickahala - 19 USBC, PF 04, , 8.06, 12.76, 202.34, 40.92, 15.59, 9.55, 1.41, 0, 0, 0, 0, 0,
Hickahala - 19 USBC, PF 05, , 24.76, 39.47, 608.31, 125.46, 50.47, 33.62, 17.35, 0, 0, 0, 0, 0,
Hickahala - 19 USBC, PF 06, , 76.15, 121.53, 1863.46, 384.34, 158.47, 99.16, 76.78, 0.63, 0, 0, 0, 0,
Hickahala - 19 USBC, PF 07, , 207.25, 330.87, 5065.33, 1041.93, 433.4, 281.42, 233.86, 4.52, 1.59, 0, 0, 0,
Hickahala - 19 USBC, PF 08, , 522.66, 834.72, 12756.66, 2625.08, 1096.35, 722.05, 614.54, 12.6, 10.67, 0.14, 0, 0,
Hickahala - 19 USBC, PF 09, , 1308.96, 2090.37, 31955.26, 6572.91, 2744.14, 1812.61, 1552.58, 25.48, 28.85, 13.83, 0, 0,
Hickahala - 19 USBC, PF 10, , 1800.92, 2875.27, 44005.9, 9040.65, 3768.82, 2487.66, 2130.21, 31.75, 38.34, 24.52, 0, 0,
James Wolf - 01 DS to 1968 Limits, PF 01, , 5.49, 10.78, 72.88, 15.09, 5.73, 3.42, 1.94, 0, 0, 0, 0, 0,
James Wolf - 01 DS to 1968 Limits, PF 02, , 18.64, 36.87, 212.87, 46.23, 19.42, 13.6, 11.67, 0, 0, 0, 0, 0,
James Wolf - 01 DS to 1968 Limits, PF 03, , 57.46, 113.99, 601.69, 135.06, 60.17, 45.33, 33.41, 0.19, 0, 0, 0, 0,
James Wolf - 01 DS to 1968 Limits, PF 04, , 168.21, 334.35, 1662.83, 381.31, 175.98, 137.38, 115.77, 3.42, 0, 0, 0, 0,
James Wolf - 01 DS to 1968 Limits, PF 05, , 475.1, 945.39, 4538.07, 1054.96, 497.03, 394.47, 355.61, 13.11, 5.72, 0, 0, 0,
James Wolf - 01 DS to 1968 Limits, PF 06, , 1235.54, 2460.27, 11534.41, 2709.87, 1293.51, 1034.63, 966.59, 31.4, 30.37, 1.97, 0, 0,
James Wolf - 01 DS to 1968 Limits, PF 07, , 2908.96, 5794.58, 26827.61, 6371.69, 3074.6, 2377.86, 2361.22, 60.01, 76.9, 46.86, 0, 0,
James Wolf - 01 DS to 1968 Limits, PF 08, , 5623.13, 11214.01, 49849.41, 12099.35, 5952.06, 4681.05, 4733.92, 85.33, 122.72, 112.17, 0, 0,
James Wolf - 01 DS to 1968 Limits, PF 09, , 9483.93, 18943.19, 79439.3, 19897.87, 10059.34, 8094.73, 8376.34, 94.91, 147.59, 166.13, 20.31, 0,
James Wolf - 01 DS to 1968 Limits, PF 10, , 10421.75, 20831.42, 84949.41, 21604.1, 11065.21, 8997.58, 9405.48, 86.93, 136.65, 156.55, 21.99, 0,
James Wolf - 02 1968 Limits to M. Dale, PF 01, , 5.46, 10.71, 77.94, 15.48, 5.66, 3.26, 1.78, 0, 0, 0, 0, 0,
James Wolf - 02 1968 Limits to M. Dale, PF 02, , 21.3, 42.03, 259.11, 54.07, 22.03, 15.1, 12.87, 0, 0, 0, 0, 0,
James Wolf - 02 1968 Limits to M. Dale, PF 03, , 67.97, 134.51, 764.15, 164.45, 70.77, 51.73, 38.09, 0.58, 0, 0, 0, 0,
James Wolf - 02 1968 Limits to M. Dale, PF 04, , 197.5, 391.62, 2102.75, 462.28, 205.74, 155.33, 128.64, 5.72, 0.01, 0, 0, 0,
James Wolf - 02 1968 Limits to M. Dale, PF 05, , 543.35, 1078.43, 5621.67, 1250.49, 566.28, 433.13, 379.28, 18.79, 10.04, 0, 0, 0,
James Wolf - 02 1968 Limits to M. Dale, PF 06, , 1425.81, 2831.73, 14468.34, 3250.93, 1488.4, 1143.87, 1029.3, 39.42, 38.85, 4.57, 0, 0,
James Wolf - 02 1968 Limits to M. Dale, PF 07, , 3585.65, 7122.55, 36187.25, 8191.96, 3777.98, 2796.57, 2666.81, 75.63, 99.76, 74.24, 0, 0,
James Wolf - 02 1968 Limits to M. Dale, PF 08, , 8871.81, 17625.96, 89074.71, 20219.1, 9343.38, 6935.53, 6642.88, 141.77, 218.38, 262.49, 95.56, 0,
James Wolf - 02 1968 Limits to M. Dale, PF 09, , 22176.1, 44054.14, 223263.48, 50639.87, 23344.65, 17289.88, 16513.48, 251.12, 425.19, 640.56, 659.15, 0,

James Wolf - 02 1968 Limits to M. Dale, PF 10, , 30112.85, 59814.21, 304224.91, 68893.73, 31693.47, 23427.28, 22321.55, 308.45, 533.04, 839.56, 990.16, 146.54,
James Wolf - 03 M. Dale to 34000, PF 01, , 2.1, 4.06, 37.41, 7.12, 2.19, 0.74, 0, 0, 0, 0, 0, 0,
James Wolf - 03 M. Dale to 34000, PF 02, , 7.98, 15.65, 111.35, 22.8, 8.44, 4.76, 0, 0, 0, 0, 0, 0,
James Wolf - 03 M. Dale to 34000, PF 03, , 27.02, 53.34, 324.55, 69.58, 28.49, 19.1, 7.17, 0, 0, 0, 0, 0,
James Wolf - 03 M. Dale to 34000, PF 04, , 85.09, 168.54, 936.37, 206.45, 89.39, 64.56, 41.16, 0, 0, 0, 0, 0,
James Wolf - 03 M. Dale to 34000, PF 05, , 243.96, 483.94, 2565.96, 574.28, 255.93, 190.76, 144.55, 1.07, 0, 0, 0, 0,
James Wolf - 03 M. Dale to 34000, PF 06, , 657.48, 1304.77, 6832.06, 1543.92, 699.93, 492, 437.13, 5.27, 0.82, 0, 0, 0,
James Wolf - 03 M. Dale to 34000, PF 07, , 1687.35, 3350.47, 17231.71, 3918.04, 1793.03, 1282.46, 1176.62, 14.35, 9.9, 0, 0, 0,
James Wolf - 03 M. Dale to 34000, PF 08, , 4147.05, 8235.67, 42170.74, 9595.42, 4400.67, 3170.31, 2945.62, 32.72, 34.02, 6.84, 0, 0,
James Wolf - 03 M. Dale to 34000, PF 09, , 9242.23, 18367.32, 91943.46, 21155.78, 9806.94, 7162.19, 6756.28, 59.99, 77.85, 54.8, 0, 0,
James Wolf - 03 M. Dale to 34000, PF 10, , 11939.41, 23731.11, 118212.37, 27264.52, 12667.93, 9280.95, 8782.76, 74.7, 100.91, 82.08, 0, 0,
James Wolf - 04 34000 to 45500, PF 01, , 1.49, 2.88, 28.19, 5.23, 1.54, 0.46, 0, 0, 0, 0, 0, 0,
James Wolf - 04 34000 to 45500, PF 02, , 4.85, 9.48, 73.34, 14.61, 5.09, 2.53, 0.48, 0, 0, 0, 0, 0,
James Wolf - 04 34000 to 45500, PF 03, , 16.1, 31.71, 205.31, 43.26, 17.04, 10.74, 1.68, 0, 0, 0, 0, 0,
James Wolf - 04 34000 to 45500, PF 04, , 51.06, 101.02, 577.54, 126.53, 53.75, 37.86, 20.12, 0, 0, 0, 0, 0,
James Wolf - 04 34000 to 45500, PF 05, , 151.7, 300.91, 1597.73, 358.81, 159.38, 118.36, 84.19, 0.26, 0, 0, 0, 0,
James Wolf - 04 34000 to 45500, PF 06, , 423.53, 841.26, 4282.06, 976.22, 444.71, 338.5, 272.35, 2.74, 0, 0, 0, 0,
James Wolf - 04 34000 to 45500, PF 07, , 1121.94, 2229.17, 11236.66, 2584.88, 1194.46, 859.88, 788.67, 9.53, 4.19, 0, 0, 0,
James Wolf - 04 34000 to 45500, PF 08, , 2880.75, 5727.01, 28342.54, 6566.79, 3062.56, 2239.51, 2107.82, 22.66, 21.72, 1.44, 0, 0,
James Wolf - 04 34000 to 45500, PF 09, , 7581.05, 15071.3, 74594.51, 17262.91, 8046.89, 5910.7, 5606.65, 48.81, 64.22, 47.19, 0, 0,
James Wolf - 04 34000 to 45500, PF 10, , 10329.39, 20535.62, 101548.88, 23509.76, 10961.01, 8061.93, 7658.23, 60.95, 85.33, 77.95, 0, 0,
James Wolf - 05 45500 to US, PF 01, , 0.64, 1.2, 16.71, 2.77, 0.61, 0, 0, 0, 0, 0, 0, 0,
James Wolf - 05 45500 to US, PF 02, , 2.9, 5.62, 51.89, 9.63, 2.99, 1.17, 0, 0, 0, 0, 0, 0,
James Wolf - 05 45500 to US, PF 03, , 9.52, 18.65, 138.02, 27.47, 9.91, 5.46, 2.51, 0, 0, 0, 0, 0,
James Wolf - 05 45500 to US, PF 04, , 28.63, 56.41, 360.29, 75.71, 30.15, 19.52, 5.64, 0, 0, 0, 0, 0,
James Wolf - 05 45500 to US, PF 05, , 87.66, 173.46, 989.49, 215.92, 92.07, 65.4, 38.43, 0, 0, 0, 0, 0,
James Wolf - 05 45500 to US, PF 06, , 252.53, 500.9, 2662.38, 595.85, 264.98, 197.23, 146.15, 0.88, 0, 0, 0, 0,
James Wolf - 05 45500 to US, PF 07, , 678.67, 1348.17, 6839.68, 1559.34, 712.34, 543.36, 448.49, 5.28, 0.36, 0, 0, 0,
James Wolf - 05 45500 to US, PF 08, , 1681.06, 3341.57, 16605.62, 3843.72, 1788.94, 1300.89, 1210.99, 14.31, 9.4, 0, 0, 0,
James Wolf - 05 45500 to US, PF 09, , 4056.54, 8070.04, 39050.46, 9149.15, 4313.57, 3193.5, 3046.59, 29.58, 32.51, 9.1, 0, 0,
James Wolf - 05 45500 to US, PF 10, , 5473.97, 10891.99, 52360.86, 12306.03, 5819.59, 4326.89, 4149.38, 36.8, 44.67, 22.46, 0, 0,
Martin Dale - 01 DS to 4500, PF 01, , 7.18, 14.01, 110.57, 20.82, 7.39, 4.23, 0.55, 0, 0, 0, 0, 0,
Martin Dale - 01 DS to 4500, PF 02, , 21.6, 42.39, 298.35, 58.35, 22.29, 14.22, 6.67, 0, 0, 0, 0, 0,
Martin Dale - 01 DS to 4500, PF 03, , 58.41, 114.97, 752.51, 151.4, 60.46, 40.58, 24.94, 0.04, 0, 0, 0, 0,
Martin Dale - 01 DS to 4500, PF 04, , 151.49, 298.77, 1862.85, 382.31, 157.16, 108.58, 76.18, 0.83, 0, 0, 0, 0,
Martin Dale - 01 DS to 4500, PF 05, , 378.1, 746.18, 4575.85, 951.63, 398.66, 258.69, 212.47, 3.39, 0.23, 0, 0, 0,
Martin Dale - 01 DS to 4500, PF 06, , 929.17, 1835.29, 11002.07, 2308.86, 978.95, 648.33, 551.78, 9.02, 4.81, 0, 0, 0,
Martin Dale - 01 DS to 4500, PF 07, , 2200.15, 4348.79, 25575.44, 5413.2, 2317.38, 1558.52, 1355.59, 19.31, 17.93, 1.51, 0, 0,
Martin Dale - 01 DS to 4500, PF 08, , 5037.72, 9963.71, 57588, 12291.25, 5305.7, 3613.41, 3188.38, 37, 44.8, 27.18, 0, 0,
Martin Dale - 01 DS to 4500, PF 09, , 11089.34, 21948.29, 124340.14, 26818.67, 11685.39, 8054.68, 7188.46, 63.9, 90.23, 92.24, 8.72, 0,
Martin Dale - 01 DS to 4500, PF 10, , 14439.2, 28586.48, 160638.42, 34800.02, 15219.58, 10536.63, 9438.71, 75.04, 110.43, 126.06, 39.01, 0,
Martin Dale - 02 4500 to US, PF 01, , 1.54, 2.99, 26.45, 4.79, 1.56, 0.77, 0.26, 0, 0, 0, 0, 0,
Martin Dale - 02 4500 to US, PF 02, , 3.67, 7.16, 57.94, 10.93, 3.79, 2.05, 0, 0, 0, 0, 0, 0,
Martin Dale - 02 4500 to US, PF 03, , 9.97, 19.54, 141.75, 27.77, 10.35, 6.28, 1.56, 0, 0, 0, 0, 0,
Martin Dale - 02 4500 to US, PF 04, , 27.7, 54.5, 361.54, 73.01, 28.77, 18.9, 9.32, 0, 0, 0, 0, 0,
Martin Dale - 02 4500 to US, PF 05, , 75.84, 149.58, 931.88, 192.44, 78.84, 54.22, 34.66, 0.08, 0, 0, 0, 0,
Martin Dale - 02 4500 to US, PF 06, , 201.67, 398.4, 2379.15, 499.07, 209.83, 148.18, 108.06, 1.33, 0, 0, 0, 0,
Martin Dale - 02 4500 to US, PF 07, , 512.13, 1012.21, 5962.21, 1264.82, 540.91, 359.98, 304.19, 5.15, 0.96, 0, 0, 0,
Martin Dale - 02 4500 to US, PF 08, , 1250.02, 2472.64, 14236.94, 3048.33, 1319.27, 895.11, 781.15, 12.97, 8.73, 0, 0, 0,
Martin Dale - 02 4500 to US, PF 09, , 2864.02, 5669.32, 31989.96, 6913.26, 3022.18, 2081.1, 1852.11, 26.78, 27.15, 5.45, 0, 0,
Martin Dale - 02 4500 to US, PF 10, , 3796.59, 7517.2, 42115.63, 9133.05, 4006.29, 2771.88, 2480.69, 33.32, 37.16, 14.46, 0, 0,
Martin Dale - 03 USBC, PF 01, , 0.93, 1.78, 18.39, 3.18, 0.93, 0.34, 0, 0, 0, 0, 0, 0,
Martin Dale - 03 USBC, PF 02, , 2.36, 4.57, 41.59, 7.58, 2.41, 1.07, 0.09, 0, 0, 0, 0, 0,
Martin Dale - 03 USBC, PF 03, , 6.23, 12.14, 97.72, 18.61, 6.45, 3.43, 0, 0, 0, 0, 0, 0,
Martin Dale - 03 USBC, PF 04, , 18.67, 36.66, 256.87, 51.17, 19.44, 12.07, 3.43, 0, 0, 0, 0, 0,
Martin Dale - 03 USBC, PF 05, , 54.1, 106.6, 680.54, 139.82, 56.32, 37.85, 20.71, 0, 0, 0, 0, 0,
Martin Dale - 03 USBC, PF 06, , 149.42, 295.03, 1784.83, 373.45, 155.57, 108.69, 74.06, 0.41, 0, 0, 0, 0,
Martin Dale - 03 USBC, PF 07, , 387.96, 766.44, 4571.61, 966.49, 410.4, 268.9, 220.76, 3.02, 0, 0, 0, 0,
Martin Dale - 03 USBC, PF 08, , 1069.75, 2115.02, 12345.31, 2627.3, 1129.07, 758.16, 653.44, 10.51, 5.59, 0, 0, 0,
Martin Dale - 03 USBC, PF 09, , 2969.72, 5871.56, 34263.43, 7276.02, 3127.14, 2117.16, 1855.22, 26.3, 27.39, 7.33, 0, 0,

Martin Dale - 03 USBC, PF 10, , 4192.01, 8287.19, 48521.83, 10281.36, 4410.52, 2986.84, 2620.57, 34.58, 40.29, 20.85, 0, 0,
Mattic - 01 DS to Nelson, PF 01, , 17.74, 34.85, 237.99, 49.38, 18.8, 11.15, 0, 0, 0, 0, 0, 0,
Mattic - 01 DS to Nelson, PF 02, , 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,
Mattic - 01 DS to Nelson, PF 03, , 1.3, 2.52, 23.54, 4.54, 1.37, 0.39, 0, 0, 0, 0, 0, 0,
Mattic - 01 DS to Nelson, PF 04, , 1.61, 3.15, 25.48, 5.15, 1.72, 0.7, 0, 0, 0, 0, 0, 0,
Mattic - 01 DS to Nelson, PF 05, , 4.13, 8.13, 52.46, 11.38, 4.4, 2.54, 1.03, 0, 0, 0, 0, 0,
Mattic - 01 DS to Nelson, PF 06, , 6.72, 13.32, 70.81, 16.63, 7.16, 4.86, 3.36, 0, 0, 0, 0, 0,
Mattic - 01 DS to Nelson, PF 07, , 15, 29.93, 131.28, 33.21, 15.9, 12.43, 11.62, 0, 0, 0, 0, 0,
Mattic - 01 DS to Nelson, PF 08, , 35.71, 71.48, 274.63, 73.46, 37.97, 32.47, 24.31, 0, 0, 0, 0, 0,
Mattic - 01 DS to Nelson, PF 09, , 35.39, 71.13, 227.63, 66.54, 37.49, 34.86, 29.57, 0, 0, 0, 0, 0,
Mattic - 01 DS to Nelson, PF 10, , 43.29, 87.26, 241.09, 75.51, 45.54, 45.23, 42.52, 0.01, 0, 0, 0, 0,
Mattic - 02 Nelson to 13000, PF 01, , 7.86, 15.5, 97.11, 20.38, 8.23, 5.5, 2.42, 0, 0, 0, 0, 0,
Mattic - 02 Nelson to 13000, PF 02, , 0, 0, 0.01, 0, 0, 0, 0, 0, 0, 0, 0, 0,
Mattic - 02 Nelson to 13000, PF 03, , 1.28, 2.5, 19.84, 3.89, 1.34, 0.66, 0.14, 0, 0, 0, 0, 0,
Mattic - 02 Nelson to 13000, PF 04, , 2.38, 4.67, 33.5, 6.74, 2.48, 1.42, 0.74, 0, 0, 0, 0, 0,
Mattic - 02 Nelson to 13000, PF 05, , 7.94, 15.66, 97.94, 20.58, 8.32, 5.57, 2.45, 0, 0, 0, 0, 0,
Mattic - 02 Nelson to 13000, PF 06, , 23.41, 46.32, 266.03, 57.4, 24.47, 17.56, 11.57, 0.01, 0, 0, 0, 0,
Mattic - 02 Nelson to 13000, PF 07, , 62.17, 123.19, 675.33, 148.19, 64.98, 48.04, 36.07, 0.45, 0, 0, 0, 0,
Mattic - 02 Nelson to 13000, PF 08, , 140.74, 278.87, 1530.09, 334.96, 146.98, 108.79, 83.56, 1.41, 0, 0, 0, 0,
Mattic - 02 Nelson to 13000, PF 09, , 394.06, 781.74, 4136.97, 918.05, 411.69, 310.47, 259.92, 6.84, 1.52, 0, 0, 0,
Mattic - 02 Nelson to 13000, PF 10, , 1012.66, 2009.58, 10527.13, 2357.3, 1070.3, 771.43, 711.48, 18.12, 14.23, 0, 0, 0,
Mattic - 03 13000 to US, PF 01, , 1.8, 3.51, 27.38, 5.58, 1.91, 0.85, 0, 0, 0, 0, 0, 0,
Mattic - 03 13000 to US, PF 02, , 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,
Mattic - 03 13000 to US, PF 03, , 0.26, 0.5, 6.23, 1.12, 0.26, 0, 0, 0, 0, 0, 0, 0,
Mattic - 03 13000 to US, PF 04, , 0.53, 1.03, 10.46, 1.99, 0.56, 0.1, 0, 0, 0, 0, 0, 0,
Mattic - 03 13000 to US, PF 05, , 1.84, 3.6, 27.91, 5.7, 1.96, 0.88, 0, 0, 0, 0, 0, 0,
Mattic - 03 13000 to US, PF 06, , 5.93, 11.68, 74.45, 16.13, 6.35, 3.85, 0, 0, 0, 0, 0, 0,
Mattic - 03 13000 to US, PF 07, , 18.11, 35.88, 198.62, 44.93, 19.28, 13.46, 4.99, 0, 0, 0, 0, 0,
Mattic - 03 13000 to US, PF 08, , 52.93, 105.17, 530.06, 123.57, 56.03, 42.13, 26.37, 0, 0, 0, 0, 0,
Mattic - 03 13000 to US, PF 09, , 160.93, 320.31, 1524.5, 361.65, 169.74, 132.77, 103.54, 0.45, 0, 0, 0, 0,
Mattic - 03 13000 to US, PF 10, , 465.84, 927.89, 4305.03, 1028.61, 490.66, 389.47, 334.26, 2.95, 0.22, 0, 0, 0,
Mattic - 04 USBC, PF 01, , 0.38, 0.72, 10.01, 1.8, 0.35, 0, 0, 0, 0, 0, 0, 0,
Mattic - 04 USBC, PF 02, , 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,
Mattic - 04 USBC, PF 03, , 0.03, 0.05, 1.78, 0.23, 0, 0, 0, 0, 0, 0, 0, 0,
Mattic - 04 USBC, PF 04, , 0.06, 0.11, 3.18, 0.47, 0.01, 0, 0, 0, 0, 0, 0, 0,
Mattic - 04 USBC, PF 05, , 0.39, 0.73, 10.14, 1.82, 0.35, 0, 0, 0, 0, 0, 0, 0,
Mattic - 04 USBC, PF 06, , 2.1, 4.1, 33.03, 6.79, 2.26, 0.84, 0, 0, 0, 0, 0, 0,
Mattic - 04 USBC, PF 07, , 8.23, 16.24, 97.65, 21.79, 8.86, 5.58, 0, 0, 0, 0, 0, 0,
Mattic - 04 USBC, PF 08, , 29.25, 58.09, 298.68, 69.7, 31.14, 22.8, 11.14, 0, 0, 0, 0, 0,
Mattic - 04 USBC, PF 09, , 89.53, 178.25, 840.28, 201.54, 94.74, 73.93, 53.38, 0.05, 0, 0, 0, 0,
Mattic - 04 USBC, PF 10, , 241.49, 481.53, 2151.86, 526, 254.96, 205.31, 171.96, 0.93, 0, 0, 0, 0,
Nelson - 01 DS to Wilborn, PF 01, , 0.99, 1.92, 16.82, 3.2, 1.02, 0.43, 0, 0, 0, 0, 0, 0,
Nelson - 01 DS to Wilborn, PF 02, , 2.81, 5.49, 43.3, 8.39, 2.91, 1.51, 0.52, 0, 0, 0, 0, 0,
Nelson - 01 DS to Wilborn, PF 03, , 6.61, 13.01, 85.21, 17.57, 6.86, 4.37, 3.18, 0, 0, 0, 0, 0,
Nelson - 01 DS to Wilborn, PF 04, , 20.61, 40.73, 241.55, 51.55, 21.54, 15.11, 8.92, 0, 0, 0, 0, 0,
Nelson - 01 DS to Wilborn, PF 05, , 60.35, 119.55, 661.15, 144.54, 63.04, 46.46, 34.18, 0.36, 0, 0, 0, 0,
Nelson - 01 DS to Wilborn, PF 06, , 168.83, 334.92, 1774.68, 394.16, 176.36, 133.18, 108.47, 2.83, 0, 0, 0, 0,
Nelson - 01 DS to Wilborn, PF 07, , 438.23, 870.16, 4476.59, 1007.16, 458.24, 350.38, 300.31, 8.19, 2.8, 0, 0, 0,
Nelson - 01 DS to Wilborn, PF 08, , 1110.93, 2206.57, 11241.98, 2553.74, 1175.47, 858.92, 803.32, 19.1, 15.99, 0, 0, 0,
Nelson - 01 DS to Wilborn, PF 09, , 2806.69, 5577.07, 28036.4, 6404.94, 2967.52, 2188.76, 2079.79, 40.41, 49.25, 26.25, 0, 0,
Nelson - 01 DS to Wilborn, PF 10, , 6861.22, 13637.11, 68001.4, 15598.14, 7252.04, 5376.07, 5143.42, 76.02, 111.26, 115.97, 8.57, 0,
Nelson - 02 Wilborn to US, PF 01, , 0.17, 0.31, 5.52, 0.85, 0.13, 0, 0, 0, 0, 0, 0, 0,
Nelson - 02 Wilborn to US, PF 02, , 0.37, 0.69, 9.8, 1.63, 0.34, 0, 0, 0, 0, 0, 0, 0,
Nelson - 02 Wilborn to US, PF 03, , 1.5, 2.9, 28.29, 5.19, 1.54, 0.52, 0, 0, 0, 0, 0, 0,
Nelson - 02 Wilborn to US, PF 04, , 5.83, 11.42, 84.83, 16.77, 6.05, 3.37, 1.66, 0, 0, 0, 0, 0,
Nelson - 02 Wilborn to US, PF 05, , 19.36, 38.14, 244.04, 50.64, 20.23, 13.39, 5.79, 0, 0, 0, 0, 0,
Nelson - 02 Wilborn to US, PF 06, , 59.93, 118.51, 689.3, 147.65, 62.58, 44.66, 29.45, 0.03, 0, 0, 0, 0,
Nelson - 02 Wilborn to US, PF 07, , 173.17, 343.09, 1885.71, 412.19, 180.79, 133.75, 103.41, 1.89, 0, 0, 0, 0,
Nelson - 02 Wilborn to US, PF 08, , 474.05, 940.25, 5004.71, 1107.33, 495.14, 372.33, 310.76, 8.17, 1.82, 0, 0, 0,
Nelson - 02 Wilborn to US, PF 09, , 1217.52, 2415.48, 12757.03, 2845.5, 1286.7, 922.86, 846.95, 21.27, 16.18, 0, 0, 0,
Nelson - 02 Wilborn to US, PF 10, , 2948.3, 5852.28, 30417.54, 6832.28, 3114.23, 2258.22, 2109.06, 45.08, 50.58, 18.08, 0, 0,
Nelson - 03 USBC, PF 01, , 0.01, 0.01, 0.61, 0.02, 0, 0, 0, 0, 0, 0, 0, 0,
Nelson - 03 USBC, PF 02, , 0.01, 0.02, 1.17, 0.08, 0, 0, 0, 0, 0, 0, 0, 0,
Nelson - 03 USBC, PF 03, , 0.07, 0.11, 4.13, 0.46, 0, 0, 0, 0, 0, 0, 0, 0,
Nelson - 03 USBC, PF 04, , 0.36, 0.64, 13.32, 2.03, 0.2, 0, 0, 0, 0, 0, 0, 0,
Nelson - 03 USBC, PF 05, , 1.81, 3.47, 38.29, 7.08, 1.88, 0.22, 0, 0, 0, 0, 0, 0,
Nelson - 03 USBC, PF 06, , 7.17, 14.04, 102.14, 21.16, 7.61, 3.86, 0.58, 0, 0, 0, 0, 0,
Nelson - 03 USBC, PF 07, , 23.46, 46.44, 263.61, 58.96, 24.71, 16.71, 12.75, 0, 0, 0, 0, 0,
Nelson - 03 USBC, PF 08, , 75.67, 150.42, 748.06, 174.99, 79.93, 60.93, 40.56, 0, 0, 0, 0, 0,

Nelson - 03 USBC, PF 09, , 221.52, 441.4, 2020.86, 486.9, 233.22, 187.27, 154.78, 1.42, 0, 0, 0, 0,
Nelson - 03 USBC, PF 10, , 693.42, 1382.9, 6142.07, 1493.77, 729.12, 594.78, 537.94, 8.42, 2.05, 0, 0, 0,
Senatobia - 01 DS to Res. Bound., PF 01, , 0.31, 0.47, 8.98, 1.64, 0.24, 0, 0, 0, 0, 0, 0, 0,
Senatobia - 01 DS to Res. Bound., PF 02, , 0.39, 0.6, 11.29, 2.1, 0.3, 0, 0, 0, 0, 0, 0, 0,
Senatobia - 01 DS to Res. Bound., PF 03, , 1.04, 1.65, 26.11, 5.72, 1.72, 0.11, 0, 0, 0, 0, 0, 0,
Senatobia - 01 DS to Res. Bound., PF 04, , 2.09, 3.41, 46.85, 11.54, 4.62, 2.21, 0, 0, 0, 0, 0, 0,
Senatobia - 01 DS to Res. Bound., PF 05, , 3.15, 5.27, 64.24, 17.46, 8.24, 5.62, 2.35, 0, 0, 0, 0, 0,
Senatobia - 01 DS to Res. Bound., PF 06, , 4.61, 7.85, 86.01, 25.33, 13.51, 11.25, 9.85, 0, 0, 0, 0, 0,
Senatobia - 01 DS to Res. Bound., PF 07, , 0.46, 0.78, 8.86, 2.73, 1.26, 0.56, 0, 0, 0, 0, 0, 0,
Senatobia - 01 DS to Res. Bound., PF 08, , 0.13, 0.22, 2.61, 0.81, 0.29, 0, 0, 0, 0, 0, 0, 0,
Senatobia - 01 DS to Res. Bound., PF 09, , 0.04, 0.06, 0.75, 0.23, 0.05, 0, 0, 0, 0, 0, 0, 0,
Senatobia - 01 DS to Res. Bound., PF 10, , 0.89, 1.55, 14.58, 5.07, 2.97, 2.45, 1.01, 0, 0, 0, 0, 0,
Senatobia - 02 Res. Bound to 15000, PF 01, , 0.61, 1.18, 11.45, 2.36, 0.67, 0.05, 0, 0, 0, 0, 0, 0,
Senatobia - 02 Res. Bound to 15000, PF 02, , 0.8, 1.55, 15.64, 3.23, 0.88, 0.01, 0, 0, 0, 0, 0, 0,
Senatobia - 02 Res. Bound to 15000, PF 03, , 3.84, 7.56, 49.1, 11.22, 4.24, 2, 0, 0, 0, 0, 0, 0,
Senatobia - 02 Res. Bound to 15000, PF 04, , 15.75, 31.31, 154.91, 37.89, 16.9, 11.75, 8.29, 0, 0, 0, 0, 0,
Senatobia - 02 Res. Bound to 15000, PF 05, , 51.09, 101.99, 437.98, 112.17, 54.72, 43.68, 24.6, 0, 0, 0, 0, 0,
Senatobia - 02 Res. Bound to 15000, PF 06, , 134.56, 269.3, 1042.76, 276.97, 142.93, 121.97, 94.92, 0.02, 0, 0, 0, 0,
Senatobia - 02 Res. Bound to 15000, PF 07, , 362.22, 725.99, 2646.23, 717.42, 382.77, 338.29, 307.15, 1.12, 0, 0, 0, 0,
Senatobia - 02 Res. Bound to 15000, PF 08, , 1123.61, 2251.98, 8213.87, 2213.68, 1184.87, 1048.32, 1021.55, 6.18, 1.77, 0, 0, 0,
Senatobia - 02 Res. Bound to 15000, PF 09, , 2470.08, 4948.78, 18343.19, 4928.79, 2639.38, 2200.77, 2335.37, 14.53, 11.74, 0, 0, 0,
Senatobia - 02 Res. Bound to 15000, PF 10, , 6150.44, 12309.61, 47660.52, 12507.15, 6561.48, 5389.49, 5679.99, 33.74, 42.08, 18.67, 0, 0,
Senatobia - 03 15000 to G. Springs, PF 01, , 0.45, 0.86, 10.66, 2.03, 0.44, 0, 0, 0, 0, 0, 0, 0,
Senatobia - 03 15000 to G. Springs, PF 02, , 0.88, 1.69, 17.33, 3.49, 0.95, 0.04, 0, 0, 0, 0, 0, 0,
Senatobia - 03 15000 to G. Springs, PF 03, , 4.1, 8.08, 51.9, 11.7, 4.48, 2.32, 0.01, 0, 0, 0, 0, 0,
Senatobia - 03 15000 to G. Springs, PF 04, , 14.67, 29.17, 142.81, 34.72, 15.63, 11.23, 8.81, 0, 0, 0, 0, 0,
Senatobia - 03 15000 to G. Springs, PF 05, , 45.15, 90.17, 381.05, 97.45, 48.04, 39.23, 26.68, 0, 0, 0, 0, 0,
Senatobia - 03 15000 to G. Springs, PF 06, , 127.71, 255.7, 976.21, 258.72, 134.86, 117.32, 102.25, 0.41, 0, 0, 0, 0,
Senatobia - 03 15000 to G. Springs, PF 07, , 353.23, 708.22, 2539.99, 688.86, 371.49, 333.93, 326.44, 3.29, 0.04, 0, 0, 0,
Senatobia - 03 15000 to G. Springs, PF 08, , 1048.62, 2103.43, 7390.93, 2017.05, 1101.32, 998.04, 1029.64, 11.82, 7.97, 0, 0, 0,
Senatobia - 03 15000 to G. Springs, PF 09, , 3809.09, 7630.97, 28363.26, 7558.04, 4045.99, 3428.33, 3714.48, 38.92, 50.04, 24.58, 0, 0,
Senatobia - 03 15000 to G. Springs, PF 10, , 12548.93, 25092.01, 100934.88, 25842.63, 13321.79, 10904.54, 11471.94, 102.61, 164.08, 195.69, 41.85, 0,
Senatobia - 04 G. Springs to Mattic, PF 01, , 0.15, 0.28, 4.05, 0.77, 0.12, 0, 0, 0, 0, 0, 0, 0,
Senatobia - 04 G. Springs to Mattic, PF 02, , 0.35, 0.67, 7.49, 1.52, 0.36, 0, 0, 0, 0, 0, 0, 0,
Senatobia - 04 G. Springs to Mattic, PF 03, , 2.13, 4.2, 27.59, 6.29, 2.35, 1.09, 0, 0, 0, 0, 0, 0,
Senatobia - 04 G. Springs to Mattic, PF 04, , 10.35, 20.59, 99.99, 24.51, 11.06, 7.91, 5.99, 0, 0, 0, 0, 0,
Senatobia - 04 G. Springs to Mattic, PF 05, , 42.64, 85.16, 359.44, 91.76, 45.31, 37.14, 26.18, 0, 0, 0, 0, 0,
Senatobia - 04 G. Springs to Mattic, PF 06, , 163.97, 328.01, 1297.14, 336.53, 172.87, 148.49, 132.19, 1.01, 0, 0, 0, 0,
Senatobia - 04 G. Springs to Mattic, PF 07, , 567.77, 1136.27, 4412.91, 1147.24, 597.1, 518.32, 502.42, 7.04, 2.19, 0, 0, 0,
Senatobia - 04 G. Springs to Mattic, PF 08, , 1725.52, 3453.14, 13425.29, 3479.55, 1814.07, 1570.36, 1575.07, 22.37, 21.97, 0.67, 0, 0,
Senatobia - 04 G. Springs to Mattic, PF 09, , 4767.96, 9535.57, 38056.25, 9777.25, 5062.13, 4161.61, 4385.08, 55.44, 74.08, 47.16, 0, 0,
Senatobia - 04 G. Springs to Mattic, PF 10, , 15222.9, 30413.93, 126307.05, 31807.27, 16149.7, 13043.01, 13546.67, 131.4, 212.61, 265.81, 91.03, 0,
Senatobia - 05 Mattic to T. Jones, PF 01, , 0.72, 1.38, 15.49, 2.89, 0.75, 0.05, 0, 0, 0, 0, 0, 0,
Senatobia - 05 Mattic to T. Jones, PF 02, , 1.48, 2.87, 26.53, 5.17, 1.57, 0.44, 0, 0, 0, 0, 0, 0,
Senatobia - 05 Mattic to T. Jones, PF 03, , 5.47, 10.74, 76.3, 15.91, 5.81, 3.05, 0.72, 0, 0, 0, 0, 0,
Senatobia - 05 Mattic to T. Jones, PF 04, , 20.9, 41.33, 239.96, 53.09, 22.19, 15.07, 5, 0, 0, 0, 0, 0,
Senatobia - 05 Mattic to T. Jones, PF 05, , 72.7, 144.34, 744.35, 170.76, 76.66, 57.45, 37.79, 0, 0, 0, 0, 0,
Senatobia - 05 Mattic to T. Jones, PF 06, , 234.95, 467.35, 2269.66, 530.74, 247.09, 192.68, 154.61, 1.4, 0, 0, 0, 0,
Senatobia - 05 Mattic to T. Jones, PF 07, , 652.97, 1300.35, 6075.45, 1444.07, 686.99, 545.04, 471.43, 5.36, 0.64, 0, 0, 0,
Senatobia - 05 Mattic to T. Jones, PF 08, , 1489.05, 2968.26, 13403.01, 3256.76, 1588.14, 1211.62, 1179.09, 12.94, 8.77, 0, 0, 0,
Senatobia - 05 Mattic to T. Jones, PF 09, , 3160.77, 6309.28, 27107.38, 6744.19, 3368.65, 2642.5, 2660.19, 24.24, 26.4, 5.35, 0, 0,
Senatobia - 05 Mattic to T. Jones, PF 10, , 7371.3, 14722.96, 61818.38, 15547.72, 7849.09, 6241.18, 6385.12, 45.92, 64.34, 52.24, 0, 0,
Senatobia - 06 T. Jones to 46000, PF 01, , 0.92, 1.77, 18.38, 3.42, 0.96, 0.2, 0, 0, 0, 0, 0, 0,
Senatobia - 06 T. Jones to 46000, PF 02, , 1.83, 3.55, 31.04, 6.04, 1.92, 0.71, 0, 0, 0, 0, 0, 0,
Senatobia - 06 T. Jones to 46000, PF 03, , 6.84, 13.44, 90.13, 18.88, 7.19, 4.21, 2.21, 0, 0, 0, 0, 0,
Senatobia - 06 T. Jones to 46000, PF 04, , 23.25, 46, 264.76, 58.23, 24.55, 17.06, 7.7, 0, 0, 0, 0, 0,
Senatobia - 06 T. Jones to 46000, PF 05, , 73.43, 145.73, 762.94, 172.98, 77.24, 57.74, 39.82, 0.04, 0, 0, 0, 0,
Senatobia - 06 T. Jones to 46000, PF 06, , 214.77, 426.9, 2122.17, 489.73, 225.56, 174.19, 140, 1.55, 0, 0, 0, 0,
Senatobia - 06 T. Jones to 46000, PF 07, , 605.59, 1204.75, 5829.76, 1357.81, 635.78, 497.68, 431.56, 6.91, 1.85, 0, 0, 0,
Senatobia - 06 T. Jones to 46000, PF 08, , 1618.36, 3219.45, 15594.41, 3645.64, 1719.16, 1277.63, 1216.07, 18.85, 15.77, 0, 0, 0,

Senatobia - 06 T. Jones to 46000, PF 09, , 4050.97, 8060.62, 38735.41, 9080.35, 4298.37, 3218.53, 3103.74, 41.23, 49.28, 22.72, 0, 0,
Senatobia - 06 T. Jones to 46000, PF 10, , 9109.64, 18137.16, 85424.47, 20225.46, 9664.36, 7319.36, 7148.14, 75.32, 107.54, 100.74, 0, 0,
Senatobia - 07 46000 to 62000, PF 01, , 1.3, 2.5, 24.93, 4.56, 1.33, 0.4, 0, 0, 0, 0, 0, 0,
Senatobia - 07 46000 to 62000, PF 02, , 2.47, 4.79, 41.52, 7.9, 2.56, 1.11, 0, 0, 0, 0, 0, 0,
Senatobia - 07 46000 to 62000, PF 03, , 8.44, 16.57, 115.89, 23.46, 8.78, 5.18, 3.07, 0, 0, 0, 0, 0,
Senatobia - 07 46000 to 62000, PF 04, , 25.63, 50.56, 313.61, 66.19, 26.88, 18.04, 7.85, 0, 0, 0, 0, 0,
Senatobia - 07 46000 to 62000, PF 05, , 74.18, 146.79, 835.43, 181.62, 77.71, 55.7, 35.54, 0, 0, 0, 0, 0,
Senatobia - 07 46000 to 62000, PF 06, , 208.13, 412.66, 2219.29, 492.35, 217.94, 162.02, 122.53, 1.22, 0, 0, 0, 0,
Senatobia - 07 46000 to 62000, PF 07, , 553.75, 1099.25, 5702.83, 1282.86, 580.04, 439.43, 362.37, 5.95, 0.46, 0, 0, 0,
Senatobia - 07 46000 to 62000, PF 08, , 1351.3, 2683.3, 13782.91, 3130.64, 1434.12, 1031.85, 947.3, 16.01, 9.11, 0, 0, 0,
Senatobia - 07 46000 to 62000, PF 09, , 3215.4, 6387.73, 32348.3, 7390.43, 3409.93, 2480.5, 2319.73, 35.33, 33.16, 1.68, 0, 0,
Senatobia - 07 46000 to 62000, PF 10, , 7859.84, 15617.16, 78645.98, 18004.91, 8328.16, 6091.88, 5750.09, 72.92, 89.92, 51.07, 0, 0,
Senatobia - 08 62000 to US, PF 01, , 0.28, 0.53, 7.89, 1.29, 0.26, 0, 0, 0, 0, 0, 0, 0,
Senatobia - 08 62000 to US, PF 02, , 0.51, 0.96, 12.58, 2.14, 0.5, 0.01, 0, 0, 0, 0, 0, 0,
Senatobia - 08 62000 to US, PF 03, , 1.74, 3.36, 32.64, 6.04, 1.8, 0.57, 0, 0, 0, 0, 0, 0,
Senatobia - 08 62000 to US, PF 04, , 6.16, 12.05, 91.12, 18.08, 6.42, 3.41, 1.27, 0, 0, 0, 0, 0,
Senatobia - 08 62000 to US, PF 05, , 19.42, 38.24, 248.48, 51.79, 20.42, 13.08, 3.61, 0, 0, 0, 0, 0,
Senatobia - 08 62000 to US, PF 06, , 59.22, 117.09, 682.4, 147.36, 62.11, 43.66, 24.86, 0, 0, 0, 0, 0,
Senatobia - 08 62000 to US, PF 07, , 176.43, 349.67, 1905.43, 420.8, 184.79, 136.25, 99.12, 0.64, 0, 0, 0, 0,
Senatobia - 08 62000 to US, PF 08, , 500.01, 992.3, 5190.62, 1163.38, 523.64, 395.15, 321.58, 5.1, 0.08, 0, 0, 0,
Senatobia - 08 62000 to US, PF 09, , 1328.36, 2637.15, 13642.85, 3086.95, 1409.2, 1010.73, 925.71, 15.87, 9.35, 0, 0, 0,
Senatobia - 08 62000 to US, PF 10, , 3315.45, 6583.9, 33761.08, 7659.44, 3512.62, 2543.51, 2370.47, 37.43, 37.29, 4.87, 0, 0,
Senatobia - 09 USBC, PF 01, , 0.25, 0.46, 6.46, 1.06, 0.23, 0.01, 0, 0, 0, 0, 0, 0,
Senatobia - 09 USBC, PF 02, , 0.39, 0.75, 9.63, 1.62, 0.39, 0.03, 0, 0, 0, 0, 0, 0,
Senatobia - 09 USBC, PF 03, , 1.17, 2.25, 23.13, 4.17, 1.19, 0.34, 0, 0, 0, 0, 0, 0,
Senatobia - 09 USBC, PF 04, , 4.36, 8.52, 66.24, 12.97, 4.53, 2.35, 0.8, 0, 0, 0, 0, 0,
Senatobia - 09 USBC, PF 05, , 14.48, 28.48, 189.24, 39.01, 15.2, 9.6, 2.43, 0, 0, 0, 0, 0,
Senatobia - 09 USBC, PF 06, , 44.08, 87.07, 521.86, 111.21, 46.17, 31.93, 17.25, 0, 0, 0, 0, 0,
Senatobia - 09 USBC, PF 07, , 126.46, 250.34, 1410.94, 306.84, 132.32, 95.76, 66.2, 0.24, 0, 0, 0, 0,
Senatobia - 09 USBC, PF 08, , 355.84, 705.22, 3842.82, 844.43, 372.05, 275.25, 214.68, 3.11, 0, 0, 0, 0,
Senatobia - 09 USBC, PF 09, , 992.47, 1967.88, 10574.01, 2346.76, 1051.34, 739.44, 662.69, 12.43, 5.78, 0, 0, 0,
Senatobia - 09 USBC, PF 10, , 2720.59, 5396.26, 28694.25, 6386.58, 2876.96, 2048.28, 1879.6, 31.49, 32.13, 5.92, 0, 0,
South Fork - 01 DS to 4600, PF 01, , 0.29, 0.43, 8.45, 1.44, 0.29, 0, 0, 0, 0, 0, 0, 0,
South Fork - 01 DS to 4600, PF 02, , 0.97, 1.5, 25.71, 4.94, 1.53, 0.52, 0, 0, 0, 0, 0, 0,
South Fork - 01 DS to 4600, PF 03, , 3.1, 4.92, 77.23, 15.97, 5.98, 3.41, 0, 0, 0, 0, 0, 0,
South Fork - 01 DS to 4600, PF 04, , 9.32, 14.98, 222.35, 48.11, 19.83, 13.34, 4.75, 0, 0, 0, 0, 0,
South Fork - 01 DS to 4600, PF 05, , 26.89, 43.55, 624.25, 138.84, 60.39, 43.62, 26.88, 0, 0, 0, 0, 0,
South Fork - 01 DS to 4600, PF 06, , 74.8, 121.64, 1708.42, 386.13, 173.02, 129.14, 96.08, 0.42, 0, 0, 0, 0,
South Fork - 01 DS to 4600, PF 07, , 198.16, 322.88, 4491.87, 1025.04, 467.02, 326.05, 287.53, 2.16, 0.13, 0, 0, 0,
South Fork - 01 DS to 4600, PF 08, , 499.32, 814.87, 11250.81, 2582.96, 1188.12, 845.85, 772.46, 6.19, 3.54, 0, 0, 0,
South Fork - 01 DS to 4600, PF 09, , 1168.45, 1910.51, 26130.97, 6051.04, 2811.43, 2036.06, 1902.42, 13.73, 13.73, 1.71, 0, 0,
South Fork - 01 DS to 4600, PF 10, , 1604.69, 2624.19, 35866.56, 8310.21, 3863.92, 2805.73, 2631.29, 17.69, 19.9, 6.85, 0, 0,
South Fork - 02 4600 to 10000, PF 01, , 0.52, 0.79, 14.9, 2.57, 0.65, 0.09, 0, 0, 0, 0, 0, 0,
South Fork - 02 4600 to 10000, PF 02, , 1.65, 2.58, 44.01, 8.32, 2.74, 1.27, 0, 0, 0, 0, 0, 0,
South Fork - 02 4600 to 10000, PF 03, , 5.02, 7.94, 127.08, 25.45, 9.57, 5.78, 0.79, 0, 0, 0, 0, 0,
South Fork - 02 4600 to 10000, PF 04, , 14.52, 23.18, 354.93, 73.76, 29.85, 20.07, 10.15, 0, 0, 0, 0, 0,
South Fork - 02 4600 to 10000, PF 05, , 39.87, 64.03, 953.7, 202.85, 85.56, 60.41, 40.53, 0.13, 0, 0, 0, 0,
South Fork - 02 4600 to 10000, PF 06, , 105.07, 169.32, 2482.82, 536.48, 232.03, 153.93, 127.36, 1.3, 0, 0, 0, 0,
South Fork - 02 4600 to 10000, PF 07, , 270.33, 436.62, 6334.71, 1381.28, 605.7, 412, 358.1, 4.37, 1.54, 0, 0, 0,
South Fork - 02 4600 to 10000, PF 08, , 687.33, 1111.42, 16039.08, 3513.28, 1550.81, 1069.77, 952.34, 10.58, 8.95, 0, 0, 0,
South Fork - 02 4600 to 10000, PF 09, , 1750.14, 2829.7, 40856.66, 8941.44, 3945.31, 2734.22, 2453.27, 22.39, 26.35, 13.44, 0, 0,
South Fork - 02 4600 to 10000, PF 10, , 2408.64, 3893.45, 56279.15, 12301.83, 5421.2, 3757.65, 3372.92, 28.41, 35.9, 25, 0, 0,
South Fork - 03 10000 to US, PF 01, , 0.61, 0.93, 17.7, 2.99, 0.77, 0.14, 0, 0, 0, 0, 0, 0,
South Fork - 03 10000 to US, PF 02, , 1.69, 2.6, 46.18, 8.35, 2.59, 1.07, 0, 0, 0, 0, 0, 0,
South Fork - 03 10000 to US, PF 03, , 5.17, 8.09, 134.63, 25.86, 9.25, 5.24, 0, 0, 0, 0, 0, 0,
South Fork - 03 10000 to US, PF 04, , 15.03, 23.78, 378.27, 75.49, 29.22, 18.71, 8.02, 0, 0, 0, 0, 0,
South Fork - 03 10000 to US, PF 05, , 42.69, 67.98, 1052.53, 214.87, 86.92, 58.79, 36.74, 0.06, 0, 0, 0, 0,
South Fork - 03 10000 to US, PF 06, , 117.15, 187, 2863.81, 590.83, 244.34, 154.28, 122.22, 1.24, 0, 0, 0, 0,
South Fork - 03 10000 to US, PF 07, , 309.03, 494.08, 7513.01, 1558.16, 651.63, 422.89, 352.65, 4.76, 1.97, 0, 0, 0,
South Fork - 03 10000 to US, PF 08, , 771.99, 1235.5, 18704.21, 3892.98, 1638.13, 1080.48, 922.98, 12.01, 10.96, 0.82, 0, 0,
South Fork - 03 10000 to US, PF 09, , 1780.81, 2853.59, 42953.67, 8990.85, 3807.1, 2542.68, 2202.45, 24.62, 29.98, 19.35, 0, 0,
South Fork - 03 10000 to US, PF 10, , 2311.44, 3706.14, 55630.32, 11678.95, 4959.15, 3325.23, 2891.23, 30.23, 38.81, 30.4, 0, 0,
South Fork - 04 USBC, PF 01, , 0.67, 1.02, 19.31, 3.27, 0.87, 0.22, 0, 0, 0, 0, 0, 0,
South Fork - 04 USBC, PF 02, , 1.88, 2.9, 51.43, 9.24, 2.94, 1.35, 0, 0, 0, 0, 0, 0,
South Fork - 04 USBC, PF 03, , 5.31, 8.29, 139.45, 26.37, 9.38, 5.36, 0.55, 0, 0, 0, 0, 0,

South Fork - 04 USBC, PF 04, , 14.87, 23.49, 376.66, 74.39, 28.64, 18.35, 8.47, 0, 0, 0, 0, 0,
South Fork - 04 USBC, PF 05, , 40.95, 65.15, 1013.4, 205.69, 82.92, 56.05, 35.44, 0.1, 0, 0, 0, 0,
South Fork - 04 USBC, PF 06, , 110.41, 176.27, 2697.55, 556.95, 230.51, 145.79, 115.29, 1.21, 0, 0, 0, 0,
South Fork - 04 USBC, PF 07, , 288.55, 461.72, 6994.73, 1456.92, 611.39, 397.42, 331.36, 4.3, 1.49, 0, 0, 0,
South Fork - 04 USBC, PF 08, , 732.44, 1173.11, 17696.66, 3698.85, 1561.15, 1029.93, 879.44, 10.65, 8.97, 0.06, 0, 0,
South Fork - 04 USBC, PF 09, , 1806.93, 2894.7, 43623.4, 9123.49, 3855.8, 2563.41, 2210.8, 22.63, 26.54, 14.67, 0, 0,
South Fork - 04 USBC, PF 10, , 2432.82, 3897.93, 58703.95, 12285.73, 5194.93, 3460.65, 2990.53, 28.19, 35.4, 25.81, 0, 0,
Steammill - 01 DS to 5200, PF 01, , 0.21, 0.38, 6.41, 0.99, 0.17, 0, 0, 0, 0, 0, 0, 0,
Steammill - 01 DS to 5200, PF 02, , 0.88, 1.68, 18.7, 3.25, 0.88, 0.21, 0, 0, 0, 0, 0, 0,
Steammill - 01 DS to 5200, PF 03, , 3.65, 7.1, 58.15, 11.01, 3.77, 1.96, 0, 0, 0, 0, 0, 0,
Steammill - 01 DS to 5200, PF 04, , 12.32, 24.19, 168.06, 33.51, 12.81, 8.05, 2.72, 0, 0, 0, 0, 0,
Steammill - 01 DS to 5200, PF 05, , 37.83, 74.58, 471.11, 96.91, 39.33, 26.77, 15.96, 0, 0, 0, 0, 0,
Steammill - 01 DS to 5200, PF 06, , 107.06, 211.49, 1265, 265.34, 111.4, 78.62, 56.4, 0.63, 0, 0, 0, 0,
Steammill - 01 DS to 5200, PF 07, , 281.47, 556.44, 3257.19, 693.1, 297.34, 198.74, 168.18, 3.02, 0.44, 0, 0, 0,
Steammill - 01 DS to 5200, PF 08, , 672.33, 1330.61, 7550.57, 1628.77, 710.12, 485.65, 426.5, 7.39, 4.72, 0, 0, 0,
Steammill - 01 DS to 5200, PF 09, , 1431.26, 2836.62, 15450.52, 3401.95, 1513.65, 1059.94, 957.9, 13.36, 13.15, 1.79, 0, 0,
Steammill - 01 DS to 5200, PF 10, , 1900.63, 3767.68, 20390.48, 4504.1, 2010.16, 1413.09, 1283.31, 16.49, 17.78, 5.29, 0, 0,
Steammill - 02 5200 to US, PF 01, , 0.49, 0.93, 12.07, 1.95, 0.47, 0.07, 0, 0, 0, 0, 0, 0,
Steammill - 02 5200 to US, PF 02, , 1.95, 3.77, 35.42, 6.3, 1.98, 0.88, 0, 0, 0, 0, 0, 0,
Steammill - 02 5200 to US, PF 03, , 6.79, 13.27, 103.91, 19.59, 6.99, 4.05, 0.65, 0, 0, 0, 0, 0,
Steammill - 02 5200 to US, PF 04, , 20.62, 40.46, 285.62, 55.69, 21.27, 13.55, 6.57, 0, 0, 0, 0, 0,
Steammill - 02 5200 to US, PF 05, , 58.48, 115.03, 766.58, 152.45, 60.41, 40.19, 25.45, 0.11, 0, 0, 0, 0,
Steammill - 02 5200 to US, PF 06, , 156.43, 307.89, 2023, 406.62, 164.34, 101.95, 79.37, 1.08, 0, 0, 0, 0,
Steammill - 02 5200 to US, PF 07, , 410.42, 808.23, 5237.26, 1055.82, 430.21, 272.57, 221.56, 3.81, 1.27, 0, 0, 0,
Steammill - 02 5200 to US, PF 08, , 1072.01, 2111.29, 13650.1, 2747.55, 1121.1, 718.11, 595.76, 10.18, 8.3, 0.02, 0, 0,
Steammill - 02 5200 to US, PF 09, , 2718.59, 5353.1, 34789.5, 6970.41, 2835.98, 1825.19, 1525.57, 23.95, 27.55, 15.1, 0, 0,
Steammill - 02 5200 to US, PF 10, , 3677.48, 7240.93, 47105.89, 9429.39, 3833.89, 2470.81, 2068.14, 31.02, 38.3, 27.87, 0, 0,
Steammill - 03 USBC, PF 01, , 0.23, 0.43, 8.27, 1.18, 0.17, 0, 0, 0, 0, 0, 0, 0,
Steammill - 03 USBC, PF 02, , 1.59, 3.05, 32.63, 5.5, 1.58, 0.58, 0, 0, 0, 0, 0, 0,
Steammill - 03 USBC, PF 03, , 6.43, 12.52, 104.48, 19, 6.55, 3.67, 0.58, 0, 0, 0, 0, 0,
Steammill - 03 USBC, PF 04, , 19.91, 38.99, 287.45, 54.59, 20.4, 12.79, 6.31, 0, 0, 0, 0, 0,
Steammill - 03 USBC, PF 05, , 56.77, 111.54, 763.42, 149.21, 58.39, 38.59, 24.81, 0.22, 0, 0, 0, 0,
Steammill - 03 USBC, PF 06, , 151.7, 298.64, 1952.29, 389.02, 156.51, 106.11, 76.52, 1.63, 0, 0, 0, 0,
Steammill - 03 USBC, PF 07, , 379.06, 746.73, 4799.7, 970.09, 397.09, 254.12, 208.45, 4.46, 1.68, 0, 0, 0,
Steammill - 03 USBC, PF 08, , 938.86, 1850.78, 11688.23, 2379.76, 983.07, 639.37, 537.98, 10.32, 8.69, 0.12, 0, 0,
Steammill - 03 USBC, PF 09, , 2309.58, 4554.17, 28550.88, 5834.28, 2417.65, 1582.2, 1343.65, 19.5, 22.13, 10.92, 0, 0,
Steammill - 03 USBC, PF 10, , 3194.39, 6297.84, 39651.34, 8082.08, 3341.14, 2185.22, 1855.13, 25.27, 30.88, 21.05, 0, 0,
Thornton - 01 DS to 1968 Limits, PF 01, , 0.16, 0.3, 4.44, 0.76, 0.14, 0, 0, 0, 0, 0, 0, 0,
Thornton - 01 DS to 1968 Limits, PF 02, , 0.84, 1.64, 14.09, 2.76, 0.89, 0.33, 0, 0, 0, 0, 0, 0,
Thornton - 01 DS to 1968 Limits, PF 03, , 4.14, 8.19, 47.47, 10.31, 4.31, 3.01, 2.55, 0, 0, 0, 0, 0,
Thornton - 01 DS to 1968 Limits, PF 04, , 10.64, 21.13, 109.54, 24.99, 11.2, 8.43, 5.77, 0, 0, 0, 0, 0,
Thornton - 01 DS to 1968 Limits, PF 05, , 9.12, 18.13, 90.25, 21.93, 9.88, 7.07, 1.42, 0, 0, 0, 0, 0,
Thornton - 01 DS to 1968 Limits, PF 06, , 6.67, 13.32, 57.62, 15.29, 7.36, 5.49, 0.22, 0, 0, 0, 0, 0,
Thornton - 01 DS to 1968 Limits, PF 07, , 1.29, 2.58, 10.91, 3.17, 1.5, 0.88, 0, 0, 0, 0, 0, 0,
Thornton - 01 DS to 1968 Limits, PF 08, , 0.42, 0.83, 4.07, 1.24, 0.53, 0.12, 0, 0, 0, 0, 0, 0,
Thornton - 01 DS to 1968 Limits, PF 09, , 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,
Thornton - 01 DS to 1968 Limits, PF 10, , 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,
Thornton - 02 1968 Limits to Steammill, PF 01, , 0.28, 0.51, 8.36, 1.32, 0.23, 0, 0, 0, 0, 0, 0, 0,
Thornton - 02 1968 Limits to Steammill, PF 02, , 1.31, 2.52, 25.82, 4.69, 1.34, 0.36, 0, 0, 0, 0, 0, 0,
Thornton - 02 1968 Limits to Steammill, PF 03, , 4.98, 9.74, 73.73, 14.65, 5.23, 2.8, 0, 0, 0, 0, 0, 0,
Thornton - 02 1968 Limits to Steammill, PF 04, , 16.53, 32.58, 205.74, 43.26, 17.37, 11.42, 4.06, 0, 0, 0, 0, 0,
Thornton - 02 1968 Limits to Steammill, PF 05, , 47.94, 94.88, 536.85, 117.18, 50.28, 36.04, 22.82, 0, 0, 0, 0, 0,
Thornton - 02 1968 Limits to Steammill, PF 06, , 125.55, 249.1, 1314.43, 294.78, 131.7, 98.5, 75.06, 0.6, 0, 0, 0, 0,
Thornton - 02 1968 Limits to Steammill, PF 07, , 239.77, 476.98, 2312.56, 539.74, 252.06, 196.54, 165.22, 1.87, 0.06, 0, 0, 0,
Thornton - 02 1968 Limits to Steammill, PF 08, , 311.39, 621.55, 2674.58, 662.72, 328.08, 270.4, 244.08, 2.51, 0.4, 0, 0, 0,
Thornton - 02 1968 Limits to Steammill, PF 09, , 83.55, 167.79, 556.41, 158.21, 88.12, 81.34, 76.01, 0.22, 0, 0, 0, 0,
Thornton - 02 1968 Limits to Steammill, PF 10, , 8.6, 17.31, 51.49, 15.93, 9.13, 8.37, 8.97, 0, 0, 0, 0, 0,
Thornton - 03 Steammill to US, PF 01, , 0.94, 1.81, 17.11, 2.95, 0.93, 0.46, 0.19, 0, 0, 0, 0, 0,
Thornton - 03 Steammill to US, PF 02, , 1.23, 2.36, 23.68, 4.15, 1.24, 0.47, 0, 0, 0, 0, 0, 0,
Thornton - 03 Steammill to US, PF 03, , 3.07, 5.96, 52.66, 9.66, 3.15, 1.5, 0, 0, 0, 0, 0, 0,
Thornton - 03 Steammill to US, PF 04, , 9.16, 17.91, 138.06, 26.45, 9.5, 5.45, 0.26, 0, 0, 0, 0, 0,
Thornton - 03 Steammill to US, PF 05, , 27.86, 54.73, 377.44, 74.89, 28.88, 18.46, 8.15, 0, 0, 0, 0, 0,
Thornton - 03 Steammill to US, PF 06, , 77.86, 153.37, 989.46, 200.88, 80.8, 54.34, 33.61, 0.05, 0, 0, 0, 0,
Thornton - 03 Steammill to US, PF 07, , 200.32, 394.93, 2486.12, 512.82, 211.73, 132.96, 104.26, 0.93, 0, 0, 0, 0,
Thornton - 03 Steammill to US, PF 08, , 476.52, 940.83, 5704.87, 1194.73, 503.25, 327.09, 271.84, 3.2, 0.73, 0, 0, 0,
Thornton - 03 Steammill to US, PF 09, , 949.21, 1877.44, 10838.22, 2325.74, 1004.33, 673.06, 580.85, 6.2, 3.58, 0, 0, 0,
Thornton - 03 Steammill to US, PF 10, , 1192.27, 2359.32, 13439.64, 2904.25, 1262.46, 851.94, 741.12, 7.37, 4.76, 0, 0, 0,
Thornton - 04 USBC, PF 01, , 0.01, 0.01, 0.74, 0.02, 0, 0, 0, 0, 0, 0, 0, 0,
Thornton - 04 USBC, PF 02, , 0.08, 0.14, 4.69, 0.61, 0, 0, 0, 0, 0, 0, 0, 0,
Thornton - 04 USBC, PF 03, , 0.65, 1.22, 16.92, 2.83, 0.62, 0, 0, 0, 0, 0, 0, 0,

Thornton - 04 USBC, PF 04, , 3.13, 6.07, 54.11, 10.12, 3.24, 1.37, 0, 0, 0, 0, 0, 0,
Thornton - 04 USBC, PF 05, , 11, 21.57, 156.78, 31.22, 11.54, 6.73, 0, 0, 0, 0, 0, 0,
Thornton - 04 USBC, PF 06, , 34.61, 68.17, 440.93, 90.98, 36.21, 23.69, 9.88, 0, 0, 0, 0, 0,
Thornton - 04 USBC, PF 07, , 99.76, 196.76, 1224.15, 257.68, 106.74, 64.32, 45.11, 0.02, 0, 0, 0, 0,
Thornton - 04 USBC, PF 08, , 282.32, 557.58, 3351.04, 711.24, 300.46, 190.53, 151.19, 0.73, 0, 0, 0, 0,
Thornton - 04 USBC, PF 09, , 769.76, 1521.03, 9019.54, 1916.01, 815.64, 531.98, 445.63, 3.36, 0.97, 0, 0, 0,
Thornton - 04 USBC, PF 10, , 1070.02, 2114.48, 12517.47, 2657.63, 1132.43, 743.07, 628.74, 4.98, 2.44, 0, 0, 0,
Tolbert-Jones - 01 DS to 3000, PF 01, , 0.04, 0.06, 2.26, 0.29, 0, 0, 0, 0, 0, 0, 0, 0,
Tolbert-Jones - 01 DS to 3000, PF 02, , 0.09, 0.15, 3.75, 0.54, 0.04, 0, 0, 0, 0, 0, 0, 0,
Tolbert-Jones - 01 DS to 3000, PF 03, , 0.41, 0.77, 10.57, 1.82, 0.39, 0, 0, 0, 0, 0, 0, 0,
Tolbert-Jones - 01 DS to 3000, PF 04, , 1.56, 3.03, 27.22, 5.29, 1.65, 0.55, 0, 0, 0, 0, 0, 0,
Tolbert-Jones - 01 DS to 3000, PF 05, , 5.14, 10.1, 68.69, 14.53, 5.49, 3.09, 0, 0, 0, 0, 0, 0,
Tolbert-Jones - 01 DS to 3000, PF 06, , 14.98, 29.65, 168.48, 37.87, 15.99, 10.88, 2.9, 0, 0, 0, 0, 0,
Tolbert-Jones - 01 DS to 3000, PF 07, , 45.48, 90.37, 456.89, 106.78, 48.25, 36, 20.84, 0, 0, 0, 0, 0,
Tolbert-Jones - 01 DS to 3000, PF 08, , 151.93, 302.33, 1449.05, 343.85, 160.55, 124.45, 92.51, 0.18, 0, 0, 0, 0,
Tolbert-Jones - 01 DS to 3000, PF 09, , 499.72, 994.18, 4802.7, 1137.79, 536.14, 385.46, 348.16, 2.01, 0.02, 0, 0, 0,
Tolbert-Jones - 01 DS to 3000, PF 10, , 992.41, 1977.99, 8976.93, 2181.89, 1060.86, 800.73, 770.67, 6.33, 3.49, 0, 0, 0,
Tolbert-Jones - 02 3000 to 12350, PF 01, , 0.16, 0.23, 4.9, 0.76, 0.12, 0, 0, 0, 0, 0, 0, 0,
Tolbert-Jones - 02 3000 to 12350, PF 02, , 0.27, 0.4, 7.95, 1.31, 0.27, 0, 0, 0, 0, 0, 0, 0,
Tolbert-Jones - 02 3000 to 12350, PF 03, , 0.8, 1.24, 22.2, 4.03, 1.16, 0.34, 0, 0, 0, 0, 0, 0,
Tolbert-Jones - 02 3000 to 12350, PF 04, , 2.42, 3.79, 62.8, 12.23, 4.26, 2.2, 0, 0, 0, 0, 0, 0,
Tolbert-Jones - 02 3000 to 12350, PF 05, , 7.09, 11.26, 176.11, 36.07, 14, 8.84, 2.31, 0, 0, 0, 0, 0,
Tolbert-Jones - 02 3000 to 12350, PF 06, , 19.95, 31.98, 480.13, 101.76, 42.14, 29.08, 16.16, 0, 0, 0, 0, 0,
Tolbert-Jones - 02 3000 to 12350, PF 07, , 54.46, 87.84, 1282.71, 278.34, 120.01, 86.69, 61.2, 0.31, 0, 0, 0, 0,
Tolbert-Jones - 02 3000 to 12350, PF 08, , 146.9, 237.76, 3416.48, 751.52, 331.42, 244.5, 192.6, 2.35, 0.01, 0, 0, 0,
Tolbert-Jones - 02 3000 to 12350, PF 09, , 382.1, 619.39, 8834.12, 1959.31, 874.86, 608.98, 542.44, 7.2, 3.6, 0, 0, 0,
Tolbert-Jones - 02 3000 to 12350, PF 10, , 972.95, 1578.84, 22404.78, 4990.86, 2241.96, 1579.9, 1436.7, 16.68, 16.13, 1.66, 0, 0,
Tolbert-Jones - 03 USBC, PF 01, , 0.06, 0.09, 1.98, 0.3, 0.04, 0, 0, 0, 0, 0, 0, 0,
Tolbert-Jones - 03 USBC, PF 02, , 0.1, 0.16, 3.15, 0.51, 0.09, 0, 0, 0, 0, 0, 0, 0,
Tolbert-Jones - 03 USBC, PF 03, , 0.27, 0.41, 7.67, 1.35, 0.33, 0.02, 0, 0, 0, 0, 0, 0,
Tolbert-Jones - 03 USBC, PF 04, , 0.8, 1.24, 21.37, 4.05, 1.26, 0.45, 0, 0, 0, 0, 0, 0,
Tolbert-Jones - 03 USBC, PF 05, , 2.26, 3.57, 57.74, 11.58, 4.15, 2.2, 0, 0, 0, 0, 0, 0,
Tolbert-Jones - 03 USBC, PF 06, , 6.7, 10.68, 164.8, 34.33, 13.5, 8.58, 2, 0, 0, 0, 0, 0,
Tolbert-Jones - 03 USBC, PF 07, , 20.06, 32.26, 477.07, 102.71, 43.25, 30.36, 17.62, 0, 0, 0, 0, 0,
Tolbert-Jones - 03 USBC, PF 08, , 56.32, 91.15, 1310.37, 288.81, 126.69, 93.09, 68.44, 0.47, 0, 0, 0, 0,
Tolbert-Jones - 03 USBC, PF 09, , 153.71, 249.41, 3540.46, 790.03, 353.77, 245.57, 214.75, 2.76, 0.23, 0, 0, 0,
Tolbert-Jones - 03 USBC, PF 10, , 424.42, 689.35, 9739.04, 2180.32, 983.27, 693.17, 627.16, 8.14, 5.45, 0, 0, 0,
West Ditch - 01 DS to Res. Bound., PF 01, , 0.1, 0.16, 2.46, 0.54, 0.16, 0.01, 0, 0, 0, 0, 0, 0,
West Ditch - 01 DS to Res. Bound., PF 02, , 0.29, 0.47, 6.58, 1.58, 0.62, 0.3, 0, 0, 0, 0, 0, 0,
West Ditch - 01 DS to Res. Bound., PF 03, , 0.68, 1.12, 14.48, 3.7, 1.67, 1.13, 0.59, 0, 0, 0, 0, 0,
West Ditch - 01 DS to Res. Bound., PF 04, , 1.38, 2.32, 27.83, 7.5, 3.72, 2.94, 2.55, 0, 0, 0, 0, 0,
West Ditch - 01 DS to Res. Bound., PF 05, , 2.55, 4.32, 49.02, 13.77, 7.29, 6.31, 6.57, 0, 0, 0, 0, 0,
West Ditch - 01 DS to Res. Bound., PF 06, , 2.36, 4.04, 42.77, 12.8, 7.17, 6.53, 7.08, 0, 0, 0, 0, 0,
West Ditch - 01 DS to Res. Bound., PF 07, , 4.48, 7.74, 77.84, 24.19, 14.28, 13.81, 16.55, 0, 0, 0, 0, 0,
West Ditch - 01 DS to Res. Bound., PF 08, , 20.01, 34.54, 349.73, 107.37, 64.26, 63.56, 63.93, 0.15, 0, 0, 0, 0,
West Ditch - 01 DS to Res. Bound., PF 09, , 35.23, 60.96, 607, 188.8, 114.77, 114.98, 120.23, 0.32, 0, 0, 0, 0,
West Ditch - 01 DS to Res. Bound., PF 10, , 28.37, 49.29, 479.12, 152.21, 94.2, 95.92, 100.73, 0.21, 0, 0, 0, 0,
West Ditch - 02 Res. Bound. To 24300, PF 01, , 3.32, 6.53, 45.92, 9.17, 3.44, 2.08, 1.36, 0, 0, 0, 0, 0,
West Ditch - 02 Res. Bound. To 24300, PF 02, , 9.32, 18.37, 116.75, 24.24, 9.73, 6.49, 3.02, 0, 0, 0, 0, 0,
West Ditch - 02 Res. Bound. To 24300, PF 03, , 26.27, 51.93, 304.95, 65.13, 27.44, 19.43, 12.36, 0, 0, 0, 0, 0,
West Ditch - 02 Res. Bound. To 24300, PF 04, , 71.57, 141.73, 790.89, 172.03, 74.75, 54.73, 40.49, 0.46, 0, 0, 0, 0,
West Ditch - 02 Res. Bound. To 24300, PF 05, , 192.3, 381.17, 2067.15, 454, 200.83, 149.5, 120.34, 2.63, 0.02, 0, 0, 0,
West Ditch - 02 Res. Bound. To 24300, PF 06, , 462.36, 917.47, 4817.46, 1073.54, 483.46, 365.03, 309.25, 7.05, 2.89, 0, 0, 0,
West Ditch - 02 Res. Bound. To 24300, PF 07, , 1055.05, 2095.11, 10750.12, 2436.82, 1117.43, 810.09, 753.23, 14.54, 12.36, 0, 0, 0,
West Ditch - 02 Res. Bound. To 24300, PF 08, , 2452.16, 4873.6, 24339.42, 5589.46, 2597, 1912.76, 1815.84, 27.87, 33.46, 16.55, 0, 0,
West Ditch - 02 Res. Bound. To 24300, PF 09, , 5921.94, 11772.01, 58415.04, 13450.53, 6266.55, 4642.44, 4439.21, 55.48, 80.58, 82.06, 3.45, 0,
West Ditch - 02 Res. Bound. To 24300, PF 10, , 8354.51, 16602.33, 83238.23, 19060.43, 8833.24, 6517.63, 6208.09, 73.43, 111.62, 130.02, 37.25, 0,
West Ditch - 03 24300 to US, PF 01, , 0.79, 1.52, 16.91, 2.98, 0.8, 0.17, 0, 0, 0, 0, 0, 0,
West Ditch - 03 24300 to US, PF 02, , 3.13, 6.11, 49.96, 9.61, 3.26, 1.6, 0, 0, 0, 0, 0, 0,
West Ditch - 03 24300 to US, PF 03, , 10.84, 21.31, 145.09, 29.53, 11.36, 7.08, 1.63, 0, 0, 0, 0, 0,
West Ditch - 03 24300 to US, PF 04, , 33.74, 66.61, 406.36, 85.65, 35.28, 24.22, 13.33, 0, 0, 0, 0, 0,
West Ditch - 03 24300 to US, PF 05, , 95.27, 188.51, 1076.23, 232.32, 99.61, 71.57, 49.92, 0.23, 0, 0, 0, 0,
West Ditch - 03 24300 to US, PF 06, , 261.1, 517.29, 2847.32, 622.79, 273.05, 200.38, 156.16, 1.9, 0, 0, 0, 0,
West Ditch - 03 24300 to US, PF 07, , 685.17, 1357.71, 7432.62, 1637.24, 726.42, 502.62, 444.59, 6.29, 2.88, 0, 0, 0,
West Ditch - 03 24300 to US, PF 08, , 1784.34, 3536.83, 19191.16, 4236.53, 1888.34, 1322.49, 1195.03, 15.72, 14.96, 1.32, 0, 0,

West Ditch - 03 24300 to US, PF 09, , 4438.71, 8799.11, 47597.74, 10514.19, 4691.72, 3304.47, 3010.82, 32.8, 41.23, 27.41, 0, 0,
West Ditch - 03 24300 to US, PF 10, , 5893.58, 11683.99, 63073.02, 13946.46, 6228.59, 4394.67, 4011.6, 40.84, 54.01, 43.32, 0, 0,
West Ditch - 04 USBC, PF 01, , 0.26, 0.4, 7.39, 1.32, 0.33, 0.03, 0, 0, 0, 0, 0, 0,
West Ditch - 04 USBC, PF 02, , 0.85, 1.33, 22.17, 4.32, 1.45, 0.66, 0, 0, 0, 0, 0, 0,
West Ditch - 04 USBC, PF 03, , 2.55, 4.04, 63.63, 13.05, 4.96, 2.98, 0.02, 0, 0, 0, 0, 0,
West Ditch - 04 USBC, PF 04, , 7.14, 11.43, 172.84, 36.53, 14.86, 9.95, 4.23, 0, 0, 0, 0, 0,
West Ditch - 04 USBC, PF 05, , 19.46, 31.32, 462.24, 99.56, 42.15, 29.74, 18.47, 0, 0, 0, 0, 0,
West Ditch - 04 USBC, PF 06, , 51.36, 82.91, 1205.62, 262.71, 113.85, 82.39, 59.63, 0.33, 0, 0, 0, 0,
West Ditch - 04 USBC, PF 07, , 132.14, 213.63, 3086.11, 677.14, 297.45, 200.59, 170.72, 1.62, 0.04, 0, 0, 0,
West Ditch - 04 USBC, PF 08, , 347, 561.26, 8088.87, 1776.25, 783.91, 536.43, 471.06, 4.93, 2.44, 0, 0, 0,
West Ditch - 04 USBC, PF 09, , 820.49, 1327.95, 19081.3, 4200.96, 1860.42, 1283.35, 1143.13, 10.5, 8.83, 0, 0, 0,
West Ditch - 04 USBC, PF 10, , 982.26, 1591.03, 22775.88, 5034.45, 2237.3, 1548.41, 1384.6, 11.74, 10.43, 0.2, 0, 0,
White's - 01 DS to 1968 Limits, PF 01, , 0.09, 0.16, 3.17, 0.5, 0.05, 0, 0, 0, 0, 0, 0, 0,
White's - 01 DS to 1968 Limits, PF 02, , 0.5, 0.96, 10.12, 1.93, 0.52, 0.06, 0, 0, 0, 0, 0, 0,
White's - 01 DS to 1968 Limits, PF 03, , 2.03, 3.98, 28.38, 5.99, 2.17, 1.08, 0.06, 0, 0, 0, 0, 0,
White's - 01 DS to 1968 Limits, PF 04, , 6.2, 12.27, 71.01, 16.03, 6.67, 4.38, 0.36, 0, 0, 0, 0, 0,
White's - 01 DS to 1968 Limits, PF 05, , 15.41, 30.63, 152.62, 36.3, 16.45, 12.19, 5.76, 0, 0, 0, 0, 0,
White's - 01 DS to 1968 Limits, PF 06, , 30.2, 60.25, 265.7, 66.48, 32.14, 25.67, 16.91, 0, 0, 0, 0, 0,
White's - 01 DS to 1968 Limits, PF 07, , 42.66, 85.38, 331.3, 88.1, 45.37, 38.59, 29.09, 0, 0, 0, 0, 0,
White's - 01 DS to 1968 Limits, PF 08, , 41.97, 84.28, 281.95, 80.92, 44.64, 40.45, 32, 0, 0, 0, 0, 0,
White's - 01 DS to 1968 Limits, PF 09, , 11.04, 22.25, 62.49, 19.98, 11.74, 10.94, 11.72, 0, 0, 0, 0, 0,
White's - 01 DS to 1968 Limits, PF 10, , 0.52, 1.04, 3.87, 1.27, 0.63, 0.31, 0, 0, 0, 0, 0, 0,
White's - 02 1968 to 8000, PF 01, , 0.22, 0.33, 5.96, 1.1, 0.3, 0.06, 0, 0, 0, 0, 0, 0,
White's - 02 1968 to 8000, PF 02, , 0.72, 1.13, 18.44, 3.69, 1.29, 0.63, 0.08, 0, 0, 0, 0, 0,
White's - 02 1968 to 8000, PF 03, , 2.37, 3.79, 57.59, 12.18, 4.82, 3.07, 2.15, 0, 0, 0, 0, 0,
White's - 02 1968 to 8000, PF 04, , 7.4, 11.93, 174.46, 38.11, 16.15, 11.38, 6.12, 0, 0, 0, 0, 0,
White's - 02 1968 to 8000, PF 05, , 23.15, 37.52, 535.95, 119.09, 52.4, 38.69, 27.28, 0.09, 0, 0, 0, 0,
White's - 02 1968 to 8000, PF 06, , 68.65, 111.52, 1574.74, 352.65, 158.22, 119.15, 94.72, 1.34, 0, 0, 0, 0,
White's - 02 1968 to 8000, PF 07, , 175.08, 285.18, 3974.18, 900.27, 410.75, 313.57, 265.83, 4.66, 1.42, 0, 0, 0,
White's - 02 1968 to 8000, PF 08, , 374.28, 612.3, 8352.87, 1935.63, 904.46, 664.86, 625.68, 9.54, 7.31, 0, 0, 0,
White's - 02 1968 to 8000, PF 09, , 640.01, 1055.19, 13844.44, 3338.48, 1615.88, 1223.23, 1188.35, 10.95, 9.91, 0.05, 0, 0,
White's - 02 1968 to 8000, PF 10, , 708.25, 1171.69, 15105.21, 3706.03, 1822.97, 1401.53, 1382.25, 11.57, 10.8, 0.17, 0, 0,
White's - 03 8000 to US, PF 01, , 0.26, 0.4, 7.61, 1.3, 0.34, 0.07, 0, 0, 0, 0, 0, 0,
White's - 03 8000 to US, PF 02, , 0.98, 1.52, 25.91, 4.83, 1.66, 0.89, 0.45, 0, 0, 0, 0, 0,
White's - 03 8000 to US, PF 03, , 2.65, 4.18, 67.55, 13.21, 4.98, 3.12, 2.35, 0, 0, 0, 0, 0,
White's - 03 8000 to US, PF 04, , 7.27, 11.56, 180.02, 36.51, 14.66, 9.94, 6.02, 0, 0, 0, 0, 0,
White's - 03 8000 to US, PF 05, , 17.92, 28.69, 433.88, 90.51, 37.78, 26.69, 18.79, 0.24, 0, 0, 0, 0,
White's - 03 8000 to US, PF 06, , 33.08, 53.31, 781.37, 168.84, 72.54, 52.33, 36.8, 0.21, 0, 0, 0, 0,
White's - 03 8000 to US, PF 07, , 78.55, 127.2, 1822.64, 402.36, 177.69, 131.5, 101.66, 1.15, 0, 0, 0, 0,
White's - 03 8000 to US, PF 08, , 189.69, 308.13, 4351.92, 975.34, 439.49, 308.39, 274.24, 3.91, 0.95, 0, 0, 0,
White's - 03 8000 to US, PF 09, , 433.13, 705.8, 9815.25, 2232.41, 1022.89, 734.16, 675.77, 9.02, 6.47, 0, 0, 0,
White's - 03 8000 to US, PF 10, , 558.86, 911.87, 12601.2, 2883.9, 1329.78, 961.66, 893.68, 11.26, 9.45, 0, 0, 0,
White's - 04 USBC, PF 01, , 0.06, 0.09, 2.1, 0.28, 0.01, 0, 0, 0, 0, 0, 0, 0,
White's - 04 USBC, PF 02, , 0.2, 0.3, 6.21, 0.98, 0.18, 0, 0, 0, 0, 0, 0, 0,
White's - 04 USBC, PF 03, , 0.69, 1.07, 19.08, 3.47, 1.01, 0.3, 0, 0, 0, 0, 0, 0,
White's - 04 USBC, PF 04, , 2.24, 3.53, 57.55, 11.42, 4.09, 2.23, 0, 0, 0, 0, 0, 0,
White's - 04 USBC, PF 05, , 6.75, 10.79, 164.65, 34.56, 13.85, 9.1, 3.23, 0, 0, 0, 0, 0,
White's - 04 USBC, PF 06, , 19.13, 30.83, 451.75, 98.09, 41.79, 29.71, 18.23, 0, 0, 0, 0, 0,
White's - 04 USBC, PF 07, , 51.48, 83.43, 1191.35, 264.38, 116.77, 86.32, 64.24, 0.45, 0, 0, 0, 0,
White's - 04 USBC, PF 08, , 134.65, 218.78, 3085.49, 693.25, 312.36, 217.99, 191.64, 2.32, 0.19, 0, 0, 0,
White's - 04 USBC, PF 09, , 344.89, 561.3, 7853.81, 1775.95, 808.35, 574.74, 523.57, 6.66, 4.14, 0, 0, 0,
White's - 04 USBC, PF 10, , 486.55, 791.77, 11084.16, 2504.31, 1139.8, 812.09, 743.84, 9.14, 7.21, 0, 0, 0,
James Wolf - 06 USBC, PF 01, , 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,
James Wolf - 06 USBC, PF 02, , 0.01, 0.01, 0.42, 0, 0, 0, 0, 0, 0, 0, 0, 0,
James Wolf - 06 USBC, PF 03, , 0.11, 0.14, 4.05, 0.4, 0, 0, 0, 0, 0, 0, 0, 0,
James Wolf - 06 USBC, PF 04, , 0.82, 1.23, 24.01, 4.26, 0.61, 0, 0, 0, 0, 0, 0, 0,
James Wolf - 06 USBC, PF 05, , 4.66, 7.39, 116.29, 24.71, 8.45, 3.19, 0, 0, 0, 0, 0, 0,
James Wolf - 06 USBC, PF 06, , 21.73, 35.21, 502.49, 114.61, 48.35, 32.25, 2.98, 0, 0, 0, 0, 0,
James Wolf - 06 USBC, PF 07, , 89.46, 146.31, 1998.23, 467.71, 212.9, 160.32, 100.99, 0, 0, 0, 0, 0,
James Wolf - 06 USBC, PF 08, , 296.62, 487.03, 6524.65, 1545.07, 726.12, 567.53, 457.46, 2.5, 0, 0, 0, 0,
James Wolf - 06 USBC, PF 09, , 724.08, 1193.79, 15662.69, 3783.33, 1827.34, 1367.87, 1301.69, 10.95, 4.54, 0, 0, 0,
James Wolf - 06 USBC, PF 10, , 926.46, 1530.69, 19867.51, 4846.87, 2366.55, 1796.74, 1741.57, 14.54, 9.15, 0, 0, 0,
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Major Bank Failure in Silt 1, 0.163, 1.679, 0.129, 0.44, 0.434, 0.096, 0.018, 0.019, 0, 0, 0, 0, mass per meter of bank height per meter length of bank
Major Bank Failure in Silt 2, 0.219, 2.52, 0.037, 0.096, 0.074, 0.017, 0.007, 0.006, 0.002, 0.001, 0, 0, mass per meter of bank height per meter length of bank
Minor Bank Failure in Sand, 0.041, 0.565, 0.062, 0.44, 0.517, 0.082, 0.015, 0.013, 0.011, 0.02, 0.018, 0, mass per meter of bank height per meter length of bank
Minor Bank Failure in Silt 1, 0.098, 1.007, 0.077, 0.264, 0.261, 0.058, 0.011, 0.011, 0, 0, 0, 0, mass per meter of bank height per meter length of bank
Minor Bank Failure in Silt 2, 0.131, 1.512, 0.022, 0.058, 0.044, 0.01, 0.004, 0.003, 0.001, 0, 0, 0, mass per meter of bank height per meter length of bank
Small Gully in Sand, 1.55, 21.593, 2.37, 16.814, 19.766, 3.15, 0.586, 0.501, 0.417, 0.772, 0.696, 0, < 60 m^3 per year
Small Gully in Silt 1, 3.73, 38.503, 2.951, 10.092, 9.964, 2.207, 0.406, 0.436, 0, 0, 0, 0, 62-106 m^3 per year
Small Gully in Silt 2, 5.026, 57.801, 0.857, 2.213, 1.697, 0.382, 0.166, 0.128, 0.039, 0.016, 0, 0, > 129 m^3 per year
Medium Gully in Sand, 2.78, 38.734, 4.251, 30.161, 35.457, 5.651, 1.051, 0.898, 0.747, 1.385, 1.248, 0, < 60 m^3 per year
Medium Gully in Silt 1, 6.692, 69.067, 5.294, 18.102, 17.874, 3.958, 0.729, 0.782, 0, 0, 0, 0, 62-106 m^3 per year
Medium Gully in Silt 2, 9.016, 103.683, 1.538, 3.97, 3.044, 0.686, 0.298, 0.23, 0.07, 0.029, 0, 0, > 129 m^3 per year
Large Gully in Sand, 4.622, 64.382, 7.066, 50.133, 58.936, 9.393, 1.746, 1.493, 1.242, 2.301, 2.075, 0, < 60 m^3 per year
Large Gully in Silt 1, 11.123, 114.801, 8.799, 30.089, 29.71, 6.579, 1.211, 1.299, 0, 0, 0, 0, 62-106 m^3 per year
Large Gully in Silt 2, 14.986, 172.34, 2.556, 6.598, 5.059, 1.14, 0.495, 0.383, 0.117, 0.049, 0, 0, > 129 m^3 per year
Surface Erosion Sand, 58.413, 756.239, 69.423, 430.385, 1021.348, 319.067, 33.301, 36.992, 0, 0, 0, 0, 2700 tonnes/mi^2 per year USGS Gage Estimate
Surface Erosion Silt, 169.998, 1985.647, 67.52, 230.645, 188.29, 34.534, 10.947, 10.692, 0, 0, 0, 0, 2700 tonnes/mi^2 per year USGS Gage Estimate
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Basket - 02 4000 to 1968 Limits, 3.08, Surface Erosion Silt, Square Miles
Basket - 03 1968 Limits to 15400, 2, Small Gully in Sand, Num. Gullies
Basket - 03 1968 Limits to 15400, 2.73, Surface Erosion Silt, Square Miles
Basket - 04 15400 to US, 0, Surface Erosion Silt, Placeholder
Basket - USBC, 2.65, Surface Erosion Silt, Square Miles
Basket - USBC, 5, Major Bank Failure in Sand, 1k feet of bank failure
Basket - USBC, 2, Minor Bank Failure in Sand, 1k feet of bank failure
Beards - 01 1968 Limits to 10800 Bridge, 2.43, Surface Erosion Silt, Trib. Brown
Beards - 01 DS to 1968 Limits, 0.21, Surface Erosion Silt, Square Miles
Beards - 02 1968 Limits to 10800 Bridge, 1.99, Surface Erosion Silt, Square Miles
Beards - 03 10800 Bridge to US, 6, Major Bank Failure in Silt 2, 1k feet of bank failure
Beards - 03 10800 Bridge to US, 1, Minor Bank Failure in Silt 2, 1k feet of bank failure
Beards - 03 10800 Bridge to US, 3.28, Surface Erosion Silt, Square Miles
Beards - USBC, 2.12, Surface Erosion Silt, Square Miles
Beards - USBC, 6, Minor Bank Failure in Silt 2, 1k feet of bank failure
Billys - 01 DS to Res. Boundary, 0.12, Surface Erosion Silt, Square Miles
Billys - 02 Res. Boundary to 1968 Limits, 0.13, Surface Erosion Silt, Square Miles
Billys - 03 1968 Limits to 12000, 8, Major Bank Failure in Silt 1, 1k feet of bank failure
Billys - 03 1968 Limits to 12000, 1, Minor Bank Failure in Silt 1, 1k feet of bank failure
Billys - 03 1968 Limits to 12000, 2, Surface Erosion Silt, Square Miles
Billys - USBC, 0.71, Surface Erosion Silt, Square Miles
Catheys - 01 DS to 3500, 1, Minor Bank Failure in Silt 1, 1k feet of bank failure
Catheys - 01 DS to 3500, 1, Medium Gully in Silt 1, Num. Gullies
Catheys - 01 DS to 3500, 0.11, Surface Erosion Sand, Square Miles
Catheys - 02 3500 to 7500, 6, Major Bank Failure in Silt 1, 1k feet of bank failure
Catheys - 02 3500 to 7500, 1, Medium Gully in Silt 1, Num. Gullies
Catheys - 02 3500 to 7500, 1.22, Surface Erosion Sand, Square Miles
Catheys - 03 7500 to 12100, 3, Major Bank Failure in Silt 1, 1k feet of bank failure
Catheys - 03 7500 to 12100, 3, Medium Gully in Silt 1, Num. Gullies
Catheys - 03 7500 to 12100, 1.43, Surface Erosion Sand, Square Miles
Catheys - 04 12100 to USBC, 7, Large Gully in Silt 1, Num. Gullies

Catheys - USBC, 1.1, Surface Erosion Sand, Square Miles
Hickahala - 01 DS to 12500, 2.87, Surface Erosion Sand, Square Miles
Hickahala - 02 12500 to 1968 Beginning, 0.82, Surface Erosion Sand, Square Miles
Hickahala - 03 1968 Project to W. Ditch, 8.24, Surface Erosion Silt, Square Miles
Hickahala - 04 W. Ditch to Senatobia, 1.51, Surface Erosion Silt, Square Miles
Hickahala - 05 Senatobia to Billy, 0.9, Surface Erosion Silt, Square Miles
Hickahala - 06 Billy to Res. Boundary, 0.38, Surface Erosion Sand, Square Miles
Hickahala - 07 Res. Boundary to Thornton, 2.67, Surface Erosion Sand, Square Miles
Hickahala - 08 Thornton to Basket, 0.03, Surface Erosion Silt, Square Miles
Hickahala - 09 Basket to 57350, 5.7, Surface Erosion Silt, Square Miles
Hickahala - 10 57350 to Lick, 2.96, Surface Erosion Silt, Trib. Lick Creek
Hickahala - 10 57350 to Lick, 1.53, Surface Erosion Silt, Square Miles
Hickahala - 11 Lick to Lick Branch, 1.66, Surface Erosion Silt, Trib. Lick Branch
Hickahala - 11 Lick to Lick Branch, 0.32, Surface Erosion Silt, Square Miles
Hickahala - 12 Lick Branch to Wolf, 1.78, Surface Erosion Silt, Square Miles
Hickahala - 13 Wolf to Whites, 1.8, Surface Erosion Silt, Square Miles
Hickahala - 14 Whites to Beards, 2, Major Bank Failure in Silt 1, 1k feet of bank failure
Hickahala - 14 Whites to Beards, 2, Major Bank Failure in Silt 2, 1k feet of bank failure
Hickahala - 14 Whites to Beards, 2, Minor Bank Failure in Sand, 1k feet of bank failure
Hickahala - 14 Whites to Beards, 7, Minor Bank Failure in Silt 2, 1k feet of bank failure
Hickahala - 14 Whites to Beards, 3, Medium Gully in Silt 2, Num. Gullies
Hickahala - 14 Whites to Beards, 9.22, Surface Erosion Silt, Square Miles
Hickahala - 15 Beards to Catheys, 0.59, Surface Erosion Silt, Square Miles
Hickahala - 16 Catheys to 109500, 1, Minor Bank Failure in Silt 1, 1k feet of bank failure
Hickahala - 16 Catheys to 109500, 2, Minor Bank Failure in Silt 2, 1k feet of bank failure
Hickahala - 16 Catheys to 109500, 1, Medium Gully in Silt 1, Num. Gullies
Hickahala - 16 Catheys to 109500, 2.15, Surface Erosion Silt, Square Miles
Hickahala - 17 109500 to S. Fork, 2, Major Bank Failure in Silt 1, 1k feet of bank failure
Hickahala - 17 109500 to S. Fork, 2, Major Bank Failure in Silt 2, 1k feet of bank failure
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Hickahala - 17 109500 to S. Fork, 9.34, Surface Erosion Sand, Square Miles
Hickahala - 18 S. Fork to US, 2, Major Bank Failure in Silt 1, 1k feet of bank failure
Hickahala - 18 S. Fork to US, 2.87, Surface Erosion Silt, Square Miles
Hickahala - USBC, 2.02, Surface Erosion Silt, Square Miles
Hickahala - USBC, 4, Major Bank Failure in Silt 1, 1k feet of bank failure
Hickahala - USBC, 2, Medium Gully in Silt 1, Num. Gullies
James Wolf - 01 DS to 1968 Limits, 4, Major Bank Failure in Silt 2, 1k feet of bank failure
James Wolf - 01 DS to 1968 Limits, 8.86, Surface Erosion Silt, Square Miles
James Wolf - 02 1968 Limits to M. Dale, 5, Minor Bank Failure in Silt 2, 1k feet of bank failure
James Wolf - 02 1968 Limits to M. Dale, 2, Medium Gully in Silt 2, Num. Gullies
James Wolf - 02 1968 Limits to M. Dale, 4.64, Surface Erosion Silt, Square Miles
James Wolf - 03 M. Dale to 34000, 2, Medium Gully in Silt 2, Num. Gullies
James Wolf - 03 M. Dale to 34000, 1.65, Surface Erosion Silt, Square Miles
James Wolf - 04 34000 to 45500, 6, Major Bank Failure in Silt 2, 1k feet of bank failure
James Wolf - 04 34000 to 45500, 2.66, Surface Erosion Silt, Square Miles
James Wolf - 05 45500 to US, 2, Major Bank Failure in Silt 2, 1k feet of bank failure
James Wolf - 05 45500 to US, 3.75, Surface Erosion Silt, Square Miles
James Wolf - USBC, 6.92, Surface Erosion Silt, Square Miles
James Wolf - USBC, 13, Major Bank Failure in Sand, 1k feet of bank failure
James Wolf - USBC, 6, Large Gully in Sand, Num. Gullies
Martin Dale - 01 DS to 4500, 2, Medium Gully in Silt 2, Num. Gullies
Martin Dale - 01 DS to 4500, 5.73, Surface Erosion Silt, Square Miles
Martin Dale - 02 4500 to US, 5, Major Bank Failure in Silt 2, 1k feet of bank failure
Martin Dale - 02 4500 to US, 13, Medium Gully in Silt 2, Num. Gullies
Martin Dale - 02 4500 to US, 1.39, Surface Erosion Silt, Square Miles
Martin Dale - USBC, 3.08, Surface Erosion Silt, Square Miles
Martin Dale - USBC, 1, Major Bank Failure in Silt 2, 1k feet of bank failure
Mattic - 01 DS to Nelson, 0.98, Surface Erosion Silt, Square Miles
Mattic - 02 Nelson to 13000, 1, Minor Bank Failure in Sand, 1k feet of bank failure
Mattic - 02 Nelson to 13000, 4, Minor Bank Failure in Silt 2, 1k feet of bank failure
Mattic - 02 Nelson to 13000, 1, Medium Gully in Sand, Num. Gullies
Mattic - 02 Nelson to 13000, 1.36, Surface Erosion Silt, Square Miles
Mattic - 03 13000 to US, 2, Major Bank Failure in Silt 1, 1k feet of bank failure
Mattic - 03 13000 to US, 1, Minor Bank Failure in Sand, 1k feet of bank failure
Mattic - 03 13000 to US, 2, Minor Bank Failure in Silt 2, 1k feet of bank failure
Mattic - 03 13000 to US, 2, Small Gully in Silt 1, Num. Gullies
Mattic - 03 13000 to US, 3.57, Surface Erosion Silt, Square Miles
Mattic - USBC, 7.04, Surface Erosion Silt, Square Miles

Mattic - USBC, 1, Minor Bank Failure in Sand, 1k feet of bank failure
Mattic - USBC, 2, Medium Gully in Sand, Num. Gullies
Nelson - 01 DS to Wilborn, 8, Major Bank Failure in Sand, 1k feet of bank failure
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Nelson - 01 DS to Wilborn, 3, Minor Bank Failure in Sand, 1k feet of bank failure
Nelson - 01 DS to Wilborn, 1, Medium Gully in Silt 1, Num. Gullies
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Nelson - 01 DS to Wilborn, 2.43, Surface Erosion Silt, Square Miles
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Nelson - 02 Wilborn to US, 1, Major Bank Failure in Sand, 1k feet of bank failure
Nelson - 02 Wilborn to US, 10, Major Bank Failure in Silt 2, 1k feet of bank failure
Nelson - 02 Wilborn to US, 4, Medium Gully in Silt 2, Num. Gullies
Nelson - 02 Wilborn to US, 2.12, Surface Erosion Silt, Square Miles
Nelson - USBC, 4.91, Surface Erosion Silt, Square Miles
Nelson - USBC, 20, Major Bank Failure in Sand, 1k feet of bank failure
Nelson - USBC, 5, Medium Gully in Sand, Num. Gullies
Senatobia - 01 DS to Res. Boundary, 0.71, Surface Erosion Sand, Square Miles
Senatobia - 02 Res. Boundary to 15000, 1.52, Surface Erosion Sand, Square Miles
Senatobia - 03 15000 to G. Springs, 2.82, Surface Erosion Silt, Trib. Gravel Springs
Senatobia - 03 15000 to G. Springs, 4.13, Surface Erosion Silt, Square Miles
Senatobia - 04 G. Springs to Mattic, 1.94, Surface Erosion Silt, Square Miles
Senatobia - 05 Mattic to T. Jones, 2, Minor Bank Failure in Silt 2, 1k feet of bank failure
Senatobia - 05 Mattic to T. Jones, 1, Medium Gully in Silt 2, Num. Gullies
Senatobia - 05 Mattic to T. Jones, 0.92, Surface Erosion Silt, Square Miles
Senatobia - 06 T. Jones to 46000, 7, Minor Bank Failure in Silt 2, 1k feet of bank failure
Senatobia - 06 T. Jones to 46000, 4.74, Surface Erosion Silt, Square Miles
Senatobia - 07 46000 to 62000, 2, Major Bank Failure in Silt 1, 1k feet of bank failure
Senatobia - 07 46000 to 62000, 5, Medium Gully in Silt 1, Num. Gullies
Senatobia - 07 46000 to 62000, 6.55, Surface Erosion Silt, Square Miles
Senatobia - 08 62000 to US, 4, Major Bank Failure in Silt 1, 1k feet of bank failure
Senatobia - 08 62000 to US, 7, Medium Gully in Silt 1, Num. Gullies
Senatobia - 08 62000 to US, 4.8, Surface Erosion Silt, Square Miles
Senatobia - USBC, 5.27, Surface Erosion Silt, Square Miles
Senatobia - USBC, 3, Major Bank Failure in Silt 1, 1k feet of bank failure
South Fork - 01 DS to 4600, 1, Major Bank Failure in Silt 1, 1k feet of bank failure
South Fork - 01 DS to 4600, 1, Minor Bank Failure in Silt 1, 1k feet of bank failure
South Fork - 01 DS to 4600, 0.58, Surface Erosion Silt, Square Miles
South Fork - 02 4600 to 10000, 3, Major Bank Failure in Silt 1, 1k feet of bank failure
South Fork - 02 4600 to 10000, 1, Medium Gully in Silt 1, Num. Gullies
South Fork - 02 4600 to 10000, 2.37, Surface Erosion Silt, Square Miles
South Fork - 03 10000 to US, 1, Medium Gully in Silt 1, Num. Gullies
South Fork - USBC, 1.97, Surface Erosion Silt, Square Miles
South Fork - USBC, 5, Major Bank Failure in Silt 1, 1k feet of bank failure
South Fork - USBC, 1, Medium Gully in Silt 1, Num. Gullies
Steammill - 01 DS to 5200, 6, Major Bank Failure in Silt 1, 1k feet of bank failure
Steammill - 01 DS to 5200, 2, Minor Bank Failure in Silt 1, 1k feet of bank failure
Steammill - 01 DS to 5200, 2, Small Gully in Silt 1, Num. Gullies
Steammill - 01 DS to 5200, 1.9, Surface Erosion Silt, Square Miles
Steammill - 02 5200 to US, 0, Surface Erosion Silt, Placeholder
Steammill - USBC, 0.37, Surface Erosion Silt, Square Miles
Thornton - 01 DS to 1968 Limits, 1, Small Gully in Silt 1, Num. Gullies
Thornton - 01 DS to 1968 Limits, 0.34, Surface Erosion Silt, Square Miles
Thornton - 02 1968 Limits to Steammill, 0.39, Surface Erosion Silt, Square Miles
Thornton - 03 Steammill to 12600, 0.94, Surface Erosion Silt, Square Miles
Thornton - USBC, 0.51, Surface Erosion Silt, Square Miles
Thornton - USBC, 11, Minor Bank Failure in Silt 1, 1k feet of bank failure
Thornton - USBC, 3, Small Gully in Silt 1, Num. Gullies
Tolbert Jones - 01 DS to 3000, 0.45, Surface Erosion Silt, Square Miles
Tolbert Jones - 02 3000 to 12350, 2, Minor Bank Failure in Silt 1, 1k feet of bank failure
Tolbert Jones - 02 3000 to 12350, 3, Medium Gully in Silt 2, Num. Gullies
Tolbert Jones - 02 3000 to 12350, 2.29, Surface Erosion Silt, Square Miles
Tolbert Jones - USBC, 2.07, Surface Erosion Silt, Square Miles
Tolbert Jones - USBC, 4, Major Bank Failure in Silt 1, 1k feet of bank failure
Tolbert Jones - USBC, 4, Minor Bank Failure in Silt 1, 1k feet of bank failure
Tolbert Jones - USBC, 3, Medium Gully in Silt 1, Num. Gullies
West Ditch - 01 DS to Res. Boundary, 4.54, Surface Erosion Silt, Square Miles
West Ditch - 02 Res. Boundary to 24300, 1, Minor Bank Failure in Silt 2, 1k feet of bank failure
West Ditch - 02 Res. Boundary to 24300, 3.05, Surface Erosion Silt, Square Miles
West Ditch - 03 243000 to US, 2, Minor Bank Failure in Silt 1, 1k feet of bank failure
West Ditch - 03 243000 to US, 1, Minor Bank Failure in Silt 2, 1k feet of bank failure

West Ditch - 03 243000 to US, 2, Small Gully in Silt 1, Num. Gullies
West Ditch - 03 243000 to US, 1, Small Gully in Silt 2, Num. Gullies
West Ditch - 03 243000 to US, 4.54, Surface Erosion Silt, Square Miles
West Ditch - USBC, 2.48, Surface Erosion Silt, Square Miles
West Ditch - USBC, 2, Minor Bank Failure in Silt 1, 1k feet of bank failure
Whites - 01 DS to 1968 Limits, 0.21, Surface Erosion Silt, Square Miles
Whites - 02 1968 Limits to 8000, 1, Small Gully in Sand, Num. Gullies
Whites - 02 1968 Limits to 8000, 2.13, Surface Erosion Silt, Square Miles
Whites - 03 8000 to 14500, 1.91, Surface Erosion Silt, Square Miles
Whites - USBC, 0.76, Surface Erosion Silt, Square Miles
Whites - USBC, 8, Major Bank Failure in Silt 1, 1k feet of bank failure
Whites - USBC, 2, Medium Gully in Silt 1, Num. Gullies
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Basket, USBC, Basket - 04 15400 to US, sand, Non-Cohesive Sand, Basket - USBC, Basket - 05 USBC, Basket - 05 USBC, Basket - USBC,
Beard's, 01 DS to 1968 Limits, Hickahala - 14 White's to Beard's, sand, Non-Cohesive Sand, Beard's - 01 DS to 1968 Limits, Beard's - 01 DS to 1968 Limits, Beard's - 01 DS to 1968 Limits, Beards - 01 DS to 1968 Limits,
Beard's, 02 1968 Limits to 10800 Bridge, Beard's - 01 DS to 1968 Limits, sand, Non-Cohesive Sand, Beard's - 02 1968 Limits to 10800 Bridge, Beard's - 02 DS to 10800 Bridge, Beard's - 02 DS to 10800 Bridge, Beards - 02 1968 Limits to 10800 Bridge,

Beard's, 03 10800 Bridge to US, Beard's - 02 1968 Limits to 10800 Bridge, silt, Cohesive Control, Beard's - 03 10800 Bridge to US, Beard's - 03 10800 Bridge to US, Beard's - 03 10800 Bridge to US, Beards - 03 10800 Bridge to US,
Beard's, USBC, Beard's - 03 10800 Bridge to US, silt, Cohesive Control, Beard's - USBC, Beard's - 04 USBC, Beard's - 04 USBC, Beards - USBC,
Billy's, 01 DS to Res. Bound., Hickahala - 05 Senatobia to Billy's, silt, Non-Cohesive Silt, Billy's - 01 DS to Res. Bound., Billy's - 01 DS to Res. Bound., Billy's - 01 DS to Res. Bound., Billys - 01 DS to Res. Boundary,
Billy's, 02 Res. Bound. to 1968 Limits, Billy's - 01 DS to Res. Bound., sand, Non-Cohesive Sand, Billy's - 02 Res. Bound. to 1968 Limits, Billy's - 02 Res. Bound to 1968 Limits, Billy's - 02 Res. Bound to 1968 Limits, Billys - 02 Res. Boundary to 1968 Limits,
Billy's, 03 1968 Limits to US, Billy's - 02 Res. Bound. to 1968 Limits, sand, Non-Cohesive Sand, Billy's - 03 1968 Limits to US, Billy's - 03 1968 Limits to 12000, Billy's - 03 1968 Limits to 12000, Billys - 03 1968 Limits to 12000,
Billy's, USBC, Billy's - 03 1968 Limits to US, sand, Non-Cohesive Sand, Billy's - USBC, Billy's - 04 USBC, Billy's - 04 USBC, Billys - USBC,
Cathey's, 01 DS to 3500, Hickahala - 15 Beard's to Cathey's, sand, Non-Cohesive Sand, Cathey's - 01 DS to 3500, Cathey's - 01 DS to 3500, Cathey's - 01 DS to 3500, Catheys - 01 DS to 3500,
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Hickahala, 04 W. Ditch to Senatobia, Hickahala - 03 1968 Start to W. Ditch, silt, Non-Cohesive Silt, Hickahala - 04 W. Ditch to Senatobia, Hickahala - 04 W. Ditch to Senatobia, Hickahala - 04 W. Ditch to Senatobia, Hickahala - 04 W. Ditch to Senatobia,

Hickahala, 05 Senatobia to Billy's, Hickahala - 04 W. Ditch to Senatobia, silt, Non-Cohesive Silt, Hickahala - 05 Senatobia to Billy's, Hickahala - 05 Senatobia to Billys, Hickahala - 05 Senatobia to Billys, Hickahala - 05 Senatobia to Billy,

Hickahala, 06 Billy's to Res. Bound., Hickahala - 05 Senatobia to Billy's, silt, Non-Cohesive Silt, Hickahala - 06 Billy's to Res. Bound., Hickahala - 06 Billys to Res. Bound., Hickahala - 06 Billys to Res. Bound., Hickahala - 06 Billy to Res. Boundary,

Hickahala, 07 Res. Bound. to Thornton, Hickahala - 06 Billy's to Res. Bound., sand, Non-Cohesive Sand, Hickahala - 07 Res. Bound. to Thornton, Hickahala - 07 Res. Bound to Thornton, Hickahala - 07 Res. Bound to Thornton, Hickahala - 07 Res. Boundary to Thornton,

Hickahala, 08 Thornton to Basket, Hickahala - 07 Res. Bound. to Thornton, sand, Non-Cohesive Sand, Hickahala - 08 Thornton to Basket, Hickahala - 08 Thornton to Basket, Hickahala - 08 Thornton to Basket, Hickahala - 08 Thornton to Basket,

Hickahala, 09 Basket to 57350, Hickahala - 08 Thornton to Basket, sand, Non-Cohesive Sand, Hickahala - 09 Basket to 57350, Hickahala - 09 Basket to 57350, Hickahala - 09 Basket to 57350, Hickahala - 09 Basket to 57350,

Hickahala, 10 57350 to Lick, Hickahala - 09 Basket to 57350, sand, Non-Cohesive Sand, Hickahala - 10 57350 to Lick, Hickahala - 10 57350 to Lick, Hickahala - 10 57350 to Lick, Hickahala - 10 57350 to Lick,

Hickahala, 11 Lick to Lick Branch, Hickahala - 10 57350 to Lick, sand, Non-Cohesive Sand, Hickahala - 11 Lick to Lick Branch, Hickahala - 11 Lick to Lick Branch, Hickahala - 11 Lick to Lick Branch, Hickahala - 11 Lick to Lick Branch,

Hickahala, 12 Lick Branch to Wolf, Hickahala - 11 Lick to Lick Branch, sand, Non-Cohesive Sand, Hickahala - 12 Lick Branch to Wolf, Hickahala - 12 Lick Branch to Wolf, Hickahala - 12 Lick Branch to Wolf, Hickahala - 12 Lick Branch to Wolf,

Hickahala, 13 Wolf to White's, Hickahala - 12 Lick Branch to Wolf, sand, Non-Cohesive Sand, Hickahala - 13 Wolf to White's, Hickahala - 13 Wolf to Whites, Hickahala - 13 Wolf to Whites, Hickahala - 13 Wolf to Whites,

Hickahala, 14 White's to Beard's, Hickahala - 13 Wolf to White's, silt, Cohesive Control, Hickahala - 14 White's to Beard's, Hickahala - 14 Whites to Beards, Hickahala - 14 Whites to Beards, Hickahala - 14 Whites to Beards,

Hickahala, 15 Beard's to Cathey's, Hickahala - 14 White's to Beard's, silt, Cohesive Control, Hickahala - 15 Beard's to Cathey's, Hickahala - 15 Beards to Catheys, Hickahala - 15 Beards to Catheys, Hickahala - 15 Beards to Catheys,

Hickahala, 16 Cathey's to 109500, Hickahala - 15 Beard's to Cathey's, silt, Cohesive Control, Hickahala - 16 Cathey's to 109500, Hickahala - 16 Catheys to 109500, Hickahala - 16 Catheys to 109500, Hickahala - 16 Catheys to 109500,

Hickahala, 17 109500 to S. Fork, Hickahala - 16 Cathey's to 109500, silt, Cohesive Control, Hickahala - 17 109500 to S. Fork, Hickahala - 17 109500 to S. Fork, Hickahala - 17 109500 to S. Fork, Hickahala - 17 109500 to S. Fork,

Hickahala, 18 S. Fork to US, Hickahala - 17 109500 to S. Fork, silt, Cohesive Control, Hickahala - 18 S. Fork to US, Hickahala - 18 S. Fork to US, Hickahala - 18 S. Fork to US, Hickahala - 18 S. Fork to US,

Hickahala, USBC, Hickahala - 18 S. Fork to US, silt, Cohesive Control, Hickahala - USBC, Hickahala - 19 USBC, Hickahala - 19 USBC, Hickahala - USBC,

James Wolf, 01 DS to 1968 Limits, Hickahala - 12 Lick Branch to Wolf, sand, Non-Cohesive Sand, James Wolf - 01 DS to 1968 Limits, James Wolf - 01 DS to 1968 Limits, James Wolf - 01 DS to 1968 Limits, James Wolf - 01 DS to 1968 Limits,

James Wolf, 02 1968 Limits to M. Dale, James Wolf - 01 DS to 1968 Limits, sand, Non-Cohesive Sand, James Wolf - 02 1968 Limits to M. Dale, James Wolf - 02 1968 Limits to M. Dale, James Wolf - 02 1968 Limits to M. Dale, James Wolf - 02 1968 Limits to M. Dale,

James Wolf, 03 M. Dale to 34000, James Wolf - 02 1968 Limits to M. Dale, sand, Non-Cohesive Sand, James Wolf - 03 M. Dale to 34000, James Wolf - 03 M. Dale to 34000, James Wolf - 03 M. Dale to 34000, James Wolf - 03 M. Dale to 34000,

James Wolf, 04 34000 to 45500, James Wolf - 03 M. Dale to 34000, sand, Non-Cohesive Sand, James Wolf - 04 34000 to 45500, James Wolf - 04 34000 to 45500, James Wolf - 04 34000 to 45500, James Wolf - 04 34000 to 45500,

James Wolf, 05 45500 to US, James Wolf - 04 34000 to 45500, sand, Non-Cohesive Sand, James Wolf - 05 45500 to US, James Wolf - 05 45500 to US, James Wolf - 05 45500 to US, James Wolf - 05 45500 to US,

James Wolf, USBC, James Wolf - 05 45500 to US, sand, Non-Cohesive Sand, James Wolf - USBC, James Wolf - 06 USBC, James Wolf - 06 USBC, James Wolf - USBC,

Martin Dale, 01 DS to 4500, James Wolf - 02 1968 Limits to M. Dale, sand, Non-Cohesive Sand, Martin Dale - 01 DS to 4500, Martin Dale - 01 DS to 4500, Martin Dale - 01 DS to 4500, Martin Dale - 01 DS to 4500,

Martin Dale, 02 4500 to US, Martin Dale - 01 DS to 4500, sand, Non-Cohesive Sand, Martin Dale - 02 4500 to US, Martin Dale - 02 4500 to US, Martin Dale - 02 4500 to US, Martin Dale - 02 4500 to US,

Martin Dale, USBC, Martin Dale - 02 4500 to US, sand, Non-Cohesive Sand, Martin Dale - USBC, Martin Dale - 03 USBC, Martin Dale - 03 USBC, Martin Dale - USBC,

Mattic, 01 DS to Nelson, Senatobia - 04 G. Springs to Mattic, sand, Non-Cohesive Sand, Mattic - 01 DS to Nelson, Mattic - 01 DS to Nelson, Mattic - 01 DS to Nelson, Mattic - 01 DS to Nelson,

Mattic, 02 Nelson to 13000, Mattic - 01 DS to Nelson, sand, Non-Cohesive Sand, Mattic - 02 Nelson to 13000, Mattic - 02 Nelson to 13000, Mattic - 02 Nelson to 13000, Mattic - 02 Nelson to 13000,

Mattic, 03 13000 to US, Mattic - 02 Nelson to 13000, sand, Non-Cohesive Sand, Mattic - 03 13000 to US, Mattic - 03 13000 to US, Mattic - 03 13000 to US, Mattic - 03 13000 to US,

Mattic, USBC, Mattic - 03 13000 to US, sand, Non-Cohesive Sand, Mattic - USBC, Mattic - 04 USBC, Mattic - 04 USBC, Mattic - USBC,

Nelson, 01 DS to Wilborn, Mattic - 01 DS to Nelson, sand, Non-Cohesive Sand, Nelson - 01 DS to Wilborn, Nelson - 01 DS to Wilborn, Nelson - 01 DS to Wilborn, Nelson - 01 DS to Wilborn,

Nelson, 02 Wilborn to US, Nelson - 01 DS to Wilborn, sand, Non-Cohesive Sand, Nelson - 02 Wilborn to US, Nelson - 02 Wilborn to US, Nelson - 02 Wilborn to US, Nelson - 02 Wilborn to US,

Nelson, USBC, Nelson - 02 Wilborn to US, sand, Non-Cohesive Sand, Nelson - USBC, Nelson - 03 USBC, Nelson - 03 USBC, Nelson - USBC,

Senatobia, 01 DS to Res. Bound., Hickahala - 04 W. Ditch to Senatobia, silt, Non-Cohesive Silt, Senatobia - 01 DS to Res. Bound., Senatobia - 01 DS to Res. Bound., Senatobia - 01 DS to Res. Bound., Senatobia - 01 DS to Res. Boundary,

Senatobia, 02 Res. Bound. to 15000, Senatobia - 01 DS to Res. Bound., sand, Non-Cohesive Sand, Senatobia - 02 Res. Bound. to 15000, Senatobia - 02 Res. Bound to 15000, Senatobia - 02 Res. Bound to 15000, Senatobia - 02 Res. Boundary to 15000,

Senatobia, 03 15000 to G. Springs, Senatobia - 02 Res. Bound. to 15000, sand, Non-Cohesive Sand, Senatobia - 03 15000 to G. Springs, Senatobia - 03 15000 to G. Springs, Senatobia - 03 15000 to G. Springs, Senatobia - 03 15000 to G. Springs,

Senatobia, 04 G. Springs to Mattic, Senatobia - 03 15000 to G. Springs, sand, Non-Cohesive Sand, Senatobia - 04 G. Springs to Mattic, Senatobia - 04 G. Springs to Mattic, Senatobia - 04 G. Springs to Mattic, Senatobia - 04 G. Springs to Mattic,
Senatobia, 05 Mattic to T. Jones, Senatobia - 04 G. Springs to Mattic, sand, Non-Cohesive Sand, Senatobia - 05 Mattic to T. Jones, Senatobia - 05 Mattic to T. Jones, Senatobia - 05 Mattic to T. Jones, Senatobia - 05 Mattic to T. Jones,
Senatobia, 06 T. Jones to 46000, Senatobia - 05 Mattic to T. Jones, sand, Non-Cohesive Sand, Senatobia - 06 T. Jones to 46000, Senatobia - 06 T. Jones to 46000, Senatobia - 06 T. Jones to 46000, Senatobia - 06 T. Jones to 46000,
Senatobia, 07 46000 to 62000, Senatobia - 06 T. Jones to 46000, sand, Non-Cohesive Sand, Senatobia - 07 46000 to 62000, Senatobia - 07 46000 to 62000, Senatobia - 07 46000 to 62000, Senatobia - 07 46000 to 62000,
Senatobia, 08 62000 to US, Senatobia - 07 46000 to 62000, sand, Non-Cohesive Sand, Senatobia - 08 62000 to US, Senatobia - 08 62000 to US, Senatobia - 08 62000 to US, Senatobia - 08 62000 to US,
Senatobia, USBC, Senatobia - 08 62000 to US, sand, Non-Cohesive Sand, Senatobia - USBC, Senatobia - 09 USBC, Senatobia - 09 USBC, Senatobia - USBC,
South Fork, 01 DS to 4600, Hickahala - 17 109500 to S. Fork, silt, Cohesive Control, South Fork - 01 DS to 4600, South Fork - 01 DS to 4600, South Fork - 01 DS to 4600, South Fork - 01 DS to 4600,
South Fork, 02 4600 to 10000, South Fork - 01 DS to 4600, silt, Cohesive Control, South Fork - 02 4600 to 10000, South Fork - 02 4600 to 10000, South Fork - 02 4600 to 10000, South Fork - 02 4600 to 10000,
South Fork, 03 10000 to US, South Fork - 02 4600 to 10000, silt, Cohesive Control, South Fork - 03 10000 to US, South Fork - 03 10000 to US, South Fork - 03 10000 to US, South Fork - 03 10000 to US,
South Fork, USBC, South Fork - 03 10000 to US, silt, Cohesive Control, South Fork - USBC, South Fork - 04 USBC, South Fork - 04 USBC, South Fork - USBC,
Steammill, 01 DS to 5200, Thornton - 02 1968 Limits to Steammill, sand, Non-Cohesive Sand, Steammill - 01 DS to 5200, Steammill - 01 DS to 5200, Steammill - 01 DS to 5200, Steammill - 01 DS to 5200,
Steammill, 02 5200 to US, Steammill - 01 DS to 5200, sand, Non-Cohesive Sand, Steammill - 02 5200 to US, Steammill - 02 5200 to US, Steammill - 02 5200 to US, Steammill - 02 5200 to US,
Steammill, USBC, Steammill - 02 5200 to US, sand, Non-Cohesive Sand, Steammill - USBC, Steammill - 03 USBC, Steammill - 03 USBC, Steammill - USBC,
Thornton, 01 DS to 1968 Limits, Hickahala - 07 Res. Bound. to Thornton, sand, Non-Cohesive Sand, Thornton - 01 DS to 1968 Limits, Thornton - 01 DS to 1968 Limits, Thornton - 01 DS to 1968 Limits, Thornton - 01 DS to 1968 Limits,
Thornton, 02 1968 Limits to Steammill, Thornton - 01 DS to 1968 Limits, sand, Non-Cohesive Sand, Thornton - 02 1968 Limits to Steammill, Thornton - 02 1968 Limits to Steammill, Thornton - 02 1968 Limits to Steammill, Thornton - 02 1968 Limits to Steammill,
Thornton, 03 Steammill to US, Thornton - 02 1968 Limits to Steammill, sand, Non-Cohesive Sand, Thornton - 03 Steammill to US, Thornton - 03 Steammill to US, Thornton - 03 Steammill to US, Thornton - 03 Steammill to 12600,
Thornton, USBC, Thornton - 03 Steammill to US, sand, Non-Cohesive Sand, Thornton - USBC, Thornton - 04 USBC, Thornton - 04 USBC, Thornton - USBC,
Tolbert-Jones, 01 DS to 3000, Senatobia - 05 Mattic to T. Jones, sand, Non-Cohesive Sand, Tolbert-Jones - 01 DS to 3000, Tolbert-Jones - 01 DS to 3000, Tolbert-Jones - 01 DS to 3000, Tolbert Jones - 01 DS to 3000,
Tolbert-Jones, 02 3000 to US, Tolbert-Jones - 01 DS to 3000, silt, Cohesive Control, Tolbert-Jones - 02 3000 to US, Tolbert-Jones - 02 3000 to 12350, Tolbert-Jones - 02 3000 to 12350, Tolbert Jones - 02 3000 to 12350,
Tolbert-Jones, USBC, Tolbert-Jones - 02 3000 to US, silt, Cohesive Control, Tolbert-Jones - USBC, Tolbert-Jones - 03 USBC, Tolbert-Jones - 03 USBC, Tolbert Jones - USBC,
West Ditch, 01 DS to Res. Bound., Hickahala - 03 1968 Start to W. Ditch, silt, Non-Cohesive Silt, West Ditch - 01 DS to Res. Bound., West Ditch - 01 DS to Res. Bound., West Ditch - 01 DS to Res. Bound., West Ditch - 01 DS to Res. Boundary,
West Ditch, 02 Res. Bound. To 24300, West Ditch - 01 DS to Res. Bound., sand, Non-Cohesive Sand, West Ditch - 02 Res. Bound. To 24300, West Ditch - 02 Res. Bound. To 24300, West Ditch - 02 Res. Bound. To 24300, West Ditch - 02 Res. Boundary to 24300,
West Ditch, 03 24300 to US, West Ditch - 02 Res. Bound. To 24300, sand, Non-Cohesive Sand, West Ditch - 03 24300 to US, West Ditch - 03 24300 to US, West Ditch - 03 24300 to US, West Ditch - 03 243000 to US,
West Ditch, USBC, West Ditch - 03 24300 to US, silt, Cohesive Control, West Ditch - USBC, West Ditch - 04 USBC, West Ditch - 04 USBC, West Ditch - USBC,
White's, 01 DS to 1968 Limits, Hickahala - 13 Wolf to White's, sand, Non-Cohesive Sand, White's - 01 DS to 1968 Limits, White's - 01 DS to 1968 Limits, White's - 01 DS to 1968 Limits, Whites - 01 DS to 1968 Limits,
White's, 02 1968 Limits to 8000, White's - 01 DS to 1968 Limits, silt, Cohesive Control, White's - 02 1968 Limits to 8000, White's - 02 1968 to 8000, White's - 02 1968 to 8000, Whites - 02 1968 Limits to 8000,
White's, 03 8000 to US, White's - 02 1968 Limits to 8000, silt, Bedrock Control, White's - 03 8000 to US, White's - 03 8000 to US, White's - 03 8000 to US, Whites - 03 8000 to 14500,
White's, USBC, White's - 03 8000 to US, silt, Cohesive Control, White's - USBC, White's - 04 USBC, White's - 04 USBC, Whites - USBC,
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<Output>
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Units: tonnes/year, tonnes/day, meters/year, s/year, meters, meters^2, meters^3, meters/second, meters^3/second, N/s, N*m
</Table Definition>
<CSV Table>
Reach Distances
Channel Load
Wash Load
Local Balance

Network Balance
</CSV Table>
</Output>

APPENDIX B

EXAMPLE SIAM OUTPUT FOR HICKAHALA SIMULATION

Table B-1 Local Balance.

Reach Key (text)	Regime Volume (m^3/s)	Regime Duration (s/yr)	Fraction Weighted Average Fall Velocity (m/s)	Volume Weighted Efficiency (none)	Volume Weighted Average Applied Power (N/s)	Regime Applied Work (N*m)	Volume Weighted Average Transport Rate (tons/d)	Regime Yield (tons/yr)	Yield-Work Slope (tons/d)/ (N/s)	Yield-Work Y-Intercept (tons/d)	Yield-Work X-Intercept (N/s)	R^2 (none)	Residual Standard Deviation (tons/d)
Basket - 01 DS to 4000	1.26E+7	1.71E+07	0.1019	3.39	52.1	7.50E+10	10.2	700.9	0.000	1.05	-1.12E+08	0.867	344.3
Basket - 02 4000 to 1968 Limits	1.16E+7	1.71E+07	0.1019	6.03	717.6	2.35E+11	386.3	5189.5	0.000	-3159.95	8.84E+10	0.996	294.0
Basket - 03 1968 Limits to 15400	9.51E+6	1.71E+07	0.1019	6.90	1166.3	3.99E+11	730.2	8590.2	0.000	-4509.42	1.36E+11	0.999	397.2
Basket - 04 15400 to US	7.44E+6	1.71E+07	0.1019	5.79	541.3	1.95E+11	320.1	4181.1	0.000	-4935.74	1.06E+11	0.999	133.4
Basket - USBC	3.65E+6	1.71E+07	0.1019	5.02	445.6	1.26E+11	277.7	2881.0	0.000	-1637.89	4.52E+10	0.998	207.2
Beard's - 01 DS to 1968 Limits	1.39E+7	1.71E+07	0.1019	5.97	603.6	2.35E+11	285.9	4014.2	0.000	-3957.04	1.15E+11	0.993	268.2
Beard's - 02 1968 Limits to 10800 Bridge	1.36E+7	1.71E+07	0.1019	7.31	1139.9	3.91E+11	724.3	8634.9	0.000	-4882.64	1.42E+11	1.000	186.4
Beard's - 03 10800 Bridge to US	7.45E+6	1.71E+07	0.0081	103.14	18220.1	5.56E+12	517.9	6591.5	0.000	-2256.57	1.42E+12	1.000	48.6
Beard's - USBC	2.92E+6	1.71E+07	0.0081	92.72	11909.0	3.57E+12	300.8	3659.4	0.000	-1443.14	1.00E+12	0.999	107.3
Billy's - 01 DS to Res. Bound.	3.98E+6	1.71E+07	0.0081	29.31	116.5	3.27E+11	1.4	201.4	0.000	3.01	-4.69E+09	0.943	82.4
Billy's - 02 Res. Bound. to 1968 Limits	3.83E+6	1.71E+07	0.1019	4.43	183.4	7.05E+10	77.8	1260.8	0.000	-1055.07	3.19E+10	0.974	170.6
Billy's - 03 1968 Limits to US	3.59E+6	1.71E+07	0.1019	5.16	380.2	1.31E+11	268.2	2997.3	0.000	-1753.33	4.85E+10	0.999	151.7
Billy's - USBC	9.74E+5	1.71E+07	0.1019	5.17	183.2	6.45E+10	125.9	1480.6	0.000	-1086.34	2.73E+10	0.999	48.8
Cathey's - 01 DS to 3500	5.36E+6	1.71E+07	0.1019	7.55	817.2	2.89E+11	473.9	7499.0	0.000	-5879.83	1.24E+11	0.957	888.1
Cathey's - 02 3500 to 7500	5.14E+6	1.71E+07	0.0081	74.73	9510.3	3.20E+12	247.5	2889.1	0.000	-1209.48	9.41E+11	1.000	71.0
Cathey's - 03 7500 to 12100	4.32E+6	1.71E+07	0.0081	69.64	5776.0	1.88E+12	135.9	1617.1	0.000	-796.48	6.17E+11	0.999	56.8
Cathey's - 04 12100 to US	3.47E+6	1.71E+07	0.0081	74.16	6918.1	2.42E+12	185.5	2289.4	0.000	-954.61	7.09E+11	1.000	50.8
Cathey's - USBC	1.50E+6	1.71E+07	0.0081	75.36	6589.5	2.25E+12	175.2	2080.7	0.000	-950.60	7.02E+11	1.000	40.2

Reach Key (text)	Regime Volume (m^3/s)	Regime Duration (s/yr)	Fraction Weighted Average Fall Velocity (m/s)	Volume Weighted Efficiency (none)	Volume Weighted Average Applied Power (N/s)	Regime Applied Work (N*m)	Volume Weighted Average Transport Rate (tons/d)	Regime Yield (tons/yr)	Yield-Work Slope (tons/d)/(N/s)	Yield-Work Y-Intercept (tons/d)	Yield-Work X-Intercept (N/s)	R^2 (none)	Residual Standard Deviation (tons/d)
Hickahala - 01 DS to 12500	3.00E+8	1.71E+07	0.0081	84.95	18458.7	3.78E+13	572.6	39485.3	0.000	6002.46	-6.52E+12	0.971	9741.6
Hickahala - 02 12500 to 1968 Start	2.95E+8	1.71E+07	0.0081	52.54	5674.2	4.17E+12	122.7	2029.8	0.000	1499.02	-1.09E+13	0.431	754.2
Hickahala - 03 1968 Start to W. Ditch	2.84E+8	1.71E+07	0.0081	61.83	17001.1	8.88E+12	377.9	6390.4	0.000	-1379.40	1.57E+12	0.683	2019.1
Hickahala - 04 W. Ditch to Senatobia	2.62E+8	1.71E+07	0.0081	43.00	2715.2	6.09E+12	48.3	6588.4	0.000	-223.47	1.98E+11	0.962	2315.0
Hickahala - 05 Senatobia to Billy's	1.71E+8	1.71E+07	0.0081	135.06	114883.6	2.63E+13	5067.8	59344.5	0.000	-30918.46	8.76E+12	0.992	5890.8
Hickahala - 06 Billy's to Res. Bound.	1.66E+8	1.71E+07	0.0081	98.23	55795.1	1.42E+13	1960.9	18247.5	0.000	-15192.29	6.37E+12	0.998	2801.1
Hickahala - 07 Res. Bound. to Thornton	1.65E+8	1.71E+07	0.1019	8.36	2591.2	1.02E+12	1123.9	15952.4	0.000	-8693.57	3.50E+11	0.863	5465.6
Hickahala - 08 Thornton to Basket	1.57E+8	1.71E+07	0.1019	9.43	11788.5	1.18E+12	7471.1	74490.4	0.000	-39205.49	4.05E+11	0.998	5288.9
Hickahala - 09 Basket to 57350	1.44E+8	1.71E+07	0.1019	8.86	9374.3	2.34E+12	5721.2	58682.7	0.000	-24042.98	6.69E+11	0.998	3641.7
Hickahala - 10 57350 to Lick	1.36E+8	1.71E+07	0.1019	9.09	7877.7	2.86E+12	4606.4	55159.9	0.000	-38890.39	1.19E+12	1.000	1268.8
Hickahala - 11 Lick to Lick Branch	1.28E+8	1.71E+07	0.1019	8.00	6069.5	1.70E+12	3423.6	35944.4	0.000	-18246.58	5.63E+11	0.999	2152.4
Hickahala - 12 Lick Branch to Wolf	1.27E+8	1.71E+07	0.1019	7.81	5182.7	1.70E+12	2772.2	32427.5	0.000	-21894.71	6.83E+11	0.999	1086.0
Hickahala - 13 Wolf to White's	7.15E+7	1.71E+07	0.1019	7.82	2034.3	7.83E+11	941.0	15538.3	0.000	-14094.95	3.67E+11	0.960	1934.3
Hickahala - 14 White's to Beard's	6.21E+7	1.71E+07	0.0081	123.21	61294.7	1.72E+13	1307.7	16248.7	0.000	-7437.99	5.39E+12	1.000	288.1
Hickahala - 15 Beard's to Cathey's	3.55E+7	1.71E+07	0.0081	101.35	39393.7	1.54E+13	841.8	13955.9	0.000	-4969.30	4.07E+12	0.517	3379.1
Hickahala - 16 Cathey's to 109500	2.93E+7	1.71E+07	0.0081	112.32	56457.2	1.62E+13	1477.2	17564.2	0.000	-5904.79	4.06E+12	1.000	237.8
Hickahala - 17 109500 to S. Fork	2.65E+7	1.71E+07	0.0081	98.75	41949.9	1.27E+13	946.2	11285.7	0.000	-6923.00	4.83E+12	1.000	121.6
Hickahala - 18 S. Fork to US	6.78E+6	1.71E+07	0.0081	98.40	14056.1	4.25E+12	415.8	5432.5	0.000	-2997.79	1.52E+12	0.999	153.4
Hickahala - USBC	2.77E+6	1.71E+07	0.0081	74.66	6758.0	2.06E+12	196.1	2280.3	0.000	-835.70	5.50E+11	0.999	98.1
James Wolf - 01 DS to 1968 Limits	5.32E+7	1.71E+07	0.1019	9.25	3507.4	1.25E+12	1980.6	30038.6	0.000	-16010.06	4.33E+11	0.999	663.3

Reach Key (text)	Regime Volume (m^3/s)	Regime Duration (s/yr)	Fraction Weighted Average Fall Velocity (m/s)	Volume Weighted Efficiency (none)	Volume Weighted Average Applied Power (N/s)	Regime Applied Work (N*m)	Volume Weighted Average Transport Rate (tons/d)	Regime Yield (tons/yr)	Yield-Work Slope (tons/d)/(N/s)	Yield-Work Y-Intercept (tons/d)	Yield-Work X-Intercept (N/s)	R^2 (none)	Residual Standard Deviation (tons/d)
James Wolf - 02 1968 Limits to M. Dale	4.10E+7	1.71E+07	0.1019	10.05	5265.4	1.54E+12	3200.8	40096.4	0.000	-24066.72	5.77E+11	0.999	1448.9
James Wolf - 03 M. Dale to 34000	2.06E+7	1.71E+07	0.1019	7.04	2308.9	6.99E+11	1437.3	18158.5	0.000	-8470.36	2.22E+11	1.000	333.6
James Wolf - 04 34000 to 45500	1.83E+7	1.71E+07	0.1019	6.53	1728.0	5.21E+11	1040.8	12261.7	0.000	-8044.17	2.06E+11	1.000	107.1
James Wolf - 05 45500 to US	1.46E+7	1.71E+07	0.1019	6.06	2606.5	4.48E+11	594.0	7144.8	0.000	1063.87	-8.49E+10	0.983	1116.9
James Wolf - USBC	9.52E+6	1.71E+07	0.1019	6.06	2606.2	1.53E+11	217.6	1967.7	0.000	-778.98	4.44E+10	0.988	446.2
Martin Dale - 01 DS to 4500	1.40E+7	1.71E+07	0.1019	8.30	2560.1	8.88E+11	1803.0	25550.1	0.000	-11741.37	2.80E+11	1.000	398.9
Martin Dale - 02 4500 to US	6.15E+6	1.71E+07	0.1019	6.16	682.6	2.26E+11	440.2	5731.1	0.000	-3838.27	9.06E+10	0.998	225.0
Martin Dale - USBC	4.23E+6	1.71E+07	0.1019	5.60	605.5	1.88E+11	388.6	4509.6	0.000	-2700.63	7.04E+10	1.000	31.7
Mattic - 01 DS to Nelson	3.70E+7	1.71E+07	0.1019	3.46	58.4	1.75E+11	12.8	2115.8	0.000	-135.73	1.06E+10	1.000	133.8
Mattic - 02 Nelson to 13000	1.66E+7	1.71E+07	0.1019	4.71	115.9	8.53E+10	57.4	1496.4	0.000	247.87	-1.55E+10	0.977	477.8
Mattic - 03 13000 to US	1.44E+7	1.71E+07	0.1019	3.25	57.5	4.63E+10	20.9	395.1	0.000	173.90	-2.58E+10	0.836	333.8
Mattic - USBC	9.69E+6	1.71E+07	0.1019	2.59	33.2	2.35E+10	10.8	132.2	0.000	111.44	-3.29E+10	0.501	209.4
Nelson - 01 DS to Wilborn	1.91E+7	1.71E+07	0.1019	6.49	738.1	2.46E+11	414.9	4917.4	0.000	-3793.29	1.08E+11	0.997	460.9
Nelson - 02 Wilborn to US	9.64E+6	1.71E+07	0.1019	4.91	321.4	9.95E+10	172.3	1845.3	0.000	-1425.31	4.34E+10	0.998	161.7
Nelson - USBC	6.76E+6	1.71E+07	0.1019	2.92	85.8	2.78E+10	28.6	257.6	0.000	-535.14	1.87E+10	0.996	63.2
Senatobia - 01 DS to Res. Bound.	8.97E+7	1.71E+07	0.0081	32.69	483.9	9.62E+11	3.4	293.9	0.000	41.03	-1.56E+11	0.933	93.9
Senatobia - 02 Res. Bound. to 15000	8.69E+7	1.71E+07	0.1019	4.99	888.1	2.96E+11	378.8	4187.1	0.000	-5771.73	1.70E+11	0.988	922.4
Senatobia - 03 15000 to G. Springs	8.58E+7	1.71E+07	0.1019	5.57	1017.3	3.03E+11	455.9	4327.6	0.000	-4818.77	1.59E+11	0.999	445.7
Senatobia - 04 G. Springs to Mattic	7.70E+7	1.71E+07	0.1019	6.00	1295.1	3.26E+11	643.6	5954.2	0.000	-3846.80	1.25E+11	0.999	568.0
Senatobia - 05 Mattic to T. Jones	3.73E+7	1.71E+07	0.1019	5.78	1014.0	2.91E+11	533.2	6366.1	0.000	-4674.92	1.23E+11	0.996	622.1

Reach Key (text)	Regime Volume (m^3/s)	Regime Duration (s/yr)	Fraction Weighted Average Fall Velocity (m/s)	Volume Weighted Efficiency (none)	Volume Weighted Average Applied Power (N/s)	Regime Applied Work (N*m)	Volume Weighted Average Transport Rate (tons/d)	Regime Yield (tons/yr)	Yield-Work Slope (tons/d)/(N/s)	Yield-Work Y-Intercept (tons/d)	Yield-Work X-Intercept (N/s)	R^2 (none)	Residual Standard Deviation (tons/d)
Senatobia - 06 T. Jones to 46000	2.94E+7	1.71E+07	0.1019	6.12	1022.6	2.97E+11	584.8	6528.5	0.000	-3946.48	1.12E+11	0.998	518.3
Senatobia - 07 46000 to 62000	2.29E+7	1.71E+07	0.1019	5.78	876.2	2.88E+11	498.5	6005.1	0.000	-3887.99	1.14E+11	0.996	654.1
Senatobia - 08 62000 to US	1.39E+7	1.71E+07	0.1019	4.55	338.8	1.11E+11	183.3	1930.1	0.000	-1646.55	5.12E+10	0.996	276.4
Senatobia - USBC	7.25E+6	1.71E+07	0.1019	4.42	253.5	8.27E+10	134.9	1410.5	0.000	-1193.47	3.78E+10	0.999	139.2
South Fork - 01 DS to 4600	6.79E+6	1.71E+07	0.0081	70.68	8365.3	2.68E+12	183.3	2246.5	0.000	-1047.55	8.47E+11	0.999	81.9
South Fork - 02 4600 to 10000	5.99E+6	1.71E+07	0.0081	79.42	10079.9	3.12E+12	259.3	3202.6	0.000	-1311.24	9.01E+11	1.000	73.6
South Fork - 03 10000 to US	3.81E+6	1.71E+07	0.0081	80.27	9772.4	2.91E+12	281.3	3529.0	0.000	-1218.89	7.47E+11	1.000	54.5
South Fork - USBC	2.71E+6	1.71E+07	0.0081	79.74	9601.5	2.83E+12	274.0	3393.1	0.000	-1198.70	7.37E+11	1.000	38.0
Steammill - 01 DS to 5200	3.09E+6	1.71E+07	0.1019	5.73	377.7	1.18E+11	230.7	2889.5	0.000	-1884.93	4.64E+10	0.999	116.7
Steammill - 02 5200 to US	2.21E+6	1.71E+07	0.1019	6.37	535.1	1.70E+11	381.6	4556.5	0.000	-1954.77	5.09E+10	1.000	48.2
Steammill - USBC	5.01E+5	1.71E+07	0.1019	6.41	484.0	1.56E+11	341.1	4151.7	0.000	-1849.96	4.82E+10	0.999	110.2
Thornton - 01 DS to 1968 Limits	6.25E+6	1.71E+07	0.1019	2.98	27.6	4.08E+10	3.5	319.1	0.000	-64.68	6.71E+09	0.969	112.9
Thornton - 02 1968 Limits to Steammill	5.53E+6	1.71E+07	0.1019	5.23	243.3	7.07E+10	114.9	2366.3	0.000	-722.90	1.68E+10	0.916	583.1
Thornton - 03 Steammill to US	2.08E+6	1.71E+07	0.1019	5.15	255.4	7.16E+10	160.2	2175.2	0.000	-1651.96	3.07E+10	0.986	225.2
Thornton - USBC	1.29E+6	1.71E+07	0.1019	3.90	170.3	5.09E+10	100.2	1051.9	0.000	-645.06	1.91E+10	0.996	106.8
Tolbert-Jones - 01 DS to 3000	6.63E+6	1.71E+07	0.1019	3.62	128.7	3.30E+10	57.5	544.9	0.000	-802.50	2.00E+10	0.986	170.3
Tolbert-Jones - 02 3000 to US	6.01E+6	1.71E+07	0.0081	56.13	2624.2	8.05E+11	57.3	651.1	0.000	-503.35	3.53E+11	0.995	97.7
Tolbert-Jones - USBC	2.86E+6	1.71E+07	0.0081	47.34	1136.3	3.59E+11	22.2	239.3	0.000	-178.28	1.52E+11	0.999	17.5
West Ditch - 01 DS to Res. Bound.	2.00E+7	1.71E+07	0.0081	52.21	1290.3	7.39E+11	13.5	264.1	0.000	159.43	-9.90E+11	0.522	75.2
West Ditch - 02 Res. Bound. To 24300	1.38E+7	1.71E+07	0.1019	7.97	1483.4	4.82E+11	905.6	12493.6	0.000	-7578.08	1.81E+11	1.000	168.8

Reach Key (text)	Regime Volume (m^3/s)	Regime Duration (s/yr)	Fraction Weighted Average Fall Velocity (m/s)	Volume Weighted Efficiency (none)	Volume Weighted Average Applied Power (N/s)	Regime Applied Work (N*m)	Volume Weighted Average Transport Rate (tons/d)	Regime Yield (tons/yr)	Yield-Work Slope (tons/d)/(N/s)	Yield-Work Y-Intercept (tons/d)	Yield-Work X-Intercept (N/s)	R^2 (none)	Residual Standard Deviation (tons/d)
West Ditch - 03 24300 to US	9.55E+6	1.71E+07	0.1019	6.58	940.5	3.20E+11	629.7	7542.0	0.000	-4306.22	1.16E+11	1.000	51.5
West Ditch - USBC	3.41E+6	1.71E+07	0.0081	70.72	5179.1	1.83E+12	126.0	1572.7	0.000	-683.40	5.51E+11	0.999	49.2
White's - 01 DS to 1968 Limits	6.90E+6	1.71E+07	0.1019	3.88	77.7	3.83E+10	20.9	557.5	0.000	-60.80	4.05E+09	0.788	221.6
White's - 02 1968 Limits to 8000	6.61E+6	1.71E+07	0.0081	77.44	7481.4	2.20E+12	132.0	1810.8	0.000	-1308.28	9.05E+11	0.989	158.7
White's - 03 8000 to US	3.67E+6	1.71E+07	0.0081	70.04	3326.1	1.39E+12	71.7	1043.4	0.000	-1234.61	7.66E+11	0.959	151.8
White's - USBC	1.04E+6	1.71E+07	0.0081	58.58	2395.4	7.23E+11	50.5	587.4	0.000	-350.65	2.68E+11	0.999	25.1

Table B-2 Wash Material Tracking.

Reach Key (text)	Clay (tons/yr)	Silt (tons/yr)	VFS (tons/yr)	FS (tons/yr)	MS (tons/yr)	CS (tons/yr)	VCS (tons/yr)	VFG (tons/yr)	FG (tons/yr)	MG (tons/yr)	CG (tons/yr)	VCG (tons/yr)	Comment (text)
Basket - 01 DS to 4000	0.3	4.7	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Major Bank Failure in Sand
Basket - 01 DS to 4000	0.1	1.1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Sand
Basket - 01 DS to 4000	3.1	43.2	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Small Gully in Sand
Basket - 01 DS to 4000	0.3	3.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Silt 2
Basket - 01 DS to 4000	1553.8	18148.8	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Surface Erosion Silt
Basket - 02 4000 to 1968 Limits	0.3	4.7	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Major Bank Failure in Sand
Basket - 02 4000 to 1968 Limits	0.1	1.1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Sand
Basket - 02 4000 to 1968 Limits	3.1	43.2	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Small Gully in Sand
Basket - 02 4000 to 1968 Limits	0.3	3.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Silt 2
Basket - 02 4000 to 1968 Limits	1438.2	16798.6	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Surface Erosion Silt
Basket - 03 1968 Limits to 15400	0.3	4.7	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Major Bank Failure in Sand
Basket - 03 1968 Limits to 15400	0.1	1.1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Sand
Basket - 03 1968 Limits to 15400	3.1	43.2	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Small Gully in Sand
Basket - 03 1968 Limits to 15400	914.6	10682.8	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Surface Erosion Silt
Basket - 04 15400 to US	0.3	4.7	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Major Bank Failure in Sand
Basket - 04 15400 to US	0.1	1.1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Sand
Basket - 04 15400 to US	450.5	5262.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Surface Erosion Silt
Basket - USBC	450.5	5262.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Surface Erosion Silt
Basket - USBC	0.3	4.7	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Major Bank Failure in Sand
Basket - USBC	0.1	1.1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Sand
Beard's - 01 DS to 1968 Limits	405.2	2611.2	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Beard's - USBC
Beard's - 01 DS to 1968 Limits	1.3	15.1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Major Bank Failure in Silt 2
Beard's - 01 DS to 1968 Limits	0.9	10.6	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Silt 2
Beard's - 01 DS to 1968 Limits	729.9	4703.3	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Beard's - 03 10800 Bridge to US
Beard's - 01 DS to 1968 Limits	1292.	15090.9	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Surface Erosion Silt
Beard's - 02 1968 Limits to 10800 Bridge	405.2	2611.2	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Beard's - USBC
Beard's - 02 1968 Limits to 10800 Bridge	1.3	15.1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Major Bank Failure in Silt 2
Beard's - 02 1968 Limits to 10800 Bridge	0.9	10.6	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Silt 2
Beard's - 02 1968 Limits to 10800 Bridge	729.9	4703.3	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Beard's - 03 10800 Bridge to US

Reach Key (text)	Clay (tons/yr)	Silt (tons/yr)	VFS (tons/yr)	FS (tons/yr)	MS (tons/yr)	CS (tons/yr)	VCS (tons/yr)	VFG (tons/yr)	FG (tons/yr)	MG (tons/yr)	CG (tons/yr)	VCG (tons/yr)	Comment (text)
Beard's - 02 1968 Limits to 10800 Bridge	1256.3	14673.9	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Surface Erosion Silt
Beard's - 03 10800 Bridge to US	405.2	2611.2	64.8	273.2	210.2	48.7	16.9	27.3	2.1	0.	0.	0.	Beard's - USBC
Beard's - 03 10800 Bridge to US	1.3	15.1	0.2	0.6	0.4	0.1	0.	0.	0.	0.	0.	0.	Major Bank Failure in Silt 2
Beard's - 03 10800 Bridge to US	0.9	10.6	0.2	0.4	0.3	0.1	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Silt 2
Beard's - 03 10800 Bridge to US	918.	10722.5	364.6	1245.5	1016.8	186.5	59.1	57.7	0.	0.	0.	0.	Surface Erosion Silt
Beard's - USBC	360.4	4209.6	143.1	489.	399.2	73.2	23.2	22.7	0.	0.	0.	0.	Surface Erosion Silt
Beard's - USBC	0.8	9.1	0.1	0.3	0.3	0.1	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Silt 2
Billy's - 01 DS to Res. Bound.	1.3	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Major Bank Failure in Silt 1
Billy's - 01 DS to Res. Bound.	0.1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Silt 1
Billy's - 01 DS to Res. Bound.	503.2	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Surface Erosion Silt
Billy's - 02 Res. Bound. to 1968 Limits	1.3	13.4	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Major Bank Failure in Silt 1
Billy's - 02 Res. Bound. to 1968 Limits	0.1	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Silt 1
Billy's - 02 Res. Bound. to 1968 Limits	482.8	5639.2	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Surface Erosion Silt
Billy's - 03 1968 Limits to US	1.3	13.4	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Major Bank Failure in Silt 1
Billy's - 03 1968 Limits to US	0.1	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Silt 1
Billy's - 03 1968 Limits to US	460.7	5381.1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Surface Erosion Silt
Billy's - USBC	120.7	1409.8	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Surface Erosion Silt
Cathey's - 01 DS to 3500	230.4	1484.7	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Cathey's - USBC
Cathey's - 01 DS to 3500	77.9	803.6	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Large Gully in Silt 1
Cathey's - 01 DS to 3500	253.5	1633.6	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Cathey's - 04 12100 to US
Cathey's - 01 DS to 3500	179.1	1153.9	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Cathey's - 03 7500 to 12100
Cathey's - 01 DS to 3500	1.5	15.1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Major Bank Failure in Silt 1
Cathey's - 01 DS to 3500	319.9	2061.5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Cathey's - 02 3500 to 7500
Cathey's - 01 DS to 3500	0.1	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Silt 1
Cathey's - 01 DS to 3500	33.5	345.3	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Medium Gully in Silt 1
Cathey's - 01 DS to 3500	225.5	2919.1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Surface Erosion Sand
Cathey's - 02 3500 to 7500	230.4	1484.7	36.8	155.3	119.5	27.7	9.6	15.5	1.2	0.	0.	0.	Cathey's - USBC
Cathey's - 02 3500 to 7500	77.9	803.6	61.6	210.6	208.	46.1	8.5	9.1	0.	0.	0.	0.	Large Gully in Silt 1
Cathey's - 02 3500 to 7500	253.5	1633.6	40.5	170.9	131.5	30.4	10.5	17.1	1.3	0.	0.	0.	Cathey's - 04 12100 to US
Cathey's - 02 3500 to 7500	179.1	1153.9	28.6	120.7	92.9	21.5	7.4	12.1	0.9	0.	0.	0.	Cathey's - 03 7500 to 12100
Cathey's - 02 3500 to 7500	1.5	15.1	1.2	4.	3.9	0.9	0.2	0.2	0.	0.	0.	0.	Major Bank Failure in Silt 1

Reach Key (text)	Clay (tons/yr)	Silt (tons/yr)	VFS (tons/yr)	FS (tons/yr)	MS (tons/yr)	CS (tons/yr)	VCS (tons/yr)	VFG (tons/yr)	FG (tons/yr)	MG (tons/yr)	CG (tons/yr)	VCG (tons/yr)	Comment (text)
Cathey's - 02 3500 to 7500	26.8	276.3	21.2	72.4	71.5	15.8	2.9	3.1	0.	0.	0.	0.	Medium Gully in Silt 1
Cathey's - 02 3500 to 7500	219.1	2835.9	260.3	1613.9	3830.1	1196.5	124.9	138.7	0.	0.	0.	0.	Surface Erosion Sand
Cathey's - 03 7500 to 12100	230.4	1484.7	36.8	155.3	119.5	27.7	9.6	15.5	1.2	0.	0.	0.	Cathey's - USBC
Cathey's - 03 7500 to 12100	77.9	803.6	61.6	210.6	208.	46.1	8.5	9.1	0.	0.	0.	0.	Large Gully in Silt 1
Cathey's - 03 7500 to 12100	253.5	1633.6	40.5	170.9	131.5	30.4	10.5	17.1	1.3	0.	0.	0.	Cathey's - 04 12100 to US
Cathey's - 03 7500 to 12100	0.5	5.	0.4	1.3	1.3	0.3	0.1	0.1	0.	0.	0.	0.	Major Bank Failure in Silt 1
Cathey's - 03 7500 to 12100	20.1	207.2	15.9	54.3	53.6	11.9	2.2	2.3	0.	0.	0.	0.	Medium Gully in Silt 1
Cathey's - 03 7500 to 12100	147.8	1913.3	175.6	1088.9	2584.	807.2	84.3	93.6	0.	0.	0.	0.	Surface Erosion Sand
Cathey's - 04 12100 to US	64.3	831.9	76.4	473.4	1123.5	351.	36.6	40.7	0.	0.	0.	0.	Surface Erosion Sand
Cathey's - 04 12100 to US	230.4	1484.7	36.8	155.3	119.5	27.7	9.6	15.5	1.2	0.	0.	0.	Cathey's - USBC
Cathey's - 04 12100 to US	77.9	803.6	61.6	210.6	208.	46.1	8.5	9.1	0.	0.	0.	0.	Large Gully in Silt 1
Cathey's - USBC	64.3	831.9	76.4	473.4	1123.5	351.	36.6	40.7	0.	0.	0.	0.	Surface Erosion Sand
Hickahala - 01 DS to 12500	405.2	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Beard's - USBC
Hickahala - 01 DS to 12500	729.9	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Beard's - 03 10800 Bridge to US
Hickahala - 01 DS to 12500	230.4	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Cathey's - USBC
Hickahala - 01 DS to 12500	77.9	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Large Gully in Silt 1
Hickahala - 01 DS to 12500	253.5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Cathey's - 04 12100 to US
Hickahala - 01 DS to 12500	179.1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Cathey's - 03 7500 to 12100
Hickahala - 01 DS to 12500	319.9	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Cathey's - 02 3500 to 7500
Hickahala - 01 DS to 12500	252.5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Hickahala - USBC
Hickahala - 01 DS to 12500	375.7	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	South Fork - USBC
Hickahala - 01 DS to 12500	390.8	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	South Fork - 03 10000 to US
Hickahala - 01 DS to 12500	354.6	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	South Fork - 02 4600 to 10000
Hickahala - 01 DS to 12500	601.5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Hickahala - 18 S. Fork to US
Hickahala - 01 DS to 12500	248.8	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	South Fork - 01 DS to 4600
Hickahala - 01 DS to 12500	1249.7	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Hickahala - 17 109500 to S. Fork
Hickahala - 01 DS to 12500	1944.9	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Hickahala - 16 Cathey's to 109500
Hickahala - 01 DS to 12500	1545.3	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Hickahala - 15 Beard's to Cathey's
Hickahala - 01 DS to 12500	65.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	White's - USBC
Hickahala - 01 DS to 12500	115.5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	White's - 03 8000 to US
Hickahala - 01 DS to 12500	4.7	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Small Gully in Sand

Reach Key (text)	Clay (tons/yr)	Silt (tons/yr)	VFS (tons/yr)	FS (tons/yr)	MS (tons/yr)	CS (tons/yr)	VCS (tons/yr)	VFG (tons/yr)	FG (tons/yr)	MG (tons/yr)	CG (tons/yr)	VCG (tons/yr)	Comment (text)
Hickahala - 01 DS to 12500	200.5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	White's - 02 1968 Limits to 8000
Hickahala - 01 DS to 12500	1799.2	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Hickahala - 14 White's to Beard's
Hickahala - 01 DS to 12500	27.7	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Large Gully in Sand
Hickahala - 01 DS to 12500	8.3	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Major Bank Failure in Silt 2
Hickahala - 01 DS to 12500	3.2	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Major Bank Failure in Sand
Hickahala - 01 DS to 12500	0.4	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Sand
Hickahala - 01 DS to 12500	25.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Medium Gully in Sand
Hickahala - 01 DS to 12500	10.7	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Major Bank Failure in Silt 1
Hickahala - 01 DS to 12500	194.1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Medium Gully in Silt 1
Hickahala - 01 DS to 12500	26.5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Tolbert-Jones - USBC
Hickahala - 01 DS to 12500	72.1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Tolbert-Jones - 02 3000 to US
Hickahala - 01 DS to 12500	297.5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Medium Gully in Silt 2
Hickahala - 01 DS to 12500	174.1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	West Ditch - USBC
Hickahala - 01 DS to 12500	2.8	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Silt 1
Hickahala - 01 DS to 12500	37.3	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Small Gully in Silt 1
Hickahala - 01 DS to 12500	5.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Small Gully in Silt 2
Hickahala - 01 DS to 12500	5.4	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Silt 2
Hickahala - 01 DS to 12500	32889.5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Surface Erosion Silt
Hickahala - 01 DS to 12500	1295.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Surface Erosion Sand
Hickahala - 02 12500 to 1968 Start	405.2	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Beard's - USBC
Hickahala - 02 12500 to 1968 Start	729.9	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Beard's - 03 10800 Bridge to US
Hickahala - 02 12500 to 1968 Start	230.4	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Cathey's - USBC
Hickahala - 02 12500 to 1968 Start	77.9	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Large Gully in Silt 1
Hickahala - 02 12500 to 1968 Start	253.5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Cathey's - 04 12100 to US
Hickahala - 02 12500 to 1968 Start	179.1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Cathey's - 03 7500 to 12100
Hickahala - 02 12500 to 1968 Start	319.9	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Cathey's - 02 3500 to 7500
Hickahala - 02 12500 to 1968 Start	252.5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Hickahala - USBC
Hickahala - 02 12500 to 1968 Start	375.7	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	South Fork - USBC
Hickahala - 02 12500 to 1968 Start	390.8	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	South Fork - 03 10000 to US
Hickahala - 02 12500 to 1968 Start	354.6	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	South Fork - 02 4600 to 10000
Hickahala - 02 12500 to 1968 Start	601.5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Hickahala - 18 S. Fork to US

Reach Key (text)	Clay (tons/yr)	Silt (tons/yr)	VFS (tons/yr)	FS (tons/yr)	MS (tons/yr)	CS (tons/yr)	VCS (tons/yr)	VFG (tons/yr)	FG (tons/yr)	MG (tons/yr)	CG (tons/yr)	VCG (tons/yr)	Comment (text)
Hickahala - 02 12500 to 1968 Start	248.8	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	South Fork - 01 DS to 4600
Hickahala - 02 12500 to 1968 Start	1249.7	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Hickahala - 17 109500 to S. Fork
Hickahala - 02 12500 to 1968 Start	1944.9	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Hickahala - 16 Cathey's to 109500
Hickahala - 02 12500 to 1968 Start	1545.3	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Hickahala - 15 Beard's to Cathey's
Hickahala - 02 12500 to 1968 Start	65.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	White's - USBC
Hickahala - 02 12500 to 1968 Start	115.5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	White's - 03 8000 to US
Hickahala - 02 12500 to 1968 Start	4.7	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Small Gully in Sand
Hickahala - 02 12500 to 1968 Start	200.5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	White's - 02 1968 Limits to 8000
Hickahala - 02 12500 to 1968 Start	1799.2	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Hickahala - 14 White's to Beard's
Hickahala - 02 12500 to 1968 Start	27.7	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Large Gully in Sand
Hickahala - 02 12500 to 1968 Start	8.3	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Major Bank Failure in Silt 2
Hickahala - 02 12500 to 1968 Start	3.2	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Major Bank Failure in Sand
Hickahala - 02 12500 to 1968 Start	0.4	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Sand
Hickahala - 02 12500 to 1968 Start	25.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Medium Gully in Sand
Hickahala - 02 12500 to 1968 Start	10.7	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Major Bank Failure in Silt 1
Hickahala - 02 12500 to 1968 Start	194.1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Medium Gully in Silt 1
Hickahala - 02 12500 to 1968 Start	26.5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Tolbert-Jones - USBC
Hickahala - 02 12500 to 1968 Start	72.1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Tolbert-Jones - 02 3000 to US
Hickahala - 02 12500 to 1968 Start	297.5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Medium Gully in Silt 2
Hickahala - 02 12500 to 1968 Start	174.1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	West Ditch - USBC
Hickahala - 02 12500 to 1968 Start	2.8	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Silt 1
Hickahala - 02 12500 to 1968 Start	37.3	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Small Gully in Silt 1
Hickahala - 02 12500 to 1968 Start	5.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Small Gully in Silt 2
Hickahala - 02 12500 to 1968 Start	5.4	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Silt 2
Hickahala - 02 12500 to 1968 Start	32889.5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Surface Erosion Silt
Hickahala - 02 12500 to 1968 Start	1127.4	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Surface Erosion Sand
Hickahala - 03 1968 Start to W. Ditch	405.2	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Beard's - USBC
Hickahala - 03 1968 Start to W. Ditch	729.9	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Beard's - 03 10800 Bridge to US
Hickahala - 03 1968 Start to W. Ditch	230.4	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Cathey's - USBC
Hickahala - 03 1968 Start to W. Ditch	77.9	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Large Gully in Silt 1
Hickahala - 03 1968 Start to W. Ditch	253.5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Cathey's - 04 12100 to US

Reach Key (text)	Clay (tons/yr)	Silt (tons/yr)	VFS (tons/yr)	FS (tons/yr)	MS (tons/yr)	CS (tons/yr)	VCS (tons/yr)	VFG (tons/yr)	FG (tons/yr)	MG (tons/yr)	CG (tons/yr)	VCG (tons/yr)	Comment (text)
Hickahala - 03 1968 Start to W. Ditch	179.1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Cathey's - 03 7500 to 12100
Hickahala - 03 1968 Start to W. Ditch	319.9	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Cathey's - 02 3500 to 7500
Hickahala - 03 1968 Start to W. Ditch	252.5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Hickahala - USBC
Hickahala - 03 1968 Start to W. Ditch	375.7	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	South Fork - USBC
Hickahala - 03 1968 Start to W. Ditch	390.8	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	South Fork - 03 10000 to US
Hickahala - 03 1968 Start to W. Ditch	354.6	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	South Fork - 02 4600 to 10000
Hickahala - 03 1968 Start to W. Ditch	601.5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Hickahala - 18 S. Fork to US
Hickahala - 03 1968 Start to W. Ditch	248.8	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	South Fork - 01 DS to 4600
Hickahala - 03 1968 Start to W. Ditch	1249.7	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Hickahala - 17 109500 to S. Fork
Hickahala - 03 1968 Start to W. Ditch	1944.9	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Hickahala - 16 Cathey's to 109500
Hickahala - 03 1968 Start to W. Ditch	1545.3	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Hickahala - 15 Beard's to Cathey's
Hickahala - 03 1968 Start to W. Ditch	65.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	White's - USBC
Hickahala - 03 1968 Start to W. Ditch	115.5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	White's - 03 8000 to US
Hickahala - 03 1968 Start to W. Ditch	4.7	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Small Gully in Sand
Hickahala - 03 1968 Start to W. Ditch	200.5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	White's - 02 1968 Limits to 8000
Hickahala - 03 1968 Start to W. Ditch	1799.2	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Hickahala - 14 White's to Beard's
Hickahala - 03 1968 Start to W. Ditch	27.7	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Large Gully in Sand
Hickahala - 03 1968 Start to W. Ditch	8.3	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Major Bank Failure in Silt 2
Hickahala - 03 1968 Start to W. Ditch	3.2	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Major Bank Failure in Sand
Hickahala - 03 1968 Start to W. Ditch	0.4	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Sand
Hickahala - 03 1968 Start to W. Ditch	25.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Medium Gully in Sand
Hickahala - 03 1968 Start to W. Ditch	10.7	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Major Bank Failure in Silt 1
Hickahala - 03 1968 Start to W. Ditch	194.1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Medium Gully in Silt 1
Hickahala - 03 1968 Start to W. Ditch	26.5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Tolbert-Jones - USBC
Hickahala - 03 1968 Start to W. Ditch	72.1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Tolbert-Jones - 02 3000 to US
Hickahala - 03 1968 Start to W. Ditch	297.5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Medium Gully in Silt 2
Hickahala - 03 1968 Start to W. Ditch	1079.5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Surface Erosion Sand
Hickahala - 03 1968 Start to W. Ditch	174.1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	West Ditch - USBC
Hickahala - 03 1968 Start to W. Ditch	2.8	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Silt 1
Hickahala - 03 1968 Start to W. Ditch	37.3	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Small Gully in Silt 1
Hickahala - 03 1968 Start to W. Ditch	5.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Small Gully in Silt 2

Reach Key (text)	Clay (tons/yr)	Silt (tons/yr)	VFS (tons/yr)	FS (tons/yr)	MS (tons/yr)	CS (tons/yr)	VCS (tons/yr)	VFG (tons/yr)	FG (tons/yr)	MG (tons/yr)	CG (tons/yr)	VCG (tons/yr)	Comment (text)
Hickahala - 03 1968 Start to W. Ditch	5.4	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Silt 2
Hickahala - 03 1968 Start to W. Ditch	32889.5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Surface Erosion Silt
Hickahala - 04 W. Ditch to Senatobia	405.2	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Beard's - USBC
Hickahala - 04 W. Ditch to Senatobia	729.9	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Beard's - 03 10800 Bridge to US
Hickahala - 04 W. Ditch to Senatobia	230.4	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Cathey's - USBC
Hickahala - 04 W. Ditch to Senatobia	77.9	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Large Gully in Silt 1
Hickahala - 04 W. Ditch to Senatobia	253.5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Cathey's - 04 12100 to US
Hickahala - 04 W. Ditch to Senatobia	179.1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Cathey's - 03 7500 to 12100
Hickahala - 04 W. Ditch to Senatobia	319.9	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Cathey's - 02 3500 to 7500
Hickahala - 04 W. Ditch to Senatobia	252.5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Hickahala - USBC
Hickahala - 04 W. Ditch to Senatobia	375.7	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	South Fork - USBC
Hickahala - 04 W. Ditch to Senatobia	390.8	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	South Fork - 03 10000 to US
Hickahala - 04 W. Ditch to Senatobia	354.6	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	South Fork - 02 4600 to 10000
Hickahala - 04 W. Ditch to Senatobia	601.5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Hickahala - 18 S. Fork to US
Hickahala - 04 W. Ditch to Senatobia	248.8	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	South Fork - 01 DS to 4600
Hickahala - 04 W. Ditch to Senatobia	1249.7	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Hickahala - 17 109500 to S. Fork
Hickahala - 04 W. Ditch to Senatobia	1944.9	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Hickahala - 16 Cathey's to 109500
Hickahala - 04 W. Ditch to Senatobia	1545.3	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Hickahala - 15 Beard's to Cathey's
Hickahala - 04 W. Ditch to Senatobia	65.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	White's - USBC
Hickahala - 04 W. Ditch to Senatobia	115.5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	White's - 03 8000 to US
Hickahala - 04 W. Ditch to Senatobia	4.7	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Small Gully in Sand
Hickahala - 04 W. Ditch to Senatobia	200.5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	White's - 02 1968 Limits to 8000
Hickahala - 04 W. Ditch to Senatobia	1799.2	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Hickahala - 14 White's to Beard's
Hickahala - 04 W. Ditch to Senatobia	27.7	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Large Gully in Sand
Hickahala - 04 W. Ditch to Senatobia	29.8	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Small Gully in Silt 1
Hickahala - 04 W. Ditch to Senatobia	8.3	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Major Bank Failure in Silt 2
Hickahala - 04 W. Ditch to Senatobia	3.2	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Major Bank Failure in Sand
Hickahala - 04 W. Ditch to Senatobia	0.4	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Sand
Hickahala - 04 W. Ditch to Senatobia	25.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Medium Gully in Sand
Hickahala - 04 W. Ditch to Senatobia	10.7	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Major Bank Failure in Silt 1
Hickahala - 04 W. Ditch to Senatobia	194.1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Medium Gully in Silt 1

Reach Key (text)	Clay (tons/yr)	Silt (tons/yr)	VFS (tons/yr)	FS (tons/yr)	MS (tons/yr)	CS (tons/yr)	VCS (tons/yr)	VFG (tons/yr)	FG (tons/yr)	MG (tons/yr)	CG (tons/yr)	VCG (tons/yr)	Comment (text)
Hickahala - 04 W. Ditch to Senatobia	26.5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Tolbert-Jones - USBC
Hickahala - 04 W. Ditch to Senatobia	2.4	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Silt 1
Hickahala - 04 W. Ditch to Senatobia	72.1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Tolbert-Jones - 02 3000 to US
Hickahala - 04 W. Ditch to Senatobia	5.1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Silt 2
Hickahala - 04 W. Ditch to Senatobia	297.5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Medium Gully in Silt 2
Hickahala - 04 W. Ditch to Senatobia	1079.5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Surface Erosion Sand
Hickahala - 04 W. Ditch to Senatobia	29005.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Surface Erosion Silt
Hickahala - 05 Senatobia to Billy's	405.2	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Beard's - USBC
Hickahala - 05 Senatobia to Billy's	729.9	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Beard's - 03 10800 Bridge to US
Hickahala - 05 Senatobia to Billy's	230.4	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Cathey's - USBC
Hickahala - 05 Senatobia to Billy's	77.9	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Large Gully in Silt 1
Hickahala - 05 Senatobia to Billy's	253.5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Cathey's - 04 12100 to US
Hickahala - 05 Senatobia to Billy's	179.1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Cathey's - 03 7500 to 12100
Hickahala - 05 Senatobia to Billy's	319.9	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Cathey's - 02 3500 to 7500
Hickahala - 05 Senatobia to Billy's	252.5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Hickahala - USBC
Hickahala - 05 Senatobia to Billy's	375.7	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	South Fork - USBC
Hickahala - 05 Senatobia to Billy's	390.8	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	South Fork - 03 10000 to US
Hickahala - 05 Senatobia to Billy's	354.6	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	South Fork - 02 4600 to 10000
Hickahala - 05 Senatobia to Billy's	601.5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Hickahala - 18 S. Fork to US
Hickahala - 05 Senatobia to Billy's	248.8	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	South Fork - 01 DS to 4600
Hickahala - 05 Senatobia to Billy's	1249.7	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Hickahala - 17 109500 to S. Fork
Hickahala - 05 Senatobia to Billy's	1944.9	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Hickahala - 16 Cathey's to 109500
Hickahala - 05 Senatobia to Billy's	1545.3	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Hickahala - 15 Beard's to Cathey's
Hickahala - 05 Senatobia to Billy's	0.2	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Sand
Hickahala - 05 Senatobia to Billy's	87.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Medium Gully in Silt 1
Hickahala - 05 Senatobia to Billy's	65.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	White's - USBC
Hickahala - 05 Senatobia to Billy's	115.5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	White's - 03 8000 to US
Hickahala - 05 Senatobia to Billy's	4.7	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Small Gully in Sand
Hickahala - 05 Senatobia to Billy's	200.5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	White's - 02 1968 Limits to 8000
Hickahala - 05 Senatobia to Billy's	1799.2	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Hickahala - 14 White's to Beard's
Hickahala - 05 Senatobia to Billy's	1.2	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Major Bank Failure in Sand

Reach Key (text)	Clay (tons/yr)	Silt (tons/yr)	VFS (tons/yr)	FS (tons/yr)	MS (tons/yr)	CS (tons/yr)	VCS (tons/yr)	VFG (tons/yr)	FG (tons/yr)	MG (tons/yr)	CG (tons/yr)	VCG (tons/yr)	Comment (text)
Hickahala - 05 Senatobia to Billy's	27.7	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Large Gully in Sand
Hickahala - 05 Senatobia to Billy's	3.2	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Silt 2
Hickahala - 05 Senatobia to Billy's	225.4	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Medium Gully in Silt 2
Hickahala - 05 Senatobia to Billy's	6.1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Major Bank Failure in Silt 2
Hickahala - 05 Senatobia to Billy's	8.1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Major Bank Failure in Silt 1
Hickahala - 05 Senatobia to Billy's	1.9	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Silt 1
Hickahala - 05 Senatobia to Billy's	22.4	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Small Gully in Silt 1
Hickahala - 05 Senatobia to Billy's	949.2	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Surface Erosion Sand
Hickahala - 05 Senatobia to Billy's	18069.1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Surface Erosion Silt
Hickahala - 06 Billy's to Res. Bound.	405.2	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Beard's - USBC
Hickahala - 06 Billy's to Res. Bound.	729.9	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Beard's - 03 10800 Bridge to US
Hickahala - 06 Billy's to Res. Bound.	230.4	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Cathey's - USBC
Hickahala - 06 Billy's to Res. Bound.	77.9	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Large Gully in Silt 1
Hickahala - 06 Billy's to Res. Bound.	253.5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Cathey's - 04 12100 to US
Hickahala - 06 Billy's to Res. Bound.	179.1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Cathey's - 03 7500 to 12100
Hickahala - 06 Billy's to Res. Bound.	319.9	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Cathey's - 02 3500 to 7500
Hickahala - 06 Billy's to Res. Bound.	252.5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Hickahala - USBC
Hickahala - 06 Billy's to Res. Bound.	375.7	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	South Fork - USBC
Hickahala - 06 Billy's to Res. Bound.	390.8	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	South Fork - 03 10000 to US
Hickahala - 06 Billy's to Res. Bound.	354.6	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	South Fork - 02 4600 to 10000
Hickahala - 06 Billy's to Res. Bound.	601.5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Hickahala - 18 S. Fork to US
Hickahala - 06 Billy's to Res. Bound.	248.8	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	South Fork - 01 DS to 4600
Hickahala - 06 Billy's to Res. Bound.	1249.7	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Hickahala - 17 109500 to S. Fork
Hickahala - 06 Billy's to Res. Bound.	1944.9	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Hickahala - 16 Cathey's to 109500
Hickahala - 06 Billy's to Res. Bound.	1545.3	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Hickahala - 15 Beard's to Cathey's
Hickahala - 06 Billy's to Res. Bound.	0.2	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Sand
Hickahala - 06 Billy's to Res. Bound.	87.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Medium Gully in Silt 1
Hickahala - 06 Billy's to Res. Bound.	65.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	White's - USBC
Hickahala - 06 Billy's to Res. Bound.	115.5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	White's - 03 8000 to US
Hickahala - 06 Billy's to Res. Bound.	4.7	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Small Gully in Sand
Hickahala - 06 Billy's to Res. Bound.	200.5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	White's - 02 1968 Limits to 8000

Reach Key (text)	Clay (tons/yr)	Silt (tons/yr)	VFS (tons/yr)	FS (tons/yr)	MS (tons/yr)	CS (tons/yr)	VCS (tons/yr)	VFG (tons/yr)	FG (tons/yr)	MG (tons/yr)	CG (tons/yr)	VCG (tons/yr)	Comment (text)
Hickahala - 06 Billy's to Res. Bound.	1799.2	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Hickahala - 14 White's to Beard's
Hickahala - 06 Billy's to Res. Bound.	1.2	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Major Bank Failure in Sand
Hickahala - 06 Billy's to Res. Bound.	27.7	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Large Gully in Sand
Hickahala - 06 Billy's to Res. Bound.	3.2	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Silt 2
Hickahala - 06 Billy's to Res. Bound.	225.4	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Medium Gully in Silt 2
Hickahala - 06 Billy's to Res. Bound.	6.1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Major Bank Failure in Silt 2
Hickahala - 06 Billy's to Res. Bound.	6.8	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Major Bank Failure in Silt 1
Hickahala - 06 Billy's to Res. Bound.	1.8	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Silt 1
Hickahala - 06 Billy's to Res. Bound.	22.4	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Small Gully in Silt 1
Hickahala - 06 Billy's to Res. Bound.	17412.9	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Surface Erosion Silt
Hickahala - 06 Billy's to Res. Bound.	949.2	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Surface Erosion Sand
Hickahala - 07 Res. Bound. to Thornton	405.2	2611.2	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Beard's - USBC
Hickahala - 07 Res. Bound. to Thornton	729.9	4703.3	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Beard's - 03 10800 Bridge to US
Hickahala - 07 Res. Bound. to Thornton	230.4	1484.7	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Cathey's - USBC
Hickahala - 07 Res. Bound. to Thornton	77.9	803.6	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Large Gully in Silt 1
Hickahala - 07 Res. Bound. to Thornton	253.5	1633.6	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Cathey's - 04 12100 to US
Hickahala - 07 Res. Bound. to Thornton	179.1	1153.9	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Cathey's - 03 7500 to 12100
Hickahala - 07 Res. Bound. to Thornton	319.9	2061.5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Cathey's - 02 3500 to 7500
Hickahala - 07 Res. Bound. to Thornton	252.5	1627.1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Hickahala - USBC
Hickahala - 07 Res. Bound. to Thornton	375.7	2421.1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	South Fork - USBC
Hickahala - 07 Res. Bound. to Thornton	390.8	2518.1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	South Fork - 03 10000 to US
Hickahala - 07 Res. Bound. to Thornton	354.6	2285.2	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	South Fork - 02 4600 to 10000
Hickahala - 07 Res. Bound. to Thornton	601.5	3876.3	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Hickahala - 18 S. Fork to US
Hickahala - 07 Res. Bound. to Thornton	248.8	1603.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	South Fork - 01 DS to 4600
Hickahala - 07 Res. Bound. to Thornton	1249.7	8052.9	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Hickahala - 17 109500 to S. Fork
Hickahala - 07 Res. Bound. to Thornton	1944.9	12532.9	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Hickahala - 16 Cathey's to 109500
Hickahala - 07 Res. Bound. to Thornton	1545.3	9958.2	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Hickahala - 15 Beard's to Cathey's
Hickahala - 07 Res. Bound. to Thornton	0.2	2.3	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Sand
Hickahala - 07 Res. Bound. to Thornton	87.	897.9	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Medium Gully in Silt 1
Hickahala - 07 Res. Bound. to Thornton	65.	419.2	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	White's - USBC
Hickahala - 07 Res. Bound. to Thornton	115.5	744.5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	White's - 03 8000 to US

Reach Key (text)	Clay (tons/yr)	Silt (tons/yr)	VFS (tons/yr)	FS (tons/yr)	MS (tons/yr)	CS (tons/yr)	VCS (tons/yr)	VFG (tons/yr)	FG (tons/yr)	MG (tons/yr)	CG (tons/yr)	VCG (tons/yr)	Comment (text)
Hickahala - 07 Res. Bound to Thornton	4.7	64.8	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Small Gully in Sand
Hickahala - 07 Res. Bound. to Thornton	200.5	1292.1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	White's - 02 1968 Limits to 8000
Hickahala - 07 Res. Bound. to Thornton	1799.2	11594.2	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Hickahala - 14 White's to Beard's
Hickahala - 07 Res. Bound. to Thornton	1.2	16.9	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Major Bank Failure in Sand
Hickahala - 07 Res. Bound. to Thornton	27.7	386.3	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Large Gully in Sand
Hickahala - 07 Res. Bound. to Thornton	3.2	36.3	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Silt 2
Hickahala - 07 Res. Bound. to Thornton	225.4	2592.1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Medium Gully in Silt 2
Hickahala - 07 Res. Bound. to Thornton	6.1	70.6	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Major Bank Failure in Silt 2
Hickahala - 07 Res. Bound. to Thornton	6.8	70.5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Major Bank Failure in Silt 1
Hickahala - 07 Res. Bound. to Thornton	1.8	18.1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Silt 1
Hickahala - 07 Res. Bound to Thornton	22.4	231.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Small Gully in Silt 1
Hickahala - 07 Res. Bound. to Thornton	17412.9	203389.8	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Surface Erosion Silt
Hickahala - 07 Res. Bound. to Thornton	927.	12001.5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Surface Erosion Sand
Hickahala - 08 Thornton to Basket	405.2	2611.2	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Beard's - USBC
Hickahala - 08 Thornton to Basket	729.9	4703.3	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Beard's - 03 10800 Bridge to US
Hickahala - 08 Thornton to Basket	230.4	1484.7	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Cathey's - USBC
Hickahala - 08 Thornton to Basket	77.9	803.6	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Large Gully in Silt 1
Hickahala - 08 Thornton to Basket	253.5	1633.6	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Cathey's - 04 12100 to US
Hickahala - 08 Thornton to Basket	179.1	1153.9	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Cathey's - 03 7500 to 12100
Hickahala - 08 Thornton to Basket	319.9	2061.5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Cathey's - 02 3500 to 7500
Hickahala - 08 Thornton to Basket	252.5	1627.1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Hickahala - USBC
Hickahala - 08 Thornton to Basket	375.7	2421.1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	South Fork - USBC
Hickahala - 08 Thornton to Basket	390.8	2518.1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	South Fork - 03 10000 to US
Hickahala - 08 Thornton to Basket	354.6	2285.2	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	South Fork - 02 4600 to 10000
Hickahala - 08 Thornton to Basket	601.5	3876.3	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Hickahala - 18 S. Fork to US
Hickahala - 08 Thornton to Basket	248.8	1603.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	South Fork - 01 DS to 4600
Hickahala - 08 Thornton to Basket	771.1	9982.4	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Surface Erosion Sand
Hickahala - 08 Thornton to Basket	1249.7	8052.9	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Hickahala - 17 109500 to S. Fork
Hickahala - 08 Thornton to Basket	0.5	5.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Silt 1
Hickahala - 08 Thornton to Basket	1944.9	12532.9	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Hickahala - 16 Cathey's to 109500
Hickahala - 08 Thornton to Basket	1545.3	9958.2	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Hickahala - 15 Beard's to Cathey's

Reach Key (text)	Clay (tons/yr)	Silt (tons/yr)	VFS (tons/yr)	FS (tons/yr)	MS (tons/yr)	CS (tons/yr)	VCS (tons/yr)	VFG (tons/yr)	FG (tons/yr)	MG (tons/yr)	CG (tons/yr)	VCG (tons/yr)	Comment (text)
Hickahala - 08 Thornton to Basket	0.2	2.3	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Sand
Hickahala - 08 Thornton to Basket	5.9	60.4	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Major Bank Failure in Silt 1
Hickahala - 08 Thornton to Basket	87.	897.9	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Medium Gully in Silt 1
Hickahala - 08 Thornton to Basket	65.	419.2	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	White's - USBC
Hickahala - 08 Thornton to Basket	115.5	744.5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	White's - 03 8000 to US
Hickahala - 08 Thornton to Basket	4.7	64.8	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Small Gully in Sand
Hickahala - 08 Thornton to Basket	200.5	1292.1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	White's - 02 1968 Limits to 8000
Hickahala - 08 Thornton to Basket	1799.2	11594.2	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Hickahala - 14 White's to Beard's
Hickahala - 08 Thornton to Basket	1.2	16.9	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Major Bank Failure in Sand
Hickahala - 08 Thornton to Basket	27.7	386.3	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Large Gully in Sand
Hickahala - 08 Thornton to Basket	3.2	36.3	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Silt 2
Hickahala - 08 Thornton to Basket	225.4	2592.1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Medium Gully in Silt 2
Hickahala - 08 Thornton to Basket	6.1	70.6	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Major Bank Failure in Silt 2
Hickahala - 08 Thornton to Basket	16656.4	194553.7	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Surface Erosion Silt
Hickahala - 09 Basket to 57350	405.2	2611.2	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Beard's - USBC
Hickahala - 09 Basket to 57350	729.9	4703.3	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Beard's - 03 10800 Bridge to US
Hickahala - 09 Basket to 57350	230.4	1484.7	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Cathey's - USBC
Hickahala - 09 Basket to 57350	77.9	803.6	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Large Gully in Silt 1
Hickahala - 09 Basket to 57350	253.5	1633.6	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Cathey's - 04 12100 to US
Hickahala - 09 Basket to 57350	179.1	1153.9	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Cathey's - 03 7500 to 12100
Hickahala - 09 Basket to 57350	319.9	2061.5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Cathey's - 02 3500 to 7500
Hickahala - 09 Basket to 57350	252.5	1627.1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Hickahala - USBC
Hickahala - 09 Basket to 57350	375.7	2421.1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	South Fork - USBC
Hickahala - 09 Basket to 57350	390.8	2518.1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	South Fork - 03 10000 to US
Hickahala - 09 Basket to 57350	354.6	2285.2	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	South Fork - 02 4600 to 10000
Hickahala - 09 Basket to 57350	601.5	3876.3	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Hickahala - 18 S. Fork to US
Hickahala - 09 Basket to 57350	248.8	1603.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	South Fork - 01 DS to 4600
Hickahala - 09 Basket to 57350	771.1	9982.4	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Surface Erosion Sand
Hickahala - 09 Basket to 57350	1249.7	8052.9	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Hickahala - 17 109500 to S. Fork
Hickahala - 09 Basket to 57350	0.5	5.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Silt 1
Hickahala - 09 Basket to 57350	1944.9	12532.9	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Hickahala - 16 Cathey's to 109500

Reach Key (text)	Clay (tons/yr)	Silt (tons/yr)	VFS (tons/yr)	FS (tons/yr)	MS (tons/yr)	CS (tons/yr)	VCS (tons/yr)	VFG (tons/yr)	FG (tons/yr)	MG (tons/yr)	CG (tons/yr)	VCG (tons/yr)	Comment (text)
Hickahala - 09 Basket to 57350	1545.3	9958.2	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Hickahala - 15 Beard's to Cathey's
Hickahala - 09 Basket to 57350	0.1	1.1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Sand
Hickahala - 09 Basket to 57350	5.9	60.4	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Major Bank Failure in Silt 1
Hickahala - 09 Basket to 57350	87.	897.9	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Medium Gully in Silt 1
Hickahala - 09 Basket to 57350	65.	419.2	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	White's - USBC
Hickahala - 09 Basket to 57350	115.5	744.5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	White's - 03 8000 to US
Hickahala - 09 Basket to 57350	1.6	21.6	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Small Gully in Sand
Hickahala - 09 Basket to 57350	200.5	1292.1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	White's - 02 1968 Limits to 8000
Hickahala - 09 Basket to 57350	1799.2	11594.2	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Hickahala - 14 White's to Beard's
Hickahala - 09 Basket to 57350	0.9	12.2	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Major Bank Failure in Sand
Hickahala - 09 Basket to 57350	27.7	386.3	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Large Gully in Sand
Hickahala - 09 Basket to 57350	2.9	33.3	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Silt 2
Hickahala - 09 Basket to 57350	225.4	2592.1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Medium Gully in Silt 2
Hickahala - 09 Basket to 57350	6.1	70.6	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Major Bank Failure in Silt 2
Hickahala - 09 Basket to 57350	15097.5	176345.3	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Surface Erosion Silt
Hickahala - 10 57350 to Lick	405.2	2611.2	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Beard's - USBC
Hickahala - 10 57350 to Lick	729.9	4703.3	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Beard's - 03 10800 Bridge to US
Hickahala - 10 57350 to Lick	230.4	1484.7	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Cathey's - USBC
Hickahala - 10 57350 to Lick	77.9	803.6	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Large Gully in Silt 1
Hickahala - 10 57350 to Lick	253.5	1633.6	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Cathey's - 04 12100 to US
Hickahala - 10 57350 to Lick	179.1	1153.9	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Cathey's - 03 7500 to 12100
Hickahala - 10 57350 to Lick	319.9	2061.5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Cathey's - 02 3500 to 7500
Hickahala - 10 57350 to Lick	252.5	1627.1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Hickahala - USBC
Hickahala - 10 57350 to Lick	375.7	2421.1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	South Fork - USBC
Hickahala - 10 57350 to Lick	390.8	2518.1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	South Fork - 03 10000 to US
Hickahala - 10 57350 to Lick	354.6	2285.2	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	South Fork - 02 4600 to 10000
Hickahala - 10 57350 to Lick	601.5	3876.3	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Hickahala - 18 S. Fork to US
Hickahala - 10 57350 to Lick	248.8	1603.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	South Fork - 01 DS to 4600
Hickahala - 10 57350 to Lick	771.1	9982.4	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Surface Erosion Sand
Hickahala - 10 57350 to Lick	1249.7	8052.9	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Hickahala - 17 109500 to S. Fork
Hickahala - 10 57350 to Lick	0.5	5.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Silt 1

Reach Key (text)	Clay (tons/yr)	Silt (tons/yr)	VFS (tons/yr)	FS (tons/yr)	MS (tons/yr)	CS (tons/yr)	VCS (tons/yr)	VFG (tons/yr)	FG (tons/yr)	MG (tons/yr)	CG (tons/yr)	VCG (tons/yr)	Comment (text)
Hickahala - 10 57350 to Lick	1944.9	12532.9	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Hickahala - 16 Cathey's to 109500
Hickahala - 10 57350 to Lick	1545.3	9958.2	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Hickahala - 15 Beard's to Cathey's
Hickahala - 10 57350 to Lick	0.1	1.1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Sand
Hickahala - 10 57350 to Lick	5.9	60.4	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Major Bank Failure in Silt 1
Hickahala - 10 57350 to Lick	87.	897.9	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Medium Gully in Silt 1
Hickahala - 10 57350 to Lick	65.	419.2	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	White's - USBC
Hickahala - 10 57350 to Lick	115.5	744.5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	White's - 03 8000 to US
Hickahala - 10 57350 to Lick	1.6	21.6	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Small Gully in Sand
Hickahala - 10 57350 to Lick	200.5	1292.1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	White's - 02 1968 Limits to 8000
Hickahala - 10 57350 to Lick	1799.2	11594.2	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Hickahala - 14 White's to Beard's
Hickahala - 10 57350 to Lick	0.9	12.2	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Major Bank Failure in Sand
Hickahala - 10 57350 to Lick	27.7	386.3	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Large Gully in Sand
Hickahala - 10 57350 to Lick	2.9	33.3	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Silt 2
Hickahala - 10 57350 to Lick	225.4	2592.1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Medium Gully in Silt 2
Hickahala - 10 57350 to Lick	6.1	70.6	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Major Bank Failure in Silt 2
Hickahala - 10 57350 to Lick	14128.5	165027.1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Surface Erosion Silt
Hickahala - 11 Lick to Lick Branch	405.2	2611.2	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Beard's - USBC
Hickahala - 11 Lick to Lick Branch	729.9	4703.3	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Beard's - 03 10800 Bridge to US
Hickahala - 11 Lick to Lick Branch	230.4	1484.7	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Cathey's - USBC
Hickahala - 11 Lick to Lick Branch	77.9	803.6	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Large Gully in Silt 1
Hickahala - 11 Lick to Lick Branch	253.5	1633.6	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Cathey's - 04 12100 to US
Hickahala - 11 Lick to Lick Branch	179.1	1153.9	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Cathey's - 03 7500 to 12100
Hickahala - 11 Lick to Lick Branch	319.9	2061.5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Cathey's - 02 3500 to 7500
Hickahala - 11 Lick to Lick Branch	252.5	1627.1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Hickahala - USBC
Hickahala - 11 Lick to Lick Branch	375.7	2421.1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	South Fork - USBC
Hickahala - 11 Lick to Lick Branch	390.8	2518.1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	South Fork - 03 10000 to US
Hickahala - 11 Lick to Lick Branch	354.6	2285.2	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	South Fork - 02 4600 to 10000
Hickahala - 11 Lick to Lick Branch	601.5	3876.3	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Hickahala - 18 S. Fork to US
Hickahala - 11 Lick to Lick Branch	248.8	1603.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	South Fork - 01 DS to 4600
Hickahala - 11 Lick to Lick Branch	771.1	9982.4	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Surface Erosion Sand
Hickahala - 11 Lick to Lick Branch	1249.7	8052.9	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Hickahala - 17 109500 to S. Fork

Reach Key (text)	Clay (tons/yr)	Silt (tons/yr)	VFS (tons/yr)	FS (tons/yr)	MS (tons/yr)	CS (tons/yr)	VCS (tons/yr)	VFG (tons/yr)	FG (tons/yr)	MG (tons/yr)	CG (tons/yr)	VCG (tons/yr)	Comment (text)
Hickahala - 11 Lick to Lick Branch	0.5	5.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Silt 1
Hickahala - 11 Lick to Lick Branch	1944.9	12532.9	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Hickahala - 16 Cathey's to 109500
Hickahala - 11 Lick to Lick Branch	1545.3	9958.2	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Hickahala - 15 Beard's to Cathey's
Hickahala - 11 Lick to Lick Branch	0.1	1.1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Sand
Hickahala - 11 Lick to Lick Branch	5.9	60.4	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Major Bank Failure in Silt 1
Hickahala - 11 Lick to Lick Branch	87.	897.9	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Medium Gully in Silt 1
Hickahala - 11 Lick to Lick Branch	65.	419.2	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	White's - USBC
Hickahala - 11 Lick to Lick Branch	115.5	744.5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	White's - 03 8000 to US
Hickahala - 11 Lick to Lick Branch	1.6	21.6	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Small Gully in Sand
Hickahala - 11 Lick to Lick Branch	200.5	1292.1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	White's - 02 1968 Limits to 8000
Hickahala - 11 Lick to Lick Branch	1799.2	11594.2	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Hickahala - 14 White's to Beard's
Hickahala - 11 Lick to Lick Branch	0.9	12.2	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Major Bank Failure in Sand
Hickahala - 11 Lick to Lick Branch	27.7	386.3	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Large Gully in Sand
Hickahala - 11 Lick to Lick Branch	2.9	33.3	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Silt 2
Hickahala - 11 Lick to Lick Branch	225.4	2592.1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Medium Gully in Silt 2
Hickahala - 11 Lick to Lick Branch	6.1	70.6	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Major Bank Failure in Silt 2
Hickahala - 11 Lick to Lick Branch	13365.2	156111.6	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Surface Erosion Silt
Hickahala - 12 Lick Branch to Wolf	405.2	2611.2	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Beard's - USBC
Hickahala - 12 Lick Branch to Wolf	729.9	4703.3	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Beard's - 03 10800 Bridge to US
Hickahala - 12 Lick Branch to Wolf	230.4	1484.7	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Cathey's - USBC
Hickahala - 12 Lick Branch to Wolf	77.9	803.6	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Large Gully in Silt 1
Hickahala - 12 Lick Branch to Wolf	253.5	1633.6	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Cathey's - 04 12100 to US
Hickahala - 12 Lick Branch to Wolf	179.1	1153.9	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Cathey's - 03 7500 to 12100
Hickahala - 12 Lick Branch to Wolf	319.9	2061.5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Cathey's - 02 3500 to 7500
Hickahala - 12 Lick Branch to Wolf	252.5	1627.1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Hickahala - USBC
Hickahala - 12 Lick Branch to Wolf	375.7	2421.1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	South Fork - USBC
Hickahala - 12 Lick Branch to Wolf	390.8	2518.1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	South Fork - 03 10000 to US
Hickahala - 12 Lick Branch to Wolf	354.6	2285.2	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	South Fork - 02 4600 to 10000
Hickahala - 12 Lick Branch to Wolf	601.5	3876.3	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Hickahala - 18 S. Fork to US
Hickahala - 12 Lick Branch to Wolf	248.8	1603.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	South Fork - 01 DS to 4600
Hickahala - 12 Lick Branch to Wolf	771.1	9982.4	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Surface Erosion Sand

Reach Key (text)	Clay (tons/yr)	Silt (tons/yr)	VFS (tons/yr)	FS (tons/yr)	MS (tons/yr)	CS (tons/yr)	VCS (tons/yr)	VFG (tons/yr)	FG (tons/yr)	MG (tons/yr)	CG (tons/yr)	VCG (tons/yr)	Comment (text)
Hickahala - 12 Lick Branch to Wolf	1249.7	8052.9	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Hickahala - 17 109500 to S. Fork
Hickahala - 12 Lick Branch to Wolf	0.5	5.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Silt 1
Hickahala - 12 Lick Branch to Wolf	1944.9	12532.9	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Hickahala - 16 Cathey's to 109500
Hickahala - 12 Lick Branch to Wolf	1545.3	9958.2	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Hickahala - 15 Beard's to Cathey's
Hickahala - 12 Lick Branch to Wolf	0.1	1.1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Sand
Hickahala - 12 Lick Branch to Wolf	5.9	60.4	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Major Bank Failure in Silt 1
Hickahala - 12 Lick Branch to Wolf	87.	897.9	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Medium Gully in Silt 1
Hickahala - 12 Lick Branch to Wolf	65.	419.2	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	White's - USBC
Hickahala - 12 Lick Branch to Wolf	115.5	744.5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	White's - 03 8000 to US
Hickahala - 12 Lick Branch to Wolf	1.6	21.6	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Small Gully in Sand
Hickahala - 12 Lick Branch to Wolf	200.5	1292.1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	White's - 02 1968 Limits to 8000
Hickahala - 12 Lick Branch to Wolf	1799.2	11594.2	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Hickahala - 14 White's to Beard's
Hickahala - 12 Lick Branch to Wolf	0.9	12.2	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Major Bank Failure in Sand
Hickahala - 12 Lick Branch to Wolf	27.7	386.3	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Large Gully in Sand
Hickahala - 12 Lick Branch to Wolf	2.9	33.3	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Silt 2
Hickahala - 12 Lick Branch to Wolf	225.4	2592.1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Medium Gully in Silt 2
Hickahala - 12 Lick Branch to Wolf	6.1	70.6	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Major Bank Failure in Silt 2
Hickahala - 12 Lick Branch to Wolf	13028.6	152180.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Surface Erosion Silt
Hickahala - 13 Wolf to White's	405.2	2611.2	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Beard's - USBC
Hickahala - 13 Wolf to White's	729.9	4703.3	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Beard's - 03 10800 Bridge to US
Hickahala - 13 Wolf to White's	230.4	1484.7	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Cathey's - USBC
Hickahala - 13 Wolf to White's	77.9	803.6	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Large Gully in Silt 1
Hickahala - 13 Wolf to White's	253.5	1633.6	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Cathey's - 04 12100 to US
Hickahala - 13 Wolf to White's	179.1	1153.9	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Cathey's - 03 7500 to 12100
Hickahala - 13 Wolf to White's	319.9	2061.5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Cathey's - 02 3500 to 7500
Hickahala - 13 Wolf to White's	252.5	1627.1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Hickahala - USBC
Hickahala - 13 Wolf to White's	375.7	2421.1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	South Fork - USBC
Hickahala - 13 Wolf to White's	390.8	2518.1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	South Fork - 03 10000 to US
Hickahala - 13 Wolf to White's	354.6	2285.2	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	South Fork - 02 4600 to 10000
Hickahala - 13 Wolf to White's	601.5	3876.3	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Hickahala - 18 S. Fork to US
Hickahala - 13 Wolf to White's	248.8	1603.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	South Fork - 01 DS to 4600

Reach Key (text)	Clay (tons/yr)	Silt (tons/yr)	VFS (tons/yr)	FS (tons/yr)	MS (tons/yr)	CS (tons/yr)	VCS (tons/yr)	VFG (tons/yr)	FG (tons/yr)	MG (tons/yr)	CG (tons/yr)	VCG (tons/yr)	Comment (text)
Hickahala - 13 Wolf to White's	771.1	9982.4	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Surface Erosion Sand
Hickahala - 13 Wolf to White's	1249.7	8052.9	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Hickahala - 17 109500 to S. Fork
Hickahala - 13 Wolf to White's	0.5	5.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Silt 1
Hickahala - 13 Wolf to White's	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Cathey's - 01 DS to 3500
Hickahala - 13 Wolf to White's	1944.9	12532.9	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Hickahala - 16 Cathey's to 109500
Hickahala - 13 Wolf to White's	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Beard's - 01 DS to 1968 Limits
Hickahala - 13 Wolf to White's	1545.3	9958.2	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Hickahala - 15 Beard's to Cathey's
Hickahala - 13 Wolf to White's	2.2	25.2	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Major Bank Failure in Silt 2
Hickahala - 13 Wolf to White's	0.1	1.1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Sand
Hickahala - 13 Wolf to White's	2.2	25.7	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Silt 2
Hickahala - 13 Wolf to White's	54.1	622.1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Medium Gully in Silt 2
Hickahala - 13 Wolf to White's	5.9	60.4	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Major Bank Failure in Silt 1
Hickahala - 13 Wolf to White's	87.	897.9	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Medium Gully in Silt 1
Hickahala - 13 Wolf to White's	65.	419.2	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	White's - USBC
Hickahala - 13 Wolf to White's	115.5	744.5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	White's - 03 8000 to US
Hickahala - 13 Wolf to White's	1.6	21.6	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Small Gully in Sand
Hickahala - 13 Wolf to White's	200.5	1292.1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	White's - 02 1968 Limits to 8000
Hickahala - 13 Wolf to White's	1799.2	11594.2	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Hickahala - 14 White's to Beard's
Hickahala - 13 Wolf to White's	6150.5	71840.7	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Surface Erosion Silt
Hickahala - 14 White's to Beard's	405.2	2611.2	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Beard's - USBC
Hickahala - 14 White's to Beard's	729.9	4703.3	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Beard's - 03 10800 Bridge to US
Hickahala - 14 White's to Beard's	230.4	1484.7	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Cathey's - USBC
Hickahala - 14 White's to Beard's	77.9	803.6	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Large Gully in Silt 1
Hickahala - 14 White's to Beard's	253.5	1633.6	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Cathey's - 04 12100 to US
Hickahala - 14 White's to Beard's	179.1	1153.9	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Cathey's - 03 7500 to 12100
Hickahala - 14 White's to Beard's	319.9	2061.5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Cathey's - 02 3500 to 7500
Hickahala - 14 White's to Beard's	252.5	1627.1	40.4	170.2	131.	30.3	10.5	17.	1.3	0.	0.	0.	Hickahala - USBC
Hickahala - 14 White's to Beard's	375.7	2421.1	60.	253.3	194.9	45.1	15.6	25.3	1.9	0.	0.	0.	South Fork - USBC
Hickahala - 14 White's to Beard's	390.8	2518.1	62.4	263.4	202.7	46.9	16.3	26.3	2.	0.	0.	0.	South Fork - 03 10000 to US
Hickahala - 14 White's to Beard's	354.6	2285.2	56.7	239.1	184.	42.6	14.7	23.9	1.8	0.	0.	0.	South Fork - 02 4600 to 10000
Hickahala - 14 White's to Beard's	601.5	3876.3	96.1	405.5	312.1	72.2	25.	40.6	3.1	0.	0.	0.	Hickahala - 18 S. Fork to US

Reach Key (text)	Clay (tons/yr)	Silt (tons/yr)	VFS (tons/yr)	FS (tons/yr)	MS (tons/yr)	CS (tons/yr)	VCS (tons/yr)	VFG (tons/yr)	FG (tons/yr)	MG (tons/yr)	CG (tons/yr)	VCG (tons/yr)	Comment (text)
Hickahala - 14 White's to Beard's	248.8	1603.	39.8	167.7	129.1	29.9	10.3	16.8	1.3	0.	0.	0.	South Fork - 01 DS to 4600
Hickahala - 14 White's to Beard's	771.1	9982.4	648.4	4019.8	9539.4	2980.1	311.	345.5	0.	0.	0.	0.	Surface Erosion Sand
Hickahala - 14 White's to Beard's	1249.7	8052.9	199.7	842.5	648.3	150.	52.	84.2	6.4	0.	0.	0.	Hickahala - 17 109500 to S. Fork
Hickahala - 14 White's to Beard's	0.5	5.	0.3	1.1	1.	0.2	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Silt 1
Hickahala - 14 White's to Beard's	73.6	759.7	31.8	108.6	107.2	23.7	4.4	4.7	0.	0.	0.	0.	Medium Gully in Silt 1
Hickahala - 14 White's to Beard's	0.	0.	574.9	1567.7	3798.1	1404.7	148.8	3.4	1.5	0.	0.	0.	Cathey's - 01 DS to 3500
Hickahala - 14 White's to Beard's	1944.9	12532.9	310.8	1311.2	1009.	233.5	80.9	131.1	9.9	0.	0.	0.	Hickahala - 16 Cathey's to 109500
Hickahala - 14 White's to Beard's	0.	0.	235.7	747.4	2056.4	876.4	97.2	0.8	0.3	0.	0.	0.	Beard's - 01 DS to 1968 Limits
Hickahala - 14 White's to Beard's	1545.3	9958.2	247.	1041.8	801.7	185.5	64.3	104.2	7.9	0.	0.	0.	Hickahala - 15 Beard's to Cathey's
Hickahala - 14 White's to Beard's	4.6	47.	2.4	8.4	8.3	1.8	0.3	0.4	0.	0.	0.	0.	Major Bank Failure in Silt 1
Hickahala - 14 White's to Beard's	2.2	25.2	0.1	0.4	0.3	0.1	0.	0.	0.	0.	0.	0.	Major Bank Failure in Silt 2
Hickahala - 14 White's to Beard's	0.1	1.1	0.1	0.9	1.	0.2	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Sand
Hickahala - 14 White's to Beard's	2.2	25.7	0.2	0.6	0.4	0.1	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Silt 2
Hickahala - 14 White's to Beard's	54.1	622.1	9.2	23.8	18.3	4.1	1.8	1.4	0.4	0.2	0.	0.	Medium Gully in Silt 2
Hickahala - 14 White's to Beard's	4992.8	58318.5	1469.9	5021.1	4099.1	751.8	238.3	232.8	0.	0.	0.	0.	Surface Erosion Silt
Hickahala - 15 Beard's to Cathey's	230.4	1484.7	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Cathey's - USBC
Hickahala - 15 Beard's to Cathey's	77.9	803.6	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Large Gully in Silt 1
Hickahala - 15 Beard's to Cathey's	253.5	1633.6	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Cathey's - 04 12100 to US
Hickahala - 15 Beard's to Cathey's	179.1	1153.9	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Cathey's - 03 7500 to 12100
Hickahala - 15 Beard's to Cathey's	319.9	2061.5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Cathey's - 02 3500 to 7500
Hickahala - 15 Beard's to Cathey's	252.5	1627.1	40.4	170.2	131.	30.3	10.5	17.	1.3	0.	0.	0.	Hickahala - USBC
Hickahala - 15 Beard's to Cathey's	375.7	2421.1	60.	253.3	194.9	45.1	15.6	25.3	1.9	0.	0.	0.	South Fork - USBC
Hickahala - 15 Beard's to Cathey's	390.8	2518.1	62.4	263.4	202.7	46.9	16.3	26.3	2.	0.	0.	0.	South Fork - 03 10000 to US
Hickahala - 15 Beard's to Cathey's	354.6	2285.2	56.7	239.1	184.	42.6	14.7	23.9	1.8	0.	0.	0.	South Fork - 02 4600 to 10000
Hickahala - 15 Beard's to Cathey's	601.5	3876.3	96.1	405.5	312.1	72.2	25.	40.6	3.1	0.	0.	0.	Hickahala - 18 S. Fork to US
Hickahala - 15 Beard's to Cathey's	248.8	1603.	39.8	167.7	129.1	29.9	10.3	16.8	1.3	0.	0.	0.	South Fork - 01 DS to 4600
Hickahala - 15 Beard's to Cathey's	4.2	43.6	2.2	7.5	7.4	1.6	0.3	0.3	0.	0.	0.	0.	Major Bank Failure in Silt 1
Hickahala - 15 Beard's to Cathey's	0.4	5.	0.1	0.2	0.1	0.	0.	0.	0.	0.	0.	0.	Major Bank Failure in Silt 2
Hickahala - 15 Beard's to Cathey's	27.	311.	4.6	11.9	9.1	2.1	0.9	0.7	0.2	0.1	0.	0.	Medium Gully in Silt 2
Hickahala - 15 Beard's to Cathey's	771.1	9982.4	648.4	4019.8	9539.4	2980.1	311.	345.5	0.	0.	0.	0.	Surface Erosion Sand
Hickahala - 15 Beard's to Cathey's	1249.7	8052.9	199.7	842.5	648.3	150.	52.	84.2	6.4	0.	0.	0.	Hickahala - 17 109500 to S. Fork

Reach Key (text)	Clay (tons/yr)	Silt (tons/yr)	VFS (tons/yr)	FS (tons/yr)	MS (tons/yr)	CS (tons/yr)	VCS (tons/yr)	VFG (tons/yr)	FG (tons/yr)	MG (tons/yr)	CG (tons/yr)	VCG (tons/yr)	Comment (text)
Hickahala - 15 Beard's to Cathey's	0.5	5.	0.3	1.1	1.	0.2	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Silt 1
Hickahala - 15 Beard's to Cathey's	0.4	4.5	0.1	0.2	0.1	0.	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Silt 2
Hickahala - 15 Beard's to Cathey's	73.6	759.7	31.8	108.6	107.2	23.7	4.4	4.7	0.	0.	0.	0.	Medium Gully in Silt 1
Hickahala - 15 Beard's to Cathey's	0.	0.	574.9	1567.7	3798.1	1404.7	148.8	3.4	1.5	0.	0.	0.	Cathey's - 01 DS to 3500
Hickahala - 15 Beard's to Cathey's	1944.9	12532.9	310.8	1311.2	1009.	233.5	80.9	131.1	9.9	0.	0.	0.	Hickahala - 16 Cathey's to 109500
Hickahala - 15 Beard's to Cathey's	2133.5	24919.9	847.4	2894.6	2363.	433.4	137.4	134.2	0.	0.	0.	0.	Surface Erosion Silt
Hickahala - 16 Cathey's to 109500	252.5	1627.1	40.4	170.2	131.	30.3	10.5	17.	1.3	0.	0.	0.	Hickahala - USBC
Hickahala - 16 Cathey's to 109500	375.7	2421.1	60.	253.3	194.9	45.1	15.6	25.3	1.9	0.	0.	0.	South Fork - USBC
Hickahala - 16 Cathey's to 109500	390.8	2518.1	62.4	263.4	202.7	46.9	16.3	26.3	2.	0.	0.	0.	South Fork - 03 10000 to US
Hickahala - 16 Cathey's to 109500	354.6	2285.2	56.7	239.1	184.	42.6	14.7	23.9	1.8	0.	0.	0.	South Fork - 02 4600 to 10000
Hickahala - 16 Cathey's to 109500	601.5	3876.3	96.1	405.5	312.1	72.2	25.	40.6	3.1	0.	0.	0.	Hickahala - 18 S. Fork to US
Hickahala - 16 Cathey's to 109500	248.8	1603.	39.8	167.7	129.1	29.9	10.3	16.8	1.3	0.	0.	0.	South Fork - 01 DS to 4600
Hickahala - 16 Cathey's to 109500	2.8	28.5	2.2	7.5	7.4	1.6	0.3	0.3	0.	0.	0.	0.	Major Bank Failure in Silt 1
Hickahala - 16 Cathey's to 109500	0.4	5.	0.1	0.2	0.1	0.	0.	0.	0.	0.	0.	0.	Major Bank Failure in Silt 2
Hickahala - 16 Cathey's to 109500	27.	311.	4.6	11.9	9.1	2.1	0.9	0.7	0.2	0.1	0.	0.	Medium Gully in Silt 2
Hickahala - 16 Cathey's to 109500	545.6	7063.3	648.4	4019.8	9539.4	2980.1	311.	345.5	0.	0.	0.	0.	Surface Erosion Sand
Hickahala - 16 Cathey's to 109500	1249.7	8052.9	199.7	842.5	648.3	150.	52.	84.2	6.4	0.	0.	0.	Hickahala - 17 109500 to S. Fork
Hickahala - 16 Cathey's to 109500	0.4	4.	0.3	1.1	1.	0.2	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Silt 1
Hickahala - 16 Cathey's to 109500	0.4	4.5	0.1	0.2	0.1	0.	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Silt 2
Hickahala - 16 Cathey's to 109500	40.2	414.4	31.8	108.6	107.2	23.7	4.4	4.7	0.	0.	0.	0.	Medium Gully in Silt 1
Hickahala - 16 Cathey's to 109500	2033.2	23748.3	807.5	2758.5	2251.9	413.	130.9	127.9	0.	0.	0.	0.	Surface Erosion Silt
Hickahala - 17 109500 to S. Fork	252.5	1627.1	40.4	170.2	131.	30.3	10.5	17.	1.3	0.	0.	0.	Hickahala - USBC
Hickahala - 17 109500 to S. Fork	375.7	2421.1	60.	253.3	194.9	45.1	15.6	25.3	1.9	0.	0.	0.	South Fork - USBC
Hickahala - 17 109500 to S. Fork	390.8	2518.1	62.4	263.4	202.7	46.9	16.3	26.3	2.	0.	0.	0.	South Fork - 03 10000 to US
Hickahala - 17 109500 to S. Fork	33.5	345.3	26.5	90.5	89.4	19.8	3.6	3.9	0.	0.	0.	0.	Medium Gully in Silt 1
Hickahala - 17 109500 to S. Fork	354.6	2285.2	56.7	239.1	184.	42.6	14.7	23.9	1.8	0.	0.	0.	South Fork - 02 4600 to 10000
Hickahala - 17 109500 to S. Fork	1667.7	19479.2	662.4	2262.6	1847.1	338.8	107.4	104.9	0.	0.	0.	0.	Surface Erosion Silt
Hickahala - 17 109500 to S. Fork	601.5	3876.3	96.1	405.5	312.1	72.2	25.	40.6	3.1	0.	0.	0.	Hickahala - 18 S. Fork to US
Hickahala - 17 109500 to S. Fork	248.8	1603.	39.8	167.7	129.1	29.9	10.3	16.8	1.3	0.	0.	0.	South Fork - 01 DS to 4600
Hickahala - 17 109500 to S. Fork	2.8	28.5	2.2	7.5	7.4	1.6	0.3	0.3	0.	0.	0.	0.	Major Bank Failure in Silt 1
Hickahala - 17 109500 to S. Fork	0.4	5.	0.1	0.2	0.1	0.	0.	0.	0.	0.	0.	0.	Major Bank Failure in Silt 2

Reach Key (text)	Clay (tons/yr)	Silt (tons/yr)	VFS (tons/yr)	FS (tons/yr)	MS (tons/yr)	CS (tons/yr)	VCS (tons/yr)	VFG (tons/yr)	FG (tons/yr)	MG (tons/yr)	CG (tons/yr)	VCG (tons/yr)	Comment (text)
Hickahala - 17 109500 to S. Fork	0.3	3.	0.2	0.8	0.8	0.2	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Silt 1
Hickahala - 17 109500 to S. Fork	0.1	1.5	0.	0.1	0.	0.	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Silt 2
Hickahala - 17 109500 to S. Fork	27.	311.	4.6	11.9	9.1	2.1	0.9	0.7	0.2	0.1	0.	0.	Medium Gully in Silt 2
Hickahala - 17 109500 to S. Fork	545.6	7063.3	648.4	4019.8	9539.4	2980.1	311.	345.5	0.	0.	0.	0.	Surface Erosion Sand
Hickahala - 18 S. Fork to US	13.4	138.1	10.6	36.2	35.7	7.9	1.5	1.6	0.	0.	0.	0.	Medium Gully in Silt 1
Hickahala - 18 S. Fork to US	252.5	1627.1	40.4	170.2	131.	30.3	10.5	17.	1.3	0.	0.	0.	Hickahala - USBC
Hickahala - 18 S. Fork to US	1.	10.1	0.8	2.6	2.6	0.6	0.1	0.1	0.	0.	0.	0.	Major Bank Failure in Silt 1
Hickahala - 18 S. Fork to US	831.3	9709.8	330.2	1127.9	920.7	168.9	53.5	52.3	0.	0.	0.	0.	Surface Erosion Silt
Hickahala - USBC	343.4	4011.	136.4	465.9	380.3	69.8	22.1	21.6	0.	0.	0.	0.	Surface Erosion Silt
Hickahala - USBC	0.7	6.7	0.5	1.8	1.7	0.4	0.1	0.1	0.	0.	0.	0.	Major Bank Failure in Silt 1
Hickahala - USBC	13.4	138.1	10.6	36.2	35.7	7.9	1.5	1.6	0.	0.	0.	0.	Medium Gully in Silt 1
James Wolf - 01 DS to 1968 Limits	0.9	12.2	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Major Bank Failure in Sand
James Wolf - 01 DS to 1968 Limits	27.7	386.3	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Large Gully in Sand
James Wolf - 01 DS to 1968 Limits	0.7	7.6	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Silt 2
James Wolf - 01 DS to 1968 Limits	171.3	1970.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Medium Gully in Silt 2
James Wolf - 01 DS to 1968 Limits	3.9	45.4	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Major Bank Failure in Silt 2
James Wolf - 01 DS to 1968 Limits	6575.5	76804.8	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Surface Erosion Silt
James Wolf - 02 1968 Limits to M. Dale	0.9	12.2	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Major Bank Failure in Sand
James Wolf - 02 1968 Limits to M. Dale	27.7	386.3	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Large Gully in Sand
James Wolf - 02 1968 Limits to M. Dale	3.1	35.3	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Major Bank Failure in Silt 2
James Wolf - 02 1968 Limits to M. Dale	0.7	7.6	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Silt 2
James Wolf - 02 1968 Limits to M. Dale	171.3	1970.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Medium Gully in Silt 2
James Wolf - 02 1968 Limits to M. Dale	5069.3	59212.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Surface Erosion Silt
James Wolf - 03 M. Dale to 34000	0.9	12.2	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Major Bank Failure in Sand
James Wolf - 03 M. Dale to 34000	27.7	386.3	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Large Gully in Sand
James Wolf - 03 M. Dale to 34000	1.8	20.2	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Major Bank Failure in Silt 2
James Wolf - 03 M. Dale to 34000	18.	207.4	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Medium Gully in Silt 2
James Wolf - 03 M. Dale to 34000	2546.6	29745.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Surface Erosion Silt
James Wolf - 04 34000 to 45500	0.9	12.2	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Major Bank Failure in Sand
James Wolf - 04 34000 to 45500	27.7	386.3	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Large Gully in Sand
James Wolf - 04 34000 to 45500	1.8	20.2	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Major Bank Failure in Silt 2

Reach Key (text)	Clay (tons/yr)	Silt (tons/yr)	VFS (tons/yr)	FS (tons/yr)	MS (tons/yr)	CS (tons/yr)	VCS (tons/yr)	VFG (tons/yr)	FG (tons/yr)	MG (tons/yr)	CG (tons/yr)	VCG (tons/yr)	Comment (text)
James Wolf - 04 34000 to 45500	2266.1	26468.7	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Surface Erosion Silt
James Wolf - 05 45500 to US	0.9	12.2	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Major Bank Failure in Sand
James Wolf - 05 45500 to US	27.7	386.3	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Large Gully in Sand
James Wolf - 05 45500 to US	0.4	5.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Major Bank Failure in Silt 2
James Wolf - 05 45500 to US	1813.9	21186.9	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Surface Erosion Silt
James Wolf - USBC	1176.4	13740.7	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Surface Erosion Silt
James Wolf - USBC	0.9	12.2	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Major Bank Failure in Sand
James Wolf - USBC	27.7	386.3	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Large Gully in Sand
Martin Dale - 01 DS to 4500	1.3	15.1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Major Bank Failure in Silt 2
Martin Dale - 01 DS to 4500	135.2	1555.2	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Medium Gully in Silt 2
Martin Dale - 01 DS to 4500	1734.	20253.6	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Surface Erosion Silt
Martin Dale - 02 4500 to US	1.3	15.1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Major Bank Failure in Silt 2
Martin Dale - 02 4500 to US	117.2	1347.9	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Medium Gully in Silt 2
Martin Dale - 02 4500 to US	759.9	8875.8	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Surface Erosion Silt
Martin Dale - USBC	523.6	6115.8	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Surface Erosion Silt
Martin Dale - USBC	0.2	2.5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Major Bank Failure in Silt 2
Mattic - 01 DS to Nelson	7.5	77.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Small Gully in Silt 1
Mattic - 01 DS to Nelson	0.8	9.1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Silt 2
Mattic - 01 DS to Nelson	2.2	25.2	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Major Bank Failure in Silt 2
Mattic - 01 DS to Nelson	36.1	414.7	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Medium Gully in Silt 2
Mattic - 01 DS to Nelson	2.	27.3	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Major Bank Failure in Sand
Mattic - 01 DS to Nelson	0.5	5.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Major Bank Failure in Silt 1
Mattic - 01 DS to Nelson	0.2	3.4	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Sand
Mattic - 01 DS to Nelson	6.7	69.1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Medium Gully in Silt 1
Mattic - 01 DS to Nelson	25.	348.6	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Medium Gully in Sand
Mattic - 01 DS to Nelson	4562.7	53294.8	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Surface Erosion Silt
Mattic - 02 Nelson to 13000	0.3	3.4	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Major Bank Failure in Silt 1
Mattic - 02 Nelson to 13000	7.5	77.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Small Gully in Silt 1
Mattic - 02 Nelson to 13000	0.1	1.7	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Sand
Mattic - 02 Nelson to 13000	0.8	9.1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Silt 2
Mattic - 02 Nelson to 13000	8.3	116.2	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Medium Gully in Sand

Reach Key (text)	Clay (tons/yr)	Silt (tons/yr)	VFS (tons/yr)	FS (tons/yr)	MS (tons/yr)	CS (tons/yr)	VCS (tons/yr)	VFG (tons/yr)	FG (tons/yr)	MG (tons/yr)	CG (tons/yr)	VCG (tons/yr)	Comment (text)
Mattic - 02 Nelson to 13000	2034.9	23768.2	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Surface Erosion Silt
Mattic - 03 13000 to US	5.6	77.5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Medium Gully in Sand
Mattic - 03 13000 to US	0.3	3.4	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Major Bank Failure in Silt 1
Mattic - 03 13000 to US	0.1	1.1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Sand
Mattic - 03 13000 to US	0.3	3.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Silt 2
Mattic - 03 13000 to US	7.5	77.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Small Gully in Silt 1
Mattic - 03 13000 to US	1803.7	21067.7	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Surface Erosion Silt
Mattic - USBC	1196.8	13979.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Surface Erosion Silt
Mattic - USBC	0.	0.6	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Sand
Mattic - USBC	5.6	77.5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Medium Gully in Sand
Nelson - 01 DS to Wilborn	2.2	25.2	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Major Bank Failure in Silt 2
Nelson - 01 DS to Wilborn	36.1	414.7	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Medium Gully in Silt 2
Nelson - 01 DS to Wilborn	2.	27.3	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Major Bank Failure in Sand
Nelson - 01 DS to Wilborn	0.2	1.7	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Major Bank Failure in Silt 1
Nelson - 01 DS to Wilborn	0.1	1.7	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Sand
Nelson - 01 DS to Wilborn	6.7	69.1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Medium Gully in Silt 1
Nelson - 01 DS to Wilborn	16.7	232.4	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Medium Gully in Sand
Nelson - 01 DS to Wilborn	2361.3	27580.6	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Surface Erosion Silt
Nelson - 02 Wilborn to US	13.9	193.7	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Medium Gully in Sand
Nelson - 02 Wilborn to US	1.4	19.8	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Major Bank Failure in Sand
Nelson - 02 Wilborn to US	2.2	25.2	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Major Bank Failure in Silt 2
Nelson - 02 Wilborn to US	36.1	414.7	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Medium Gully in Silt 2
Nelson - 02 Wilborn to US	1195.1	13959.1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Surface Erosion Silt
Nelson - USBC	834.7	9749.5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Surface Erosion Silt
Nelson - USBC	1.4	18.8	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Major Bank Failure in Sand
Nelson - USBC	13.9	193.7	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Medium Gully in Sand
Senatobia - 01 DS to Res. Bound.	7.5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Small Gully in Silt 1
Senatobia - 01 DS to Res. Bound.	2.2	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Major Bank Failure in Silt 2
Senatobia - 01 DS to Res. Bound.	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Major Bank Failure in Sand
Senatobia - 01 DS to Res. Bound.	0.2	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Sand
Senatobia - 01 DS to Res. Bound.	25.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Medium Gully in Sand

Reach Key (text)	Clay (tons/yr)	Silt (tons/yr)	VFS (tons/yr)	FS (tons/yr)	MS (tons/yr)	CS (tons/yr)	VCS (tons/yr)	VFG (tons/yr)	FG (tons/yr)	MG (tons/yr)	CG (tons/yr)	VCG (tons/yr)	Comment (text)
Senatobia - 01 DS to Res. Bound.	2.6	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Major Bank Failure in Silt 1
Senatobia - 01 DS to Res. Bound.	107.1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Medium Gully in Silt 1
Senatobia - 01 DS to Res. Bound.	26.5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Tolbert-Jones - USBC
Senatobia - 01 DS to Res. Bound.	0.6	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Silt 1
Senatobia - 01 DS to Res. Bound.	72.1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Tolbert-Jones - 02 3000 to US
Senatobia - 01 DS to Res. Bound.	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Silt 2
Senatobia - 01 DS to Res. Bound.	72.1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Medium Gully in Silt 2
Senatobia - 01 DS to Res. Bound.	10679.3	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Surface Erosion Silt
Senatobia - 01 DS to Res. Bound.	130.3	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Surface Erosion Sand
Senatobia - 02 Res. Bound. to 15000	7.5	77.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Small Gully in Silt 1
Senatobia - 02 Res. Bound. to 15000	2.2	25.2	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Major Bank Failure in Silt 2
Senatobia - 02 Res. Bound. to 15000	2.	27.3	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Major Bank Failure in Sand
Senatobia - 02 Res. Bound. to 15000	0.2	3.4	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Sand
Senatobia - 02 Res. Bound. to 15000	25.	348.6	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Medium Gully in Sand
Senatobia - 02 Res. Bound. to 15000	2.6	26.9	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Major Bank Failure in Silt 1
Senatobia - 02 Res. Bound. to 15000	107.1	1105.1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Medium Gully in Silt 1
Senatobia - 02 Res. Bound. to 15000	26.5	170.7	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Tolbert-Jones - USBC
Senatobia - 02 Res. Bound. to 15000	0.6	6.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Silt 1
Senatobia - 02 Res. Bound. to 15000	72.1	464.6	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Tolbert-Jones - 02 3000 to US
Senatobia - 02 Res. Bound. to 15000	2.	22.7	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Silt 2
Senatobia - 02 Res. Bound. to 15000	72.1	829.5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Medium Gully in Silt 2
Senatobia - 02 Res. Bound. to 15000	10679.3	124738.3	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Surface Erosion Silt
Senatobia - 02 Res. Bound. to 15000	88.8	1149.5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Surface Erosion Sand
Senatobia - 03 15000 to G. Springs	7.5	77.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Small Gully in Silt 1
Senatobia - 03 15000 to G. Springs	2.2	25.2	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Major Bank Failure in Silt 2
Senatobia - 03 15000 to G. Springs	2.	27.3	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Major Bank Failure in Sand
Senatobia - 03 15000 to G. Springs	0.2	3.4	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Sand
Senatobia - 03 15000 to G. Springs	25.	348.6	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Medium Gully in Sand
Senatobia - 03 15000 to G. Springs	2.6	26.9	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Major Bank Failure in Silt 1
Senatobia - 03 15000 to G. Springs	107.1	1105.1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Medium Gully in Silt 1
Senatobia - 03 15000 to G. Springs	26.5	170.7	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Tolbert-Jones - USBC

Reach Key (text)	Clay (tons/yr)	Silt (tons/yr)	VFS (tons/yr)	FS (tons/yr)	MS (tons/yr)	CS (tons/yr)	VCS (tons/yr)	VFG (tons/yr)	FG (tons/yr)	MG (tons/yr)	CG (tons/yr)	VCG (tons/yr)	Comment (text)
Senatobia - 03 15000 to G. Springs	0.6	6.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Silt 1
Senatobia - 03 15000 to G. Springs	72.1	464.6	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Tolbert-Jones - 02 3000 to US
Senatobia - 03 15000 to G. Springs	2.	22.7	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Silt 2
Senatobia - 03 15000 to G. Springs	72.1	829.5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Medium Gully in Silt 2
Senatobia - 03 15000 to G. Springs	10679.3	124738.3	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Surface Erosion Silt
Senatobia - 04 G. Springs to Mattic	7.5	77.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Small Gully in Silt 1
Senatobia - 04 G. Springs to Mattic	2.2	25.2	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Major Bank Failure in Silt 2
Senatobia - 04 G. Springs to Mattic	2.	27.3	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Major Bank Failure in Sand
Senatobia - 04 G. Springs to Mattic	0.2	3.4	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Sand
Senatobia - 04 G. Springs to Mattic	25.	348.6	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Medium Gully in Sand
Senatobia - 04 G. Springs to Mattic	2.6	26.9	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Major Bank Failure in Silt 1
Senatobia - 04 G. Springs to Mattic	107.1	1105.1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Medium Gully in Silt 1
Senatobia - 04 G. Springs to Mattic	26.5	170.7	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Tolbert-Jones - USBC
Senatobia - 04 G. Springs to Mattic	0.6	6.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Silt 1
Senatobia - 04 G. Springs to Mattic	72.1	464.6	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Tolbert-Jones - 02 3000 to US
Senatobia - 04 G. Springs to Mattic	2.	22.7	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Silt 2
Senatobia - 04 G. Springs to Mattic	72.1	829.5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Medium Gully in Silt 2
Senatobia - 04 G. Springs to Mattic	9497.8	110938.1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Surface Erosion Silt
Senatobia - 05 Mattic to T. Jones	2.1	21.8	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Major Bank Failure in Silt 1
Senatobia - 05 Mattic to T. Jones	100.4	1036.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Medium Gully in Silt 1
Senatobia - 05 Mattic to T. Jones	26.5	170.7	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Tolbert-Jones - USBC
Senatobia - 05 Mattic to T. Jones	0.6	6.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Silt 1
Senatobia - 05 Mattic to T. Jones	72.1	464.6	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Tolbert-Jones - 02 3000 to US
Senatobia - 05 Mattic to T. Jones	1.2	13.6	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Silt 2
Senatobia - 05 Mattic to T. Jones	36.1	414.7	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Medium Gully in Silt 2
Senatobia - 05 Mattic to T. Jones	4605.2	53791.2	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Surface Erosion Silt
Senatobia - 06 T. Jones to 46000	1.5	15.1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Major Bank Failure in Silt 1
Senatobia - 06 T. Jones to 46000	80.3	828.8	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Medium Gully in Silt 1
Senatobia - 06 T. Jones to 46000	0.9	10.6	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Silt 2
Senatobia - 06 T. Jones to 46000	3631.2	42413.4	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Surface Erosion Silt
Senatobia - 07 46000 to 62000	1.5	15.1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Major Bank Failure in Silt 1

Reach Key (text)	Clay (tons/yr)	Silt (tons/yr)	VFS (tons/yr)	FS (tons/yr)	MS (tons/yr)	CS (tons/yr)	VCS (tons/yr)	VFG (tons/yr)	FG (tons/yr)	MG (tons/yr)	CG (tons/yr)	VCG (tons/yr)	Comment (text)
Senatobia - 07 46000 to 62000	80.3	828.8	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Medium Gully in Silt 1
Senatobia - 07 46000 to 62000	2825.4	33001.5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Surface Erosion Silt
Senatobia - 08 62000 to US	1.1	11.8	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Major Bank Failure in Silt 1
Senatobia - 08 62000 to US	46.8	483.5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Medium Gully in Silt 1
Senatobia - 08 62000 to US	1711.9	19995.5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Surface Erosion Silt
Senatobia - USBC	895.9	10464.4	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Surface Erosion Silt
Senatobia - USBC	0.5	5.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Major Bank Failure in Silt 1
South Fork - 01 DS to 4600	375.7	2421.1	60.	253.3	194.9	45.1	15.6	25.3	1.9	0.	0.	0.	South Fork - USBC
South Fork - 01 DS to 4600	390.8	2518.1	62.4	263.4	202.7	46.9	16.3	26.3	2.	0.	0.	0.	South Fork - 03 10000 to US
South Fork - 01 DS to 4600	20.1	207.2	15.9	54.3	53.6	11.9	2.2	2.3	0.	0.	0.	0.	Medium Gully in Silt 1
South Fork - 01 DS to 4600	354.6	2285.2	56.7	239.1	184.	42.6	14.7	23.9	1.8	0.	0.	0.	South Fork - 02 4600 to 10000
South Fork - 01 DS to 4600	1.5	15.1	1.2	4.	3.9	0.9	0.2	0.2	0.	0.	0.	0.	Major Bank Failure in Silt 1
South Fork - 01 DS to 4600	0.1	1.	0.1	0.3	0.3	0.1	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Silt 1
South Fork - 01 DS to 4600	836.4	9769.4	332.2	1134.8	926.4	169.9	53.9	52.6	0.	0.	0.	0.	Surface Erosion Silt
South Fork - 02 4600 to 10000	375.7	2421.1	60.	253.3	194.9	45.1	15.6	25.3	1.9	0.	0.	0.	South Fork - USBC
South Fork - 02 4600 to 10000	390.8	2518.1	62.4	263.4	202.7	46.9	16.3	26.3	2.	0.	0.	0.	South Fork - 03 10000 to US
South Fork - 02 4600 to 10000	1.3	13.4	1.	3.5	3.5	0.8	0.1	0.2	0.	0.	0.	0.	Major Bank Failure in Silt 1
South Fork - 02 4600 to 10000	20.1	207.2	15.9	54.3	53.6	11.9	2.2	2.3	0.	0.	0.	0.	Medium Gully in Silt 1
South Fork - 02 4600 to 10000	737.8	8617.7	293.	1001.	817.2	149.9	47.5	46.4	0.	0.	0.	0.	Surface Erosion Silt
South Fork - 03 10000 to US	334.9	3911.7	133.	454.4	370.9	68.	21.6	21.1	0.	0.	0.	0.	Surface Erosion Silt
South Fork - 03 10000 to US	0.8	8.4	0.6	2.2	2.2	0.5	0.1	0.1	0.	0.	0.	0.	Major Bank Failure in Silt 1
South Fork - 03 10000 to US	375.7	2421.1	60.	253.3	194.9	45.1	15.6	25.3	1.9	0.	0.	0.	South Fork - USBC
South Fork - 03 10000 to US	13.4	138.1	10.6	36.2	35.7	7.9	1.5	1.6	0.	0.	0.	0.	Medium Gully in Silt 1
South Fork - USBC	334.9	3911.7	133.	454.4	370.9	68.	21.6	21.1	0.	0.	0.	0.	Surface Erosion Silt
South Fork - USBC	0.8	8.4	0.6	2.2	2.2	0.5	0.1	0.1	0.	0.	0.	0.	Major Bank Failure in Silt 1
South Fork - USBC	6.7	69.1	5.3	18.1	17.9	4.	0.7	0.8	0.	0.	0.	0.	Medium Gully in Silt 1
Steammill - 01 DS to 5200	1.	10.1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Major Bank Failure in Silt 1
Steammill - 01 DS to 5200	0.2	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Silt 1
Steammill - 01 DS to 5200	7.5	77.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Small Gully in Silt 1
Steammill - 01 DS to 5200	385.9	4507.4	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Surface Erosion Silt
Steammill - 02 5200 to US	62.9	734.7	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Surface Erosion Silt

Reach Key (text)	Clay (tons/yr)	Silt (tons/yr)	VFS (tons/yr)	FS (tons/yr)	MS (tons/yr)	CS (tons/yr)	VCS (tons/yr)	VFG (tons/yr)	FG (tons/yr)	MG (tons/yr)	CG (tons/yr)	VCG (tons/yr)	Comment (text)
Steammill - USBC	62.9	734.7	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Surface Erosion Silt
Thornton - 01 DS to 1968 Limits	1.	10.1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Major Bank Failure in Silt 1
Thornton - 01 DS to 1968 Limits	1.3	13.1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Silt 1
Thornton - 01 DS to 1968 Limits	22.4	231.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Small Gully in Silt 1
Thornton - 01 DS to 1968 Limits	756.5	8836.1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Surface Erosion Silt
Thornton - 02 1968 Limits to Steammill	1.	10.1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Major Bank Failure in Silt 1
Thornton - 02 1968 Limits to Steammill	1.3	13.1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Silt 1
Thornton - 02 1968 Limits to Steammill	18.7	192.5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Small Gully in Silt 1
Thornton - 02 1968 Limits to Steammill	698.7	8161.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Surface Erosion Silt
Thornton - 03 Steammill to US	1.1	11.1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Silt 1
Thornton - 03 Steammill to US	11.2	115.5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Small Gully in Silt 1
Thornton - 03 Steammill to US	246.5	2879.2	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Surface Erosion Silt
Thornton - USBC	86.7	1012.7	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Surface Erosion Silt
Thornton - USBC	1.1	11.1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Silt 1
Thornton - USBC	11.2	115.5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Small Gully in Silt 1
Tolbert-Jones - 01 DS to 3000	0.7	6.7	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Major Bank Failure in Silt 1
Tolbert-Jones - 01 DS to 3000	20.1	207.2	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Medium Gully in Silt 1
Tolbert-Jones - 01 DS to 3000	26.5	170.7	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Tolbert-Jones - USBC
Tolbert-Jones - 01 DS to 3000	0.6	6.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Silt 1
Tolbert-Jones - 01 DS to 3000	27.	311.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Medium Gully in Silt 2
Tolbert-Jones - 01 DS to 3000	72.1	464.6	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Tolbert-Jones - 02 3000 to US
Tolbert-Jones - 01 DS to 3000	817.7	9551.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Surface Erosion Silt
Tolbert-Jones - 02 3000 to US	0.7	6.7	0.5	1.8	1.7	0.4	0.1	0.1	0.	0.	0.	0.	Major Bank Failure in Silt 1
Tolbert-Jones - 02 3000 to US	20.1	207.2	15.9	54.3	53.6	11.9	2.2	2.3	0.	0.	0.	0.	Medium Gully in Silt 1
Tolbert-Jones - 02 3000 to US	26.5	170.7	4.2	17.9	13.7	3.2	1.1	1.8	0.1	0.	0.	0.	Tolbert-Jones - USBC
Tolbert-Jones - 02 3000 to US	0.6	6.	0.5	1.6	1.6	0.3	0.1	0.1	0.	0.	0.	0.	Minor Bank Failure in Silt 1
Tolbert-Jones - 02 3000 to US	27.	311.	4.6	11.9	9.1	2.1	0.9	0.7	0.2	0.1	0.	0.	Medium Gully in Silt 2
Tolbert-Jones - 02 3000 to US	741.2	8657.4	294.4	1005.6	820.9	150.6	47.7	46.6	0.	0.	0.	0.	Surface Erosion Silt
Tolbert-Jones - USBC	351.9	4110.3	139.8	477.4	389.8	71.5	22.7	22.1	0.	0.	0.	0.	Surface Erosion Silt
Tolbert-Jones - USBC	0.7	6.7	0.5	1.8	1.7	0.4	0.1	0.1	0.	0.	0.	0.	Major Bank Failure in Silt 1
Tolbert-Jones - USBC	0.4	4.	0.3	1.1	1.	0.2	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Silt 1

Reach Key (text)	Clay (tons/yr)	Silt (tons/yr)	VFS (tons/yr)	FS (tons/yr)	MS (tons/yr)	CS (tons/yr)	VCS (tons/yr)	VFG (tons/yr)	FG (tons/yr)	MG (tons/yr)	CG (tons/yr)	VCG (tons/yr)	Comment (text)
Tolbert-Jones - USBC	20.1	207.2	15.9	54.3	53.6	11.9	2.2	2.3	0.	0.	0.	0.	Medium Gully in Silt 1
West Ditch - 01 DS to Res. Bound.	174.1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	West Ditch - USBC
West Ditch - 01 DS to Res. Bound.	0.4	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Silt 1
West Ditch - 01 DS to Res. Bound.	7.5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Small Gully in Silt 1
West Ditch - 01 DS to Res. Bound.	5.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Small Gully in Silt 2
West Ditch - 01 DS to Res. Bound.	0.3	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Silt 2
West Ditch - 01 DS to Res. Bound.	2483.7	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Surface Erosion Silt
West Ditch - 02 Res. Bound. To 24300	174.1	1122.2	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	West Ditch - USBC
West Ditch - 02 Res. Bound. To 24300	0.4	4.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Silt 1
West Ditch - 02 Res. Bound. To 24300	7.5	77.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Small Gully in Silt 1
West Ditch - 02 Res. Bound. To 24300	5.	57.8	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Small Gully in Silt 2
West Ditch - 02 Res. Bound. To 24300	0.3	3.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Silt 2
West Ditch - 02 Res. Bound. To 24300	1711.9	19995.5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Surface Erosion Silt
West Ditch - 03 24300 to US	174.1	1122.2	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	West Ditch - USBC
West Ditch - 03 24300 to US	0.4	4.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Silt 1
West Ditch - 03 24300 to US	0.1	1.5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Silt 2
West Ditch - 03 24300 to US	7.5	77.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Small Gully in Silt 1
West Ditch - 03 24300 to US	5.	57.8	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Small Gully in Silt 2
West Ditch - 03 24300 to US	1193.4	13939.2	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Surface Erosion Silt
West Ditch - USBC	421.6	4924.4	167.5	572.	467.	85.6	27.1	26.5	0.	0.	0.	0.	Surface Erosion Silt
West Ditch - USBC	0.2	2.	0.2	0.5	0.5	0.1	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Silt 1
White's - 01 DS to 1968 Limits	1.3	13.4	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Major Bank Failure in Silt 1
White's - 01 DS to 1968 Limits	13.4	138.1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Medium Gully in Silt 1
White's - 01 DS to 1968 Limits	65.	419.2	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	White's - USBC
White's - 01 DS to 1968 Limits	115.5	744.5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	White's - 03 8000 to US
White's - 01 DS to 1968 Limits	1.6	21.6	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Small Gully in Sand
White's - 01 DS to 1968 Limits	200.5	1292.1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	White's - 02 1968 Limits to 8000
White's - 01 DS to 1968 Limits	851.7	9948.1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	Surface Erosion Silt
White's - 02 1968 Limits to 8000	1.3	13.4	1.	3.5	3.5	0.8	0.1	0.2	0.	0.	0.	0.	Major Bank Failure in Silt 1
White's - 02 1968 Limits to 8000	13.4	138.1	10.6	36.2	35.7	7.9	1.5	1.6	0.	0.	0.	0.	Medium Gully in Silt 1
White's - 02 1968 Limits to 8000	65.	419.2	10.4	43.9	33.7	7.8	2.7	4.4	0.3	0.	0.	0.	White's - USBC

Reach Key (text)	Clay (tons/yr)	Silt (tons/yr)	VFS (tons/yr)	FS (tons/yr)	MS (tons/yr)	CS (tons/yr)	VCS (tons/yr)	VFG (tons/yr)	FG (tons/yr)	MG (tons/yr)	CG (tons/yr)	VCG (tons/yr)	Comment (text)
White's - 02 1968 Limits to 8000	115.5	744.5	18.5	77.9	59.9	13.9	4.8	7.8	0.6	0.	0.	0.	White's - 03 8000 to US
White's - 02 1968 Limits to 8000	1.6	21.6	2.4	16.8	19.8	3.2	0.6	0.5	0.4	0.8	0.7	0.	Small Gully in Sand
White's - 02 1968 Limits to 8000	816.	9531.1	324.1	1107.1	903.8	165.8	52.5	51.3	0.	0.	0.	0.	Surface Erosion Silt
White's - 03 8000 to US	1.3	13.4	1.	3.5	3.5	0.8	0.1	0.2	0.	0.	0.	0.	Major Bank Failure in Silt 1
White's - 03 8000 to US	13.4	138.1	10.6	36.2	35.7	7.9	1.5	1.6	0.	0.	0.	0.	Medium Gully in Silt 1
White's - 03 8000 to US	65.	419.2	10.4	43.9	33.7	7.8	2.7	4.4	0.3	0.	0.	0.	White's - USBC
White's - 03 8000 to US	453.9	5301.7	180.3	615.8	502.7	92.2	29.2	28.5	0.	0.	0.	0.	Surface Erosion Silt
White's - USBC	129.2	1509.1	51.3	175.3	143.1	26.2	8.3	8.1	0.	0.	0.	0.	Surface Erosion Silt
White's - USBC	1.3	13.4	1.	3.5	3.5	0.8	0.1	0.2	0.	0.	0.	0.	Major Bank Failure in Silt 1
White's - USBC	13.4	138.1	10.6	36.2	35.7	7.9	1.5	1.6	0.	0.	0.	0.	Medium Gully in Silt 1

Table B-3 Source Channel Accumulation.

Reach Key (text)	Clay (tons/yr)	Silt (tons/yr)	VFS (tons/yr)	FS (tons/yr)	MS (tons/yr)	CS (tons/yr)	VCS (tons/yr)	VFG (tons/yr)	FG (tons/yr)	MG (tons/yr)	CG (tons/yr)	VCG (tons/yr)	Comment (text)
Basket - 01 DS to 4000	0.3	4.7	0.5	3.7	4.3	0.7	0.1	0.1	0.1	0.2	0.2	0.	Major Bank Failure in Sand
Basket - 01 DS to 4000	0.1	1.1	0.1	0.9	1.	0.2	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Sand
Basket - 01 DS to 4000	3.1	43.2	4.7	33.6	39.5	6.3	1.2	1.	0.8	1.5	1.4	0.	Small Gully in Sand
Basket - 01 DS to 4000	0.3	3.	0.	0.1	0.1	0.	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Silt 2
Basket - 01 DS to 4000	1553.8	18148.8	617.1	2108.1	1721.	315.6	100.1	97.7	0.	0.	0.	0.	Surface Erosion Silt
Basket - 02 4000 to 1968 Limits	0.3	4.7	0.5	3.7	4.3	0.7	0.1	0.1	0.1	0.2	0.2	0.	Major Bank Failure in Sand
Basket - 02 4000 to 1968 Limits	0.1	1.1	0.1	0.9	1.	0.2	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Sand
Basket - 02 4000 to 1968 Limits	3.1	43.2	4.7	33.6	39.5	6.3	1.2	1.	0.8	1.5	1.4	0.	Small Gully in Sand
Basket - 02 4000 to 1968 Limits	0.3	3.	0.	0.1	0.1	0.	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Silt 2
Basket - 02 4000 to 1968 Limits	1438.2	16798.6	571.2	1951.3	1592.9	292.2	92.6	90.5	0.	0.	0.	0.	Surface Erosion Silt
Basket - 03 1968 Limits to 15400	0.3	4.7	0.5	3.7	4.3	0.7	0.1	0.1	0.1	0.2	0.2	0.	Major Bank Failure in Sand
Basket - 03 1968 Limits to 15400	0.1	1.1	0.1	0.9	1.	0.2	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Sand
Basket - 03 1968 Limits to 15400	3.1	43.2	4.7	33.6	39.5	6.3	1.2	1.	0.8	1.5	1.4	0.	Small Gully in Sand
Basket - 03 1968 Limits to 15400	914.6	10682.8	363.3	1240.9	1013.	185.8	58.9	57.5	0.	0.	0.	0.	Surface Erosion Silt
Basket - 04 15400 to US	0.3	4.7	0.5	3.7	4.3	0.7	0.1	0.1	0.1	0.2	0.2	0.	Major Bank Failure in Sand
Basket - 04 15400 to US	0.1	1.1	0.1	0.9	1.	0.2	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Sand
Basket - 04 15400 to US	450.5	5262.	178.9	611.2	499.	91.5	29.	28.3	0.	0.	0.	0.	Surface Erosion Silt
Basket - USBC	450.5	5262.	178.9	611.2	499.	91.5	29.	28.3	0.	0.	0.	0.	Surface Erosion Silt
Basket - USBC	0.3	4.7	0.5	3.7	4.3	0.7	0.1	0.1	0.1	0.2	0.2	0.	Major Bank Failure in Sand
Basket - USBC	0.1	1.1	0.1	0.9	1.	0.2	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Sand
Beard's - 01 DS to 1968 Limits	1.3	15.1	0.2	0.6	0.4	0.1	0.	0.	0.	0.	0.	0.	Major Bank Failure in Silt 2
Beard's - 01 DS to 1968 Limits	0.9	10.6	0.2	0.4	0.3	0.1	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Silt 2
Beard's - 01 DS to 1968 Limits	1292.	15090.9	513.2	1752.9	1431.	262.5	83.2	81.3	0.	0.	0.	0.	Surface Erosion Silt
Beard's - 02 1968 Limits to 10800 Bridge	1.3	15.1	0.2	0.6	0.4	0.1	0.	0.	0.	0.	0.	0.	Major Bank Failure in Silt 2
Beard's - 02 1968 Limits to 10800 Bridge	0.9	10.6	0.2	0.4	0.3	0.1	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Silt 2
Beard's - 02 1968 Limits to 10800 Bridge	1256.3	14673.9	499.	1704.5	1391.5	255.2	80.9	79.	0.	0.	0.	0.	Surface Erosion Silt
Beard's - 03 10800 Bridge to US	1.3	15.1	0.2	0.6	0.4	0.1	0.	0.	0.	0.	0.	0.	Major Bank Failure in Silt 2
Beard's - 03 10800 Bridge to US	0.9	10.6	0.2	0.4	0.3	0.1	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Silt 2

Reach Key (text)	Clay (tons/yr)	Silt (tons/yr)	VFS (tons/yr)	FS (tons/yr)	MS (tons/yr)	CS (tons/yr)	VCS (tons/yr)	VFG (tons/yr)	FG (tons/yr)	MG (tons/yr)	CG (tons/yr)	VCG (tons/yr)	Comment (text)
Beard's - 03 10800 Bridge to US	918.	10722.5	364.6	1245.5	1016.8	186.5	59.1	57.7	0.	0.	0.	0.	Surface Erosion Silt
Beard's - USBC	360.4	4209.6	143.1	489.	399.2	73.2	23.2	22.7	0.	0.	0.	0.	Surface Erosion Silt
Beard's - USBC	0.8	9.1	0.1	0.3	0.3	0.1	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Silt 2
Billy's - 01 DS to Res. Bound.	1.3	13.4	1.	3.5	3.5	0.8	0.1	0.2	0.	0.	0.	0.	Major Bank Failure in Silt 1
Billy's - 01 DS to Res. Bound.	0.1	1.	0.1	0.3	0.3	0.1	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Silt 1
Billy's - 01 DS to Res. Bound.	503.2	5877.5	199.9	682.7	557.3	102.2	32.4	31.6	0.	0.	0.	0.	Surface Erosion Silt
Billy's - 02 Res. Bound. to 1968 Limits	1.3	13.4	1.	3.5	3.5	0.8	0.1	0.2	0.	0.	0.	0.	Major Bank Failure in Silt 1
Billy's - 02 Res. Bound. to 1968 Limits	0.1	1.	0.1	0.3	0.3	0.1	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Silt 1
Billy's - 02 Res. Bound. to 1968 Limits	482.8	5639.2	191.8	655.	534.7	98.1	31.1	30.4	0.	0.	0.	0.	Surface Erosion Silt
Billy's - 03 1968 Limits to US	1.3	13.4	1.	3.5	3.5	0.8	0.1	0.2	0.	0.	0.	0.	Major Bank Failure in Silt 1
Billy's - 03 1968 Limits to US	0.1	1.	0.1	0.3	0.3	0.1	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Silt 1
Billy's - 03 1968 Limits to US	460.7	5381.1	183.	625.	510.3	93.6	29.7	29.	0.	0.	0.	0.	Surface Erosion Silt
Billy's - USBC	120.7	1409.8	47.9	163.8	133.7	24.5	7.8	7.6	0.	0.	0.	0.	Surface Erosion Silt
Cathey's - 01 DS to 3500	77.9	803.6	61.6	210.6	208.	46.1	8.5	9.1	0.	0.	0.	0.	Large Gully in Silt 1
Cathey's - 01 DS to 3500	1.5	15.1	1.2	4.	3.9	0.9	0.2	0.2	0.	0.	0.	0.	Major Bank Failure in Silt 1
Cathey's - 01 DS to 3500	0.1	1.	0.1	0.3	0.3	0.1	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Silt 1
Cathey's - 01 DS to 3500	33.5	345.3	26.5	90.5	89.4	19.8	3.6	3.9	0.	0.	0.	0.	Medium Gully in Silt 1
Cathey's - 01 DS to 3500	225.5	2919.1	268.	1661.3	3942.4	1231.6	128.5	142.8	0.	0.	0.	0.	Surface Erosion Sand
Cathey's - 02 3500 to 7500	77.9	803.6	61.6	210.6	208.	46.1	8.5	9.1	0.	0.	0.	0.	Large Gully in Silt 1
Cathey's - 02 3500 to 7500	1.5	15.1	1.2	4.	3.9	0.9	0.2	0.2	0.	0.	0.	0.	Major Bank Failure in Silt 1
Cathey's - 02 3500 to 7500	26.8	276.3	21.2	72.4	71.5	15.8	2.9	3.1	0.	0.	0.	0.	Medium Gully in Silt 1
Cathey's - 02 3500 to 7500	219.1	2835.9	260.3	1613.9	3830.1	1196.5	124.9	138.7	0.	0.	0.	0.	Surface Erosion Sand
Cathey's - 03 7500 to 12100	77.9	803.6	61.6	210.6	208.	46.1	8.5	9.1	0.	0.	0.	0.	Large Gully in Silt 1
Cathey's - 03 7500 to 12100	0.5	5.	0.4	1.3	1.3	0.3	0.1	0.1	0.	0.	0.	0.	Major Bank Failure in Silt 1
Cathey's - 03 7500 to 12100	20.1	207.2	15.9	54.3	53.6	11.9	2.2	2.3	0.	0.	0.	0.	Medium Gully in Silt 1
Cathey's - 03 7500 to 12100	147.8	1913.3	175.6	1088.9	2584.	807.2	84.3	93.6	0.	0.	0.	0.	Surface Erosion Sand
Cathey's - 04 12100 to US	64.3	831.9	76.4	473.4	1123.5	351.	36.6	40.7	0.	0.	0.	0.	Surface Erosion Sand
Cathey's - 04 12100 to US	77.9	803.6	61.6	210.6	208.	46.1	8.5	9.1	0.	0.	0.	0.	Large Gully in Silt 1
Cathey's - USBC	64.3	831.9	76.4	473.4	1123.5	351.	36.6	40.7	0.	0.	0.	0.	Surface Erosion Sand
Hickahala - 01 DS to 12500	77.9	803.6	61.6	210.6	208.	46.1	8.5	9.1	0.	0.	0.	0.	Large Gully in Silt 1

Reach Key (text)	Clay (tons/yr)	Silt (tons/yr)	VFS (tons/yr)	FS (tons/yr)	MS (tons/yr)	CS (tons/yr)	VCS (tons/yr)	VFG (tons/yr)	FG (tons/yr)	MG (tons/yr)	CG (tons/yr)	VCG (tons/yr)	Comment (text)
Hickahala - 01 DS to 12500	4.7	64.8	7.1	50.4	59.3	9.5	1.8	1.5	1.3	2.3	2.1	0.	Small Gully in Sand
Hickahala - 01 DS to 12500	27.7	386.3	42.4	300.8	353.6	56.4	10.5	9.	7.5	13.8	12.4	0.	Large Gully in Sand
Hickahala - 01 DS to 12500	8.3	95.8	1.4	3.7	2.8	0.6	0.3	0.2	0.1	0.	0.	0.	Major Bank Failure in Silt 2
Hickahala - 01 DS to 12500	3.2	44.3	4.9	34.5	40.5	6.5	1.2	1.	0.9	1.6	1.4	0.	Major Bank Failure in Sand
Hickahala - 01 DS to 12500	0.4	5.6	0.6	4.4	5.2	0.8	0.2	0.1	0.1	0.2	0.2	0.	Minor Bank Failure in Sand
Hickahala - 01 DS to 12500	25.	348.6	38.3	271.4	319.1	50.9	9.5	8.1	6.7	12.5	11.2	0.	Medium Gully in Sand
Hickahala - 01 DS to 12500	10.7	110.8	8.5	29.	28.7	6.4	1.2	1.3	0.	0.	0.	0.	Major Bank Failure in Silt 1
Hickahala - 01 DS to 12500	194.1	2002.9	153.5	525.	518.3	114.8	21.1	22.7	0.	0.	0.	0.	Medium Gully in Silt 1
Hickahala - 01 DS to 12500	297.5	3421.5	50.7	131.	100.4	22.6	9.8	7.6	2.3	1.	0.	0.	Medium Gully in Silt 2
Hickahala - 01 DS to 12500	2.8	29.2	2.2	7.7	7.6	1.7	0.3	0.3	0.	0.	0.	0.	Minor Bank Failure in Silt 1
Hickahala - 01 DS to 12500	37.3	385.	29.5	100.9	99.6	22.1	4.1	4.4	0.	0.	0.	0.	Small Gully in Silt 1
Hickahala - 01 DS to 12500	5.	57.8	0.9	2.2	1.7	0.4	0.2	0.1	0.	0.	0.	0.	Small Gully in Silt 2
Hickahala - 01 DS to 12500	5.4	62.	0.9	2.4	1.8	0.4	0.2	0.1	0.	0.	0.	0.	Minor Bank Failure in Silt 2
Hickahala - 01 DS to 12500	32889.5	384163.1	13063.1	44622.9	36428.5	6681.3	2117.9	2068.6	0.	0.	0.	0.	Surface Erosion Silt
Hickahala - 01 DS to 12500	1295.	16765.8	1539.1	9541.6	22643.3	7073.7	738.3	820.1	0.	0.	0.	0.	Surface Erosion Sand
Hickahala - 02 12500 to 1968 Start	77.9	803.6	61.6	210.6	208.	46.1	8.5	9.1	0.	0.	0.	0.	Large Gully in Silt 1
Hickahala - 02 12500 to 1968 Start	4.7	64.8	7.1	50.4	59.3	9.5	1.8	1.5	1.3	2.3	2.1	0.	Small Gully in Sand
Hickahala - 02 12500 to 1968 Start	27.7	386.3	42.4	300.8	353.6	56.4	10.5	9.	7.5	13.8	12.4	0.	Large Gully in Sand
Hickahala - 02 12500 to 1968 Start	8.3	95.8	1.4	3.7	2.8	0.6	0.3	0.2	0.1	0.	0.	0.	Major Bank Failure in Silt 2
Hickahala - 02 12500 to 1968 Start	3.2	44.3	4.9	34.5	40.5	6.5	1.2	1.	0.9	1.6	1.4	0.	Major Bank Failure in Sand
Hickahala - 02 12500 to 1968 Start	0.4	5.6	0.6	4.4	5.2	0.8	0.2	0.1	0.1	0.2	0.2	0.	Minor Bank Failure in Sand
Hickahala - 02 12500 to 1968 Start	25.	348.6	38.3	271.4	319.1	50.9	9.5	8.1	6.7	12.5	11.2	0.	Medium Gully in Sand
Hickahala - 02 12500 to 1968 Start	10.7	110.8	8.5	29.	28.7	6.4	1.2	1.3	0.	0.	0.	0.	Major Bank Failure in Silt 1
Hickahala - 02 12500 to 1968 Start	194.1	2002.9	153.5	525.	518.3	114.8	21.1	22.7	0.	0.	0.	0.	Medium Gully in Silt 1
Hickahala - 02 12500 to 1968 Start	297.5	3421.5	50.7	131.	100.4	22.6	9.8	7.6	2.3	1.	0.	0.	Medium Gully in Silt 2
Hickahala - 02 12500 to 1968 Start	2.8	29.2	2.2	7.7	7.6	1.7	0.3	0.3	0.	0.	0.	0.	Minor Bank Failure in Silt 1

Reach Key (text)	Clay (tons/yr)	Silt (tons/yr)	VFS (tons/yr)	FS (tons/yr)	MS (tons/yr)	CS (tons/yr)	VCS (tons/yr)	VFG (tons/yr)	FG (tons/yr)	MG (tons/yr)	CG (tons/yr)	VCG (tons/yr)	Comment (text)
Hickahala - 02 12500 to 1968 Start	37.3	385.	29.5	100.9	99.6	22.1	4.1	4.4	0.	0.	0.	0.	Small Gully in Silt 1
Hickahala - 02 12500 to 1968 Start	5.	57.8	0.9	2.2	1.7	0.4	0.2	0.1	0.	0.	0.	0.	Small Gully in Silt 2
Hickahala - 02 12500 to 1968 Start	5.4	62.	0.9	2.4	1.8	0.4	0.2	0.1	0.	0.	0.	0.	Minor Bank Failure in Silt 2
Hickahala - 02 12500 to 1968 Start	32889.5	384163.1	13063.1	44622.9	36428.5	6681.3	2117.9	2068.6	0.	0.	0.	0.	Surface Erosion Silt
Hickahala - 02 12500 to 1968 Start	1127.4	14595.4	1339.9	8306.4	19712.	6158.	642.7	713.9	0.	0.	0.	0.	Surface Erosion Sand
Hickahala - 03 1968 Start to W. Ditch	77.9	803.6	61.6	210.6	208.	46.1	8.5	9.1	0.	0.	0.	0.	Large Gully in Silt 1
Hickahala - 03 1968 Start to W. Ditch	4.7	64.8	7.1	50.4	59.3	9.5	1.8	1.5	1.3	2.3	2.1	0.	Small Gully in Sand
Hickahala - 03 1968 Start to W. Ditch	27.7	386.3	42.4	300.8	353.6	56.4	10.5	9.	7.5	13.8	12.4	0.	Large Gully in Sand
Hickahala - 03 1968 Start to W. Ditch	8.3	95.8	1.4	3.7	2.8	0.6	0.3	0.2	0.1	0.	0.	0.	Major Bank Failure in Silt 2
Hickahala - 03 1968 Start to W. Ditch	3.2	44.3	4.9	34.5	40.5	6.5	1.2	1.	0.9	1.6	1.4	0.	Major Bank Failure in Sand
Hickahala - 03 1968 Start to W. Ditch	0.4	5.6	0.6	4.4	5.2	0.8	0.2	0.1	0.1	0.2	0.2	0.	Minor Bank Failure in Sand
Hickahala - 03 1968 Start to W. Ditch	25.	348.6	38.3	271.4	319.1	50.9	9.5	8.1	6.7	12.5	11.2	0.	Medium Gully in Sand
Hickahala - 03 1968 Start to W. Ditch	10.7	110.8	8.5	29.	28.7	6.4	1.2	1.3	0.	0.	0.	0.	Major Bank Failure in Silt 1
Hickahala - 03 1968 Start to W. Ditch	194.1	2002.9	153.5	525.	518.3	114.8	21.1	22.7	0.	0.	0.	0.	Medium Gully in Silt 1
Hickahala - 03 1968 Start to W. Ditch	297.5	3421.5	50.7	131.	100.4	22.6	9.8	7.6	2.3	1.	0.	0.	Medium Gully in Silt 2
Hickahala - 03 1968 Start to W. Ditch	1079.5	13975.3	1282.9	7953.5	18874.5	5896.3	615.4	683.6	0.	0.	0.	0.	Surface Erosion Sand
Hickahala - 03 1968 Start to W. Ditch	2.8	29.2	2.2	7.7	7.6	1.7	0.3	0.3	0.	0.	0.	0.	Minor Bank Failure in Silt 1
Hickahala - 03 1968 Start to W. Ditch	37.3	385.	29.5	100.9	99.6	22.1	4.1	4.4	0.	0.	0.	0.	Small Gully in Silt 1
Hickahala - 03 1968 Start to W. Ditch	5.	57.8	0.9	2.2	1.7	0.4	0.2	0.1	0.	0.	0.	0.	Small Gully in Silt 2
Hickahala - 03 1968 Start to W. Ditch	5.4	62.	0.9	2.4	1.8	0.4	0.2	0.1	0.	0.	0.	0.	Minor Bank Failure in Silt 2
Hickahala - 03 1968 Start to W. Ditch	32889.5	384163.1	13063.1	44622.9	36428.5	6681.3	2117.9	2068.6	0.	0.	0.	0.	Surface Erosion Silt

Reach Key (text)	Clay (tons/yr)	Silt (tons/yr)	VFS (tons/yr)	FS (tons/yr)	MS (tons/yr)	CS (tons/yr)	VCS (tons/yr)	VFG (tons/yr)	FG (tons/yr)	MG (tons/yr)	CG (tons/yr)	VCG (tons/yr)	Comment (text)
Hickahala - 04 W. Ditch to Senatobia	77.9	803.6	61.6	210.6	208.	46.1	8.5	9.1	0.	0.	0.	0.	Large Gully in Silt 1
Hickahala - 04 W. Ditch to Senatobia	4.7	64.8	7.1	50.4	59.3	9.5	1.8	1.5	1.3	2.3	2.1	0.	Small Gully in Sand
Hickahala - 04 W. Ditch to Senatobia	27.7	386.3	42.4	300.8	353.6	56.4	10.5	9.	7.5	13.8	12.4	0.	Large Gully in Sand
Hickahala - 04 W. Ditch to Senatobia	29.8	308.	23.6	80.7	79.7	17.7	3.2	3.5	0.	0.	0.	0.	Small Gully in Silt 1
Hickahala - 04 W. Ditch to Senatobia	8.3	95.8	1.4	3.7	2.8	0.6	0.3	0.2	0.1	0.	0.	0.	Major Bank Failure in Silt 2
Hickahala - 04 W. Ditch to Senatobia	3.2	44.3	4.9	34.5	40.5	6.5	1.2	1.	0.9	1.6	1.4	0.	Major Bank Failure in Sand
Hickahala - 04 W. Ditch to Senatobia	0.4	5.6	0.6	4.4	5.2	0.8	0.2	0.1	0.1	0.2	0.2	0.	Minor Bank Failure in Sand
Hickahala - 04 W. Ditch to Senatobia	25.	348.6	38.3	271.4	319.1	50.9	9.5	8.1	6.7	12.5	11.2	0.	Medium Gully in Sand
Hickahala - 04 W. Ditch to Senatobia	10.7	110.8	8.5	29.	28.7	6.4	1.2	1.3	0.	0.	0.	0.	Major Bank Failure in Silt 1
Hickahala - 04 W. Ditch to Senatobia	194.1	2002.9	153.5	525.	518.3	114.8	21.1	22.7	0.	0.	0.	0.	Medium Gully in Silt 1
Hickahala - 04 W. Ditch to Senatobia	2.4	25.2	1.9	6.6	6.5	1.4	0.3	0.3	0.	0.	0.	0.	Minor Bank Failure in Silt 1
Hickahala - 04 W. Ditch to Senatobia	5.1	59.	0.9	2.3	1.7	0.4	0.2	0.1	0.	0.	0.	0.	Minor Bank Failure in Silt 2
Hickahala - 04 W. Ditch to Senatobia	297.5	3421.5	50.7	131.	100.4	22.6	9.8	7.6	2.3	1.	0.	0.	Medium Gully in Silt 2
Hickahala - 04 W. Ditch to Senatobia	1079.5	13975.3	1282.9	7953.5	18874.5	5896.3	615.4	683.6	0.	0.	0.	0.	Surface Erosion Sand
Hickahala - 04 W. Ditch to Senatobia	29005.	338791.	11520.3	39352.6	32126.	5892.2	1867.8	1824.3	0.	0.	0.	0.	Surface Erosion Silt
Hickahala - 05 Senatobia to Billy's	77.9	803.6	61.6	210.6	208.	46.1	8.5	9.1	0.	0.	0.	0.	Large Gully in Silt 1
Hickahala - 05 Senatobia to Billy's	0.2	2.3	0.2	1.8	2.1	0.3	0.1	0.1	0.	0.1	0.1	0.	Minor Bank Failure in Sand
Hickahala - 05 Senatobia to Billy's	87.	897.9	68.8	235.3	232.4	51.5	9.5	10.2	0.	0.	0.	0.	Medium Gully in Silt 1
Hickahala - 05 Senatobia to Billy's	4.7	64.8	7.1	50.4	59.3	9.5	1.8	1.5	1.3	2.3	2.1	0.	Small Gully in Sand
Hickahala - 05 Senatobia to Billy's	1.2	16.9	1.9	13.2	15.5	2.5	0.5	0.4	0.3	0.6	0.5	0.	Major Bank Failure in Sand
Hickahala - 05 Senatobia to Billy's	27.7	386.3	42.4	300.8	353.6	56.4	10.5	9.	7.5	13.8	12.4	0.	Large Gully in Sand

Reach Key (text)	Clay (tons/yr)	Silt (tons/yr)	VFS (tons/yr)	FS (tons/yr)	MS (tons/yr)	CS (tons/yr)	VCS (tons/yr)	VFG (tons/yr)	FG (tons/yr)	MG (tons/yr)	CG (tons/yr)	VCG (tons/yr)	Comment (text)
Hickahala - 05 Senatobia to Billy's	3.2	36.3	0.5	1.4	1.1	0.2	0.1	0.1	0.	0.	0.	0.	Minor Bank Failure in Silt 2
Hickahala - 05 Senatobia to Billy's	225.4	2592.1	38.4	99.2	76.1	17.1	7.4	5.8	1.8	0.7	0.	0.	Medium Gully in Silt 2
Hickahala - 05 Senatobia to Billy's	6.1	70.6	1.	2.7	2.1	0.5	0.2	0.2	0.	0.	0.	0.	Major Bank Failure in Silt 2
Hickahala - 05 Senatobia to Billy's	8.1	83.9	6.4	22.	21.7	4.8	0.9	1.	0.	0.	0.	0.	Major Bank Failure in Silt 1
Hickahala - 05 Senatobia to Billy's	1.9	19.1	1.5	5.	5.	1.1	0.2	0.2	0.	0.	0.	0.	Minor Bank Failure in Silt 1
Hickahala - 05 Senatobia to Billy's	22.4	231.	17.7	60.5	59.8	13.2	2.4	2.6	0.	0.	0.	0.	Small Gully in Silt 1
Hickahala - 05 Senatobia to Billy's	949.2	12288.9	1128.1	6993.8	16596.9	5184.8	541.1	601.1	0.	0.	0.	0.	Surface Erosion Sand
Hickahala - 05 Senatobia to Billy's	18069.1	211054.4	7176.7	24515.3	20013.4	3670.6	1163.6	1136.4	0.	0.	0.	0.	Surface Erosion Silt
Hickahala - 06 Billy's to Res. Bound.	77.9	803.6	61.6	210.6	208.	46.1	8.5	9.1	0.	0.	0.	0.	Large Gully in Silt 1
Hickahala - 06 Billy's to Res. Bound.	0.2	2.3	0.2	1.8	2.1	0.3	0.1	0.1	0.	0.1	0.1	0.	Minor Bank Failure in Sand
Hickahala - 06 Billy's to Res. Bound.	87.	897.9	68.8	235.3	232.4	51.5	9.5	10.2	0.	0.	0.	0.	Medium Gully in Silt 1
Hickahala - 06 Billy's to Res. Bound.	4.7	64.8	7.1	50.4	59.3	9.5	1.8	1.5	1.3	2.3	2.1	0.	Small Gully in Sand
Hickahala - 06 Billy's to Res. Bound.	1.2	16.9	1.9	13.2	15.5	2.5	0.5	0.4	0.3	0.6	0.5	0.	Major Bank Failure in Sand
Hickahala - 06 Billy's to Res. Bound.	27.7	386.3	42.4	300.8	353.6	56.4	10.5	9.	7.5	13.8	12.4	0.	Large Gully in Sand
Hickahala - 06 Billy's to Res. Bound.	3.2	36.3	0.5	1.4	1.1	0.2	0.1	0.1	0.	0.	0.	0.	Minor Bank Failure in Silt 2
Hickahala - 06 Billy's to Res. Bound.	225.4	2592.1	38.4	99.2	76.1	17.1	7.4	5.8	1.8	0.7	0.	0.	Medium Gully in Silt 2
Hickahala - 06 Billy's to Res. Bound.	6.1	70.6	1.	2.7	2.1	0.5	0.2	0.2	0.	0.	0.	0.	Major Bank Failure in Silt 2
Hickahala - 06 Billy's to Res. Bound.	6.8	70.5	5.4	18.5	18.2	4.	0.7	0.8	0.	0.	0.	0.	Major Bank Failure in Silt 1
Hickahala - 06 Billy's to Res. Bound.	1.8	18.1	1.4	4.8	4.7	1.	0.2	0.2	0.	0.	0.	0.	Minor Bank Failure in Silt 1
Hickahala - 06 Billy's to Res. Bound.	22.4	231.	17.7	60.5	59.8	13.2	2.4	2.6	0.	0.	0.	0.	Small Gully in Silt 1
Hickahala - 06 Billy's to Res. Bound.	17412.9	203389.8	6916.1	23625.	19286.5	3537.3	1121.3	1095.2	0.	0.	0.	0.	Surface Erosion Silt

Reach Key (text)	Clay (tons/yr)	Silt (tons/yr)	VFS (tons/yr)	FS (tons/yr)	MS (tons/yr)	CS (tons/yr)	VCS (tons/yr)	VFG (tons/yr)	FG (tons/yr)	MG (tons/yr)	CG (tons/yr)	VCG (tons/yr)	Comment (text)
Hickahala - 06 Billy's to Res. Bound.	949.2	12288.9	1128.1	6993.8	16596.9	5184.8	541.1	601.1	0.	0.	0.	0.	Surface Erosion Sand
Hickahala - 07 Res. Bound. to Thornton	77.9	803.6	61.6	210.6	208.	46.1	8.5	9.1	0.	0.	0.	0.	Large Gully in Silt 1
Hickahala - 07 Res. Bound. to Thornton	0.2	2.3	0.2	1.8	2.1	0.3	0.1	0.1	0.	0.1	0.1	0.	Minor Bank Failure in Sand
Hickahala - 07 Res. Bound. to Thornton	87.	897.9	68.8	235.3	232.4	51.5	9.5	10.2	0.	0.	0.	0.	Medium Gully in Silt 1
Hickahala - 07 Res. Bound. to Thornton	4.7	64.8	7.1	50.4	59.3	9.5	1.8	1.5	1.3	2.3	2.1	0.	Small Gully in Sand
Hickahala - 07 Res. Bound. to Thornton	1.2	16.9	1.9	13.2	15.5	2.5	0.5	0.4	0.3	0.6	0.5	0.	Major Bank Failure in Sand
Hickahala - 07 Res. Bound. to Thornton	27.7	386.3	42.4	300.8	353.6	56.4	10.5	9.	7.5	13.8	12.4	0.	Large Gully in Sand
Hickahala - 07 Res. Bound. to Thornton	3.2	36.3	0.5	1.4	1.1	0.2	0.1	0.1	0.	0.	0.	0.	Minor Bank Failure in Silt 2
Hickahala - 07 Res. Bound. to Thornton	225.4	2592.1	38.4	99.2	76.1	17.1	7.4	5.8	1.8	0.7	0.	0.	Medium Gully in Silt 2
Hickahala - 07 Res. Bound. to Thornton	6.1	70.6	1.	2.7	2.1	0.5	0.2	0.2	0.	0.	0.	0.	Major Bank Failure in Silt 2
Hickahala - 07 Res. Bound. to Thornton	6.8	70.5	5.4	18.5	18.2	4.	0.7	0.8	0.	0.	0.	0.	Major Bank Failure in Silt 1
Hickahala - 07 Res. Bound. to Thornton	1.8	18.1	1.4	4.8	4.7	1.	0.2	0.2	0.	0.	0.	0.	Minor Bank Failure in Silt 1
Hickahala - 07 Res. Bound. to Thornton	22.4	231.	17.7	60.5	59.8	13.2	2.4	2.6	0.	0.	0.	0.	Small Gully in Silt 1
Hickahala - 07 Res. Bound. to Thornton	17412.9	203389.8	6916.1	23625.	19286.5	3537.3	1121.3	1095.2	0.	0.	0.	0.	Surface Erosion Silt
Hickahala - 07 Res. Bound. to Thornton	927.	12001.5	1101.7	6830.2	16208.8	5063.6	528.5	587.1	0.	0.	0.	0.	Surface Erosion Sand
Hickahala - 08 Thornton to Basket	77.9	803.6	61.6	210.6	208.	46.1	8.5	9.1	0.	0.	0.	0.	Large Gully in Silt 1
Hickahala - 08 Thornton to Basket	771.1	9982.4	916.4	5681.1	13481.8	4211.7	439.6	488.3	0.	0.	0.	0.	Surface Erosion Sand
Hickahala - 08 Thornton to Basket	0.5	5.	0.4	1.3	1.3	0.3	0.1	0.1	0.	0.	0.	0.	Minor Bank Failure in Silt 1
Hickahala - 08 Thornton to Basket	0.2	2.3	0.2	1.8	2.1	0.3	0.1	0.1	0.	0.1	0.1	0.	Minor Bank Failure in Sand
Hickahala - 08 Thornton to Basket	5.9	60.4	4.6	15.8	15.6	3.5	0.6	0.7	0.	0.	0.	0.	Major Bank Failure in Silt 1
Hickahala - 08 Thornton to Basket	87.	897.9	68.8	235.3	232.4	51.5	9.5	10.2	0.	0.	0.	0.	Medium Gully in Silt 1

Reach Key (text)	Clay (tons/yr)	Silt (tons/yr)	VFS (tons/yr)	FS (tons/yr)	MS (tons/yr)	CS (tons/yr)	VCS (tons/yr)	VFG (tons/yr)	FG (tons/yr)	MG (tons/yr)	CG (tons/yr)	VCG (tons/yr)	Comment (text)
Hickahala - 08 Thornton to Basket	4.7	64.8	7.1	50.4	59.3	9.5	1.8	1.5	1.3	2.3	2.1	0.	Small Gully in Sand
Hickahala - 08 Thornton to Basket	1.2	16.9	1.9	13.2	15.5	2.5	0.5	0.4	0.3	0.6	0.5	0.	Major Bank Failure in Sand
Hickahala - 08 Thornton to Basket	27.7	386.3	42.4	300.8	353.6	56.4	10.5	9.	7.5	13.8	12.4	0.	Large Gully in Sand
Hickahala - 08 Thornton to Basket	3.2	36.3	0.5	1.4	1.1	0.2	0.1	0.1	0.	0.	0.	0.	Minor Bank Failure in Silt 2
Hickahala - 08 Thornton to Basket	225.4	2592.1	38.4	99.2	76.1	17.1	7.4	5.8	1.8	0.7	0.	0.	Medium Gully in Silt 2
Hickahala - 08 Thornton to Basket	6.1	70.6	1.	2.7	2.1	0.5	0.2	0.2	0.	0.	0.	0.	Major Bank Failure in Silt 2
Hickahala - 08 Thornton to Basket	16656.4	194553.7	6615.6	22598.6	18448.7	3383.7	1072.6	1047.6	0.	0.	0.	0.	Surface Erosion Silt
Hickahala - 09 Basket to 57350	77.9	803.6	61.6	210.6	208.	46.1	8.5	9.1	0.	0.	0.	0.	Large Gully in Silt 1
Hickahala - 09 Basket to 57350	771.1	9982.4	916.4	5681.1	13481.8	4211.7	439.6	488.3	0.	0.	0.	0.	Surface Erosion Sand
Hickahala - 09 Basket to 57350	0.5	5.	0.4	1.3	1.3	0.3	0.1	0.1	0.	0.	0.	0.	Minor Bank Failure in Silt 1
Hickahala - 09 Basket to 57350	0.1	1.1	0.1	0.9	1.	0.2	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Sand
Hickahala - 09 Basket to 57350	5.9	60.4	4.6	15.8	15.6	3.5	0.6	0.7	0.	0.	0.	0.	Major Bank Failure in Silt 1
Hickahala - 09 Basket to 57350	87.	897.9	68.8	235.3	232.4	51.5	9.5	10.2	0.	0.	0.	0.	Medium Gully in Silt 1
Hickahala - 09 Basket to 57350	1.6	21.6	2.4	16.8	19.8	3.2	0.6	0.5	0.4	0.8	0.7	0.	Small Gully in Sand
Hickahala - 09 Basket to 57350	0.9	12.2	1.3	9.5	11.2	1.8	0.3	0.3	0.2	0.4	0.4	0.	Major Bank Failure in Sand
Hickahala - 09 Basket to 57350	27.7	386.3	42.4	300.8	353.6	56.4	10.5	9.	7.5	13.8	12.4	0.	Large Gully in Sand
Hickahala - 09 Basket to 57350	2.9	33.3	0.5	1.3	1.	0.2	0.1	0.1	0.	0.	0.	0.	Minor Bank Failure in Silt 2
Hickahala - 09 Basket to 57350	225.4	2592.1	38.4	99.2	76.1	17.1	7.4	5.8	1.8	0.7	0.	0.	Medium Gully in Silt 2
Hickahala - 09 Basket to 57350	6.1	70.6	1.	2.7	2.1	0.5	0.2	0.2	0.	0.	0.	0.	Major Bank Failure in Silt 2
Hickahala - 09 Basket to 57350	15097.5	176345.3	5996.5	20483.6	16722.	3067.	972.2	949.5	0.	0.	0.	0.	Surface Erosion Silt
Hickahala - 10 57350 to Lick	77.9	803.6	61.6	210.6	208.	46.1	8.5	9.1	0.	0.	0.	0.	Large Gully in Silt 1
Hickahala - 10 57350 to Lick	771.1	9982.4	916.4	5681.1	13481.8	4211.7	439.6	488.3	0.	0.	0.	0.	Surface Erosion Sand
Hickahala - 10 57350 to Lick	0.5	5.	0.4	1.3	1.3	0.3	0.1	0.1	0.	0.	0.	0.	Minor Bank Failure in Silt 1
Hickahala - 10 57350 to Lick	0.1	1.1	0.1	0.9	1.	0.2	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Sand
Hickahala - 10 57350 to Lick	5.9	60.4	4.6	15.8	15.6	3.5	0.6	0.7	0.	0.	0.	0.	Major Bank Failure in Silt 1
Hickahala - 10 57350 to Lick	87.	897.9	68.8	235.3	232.4	51.5	9.5	10.2	0.	0.	0.	0.	Medium Gully in Silt 1
Hickahala - 10 57350 to Lick	1.6	21.6	2.4	16.8	19.8	3.2	0.6	0.5	0.4	0.8	0.7	0.	Small Gully in Sand
Hickahala - 10 57350 to Lick	0.9	12.2	1.3	9.5	11.2	1.8	0.3	0.3	0.2	0.4	0.4	0.	Major Bank Failure in Sand

Reach Key (text)	Clay (tons/yr)	Silt (tons/yr)	VFS (tons/yr)	FS (tons/yr)	MS (tons/yr)	CS (tons/yr)	VCS (tons/yr)	VFG (tons/yr)	FG (tons/yr)	MG (tons/yr)	CG (tons/yr)	VCG (tons/yr)	Comment (text)
Hickahala - 10 57350 to Lick	27.7	386.3	42.4	300.8	353.6	56.4	10.5	9.	7.5	13.8	12.4	0.	Large Gully in Sand
Hickahala - 10 57350 to Lick	2.9	33.3	0.5	1.3	1.	0.2	0.1	0.1	0.	0.	0.	0.	Minor Bank Failure in Silt 2
Hickahala - 10 57350 to Lick	225.4	2592.1	38.4	99.2	76.1	17.1	7.4	5.8	1.8	0.7	0.	0.	Medium Gully in Silt 2
Hickahala - 10 57350 to Lick	6.1	70.6	1.	2.7	2.1	0.5	0.2	0.2	0.	0.	0.	0.	Major Bank Failure in Silt 2
Hickahala - 10 57350 to Lick	14128.5	165027.1	5611.6	19168.9	15648.8	2870.1	909.8	888.6	0.	0.	0.	0.	Surface Erosion Silt
Hickahala - 11 Lick to Lick Branch	77.9	803.6	61.6	210.6	208.	46.1	8.5	9.1	0.	0.	0.	0.	Large Gully in Silt 1
Hickahala - 11 Lick to Lick Branch	771.1	9982.4	916.4	5681.1	13481.8	4211.7	439.6	488.3	0.	0.	0.	0.	Surface Erosion Sand
Hickahala - 11 Lick to Lick Branch	0.5	5.	0.4	1.3	1.3	0.3	0.1	0.1	0.	0.	0.	0.	Minor Bank Failure in Silt 1
Hickahala - 11 Lick to Lick Branch	0.1	1.1	0.1	0.9	1.	0.2	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Sand
Hickahala - 11 Lick to Lick Branch	5.9	60.4	4.6	15.8	15.6	3.5	0.6	0.7	0.	0.	0.	0.	Major Bank Failure in Silt 1
Hickahala - 11 Lick to Lick Branch	87.	897.9	68.8	235.3	232.4	51.5	9.5	10.2	0.	0.	0.	0.	Medium Gully in Silt 1
Hickahala - 11 Lick to Lick Branch	1.6	21.6	2.4	16.8	19.8	3.2	0.6	0.5	0.4	0.8	0.7	0.	Small Gully in Sand
Hickahala - 11 Lick to Lick Branch	0.9	12.2	1.3	9.5	11.2	1.8	0.3	0.3	0.2	0.4	0.4	0.	Major Bank Failure in Sand
Hickahala - 11 Lick to Lick Branch	27.7	386.3	42.4	300.8	353.6	56.4	10.5	9.	7.5	13.8	12.4	0.	Large Gully in Sand
Hickahala - 11 Lick to Lick Branch	2.9	33.3	0.5	1.3	1.	0.2	0.1	0.1	0.	0.	0.	0.	Minor Bank Failure in Silt 2
Hickahala - 11 Lick to Lick Branch	225.4	2592.1	38.4	99.2	76.1	17.1	7.4	5.8	1.8	0.7	0.	0.	Medium Gully in Silt 2
Hickahala - 11 Lick to Lick Branch	6.1	70.6	1.	2.7	2.1	0.5	0.2	0.2	0.	0.	0.	0.	Major Bank Failure in Silt 2
Hickahala - 11 Lick to Lick Branch	13365.2	156111.6	5308.4	18133.3	14803.4	2715.1	860.7	840.6	0.	0.	0.	0.	Surface Erosion Silt
Hickahala - 12 Lick Branch to Wolf	77.9	803.6	61.6	210.6	208.	46.1	8.5	9.1	0.	0.	0.	0.	Large Gully in Silt 1
Hickahala - 12 Lick Branch to Wolf	771.1	9982.4	916.4	5681.1	13481.8	4211.7	439.6	488.3	0.	0.	0.	0.	Surface Erosion Sand
Hickahala - 12 Lick Branch to Wolf	0.5	5.	0.4	1.3	1.3	0.3	0.1	0.1	0.	0.	0.	0.	Minor Bank Failure in Silt 1
Hickahala - 12 Lick Branch to Wolf	0.1	1.1	0.1	0.9	1.	0.2	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Sand
Hickahala - 12 Lick Branch to Wolf	5.9	60.4	4.6	15.8	15.6	3.5	0.6	0.7	0.	0.	0.	0.	Major Bank Failure in Silt 1

Reach Key (text)	Clay (tons/yr)	Silt (tons/yr)	VFS (tons/yr)	FS (tons/yr)	MS (tons/yr)	CS (tons/yr)	VCS (tons/yr)	VFG (tons/yr)	FG (tons/yr)	MG (tons/yr)	CG (tons/yr)	VCG (tons/yr)	Comment (text)
Hickahala - 12 Lick Branch to Wolf	87.	897.9	68.8	235.3	232.4	51.5	9.5	10.2	0.	0.	0.	0.	Medium Gully in Silt 1
Hickahala - 12 Lick Branch to Wolf	1.6	21.6	2.4	16.8	19.8	3.2	0.6	0.5	0.4	0.8	0.7	0.	Small Gully in Sand
Hickahala - 12 Lick Branch to Wolf	0.9	12.2	1.3	9.5	11.2	1.8	0.3	0.3	0.2	0.4	0.4	0.	Major Bank Failure in Sand
Hickahala - 12 Lick Branch to Wolf	27.7	386.3	42.4	300.8	353.6	56.4	10.5	9.	7.5	13.8	12.4	0.	Large Gully in Sand
Hickahala - 12 Lick Branch to Wolf	2.9	33.3	0.5	1.3	1.	0.2	0.1	0.1	0.	0.	0.	0.	Minor Bank Failure in Silt 2
Hickahala - 12 Lick Branch to Wolf	225.4	2592.1	38.4	99.2	76.1	17.1	7.4	5.8	1.8	0.7	0.	0.	Medium Gully in Silt 2
Hickahala - 12 Lick Branch to Wolf	6.1	70.6	1.	2.7	2.1	0.5	0.2	0.2	0.	0.	0.	0.	Major Bank Failure in Silt 2
Hickahala - 12 Lick Branch to Wolf	13028.6	152180.	5174.8	17676.6	14430.6	2646.7	839.	819.4	0.	0.	0.	0.	Surface Erosion Silt
Hickahala - 13 Wolf to White's	77.9	803.6	61.6	210.6	208.	46.1	8.5	9.1	0.	0.	0.	0.	Large Gully in Silt 1
Hickahala - 13 Wolf to White's	771.1	9982.4	916.4	5681.1	13481.8	4211.7	439.6	488.3	0.	0.	0.	0.	Surface Erosion Sand
Hickahala - 13 Wolf to White's	0.5	5.	0.4	1.3	1.3	0.3	0.1	0.1	0.	0.	0.	0.	Minor Bank Failure in Silt 1
Hickahala - 13 Wolf to White's	2.2	25.2	0.4	1.	0.7	0.2	0.1	0.1	0.	0.	0.	0.	Major Bank Failure in Silt 2
Hickahala - 13 Wolf to White's	0.1	1.1	0.1	0.9	1.	0.2	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Sand
Hickahala - 13 Wolf to White's	2.2	25.7	0.4	1.	0.8	0.2	0.1	0.1	0.	0.	0.	0.	Minor Bank Failure in Silt 2
Hickahala - 13 Wolf to White's	54.1	622.1	9.2	23.8	18.3	4.1	1.8	1.4	0.4	0.2	0.	0.	Medium Gully in Silt 2
Hickahala - 13 Wolf to White's	5.9	60.4	4.6	15.8	15.6	3.5	0.6	0.7	0.	0.	0.	0.	Major Bank Failure in Silt 1
Hickahala - 13 Wolf to White's	87.	897.9	68.8	235.3	232.4	51.5	9.5	10.2	0.	0.	0.	0.	Medium Gully in Silt 1
Hickahala - 13 Wolf to White's	1.6	21.6	2.4	16.8	19.8	3.2	0.6	0.5	0.4	0.8	0.7	0.	Small Gully in Sand
Hickahala - 13 Wolf to White's	6150.5	71840.7	2442.9	8344.7	6812.3	1249.4	396.1	386.8	0.	0.	0.	0.	Surface Erosion Silt
Hickahala - 14 White's to Beard's	77.9	803.6	61.6	210.6	208.	46.1	8.5	9.1	0.	0.	0.	0.	Large Gully in Silt 1
Hickahala - 14 White's to Beard's	771.1	9982.4	916.4	5681.1	13481.8	4211.7	439.6	488.3	0.	0.	0.	0.	Surface Erosion Sand
Hickahala - 14 White's to Beard's	0.5	5.	0.4	1.3	1.3	0.3	0.1	0.1	0.	0.	0.	0.	Minor Bank Failure in Silt 1
Hickahala - 14 White's to Beard's	73.6	759.7	58.2	199.1	196.6	43.5	8.	8.6	0.	0.	0.	0.	Medium Gully in Silt 1
Hickahala - 14 White's to Beard's	4.6	47.	3.6	12.3	12.2	2.7	0.5	0.5	0.	0.	0.	0.	Major Bank Failure in Silt 1
Hickahala - 14 White's to Beard's	2.2	25.2	0.4	1.	0.7	0.2	0.1	0.1	0.	0.	0.	0.	Major Bank Failure in Silt 2
Hickahala - 14 White's to Beard's	0.1	1.1	0.1	0.9	1.	0.2	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Sand
Hickahala - 14 White's to Beard's	2.2	25.7	0.4	1.	0.8	0.2	0.1	0.1	0.	0.	0.	0.	Minor Bank Failure in Silt 2

Reach Key (text)	Clay (tons/yr)	Silt (tons/yr)	VFS (tons/yr)	FS (tons/yr)	MS (tons/yr)	CS (tons/yr)	VCS (tons/yr)	VFG (tons/yr)	FG (tons/yr)	MG (tons/yr)	CG (tons/yr)	VCG (tons/yr)	Comment (text)
Hickahala - 14 White's to Beard's	54.1	622.1	9.2	23.8	18.3	4.1	1.8	1.4	0.4	0.2	0.	0.	Medium Gully in Silt 2
Hickahala - 14 White's to Beard's	4992.8	58318.5	1983.1	6774.	5530.1	1014.3	321.5	314.	0.	0.	0.	0.	Surface Erosion Silt
Hickahala - 15 Beard's to Cathey's	77.9	803.6	61.6	210.6	208.	46.1	8.5	9.1	0.	0.	0.	0.	Large Gully in Silt 1
Hickahala - 15 Beard's to Cathey's	4.2	43.6	3.3	11.4	11.3	2.5	0.5	0.5	0.	0.	0.	0.	Major Bank Failure in Silt 1
Hickahala - 15 Beard's to Cathey's	0.4	5.	0.1	0.2	0.1	0.	0.	0.	0.	0.	0.	0.	Major Bank Failure in Silt 2
Hickahala - 15 Beard's to Cathey's	27.	311.	4.6	11.9	9.1	2.1	0.9	0.7	0.2	0.1	0.	0.	Medium Gully in Silt 2
Hickahala - 15 Beard's to Cathey's	771.1	9982.4	916.4	5681.1	13481.8	4211.7	439.6	488.3	0.	0.	0.	0.	Surface Erosion Sand
Hickahala - 15 Beard's to Cathey's	0.5	5.	0.4	1.3	1.3	0.3	0.1	0.1	0.	0.	0.	0.	Minor Bank Failure in Silt 1
Hickahala - 15 Beard's to Cathey's	0.4	4.5	0.1	0.2	0.1	0.	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Silt 2
Hickahala - 15 Beard's to Cathey's	73.6	759.7	58.2	199.1	196.6	43.5	8.	8.6	0.	0.	0.	0.	Medium Gully in Silt 1
Hickahala - 15 Beard's to Cathey's	2133.5	24919.9	847.4	2894.6	2363.	433.4	137.4	134.2	0.	0.	0.	0.	Surface Erosion Silt
Hickahala - 16 Cathey's to 109500	2.8	28.5	2.2	7.5	7.4	1.6	0.3	0.3	0.	0.	0.	0.	Major Bank Failure in Silt 1
Hickahala - 16 Cathey's to 109500	0.4	5.	0.1	0.2	0.1	0.	0.	0.	0.	0.	0.	0.	Major Bank Failure in Silt 2
Hickahala - 16 Cathey's to 109500	27.	311.	4.6	11.9	9.1	2.1	0.9	0.7	0.2	0.1	0.	0.	Medium Gully in Silt 2
Hickahala - 16 Cathey's to 109500	545.6	7063.3	648.4	4019.8	9539.4	2980.1	311.	345.5	0.	0.	0.	0.	Surface Erosion Sand
Hickahala - 16 Cathey's to 109500	0.4	4.	0.3	1.1	1.	0.2	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Silt 1
Hickahala - 16 Cathey's to 109500	0.4	4.5	0.1	0.2	0.1	0.	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Silt 2
Hickahala - 16 Cathey's to 109500	40.2	414.4	31.8	108.6	107.2	23.7	4.4	4.7	0.	0.	0.	0.	Medium Gully in Silt 1
Hickahala - 16 Cathey's to 109500	2033.2	23748.3	807.5	2758.5	2251.9	413.	130.9	127.9	0.	0.	0.	0.	Surface Erosion Silt
Hickahala - 17 109500 to S. Fork	33.5	345.3	26.5	90.5	89.4	19.8	3.6	3.9	0.	0.	0.	0.	Medium Gully in Silt 1
Hickahala - 17 109500 to S. Fork	1667.7	19479.2	662.4	2262.6	1847.1	338.8	107.4	104.9	0.	0.	0.	0.	Surface Erosion Silt
Hickahala - 17 109500 to S. Fork	2.8	28.5	2.2	7.5	7.4	1.6	0.3	0.3	0.	0.	0.	0.	Major Bank Failure in Silt 1
Hickahala - 17 109500 to S. Fork	0.4	5.	0.1	0.2	0.1	0.	0.	0.	0.	0.	0.	0.	Major Bank Failure in Silt 2

Reach Key (text)	Clay (tons/yr)	Silt (tons/yr)	VFS (tons/yr)	FS (tons/yr)	MS (tons/yr)	CS (tons/yr)	VCS (tons/yr)	VFG (tons/yr)	FG (tons/yr)	MG (tons/yr)	CG (tons/yr)	VCG (tons/yr)	Comment (text)
Hickahala - 17 109500 to S. Fork	0.3	3.	0.2	0.8	0.8	0.2	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Silt 1
Hickahala - 17 109500 to S. Fork	0.1	1.5	0.	0.1	0.	0.	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Silt 2
Hickahala - 17 109500 to S. Fork	27.	311.	4.6	11.9	9.1	2.1	0.9	0.7	0.2	0.1	0.	0.	Medium Gully in Silt 2
Hickahala - 17 109500 to S. Fork	545.6	7063.3	648.4	4019.8	9539.4	2980.1	311.	345.5	0.	0.	0.	0.	Surface Erosion Sand
Hickahala - 18 S. Fork to US	13.4	138.1	10.6	36.2	35.7	7.9	1.5	1.6	0.	0.	0.	0.	Medium Gully in Silt 1
Hickahala - 18 S. Fork to US	1.	10.1	0.8	2.6	2.6	0.6	0.1	0.1	0.	0.	0.	0.	Major Bank Failure in Silt 1
Hickahala - 18 S. Fork to US	831.3	9709.8	330.2	1127.9	920.7	168.9	53.5	52.3	0.	0.	0.	0.	Surface Erosion Silt
Hickahala - USBC	343.4	4011.	136.4	465.9	380.3	69.8	22.1	21.6	0.	0.	0.	0.	Surface Erosion Silt
Hickahala - USBC	0.7	6.7	0.5	1.8	1.7	0.4	0.1	0.1	0.	0.	0.	0.	Major Bank Failure in Silt 1
Hickahala - USBC	13.4	138.1	10.6	36.2	35.7	7.9	1.5	1.6	0.	0.	0.	0.	Medium Gully in Silt 1
James Wolf - 01 DS to 1968 Limits	0.9	12.2	1.3	9.5	11.2	1.8	0.3	0.3	0.2	0.4	0.4	0.	Major Bank Failure in Sand
James Wolf - 01 DS to 1968 Limits	27.7	386.3	42.4	300.8	353.6	56.4	10.5	9.	7.5	13.8	12.4	0.	Large Gully in Sand
James Wolf - 01 DS to 1968 Limits	0.7	7.6	0.1	0.3	0.2	0.	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Silt 2
James Wolf - 01 DS to 1968 Limits	171.3	1970.	29.2	75.4	57.8	13.	5.7	4.4	1.3	0.6	0.	0.	Medium Gully in Silt 2
James Wolf - 01 DS to 1968 Limits	3.9	45.4	0.7	1.7	1.3	0.3	0.1	0.1	0.	0.	0.	0.	Major Bank Failure in Silt 2
James Wolf - 01 DS to 1968 Limits	6575.5	76804.8	2611.7	8921.3	7283.1	1335.8	423.4	413.6	0.	0.	0.	0.	Surface Erosion Silt
James Wolf - 02 1968 Limits to M. Dale	0.9	12.2	1.3	9.5	11.2	1.8	0.3	0.3	0.2	0.4	0.4	0.	Major Bank Failure in Sand
James Wolf - 02 1968 Limits to M. Dale	27.7	386.3	42.4	300.8	353.6	56.4	10.5	9.	7.5	13.8	12.4	0.	Large Gully in Sand
James Wolf - 02 1968 Limits to M. Dale	3.1	35.3	0.5	1.4	1.	0.2	0.1	0.1	0.	0.	0.	0.	Major Bank Failure in Silt 2
James Wolf - 02 1968 Limits to M. Dale	0.7	7.6	0.1	0.3	0.2	0.	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Silt 2
James Wolf - 02 1968 Limits to M. Dale	171.3	1970.	29.2	75.4	57.8	13.	5.7	4.4	1.3	0.6	0.	0.	Medium Gully in Silt 2
James Wolf - 02 1968 Limits to M. Dale	5069.3	59212.	2013.5	6877.8	5614.8	1029.8	326.4	318.8	0.	0.	0.	0.	Surface Erosion Silt
James Wolf - 03 M. Dale to 34000	0.9	12.2	1.3	9.5	11.2	1.8	0.3	0.3	0.2	0.4	0.4	0.	Major Bank Failure in Sand
James Wolf - 03 M. Dale to 34000	27.7	386.3	42.4	300.8	353.6	56.4	10.5	9.	7.5	13.8	12.4	0.	Large Gully in Sand

Reach Key (text)	Clay (tons/yr)	Silt (tons/yr)	VFS (tons/yr)	FS (tons/yr)	MS (tons/yr)	CS (tons/yr)	VCS (tons/yr)	VFG (tons/yr)	FG (tons/yr)	MG (tons/yr)	CG (tons/yr)	VCG (tons/yr)	Comment (text)
James Wolf - 03 M. Dale to 34000	1.8	20.2	0.3	0.8	0.6	0.1	0.1	0.	0.	0.	0.	0.	Major Bank Failure in Silt 2
James Wolf - 03 M. Dale to 34000	18.	207.4	3.1	7.9	6.1	1.4	0.6	0.5	0.1	0.1	0.	0.	Medium Gully in Silt 2
James Wolf - 03 M. Dale to 34000	2546.6	29745.	1011.5	3455.1	2820.6	517.3	164.	160.2	0.	0.	0.	0.	Surface Erosion Silt
James Wolf - 04 34000 to 45500	0.9	12.2	1.3	9.5	11.2	1.8	0.3	0.3	0.2	0.4	0.4	0.	Major Bank Failure in Sand
James Wolf - 04 34000 to 45500	27.7	386.3	42.4	300.8	353.6	56.4	10.5	9.	7.5	13.8	12.4	0.	Large Gully in Sand
James Wolf - 04 34000 to 45500	1.8	20.2	0.3	0.8	0.6	0.1	0.1	0.	0.	0.	0.	0.	Major Bank Failure in Silt 2
James Wolf - 04 34000 to 45500	2266.1	26468.7	900.	3074.5	2509.9	460.3	145.9	142.5	0.	0.	0.	0.	Surface Erosion Silt
James Wolf - 05 45500 to US	0.9	12.2	1.3	9.5	11.2	1.8	0.3	0.3	0.2	0.4	0.4	0.	Major Bank Failure in Sand
James Wolf - 05 45500 to US	27.7	386.3	42.4	300.8	353.6	56.4	10.5	9.	7.5	13.8	12.4	0.	Large Gully in Sand
James Wolf - 05 45500 to US	0.4	5.	0.1	0.2	0.1	0.	0.	0.	0.	0.	0.	0.	Major Bank Failure in Silt 2
James Wolf - 05 45500 to US	1813.9	21186.9	720.4	2461.	2009.1	368.5	116.8	114.1	0.	0.	0.	0.	Surface Erosion Silt
James Wolf - USBC	1176.4	13740.7	467.2	1596.1	1303.	239.	75.8	74.	0.	0.	0.	0.	Surface Erosion Silt
James Wolf - USBC	0.9	12.2	1.3	9.5	11.2	1.8	0.3	0.3	0.2	0.4	0.4	0.	Major Bank Failure in Sand
James Wolf - USBC	27.7	386.3	42.4	300.8	353.6	56.4	10.5	9.	7.5	13.8	12.4	0.	Large Gully in Sand
Martin Dale - 01 DS to 4500	1.3	15.1	0.2	0.6	0.4	0.1	0.	0.	0.	0.	0.	0.	Major Bank Failure in Silt 2
Martin Dale - 01 DS to 4500	135.2	1555.2	23.1	59.5	45.7	10.3	4.5	3.5	1.1	0.4	0.	0.	Medium Gully in Silt 2
Martin Dale - 01 DS to 4500	1734.	20253.6	688.7	2352.6	1920.6	352.2	111.7	109.1	0.	0.	0.	0.	Surface Erosion Silt
Martin Dale - 02 4500 to US	1.3	15.1	0.2	0.6	0.4	0.1	0.	0.	0.	0.	0.	0.	Major Bank Failure in Silt 2
Martin Dale - 02 4500 to US	117.2	1347.9	20.	51.6	39.6	8.9	3.9	3.	0.9	0.4	0.	0.	Medium Gully in Silt 2
Martin Dale - 02 4500 to US	759.9	8875.8	301.8	1031.	841.7	154.4	48.9	47.8	0.	0.	0.	0.	Surface Erosion Silt
Martin Dale - USBC	523.6	6115.8	208.	710.4	579.9	106.4	33.7	32.9	0.	0.	0.	0.	Surface Erosion Silt
Martin Dale - USBC	0.2	2.5	0.	0.1	0.1	0.	0.	0.	0.	0.	0.	0.	Major Bank Failure in Silt 2
Mattic - 01 DS to Nelson	7.5	77.	5.9	20.2	19.9	4.4	0.8	0.9	0.	0.	0.	0.	Small Gully in Silt 1
Mattic - 01 DS to Nelson	0.8	9.1	0.1	0.3	0.3	0.1	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Silt 2
Mattic - 01 DS to Nelson	2.2	25.2	0.4	1.	0.7	0.2	0.1	0.1	0.	0.	0.	0.	Major Bank Failure in Silt 2
Mattic - 01 DS to Nelson	36.1	414.7	6.2	15.9	12.2	2.7	1.2	0.9	0.3	0.1	0.	0.	Medium Gully in Silt 2
Mattic - 01 DS to Nelson	2.	27.3	3.	21.3	25.	4.	0.7	0.6	0.5	1.	0.9	0.	Major Bank Failure in Sand
Mattic - 01 DS to Nelson	0.5	5.	0.4	1.3	1.3	0.3	0.1	0.1	0.	0.	0.	0.	Major Bank Failure in Silt 1
Mattic - 01 DS to Nelson	0.2	3.4	0.4	2.6	3.1	0.5	0.1	0.1	0.1	0.1	0.1	0.	Minor Bank Failure in Sand
Mattic - 01 DS to Nelson	6.7	69.1	5.3	18.1	17.9	4.	0.7	0.8	0.	0.	0.	0.	Medium Gully in Silt 1

Reach Key (text)	Clay (tons/yr)	Silt (tons/yr)	VFS (tons/yr)	FS (tons/yr)	MS (tons/yr)	CS (tons/yr)	VCS (tons/yr)	VFG (tons/yr)	FG (tons/yr)	MG (tons/yr)	CG (tons/yr)	VCG (tons/yr)	Comment (text)
Mattic - 01 DS to Nelson	25.	348.6	38.3	271.4	319.1	50.9	9.5	8.1	6.7	12.5	11.2	0.	Medium Gully in Sand
Mattic - 01 DS to Nelson	4562.7	53294.8	1812.2	6190.5	5053.7	926.9	293.8	287.	0.	0.	0.	0.	Surface Erosion Silt
Mattic - 02 Nelson to 13000	0.3	3.4	0.3	0.9	0.9	0.2	0.	0.	0.	0.	0.	0.	Major Bank Failure in Silt 1
Mattic - 02 Nelson to 13000	7.5	77.	5.9	20.2	19.9	4.4	0.8	0.9	0.	0.	0.	0.	Small Gully in Silt 1
Mattic - 02 Nelson to 13000	0.1	1.7	0.2	1.3	1.6	0.2	0.	0.	0.	0.1	0.1	0.	Minor Bank Failure in Sand
Mattic - 02 Nelson to 13000	0.8	9.1	0.1	0.3	0.3	0.1	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Silt 2
Mattic - 02 Nelson to 13000	8.3	116.2	12.8	90.5	106.4	17.	3.2	2.7	2.2	4.2	3.7	0.	Medium Gully in Sand
Mattic - 02 Nelson to 13000	2034.9	23768.2	808.2	2760.8	2253.8	413.4	131.	128.	0.	0.	0.	0.	Surface Erosion Silt
Mattic - 03 13000 to US	5.6	77.5	8.5	60.3	70.9	11.3	2.1	1.8	1.5	2.8	2.5	0.	Medium Gully in Sand
Mattic - 03 13000 to US	0.3	3.4	0.3	0.9	0.9	0.2	0.	0.	0.	0.	0.	0.	Major Bank Failure in Silt 1
Mattic - 03 13000 to US	0.1	1.1	0.1	0.9	1.	0.2	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Sand
Mattic - 03 13000 to US	0.3	3.	0.	0.1	0.1	0.	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Silt 2
Mattic - 03 13000 to US	7.5	77.	5.9	20.2	19.9	4.4	0.8	0.9	0.	0.	0.	0.	Small Gully in Silt 1
Mattic - 03 13000 to US	1803.7	21067.7	716.4	2447.1	1997.8	366.4	116.1	113.4	0.	0.	0.	0.	Surface Erosion Silt
Mattic - USBC	1196.8	13979.	475.3	1623.7	1325.6	243.1	77.1	75.3	0.	0.	0.	0.	Surface Erosion Silt
Mattic - USBC	0.	0.6	0.1	0.4	0.5	0.1	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Sand
Mattic - USBC	5.6	77.5	8.5	60.3	70.9	11.3	2.1	1.8	1.5	2.8	2.5	0.	Medium Gully in Sand
Nelson - 01 DS to Wilborn	2.2	25.2	0.4	1.	0.7	0.2	0.1	0.1	0.	0.	0.	0.	Major Bank Failure in Silt 2
Nelson - 01 DS to Wilborn	36.1	414.7	6.2	15.9	12.2	2.7	1.2	0.9	0.3	0.1	0.	0.	Medium Gully in Silt 2
Nelson - 01 DS to Wilborn	2.	27.3	3.	21.3	25.	4.	0.7	0.6	0.5	1.	0.9	0.	Major Bank Failure in Sand
Nelson - 01 DS to Wilborn	0.2	1.7	0.1	0.4	0.4	0.1	0.	0.	0.	0.	0.	0.	Major Bank Failure in Silt 1
Nelson - 01 DS to Wilborn	0.1	1.7	0.2	1.3	1.6	0.2	0.	0.	0.	0.1	0.1	0.	Minor Bank Failure in Sand
Nelson - 01 DS to Wilborn	6.7	69.1	5.3	18.1	17.9	4.	0.7	0.8	0.	0.	0.	0.	Medium Gully in Silt 1
Nelson - 01 DS to Wilborn	16.7	232.4	25.5	181.	212.7	33.9	6.3	5.4	4.5	8.3	7.5	0.	Medium Gully in Sand
Nelson - 01 DS to Wilborn	2361.3	27580.6	937.9	3203.7	2615.3	479.7	152.1	148.5	0.	0.	0.	0.	Surface Erosion Silt
Nelson - 02 Wilborn to US	13.9	193.7	21.3	150.8	177.3	28.3	5.3	4.5	3.7	6.9	6.2	0.	Medium Gully in Sand
Nelson - 02 Wilborn to US	1.4	19.8	2.2	15.4	18.1	2.9	0.5	0.5	0.4	0.7	0.6	0.	Major Bank Failure in Sand
Nelson - 02 Wilborn to US	2.2	25.2	0.4	1.	0.7	0.2	0.1	0.1	0.	0.	0.	0.	Major Bank Failure in Silt 2
Nelson - 02 Wilborn to US	36.1	414.7	6.2	15.9	12.2	2.7	1.2	0.9	0.3	0.1	0.	0.	Medium Gully in Silt 2
Nelson - 02 Wilborn to US	1195.1	13959.1	474.7	1621.4	1323.7	242.8	77.	75.2	0.	0.	0.	0.	Surface Erosion Silt
Nelson - USBC	834.7	9749.5	331.5	1132.5	924.5	169.6	53.7	52.5	0.	0.	0.	0.	Surface Erosion Silt

Reach Key (text)	Clay (tons/yr)	Silt (tons/yr)	VFS (tons/yr)	FS (tons/yr)	MS (tons/yr)	CS (tons/yr)	VCS (tons/yr)	VFG (tons/yr)	FG (tons/yr)	MG (tons/yr)	CG (tons/yr)	VCG (tons/yr)	Comment (text)
Nelson - USBC	1.4	18.8	2.1	14.7	17.2	2.7	0.5	0.4	0.4	0.7	0.6	0.	Major Bank Failure in Sand
Nelson - USBC	13.9	193.7	21.3	150.8	177.3	28.3	5.3	4.5	3.7	6.9	6.2	0.	Medium Gully in Sand
Senatobia - 01 DS to Res. Bound.	7.5	77.	5.9	20.2	19.9	4.4	0.8	0.9	0.	0.	0.	0.	Small Gully in Silt 1
Senatobia - 01 DS to Res. Bound.	2.2	25.2	0.4	1.	0.7	0.2	0.1	0.1	0.	0.	0.	0.	Major Bank Failure in Silt 2
Senatobia - 01 DS to Res. Bound.	2.	27.3	3.	21.3	25.	4.	0.7	0.6	0.5	1.	0.9	0.	Major Bank Failure in Sand
Senatobia - 01 DS to Res. Bound.	0.2	3.4	0.4	2.6	3.1	0.5	0.1	0.1	0.1	0.1	0.1	0.	Minor Bank Failure in Sand
Senatobia - 01 DS to Res. Bound.	25.	348.6	38.3	271.4	319.1	50.9	9.5	8.1	6.7	12.5	11.2	0.	Medium Gully in Sand
Senatobia - 01 DS to Res. Bound.	2.6	26.9	2.1	7.	7.	1.5	0.3	0.3	0.	0.	0.	0.	Major Bank Failure in Silt 1
Senatobia - 01 DS to Res. Bound.	107.1	1105.1	84.7	289.6	286.	63.3	11.7	12.5	0.	0.	0.	0.	Medium Gully in Silt 1
Senatobia - 01 DS to Res. Bound.	0.6	6.	0.5	1.6	1.6	0.3	0.1	0.1	0.	0.	0.	0.	Minor Bank Failure in Silt 1
Senatobia - 01 DS to Res. Bound.	2.	22.7	0.3	0.9	0.7	0.1	0.1	0.1	0.	0.	0.	0.	Minor Bank Failure in Silt 2
Senatobia - 01 DS to Res. Bound.	72.1	829.5	12.3	31.8	24.3	5.5	2.4	1.8	0.6	0.2	0.	0.	Medium Gully in Silt 2
Senatobia - 01 DS to Res. Bound.	10679.3	124738.3	4241.6	14489.1	11828.4	2169.4	687.7	671.7	0.	0.	0.	0.	Surface Erosion Silt
Senatobia - 01 DS to Res. Bound.	130.3	1686.4	154.8	959.8	2277.6	711.5	74.3	82.5	0.	0.	0.	0.	Surface Erosion Sand
Senatobia - 02 Res. Bound. to 15000	7.5	77.	5.9	20.2	19.9	4.4	0.8	0.9	0.	0.	0.	0.	Small Gully in Silt 1
Senatobia - 02 Res. Bound. to 15000	2.2	25.2	0.4	1.	0.7	0.2	0.1	0.1	0.	0.	0.	0.	Major Bank Failure in Silt 2
Senatobia - 02 Res. Bound. to 15000	2.	27.3	3.	21.3	25.	4.	0.7	0.6	0.5	1.	0.9	0.	Major Bank Failure in Sand
Senatobia - 02 Res. Bound. to 15000	0.2	3.4	0.4	2.6	3.1	0.5	0.1	0.1	0.1	0.1	0.1	0.	Minor Bank Failure in Sand
Senatobia - 02 Res. Bound. to 15000	25.	348.6	38.3	271.4	319.1	50.9	9.5	8.1	6.7	12.5	11.2	0.	Medium Gully in Sand
Senatobia - 02 Res. Bound. to 15000	2.6	26.9	2.1	7.	7.	1.5	0.3	0.3	0.	0.	0.	0.	Major Bank Failure in Silt 1
Senatobia - 02 Res. Bound. to 15000	107.1	1105.1	84.7	289.6	286.	63.3	11.7	12.5	0.	0.	0.	0.	Medium Gully in Silt 1
Senatobia - 02 Res. Bound. to 15000	0.6	6.	0.5	1.6	1.6	0.3	0.1	0.1	0.	0.	0.	0.	Minor Bank Failure in Silt 1
Senatobia - 02 Res. Bound. to 15000	2.	22.7	0.3	0.9	0.7	0.1	0.1	0.1	0.	0.	0.	0.	Minor Bank Failure in Silt 2
Senatobia - 02 Res. Bound. to 15000	72.1	829.5	12.3	31.8	24.3	5.5	2.4	1.8	0.6	0.2	0.	0.	Medium Gully in Silt 2
Senatobia - 02 Res. Bound. to 15000	10679.3	124738.3	4241.6	14489.1	11828.4	2169.4	687.7	671.7	0.	0.	0.	0.	Surface Erosion Silt
Senatobia - 02 Res. Bound. to 15000	88.8	1149.5	105.5	654.2	1552.4	485.	50.6	56.2	0.	0.	0.	0.	Surface Erosion Sand

Reach Key (text)	Clay (tons/yr)	Silt (tons/yr)	VFS (tons/yr)	FS (tons/yr)	MS (tons/yr)	CS (tons/yr)	VCS (tons/yr)	VFG (tons/yr)	FG (tons/yr)	MG (tons/yr)	CG (tons/yr)	VCG (tons/yr)	Comment (text)
Senatobia - 03 15000 to G. Springs	7.5	77.	5.9	20.2	19.9	4.4	0.8	0.9	0.	0.	0.	0.	Small Gully in Silt 1
Senatobia - 03 15000 to G. Springs	2.2	25.2	0.4	1.	0.7	0.2	0.1	0.1	0.	0.	0.	0.	Major Bank Failure in Silt 2
Senatobia - 03 15000 to G. Springs	2.	27.3	3.	21.3	25.	4.	0.7	0.6	0.5	1.	0.9	0.	Major Bank Failure in Sand
Senatobia - 03 15000 to G. Springs	0.2	3.4	0.4	2.6	3.1	0.5	0.1	0.1	0.1	0.1	0.1	0.	Minor Bank Failure in Sand
Senatobia - 03 15000 to G. Springs	25.	348.6	38.3	271.4	319.1	50.9	9.5	8.1	6.7	12.5	11.2	0.	Medium Gully in Sand
Senatobia - 03 15000 to G. Springs	2.6	26.9	2.1	7.	7.	1.5	0.3	0.3	0.	0.	0.	0.	Major Bank Failure in Silt 1
Senatobia - 03 15000 to G. Springs	107.1	1105.1	84.7	289.6	286.	63.3	11.7	12.5	0.	0.	0.	0.	Medium Gully in Silt 1
Senatobia - 03 15000 to G. Springs	0.6	6.	0.5	1.6	1.6	0.3	0.1	0.1	0.	0.	0.	0.	Minor Bank Failure in Silt 1
Senatobia - 03 15000 to G. Springs	2.	22.7	0.3	0.9	0.7	0.1	0.1	0.1	0.	0.	0.	0.	Minor Bank Failure in Silt 2
Senatobia - 03 15000 to G. Springs	72.1	829.5	12.3	31.8	24.3	5.5	2.4	1.8	0.6	0.2	0.	0.	Medium Gully in Silt 2
Senatobia - 03 15000 to G. Springs	10679.3	124738.3	4241.6	14489.1	11828.4	2169.4	687.7	671.7	0.	0.	0.	0.	Surface Erosion Silt
Senatobia - 04 G. Springs to Mattic	7.5	77.	5.9	20.2	19.9	4.4	0.8	0.9	0.	0.	0.	0.	Small Gully in Silt 1
Senatobia - 04 G. Springs to Mattic	2.2	25.2	0.4	1.	0.7	0.2	0.1	0.1	0.	0.	0.	0.	Major Bank Failure in Silt 2
Senatobia - 04 G. Springs to Mattic	2.	27.3	3.	21.3	25.	4.	0.7	0.6	0.5	1.	0.9	0.	Major Bank Failure in Sand
Senatobia - 04 G. Springs to Mattic	0.2	3.4	0.4	2.6	3.1	0.5	0.1	0.1	0.1	0.1	0.1	0.	Minor Bank Failure in Sand
Senatobia - 04 G. Springs to Mattic	25.	348.6	38.3	271.4	319.1	50.9	9.5	8.1	6.7	12.5	11.2	0.	Medium Gully in Sand
Senatobia - 04 G. Springs to Mattic	2.6	26.9	2.1	7.	7.	1.5	0.3	0.3	0.	0.	0.	0.	Major Bank Failure in Silt 1
Senatobia - 04 G. Springs to Mattic	107.1	1105.1	84.7	289.6	286.	63.3	11.7	12.5	0.	0.	0.	0.	Medium Gully in Silt 1
Senatobia - 04 G. Springs to Mattic	0.6	6.	0.5	1.6	1.6	0.3	0.1	0.1	0.	0.	0.	0.	Minor Bank Failure in Silt 1
Senatobia - 04 G. Springs to Mattic	2.	22.7	0.3	0.9	0.7	0.1	0.1	0.1	0.	0.	0.	0.	Minor Bank Failure in Silt 2
Senatobia - 04 G. Springs to Mattic	72.1	829.5	12.3	31.8	24.3	5.5	2.4	1.8	0.6	0.2	0.	0.	Medium Gully in Silt 2

Reach Key (text)	Clay (tons/yr)	Silt (tons/yr)	VFS (tons/yr)	FS (tons/yr)	MS (tons/yr)	CS (tons/yr)	VCS (tons/yr)	VFG (tons/yr)	FG (tons/yr)	MG (tons/yr)	CG (tons/yr)	VCG (tons/yr)	Comment (text)
Senatobia - 04 G. Springs to Mattic	9497.8	110938.1	3772.4	12886.1	10519.8	1929.4	611.6	597.4	0.	0.	0.	0.	Surface Erosion Silt
Senatobia - 05 Mattic to T. Jones	2.1	21.8	1.7	5.7	5.6	1.3	0.2	0.2	0.	0.	0.	0.	Major Bank Failure in Silt 1
Senatobia - 05 Mattic to T. Jones	100.4	1036.	79.4	271.5	268.1	59.4	10.9	11.7	0.	0.	0.	0.	Medium Gully in Silt 1
Senatobia - 05 Mattic to T. Jones	0.6	6.	0.5	1.6	1.6	0.3	0.1	0.1	0.	0.	0.	0.	Minor Bank Failure in Silt 1
Senatobia - 05 Mattic to T. Jones	1.2	13.6	0.2	0.5	0.4	0.1	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Silt 2
Senatobia - 05 Mattic to T. Jones	36.1	414.7	6.2	15.9	12.2	2.7	1.2	0.9	0.3	0.1	0.	0.	Medium Gully in Silt 2
Senatobia - 05 Mattic to T. Jones	4605.2	53791.2	1829.1	6248.2	5100.8	935.5	296.6	289.6	0.	0.	0.	0.	Surface Erosion Silt
Senatobia - 06 T. Jones to 46000	1.5	15.1	1.2	4.	3.9	0.9	0.2	0.2	0.	0.	0.	0.	Major Bank Failure in Silt 1
Senatobia - 06 T. Jones to 46000	80.3	828.8	63.5	217.2	214.5	47.5	8.7	9.4	0.	0.	0.	0.	Medium Gully in Silt 1
Senatobia - 06 T. Jones to 46000	0.9	10.6	0.2	0.4	0.3	0.1	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Silt 2
Senatobia - 06 T. Jones to 46000	3631.2	42413.4	1442.2	4926.6	4021.9	737.7	233.8	228.4	0.	0.	0.	0.	Surface Erosion Silt
Senatobia - 07 46000 to 62000	1.5	15.1	1.2	4.	3.9	0.9	0.2	0.2	0.	0.	0.	0.	Major Bank Failure in Silt 1
Senatobia - 07 46000 to 62000	80.3	828.8	63.5	217.2	214.5	47.5	8.7	9.4	0.	0.	0.	0.	Medium Gully in Silt 1
Senatobia - 07 46000 to 62000	2825.4	33001.5	1122.2	3833.3	3129.4	574.	181.9	177.7	0.	0.	0.	0.	Surface Erosion Silt
Senatobia - 08 62000 to US	1.1	11.8	0.9	3.1	3.	0.7	0.1	0.1	0.	0.	0.	0.	Major Bank Failure in Silt 1
Senatobia - 08 62000 to US	46.8	483.5	37.1	126.7	125.1	27.7	5.1	5.5	0.	0.	0.	0.	Medium Gully in Silt 1
Senatobia - 08 62000 to US	1711.9	19995.5	679.9	2322.6	1896.1	347.8	110.2	107.7	0.	0.	0.	0.	Surface Erosion Silt
Senatobia - USBC	895.9	10464.4	355.8	1215.5	992.3	182.	57.7	56.3	0.	0.	0.	0.	Surface Erosion Silt
Senatobia - USBC	0.5	5.	0.4	1.3	1.3	0.3	0.1	0.1	0.	0.	0.	0.	Major Bank Failure in Silt 1
South Fork - 01 DS to 4600	20.1	207.2	15.9	54.3	53.6	11.9	2.2	2.3	0.	0.	0.	0.	Medium Gully in Silt 1
South Fork - 01 DS to 4600	1.5	15.1	1.2	4.	3.9	0.9	0.2	0.2	0.	0.	0.	0.	Major Bank Failure in Silt 1
South Fork - 01 DS to 4600	0.1	1.	0.1	0.3	0.3	0.1	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Silt 1
South Fork - 01 DS to 4600	836.4	9769.4	332.2	1134.8	926.4	169.9	53.9	52.6	0.	0.	0.	0.	Surface Erosion Silt
South Fork - 02 4600 to 10000	1.3	13.4	1.	3.5	3.5	0.8	0.1	0.2	0.	0.	0.	0.	Major Bank Failure in Silt 1
South Fork - 02 4600 to 10000	20.1	207.2	15.9	54.3	53.6	11.9	2.2	2.3	0.	0.	0.	0.	Medium Gully in Silt 1
South Fork - 02 4600 to 10000	737.8	8617.7	293.	1001.	817.2	149.9	47.5	46.4	0.	0.	0.	0.	Surface Erosion Silt
South Fork - 03 10000 to US	334.9	3911.7	133.	454.4	370.9	68.	21.6	21.1	0.	0.	0.	0.	Surface Erosion Silt
South Fork - 03 10000 to US	0.8	8.4	0.6	2.2	2.2	0.5	0.1	0.1	0.	0.	0.	0.	Major Bank Failure in Silt 1
South Fork - 03 10000 to US	13.4	138.1	10.6	36.2	35.7	7.9	1.5	1.6	0.	0.	0.	0.	Medium Gully in Silt 1
South Fork - USBC	334.9	3911.7	133.	454.4	370.9	68.	21.6	21.1	0.	0.	0.	0.	Surface Erosion Silt
South Fork - USBC	0.8	8.4	0.6	2.2	2.2	0.5	0.1	0.1	0.	0.	0.	0.	Major Bank Failure in Silt 1

Reach Key (text)	Clay (tons/yr)	Silt (tons/yr)	VFS (tons/yr)	FS (tons/yr)	MS (tons/yr)	CS (tons/yr)	VCS (tons/yr)	VFG (tons/yr)	FG (tons/yr)	MG (tons/yr)	CG (tons/yr)	VCG (tons/yr)	Comment (text)
South Fork - USBC	6.7	69.1	5.3	18.1	17.9	4.	0.7	0.8	0.	0.	0.	0.	Medium Gully in Silt 1
Steammill - 01 DS to 5200	1.	10.1	0.8	2.6	2.6	0.6	0.1	0.1	0.	0.	0.	0.	Major Bank Failure in Silt 1
Steammill - 01 DS to 5200	0.2	2.	0.2	0.5	0.5	0.1	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Silt 1
Steammill - 01 DS to 5200	7.5	77.	5.9	20.2	19.9	4.4	0.8	0.9	0.	0.	0.	0.	Small Gully in Silt 1
Steammill - 01 DS to 5200	385.9	4507.4	153.3	523.6	427.4	78.4	24.8	24.3	0.	0.	0.	0.	Surface Erosion Silt
Steammill - 02 5200 to US	62.9	734.7	25.	85.3	69.7	12.8	4.1	4.	0.	0.	0.	0.	Surface Erosion Silt
Steammill - USBC	62.9	734.7	25.	85.3	69.7	12.8	4.1	4.	0.	0.	0.	0.	Surface Erosion Silt
Thornton - 01 DS to 1968 Limits	1.	10.1	0.8	2.6	2.6	0.6	0.1	0.1	0.	0.	0.	0.	Major Bank Failure in Silt 1
Thornton - 01 DS to 1968 Limits	1.3	13.1	1.	3.4	3.4	0.8	0.1	0.1	0.	0.	0.	0.	Minor Bank Failure in Silt 1
Thornton - 01 DS to 1968 Limits	22.4	231.	17.7	60.5	59.8	13.2	2.4	2.6	0.	0.	0.	0.	Small Gully in Silt 1
Thornton - 01 DS to 1968 Limits	756.5	8836.1	300.5	1026.4	837.9	153.7	48.7	47.6	0.	0.	0.	0.	Surface Erosion Silt
Thornton - 02 1968 Limits to Steammill	1.	10.1	0.8	2.6	2.6	0.6	0.1	0.1	0.	0.	0.	0.	Major Bank Failure in Silt 1
Thornton - 02 1968 Limits to Steammill	1.3	13.1	1.	3.4	3.4	0.8	0.1	0.1	0.	0.	0.	0.	Minor Bank Failure in Silt 1
Thornton - 02 1968 Limits to Steammill	18.7	192.5	14.8	50.5	49.8	11.	2.	2.2	0.	0.	0.	0.	Small Gully in Silt 1
Thornton - 02 1968 Limits to Steammill	698.7	8161.	277.5	948.	773.9	141.9	45.	43.9	0.	0.	0.	0.	Surface Erosion Silt
Thornton - 03 Steammill to US	1.1	11.1	0.8	2.9	2.9	0.6	0.1	0.1	0.	0.	0.	0.	Minor Bank Failure in Silt 1
Thornton - 03 Steammill to US	11.2	115.5	8.9	30.3	29.9	6.6	1.2	1.3	0.	0.	0.	0.	Small Gully in Silt 1
Thornton - 03 Steammill to US	246.5	2879.2	97.9	334.4	273.	50.1	15.9	15.5	0.	0.	0.	0.	Surface Erosion Silt
Thornton - USBC	86.7	1012.7	34.4	117.6	96.	17.6	5.6	5.5	0.	0.	0.	0.	Surface Erosion Silt
Thornton - USBC	1.1	11.1	0.8	2.9	2.9	0.6	0.1	0.1	0.	0.	0.	0.	Minor Bank Failure in Silt 1
Thornton - USBC	11.2	115.5	8.9	30.3	29.9	6.6	1.2	1.3	0.	0.	0.	0.	Small Gully in Silt 1
Tolbert-Jones - 01 DS to 3000	0.7	6.7	0.5	1.8	1.7	0.4	0.1	0.1	0.	0.	0.	0.	Major Bank Failure in Silt 1
Tolbert-Jones - 01 DS to 3000	20.1	207.2	15.9	54.3	53.6	11.9	2.2	2.3	0.	0.	0.	0.	Medium Gully in Silt 1
Tolbert-Jones - 01 DS to 3000	0.6	6.	0.5	1.6	1.6	0.3	0.1	0.1	0.	0.	0.	0.	Minor Bank Failure in Silt 1
Tolbert-Jones - 01 DS to 3000	27.	311.	4.6	11.9	9.1	2.1	0.9	0.7	0.2	0.1	0.	0.	Medium Gully in Silt 2
Tolbert-Jones - 01 DS to 3000	817.7	9551.	324.8	1109.4	905.7	166.1	52.7	51.4	0.	0.	0.	0.	Surface Erosion Silt
Tolbert-Jones - 02 3000 to US	0.7	6.7	0.5	1.8	1.7	0.4	0.1	0.1	0.	0.	0.	0.	Major Bank Failure in Silt 1
Tolbert-Jones - 02 3000 to US	20.1	207.2	15.9	54.3	53.6	11.9	2.2	2.3	0.	0.	0.	0.	Medium Gully in Silt 1
Tolbert-Jones - 02 3000 to US	0.6	6.	0.5	1.6	1.6	0.3	0.1	0.1	0.	0.	0.	0.	Minor Bank Failure in Silt 1

Reach Key (text)	Clay (tons/yr)	Silt (tons/yr)	VFS (tons/yr)	FS (tons/yr)	MS (tons/yr)	CS (tons/yr)	VCS (tons/yr)	VFG (tons/yr)	FG (tons/yr)	MG (tons/yr)	CG (tons/yr)	VCG (tons/yr)	Comment (text)
Tolbert-Jones - 02 3000 to US	27.	311.	4.6	11.9	9.1	2.1	0.9	0.7	0.2	0.1	0.	0.	Medium Gully in Silt 2
Tolbert-Jones - 02 3000 to US	741.2	8657.4	294.4	1005.6	820.9	150.6	47.7	46.6	0.	0.	0.	0.	Surface Erosion Silt
Tolbert-Jones - USBC	351.9	4110.3	139.8	477.4	389.8	71.5	22.7	22.1	0.	0.	0.	0.	Surface Erosion Silt
Tolbert-Jones - USBC	0.7	6.7	0.5	1.8	1.7	0.4	0.1	0.1	0.	0.	0.	0.	Major Bank Failure in Silt 1
Tolbert-Jones - USBC	0.4	4.	0.3	1.1	1.	0.2	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Silt 1
Tolbert-Jones - USBC	20.1	207.2	15.9	54.3	53.6	11.9	2.2	2.3	0.	0.	0.	0.	Medium Gully in Silt 1
West Ditch - 01 DS to Res. Bound.	0.4	4.	0.3	1.1	1.	0.2	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Silt 1
West Ditch - 01 DS to Res. Bound.	7.5	77.	5.9	20.2	19.9	4.4	0.8	0.9	0.	0.	0.	0.	Small Gully in Silt 1
West Ditch - 01 DS to Res. Bound.	5.	57.8	0.9	2.2	1.7	0.4	0.2	0.1	0.	0.	0.	0.	Small Gully in Silt 2
West Ditch - 01 DS to Res. Bound.	0.3	3.	0.	0.1	0.1	0.	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Silt 2
West Ditch - 01 DS to Res. Bound.	2483.7	29010.3	986.5	3369.7	2750.9	504.5	159.9	156.2	0.	0.	0.	0.	Surface Erosion Silt
West Ditch - 02 Res. Bound. To 24300	0.4	4.	0.3	1.1	1.	0.2	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Silt 1
West Ditch - 02 Res. Bound. To 24300	7.5	77.	5.9	20.2	19.9	4.4	0.8	0.9	0.	0.	0.	0.	Small Gully in Silt 1
West Ditch - 02 Res. Bound. To 24300	5.	57.8	0.9	2.2	1.7	0.4	0.2	0.1	0.	0.	0.	0.	Small Gully in Silt 2
West Ditch - 02 Res. Bound. To 24300	0.3	3.	0.	0.1	0.1	0.	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Silt 2
West Ditch - 02 Res. Bound. To 24300	1711.9	19995.5	679.9	2322.6	1896.1	347.8	110.2	107.7	0.	0.	0.	0.	Surface Erosion Silt
West Ditch - 03 24300 to US	0.4	4.	0.3	1.1	1.	0.2	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Silt 1
West Ditch - 03 24300 to US	0.1	1.5	0.	0.1	0.	0.	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Silt 2
West Ditch - 03 24300 to US	7.5	77.	5.9	20.2	19.9	4.4	0.8	0.9	0.	0.	0.	0.	Small Gully in Silt 1
West Ditch - 03 24300 to US	5.	57.8	0.9	2.2	1.7	0.4	0.2	0.1	0.	0.	0.	0.	Small Gully in Silt 2
West Ditch - 03 24300 to US	1193.4	13939.2	474.	1619.1	1321.8	242.4	76.8	75.1	0.	0.	0.	0.	Surface Erosion Silt
West Ditch - USBC	421.6	4924.4	167.5	572.	467.	85.6	27.1	26.5	0.	0.	0.	0.	Surface Erosion Silt
West Ditch - USBC	0.2	2.	0.2	0.5	0.5	0.1	0.	0.	0.	0.	0.	0.	Minor Bank Failure in Silt 1
White's - 01 DS to 1968 Limits	1.3	13.4	1.	3.5	3.5	0.8	0.1	0.2	0.	0.	0.	0.	Major Bank Failure in Silt 1
White's - 01 DS to 1968 Limits	13.4	138.1	10.6	36.2	35.7	7.9	1.5	1.6	0.	0.	0.	0.	Medium Gully in Silt 1
White's - 01 DS to 1968 Limits	1.6	21.6	2.4	16.8	19.8	3.2	0.6	0.5	0.4	0.8	0.7	0.	Small Gully in Sand

Reach Key (text)	Clay (tons/yr)	Silt (tons/yr)	VFS (tons/yr)	FS (tons/yr)	MS (tons/yr)	CS (tons/yr)	VCS (tons/yr)	VFG (tons/yr)	FG (tons/yr)	MG (tons/yr)	CG (tons/yr)	VCG (tons/yr)	Comment (text)
White's - 01 DS to 1968 Limits	851.7	9948.1	338.3	1155.5	943.3	173.	54.8	53.6	0.	0.	0.	0.	Surface Erosion Silt
White's - 02 1968 Limits to 8000	1.3	13.4	1.	3.5	3.5	0.8	0.1	0.2	0.	0.	0.	0.	Major Bank Failure in Silt 1
White's - 02 1968 Limits to 8000	13.4	138.1	10.6	36.2	35.7	7.9	1.5	1.6	0.	0.	0.	0.	Medium Gully in Silt 1
White's - 02 1968 Limits to 8000	1.6	21.6	2.4	16.8	19.8	3.2	0.6	0.5	0.4	0.8	0.7	0.	Small Gully in Sand
White's - 02 1968 Limits to 8000	816.	9531.1	324.1	1107.1	903.8	165.8	52.5	51.3	0.	0.	0.	0.	Surface Erosion Silt
White's - 03 8000 to US	1.3	13.4	1.	3.5	3.5	0.8	0.1	0.2	0.	0.	0.	0.	Major Bank Failure in Silt 1
White's - 03 8000 to US	13.4	138.1	10.6	36.2	35.7	7.9	1.5	1.6	0.	0.	0.	0.	Medium Gully in Silt 1
White's - 03 8000 to US	453.9	5301.7	180.3	615.8	502.7	92.2	29.2	28.5	0.	0.	0.	0.	Surface Erosion Silt
White's - USBC	129.2	1509.1	51.3	175.3	143.1	26.2	8.3	8.1	0.	0.	0.	0.	Surface Erosion Silt
White's - USBC	1.3	13.4	1.	3.5	3.5	0.8	0.1	0.2	0.	0.	0.	0.	Major Bank Failure in Silt 1
White's - USBC	13.4	138.1	10.6	36.2	35.7	7.9	1.5	1.6	0.	0.	0.	0.	Medium Gully in Silt 1

Table B-4 Event Energy.

Reach Key (text)	Regime Volume (m^3/s)	Regime Duration (s/yr)	Fraction Weighted Average Fall Velocity (m/s)	Volume Weighted Efficiency (none)	Volume Weighted Average Applied Power (N/s)	Regime Applied Work (N*m)	Volume Weighted Average Transport Rate (tons/d)	Regime Yield (tons/yr)	Rate-Power Slope (tons/yr)/(N*m)	Rate-Power Y-Intercept (tons/yr)	Rate-Power X-Intercept (N*m)	R^2 (none)	Residual Standard Deviation (N*m)
Basket - 01 DS to 4000	1.26E+7	1.71E+07	0.1019	3.39	52.1	7.50E+10	10.2	700.9	0.247	-1.73	7.01	0.970	2.5
Basket - 02 4000 to 1968 Limits	1.16E+7	1.71E+07	0.1019	6.03	717.6	2.35E+11	386.3	5189.5	0.538	-5.44	10.10	0.999	26.1
Basket - 03 1968 Limits to 15400	9.51E+6	1.71E+07	0.1019	6.90	1166.3	3.99E+11	730.2	8590.2	0.685	-50.66	73.98	1.000	49.9
Basket - 04 15400 to US	7.44E+6	1.71E+07	0.1019	5.79	541.3	1.95E+11	320.1	4181.1	0.655	-26.36	40.26	1.000	22.6
Basket - USBC	3.65E+6	1.71E+07	0.1019	5.02	445.6	1.26E+11	277.7	2881.0	0.698	-24.81	35.53	1.000	26.8
Beard's - 01 DS to 1968 Limits	1.39E+7	1.71E+07	0.1019	5.97	603.6	2.35E+11	285.9	4014.2	0.505	-15.39	30.44	1.000	10.3
Beard's - 02 1968 Limits to 10800 Bridge	1.36E+7	1.71E+07	0.1019	7.31	1139.9	3.91E+11	724.3	8634.9	0.678	-36.74	54.23	1.000	30.7
Beard's - 03 10800 Bridge to US	7.45E+6	1.71E+07	0.0081	103.14	18220.1	5.56E+12	517.9	6591.5	0.030	-18.35	617.08	1.000	15.8
Beard's - USBC	2.92E+6	1.71E+07	0.0081	92.72	11909.0	3.57E+12	300.8	3659.4	0.027	-18.74	684.69	1.000	23.3
Billy's - 01 DS to Res. Bound.	3.98E+6	1.71E+07	0.0081	29.31	116.5	3.27E+11	1.4	201.4	0.015	-0.17	11.76	0.962	0.6
Billy's - 02 Res. Bound. to 1968 Limits	3.83E+6	1.71E+07	0.1019	4.43	183.4	7.05E+10	77.8	1260.8	0.381	3.11	-8.15	0.994	12.3
Billy's - 03 1968 Limits to US	3.59E+6	1.71E+07	0.1019	5.16	380.2	1.31E+11	268.2	2997.3	0.766	-17.57	22.95	1.000	15.3
Billy's - USBC	9.74E+5	1.71E+07	0.1019	5.17	183.2	6.45E+10	125.9	1480.6	0.768	-10.93	14.24	1.000	11.0
Cathey's - 01 DS to 3500	5.36E+6	1.71E+07	0.1019	7.55	817.2	2.89E+11	473.9	7499.0	0.596	-14.29	23.98	1.000	26.1
Cathey's - 02 3500 to 7500	5.14E+6	1.71E+07	0.0081	74.73	9510.3	3.20E+12	247.5	2889.1	0.028	-13.97	498.75	1.000	14.0
Cathey's - 03 7500 to 12100	4.32E+6	1.71E+07	0.0081	69.64	5776.0	1.88E+12	135.9	1617.1	0.026	-9.48	368.11	1.000	10.2
Cathey's - 04 12100 to US	3.47E+6	1.71E+07	0.0081	74.16	6918.1	2.42E+12	185.5	2289.4	0.029	-9.12	318.99	1.000	8.5
Cathey's - USBC	1.50E+6	1.71E+07	0.0081	75.36	6589.5	2.25E+12	175.2	2080.7	0.029	-11.79	405.92	1.000	12.9
Hickahala - 01 DS to 12500	3.00E+8	1.71E+07	0.0081	84.95	18458.7	3.78E+13	572.6	39485.3	0.042	-204.45	4840.92	0.998	46.8
Hickahala - 02 12500 to 1968 Start	2.95E+8	1.71E+07	0.0081	52.54	5674.2	4.17E+12	122.7	2029.8	0.026	-22.37	857.31	0.997	19.8
Hickahala - 03 1968 Start to W. Ditch	2.84E+8	1.71E+07	0.0081	61.83	17001.1	8.88E+12	377.9	6390.4	0.026	-50.42	1906.84	0.998	49.4
Hickahala - 04 W. Ditch to Senatobia	2.62E+8	1.71E+07	0.0081	43.00	2715.2	6.09E+12	48.3	6588.4	0.022	-14.77	686.13	0.993	10.5
Hickahala - 05 Senatobia to Billy's	1.71E+8	1.71E+07	0.0081	135.06	114883.6	2.63E+13	5067.8	59344.5	0.047	-297.00	6255.26	1.000	337.2
Hickahala - 06 Billy's to Res. Bound.	1.66E+8	1.71E+07	0.0081	98.23	55795.1	1.42E+13	1960.9	18247.5	0.044	-397.05	9010.44	0.999	520.6

Reach Key (text)	Regime Volume (m^3/s)	Regime Duration (s/yr)	Fraction Weighted Average Fall Velocity (m/s)	Volume Weighted Efficiency (none)	Volume Weighted Average Applied Power (N/s)	Regime Applied Work (N*m)	Volume Weighted Average Transport Rate (tons/d)	Regime Yield (tons/yr)	Rate-Power Slope (tons/yr)/(N*m)	Rate-Power Y-Intercept (tons/yr)	Rate-Power X-Intercept (N*m)	R^2 (none)	Residual Standard Deviation (N*m)
Hickahala - 07 Res. Bound. to Thornton	1.65E+8	1.71E+07	0.1019	8.36	2591.2	1.02E+12	1123.9	15952.4	0.472	-114.22	242.04	0.997	135.2
Hickahala - 08 Thornton to Basket	1.57E+8	1.71E+07	0.1019	9.43	11788.5	1.18E+12	7471.1	74490.4	0.687	-580.88	845.78	0.999	915.0
Hickahala - 09 Basket to 57350	1.44E+8	1.71E+07	0.1019	8.86	9374.3	2.34E+12	5721.2	58682.7	0.663	-368.27	555.26	1.000	438.5
Hickahala - 10 57350 to Lick	1.36E+8	1.71E+07	0.1019	9.09	7877.7	2.86E+12	4606.4	55159.9	0.663	-471.30	710.52	0.999	567.6
Hickahala - 11 Lick to Lick Branch	1.28E+8	1.71E+07	0.1019	8.00	6069.5	1.70E+12	3423.6	35944.4	0.644	-366.59	569.13	0.999	502.8
Hickahala - 12 Lick Branch to Wolf	1.27E+8	1.71E+07	0.1019	7.81	5182.7	1.70E+12	2772.2	32427.5	0.610	-292.38	479.29	0.999	360.6
Hickahala - 13 Wolf to White's	7.15E+7	1.71E+07	0.1019	7.82	2034.3	7.83E+11	941.0	15538.3	0.487	-41.68	85.53	1.000	32.6
Hickahala - 14 White's to Beard's	6.21E+7	1.71E+07	0.0081	123.21	61294.7	1.72E+13	1307.7	16248.7	0.023	-70.52	3083.85	1.000	68.6
Hickahala - 15 Beard's to Cathey's	3.55E+7	1.71E+07	0.0081	101.35	39393.7	1.54E+13	841.8	13955.9	0.022	-21.18	965.19	1.000	11.4
Hickahala - 16 Cathey's to 109500	2.93E+7	1.71E+07	0.0081	112.32	56457.2	1.62E+13	1477.2	17564.2	0.028	-63.12	2281.84	1.000	57.8
Hickahala - 17 109500 to S. Fork	2.65E+7	1.71E+07	0.0081	98.75	41949.9	1.27E+13	946.2	11285.7	0.024	-60.88	2486.07	1.000	57.0
Hickahala - 18 S. Fork to US	6.78E+6	1.71E+07	0.0081	98.40	14056.1	4.25E+12	415.8	5432.5	0.032	-20.99	666.27	1.000	17.2
Hickahala - USBC	2.77E+6	1.71E+07	0.0081	74.66	6758.0	2.06E+12	196.1	2280.3	0.031	-10.33	332.59	1.000	10.1
James Wolf - 01 DS to 1968 Limits	5.32E+7	1.71E+07	0.1019	9.25	3507.4	1.25E+12	1980.6	30038.6	0.551	10.74	-19.47	1.000	113.7
James Wolf - 02 1968 Limits to M. Dale	4.10E+7	1.71E+07	0.1019	10.05	5265.4	1.54E+12	3200.8	40096.4	0.667	-230.84	346.28	1.000	236.3
James Wolf - 03 M. Dale to 34000	2.06E+7	1.71E+07	0.1019	7.04	2308.9	6.99E+11	1437.3	18158.5	0.659	-63.62	96.60	1.000	51.8
James Wolf - 04 34000 to 45500	1.83E+7	1.71E+07	0.1019	6.53	1728.0	5.21E+11	1040.8	12261.7	0.666	-81.31	122.14	1.000	83.6
James Wolf - 05 45500 to US	1.46E+7	1.71E+07	0.1019	6.06	2606.5	4.48E+11	594.0	7144.8	0.193	62.33	-322.23	0.999	93.9
James Wolf - USBC	9.52E+6	1.71E+07	0.1019	6.06	2606.2	1.53E+11	217.6	1967.7	0.080	4.89	-60.94	0.998	48.0
Martin Dale - 01 DS to 4500	1.40E+7	1.71E+07	0.1019	8.30	2560.1	8.88E+11	1803.0	25550.1	0.730	-52.49	71.91	1.000	36.1
Martin Dale - 02 4500 to US	6.15E+6	1.71E+07	0.1019	6.16	682.6	2.26E+11	440.2	5731.1	0.694	-25.05	36.12	1.000	22.8
Martin Dale - USBC	4.23E+6	1.71E+07	0.1019	5.60	605.5	1.88E+11	388.6	4509.6	0.714	-32.51	45.51	1.000	36.3
Mattic - 01 DS to Nelson	3.70E+7	1.71E+07	0.1019	3.46	58.4	1.75E+11	12.8	2115.8	0.207	0.12	-0.58	0.988	2.4
Mattic - 02 Nelson to 13000	1.66E+7	1.71E+07	0.1019	4.71	115.9	8.53E+10	57.4	1496.4	0.602	-10.42	17.31	0.999	11.5
Mattic - 03 13000 to US	1.44E+7	1.71E+07	0.1019	3.25	57.5	4.63E+10	20.9	395.1	0.512	-7.37	14.38	0.998	8.4
Mattic - USBC	9.69E+6	1.71E+07	0.1019	2.59	33.2	2.35E+10	10.8	132.2	0.473	-4.06	8.59	0.998	4.8

Reach Key (text)	Regime Volume (m^3/s)	Regime Duration (s/yr)	Fraction Weighted Average Fall Velocity (m/s)	Volume Weighted Efficiency (none)	Volume Weighted Average Applied Power (N/s)	Regime Applied Work (N*m)	Volume Weighted Average Transport Rate (tons/d)	Regime Yield (tons/yr)	Rate-Power Slope (tons/yr)/(N*m)	Rate-Power Y-Intercept (tons/yr)	Rate-Power X-Intercept (N*m)	R^2 (none)	Residual Standard Deviation (N*m)
Nelson - 01 DS to Wilborn	1.91E+7	1.71E+07	0.1019	6.49	738.1	2.46E+11	414.9	4917.4	0.656	-57.01	86.90	1.000	64.9
Nelson - 02 Wilborn to US	9.64E+6	1.71E+07	0.1019	4.91	321.4	9.95E+10	172.3	1845.3	0.626	-23.75	37.96	1.000	27.3
Nelson - USBC	6.76E+6	1.71E+07	0.1019	2.92	85.8	2.78E+10	28.6	257.6	0.489	-11.45	23.45	0.997	14.8
Senatobia - 01 DS to Res. Bound.	8.97E+7	1.71E+07	0.0081	32.69	483.9	9.62E+11	3.4	293.9	0.009	-1.12	122.84	0.944	1.1
Senatobia - 02 Res. Bound. to 15000	8.69E+7	1.71E+07	0.1019	4.99	888.1	2.96E+11	378.8	4187.1	0.552	-91.23	165.26	0.998	118.8
Senatobia - 03 15000 to G. Springs	8.58E+7	1.71E+07	0.1019	5.57	1017.3	3.03E+11	455.9	4327.6	0.596	-136.88	229.64	0.999	201.0
Senatobia - 04 G. Springs to Mattic	7.70E+7	1.71E+07	0.1019	6.00	1295.1	3.26E+11	643.6	5954.2	0.610	-129.51	212.35	0.999	187.3
Senatobia - 05 Mattic to T. Jones	3.73E+7	1.71E+07	0.1019	5.78	1014.0	2.91E+11	533.2	6366.1	0.597	-58.88	98.68	1.000	62.2
Senatobia - 06 T. Jones to 46000	2.94E+7	1.71E+07	0.1019	6.12	1022.6	2.97E+11	584.8	6528.5	0.643	-58.55	91.05	1.000	63.3
Senatobia - 07 46000 to 62000	2.29E+7	1.71E+07	0.1019	5.78	876.2	2.88E+11	498.5	6005.1	0.640	-52.95	82.72	1.000	62.3
Senatobia - 08 62000 to US	1.39E+7	1.71E+07	0.1019	4.55	338.8	1.11E+11	183.3	1930.1	0.637	-26.65	41.86	1.000	29.5
Senatobia - USBC	7.25E+6	1.71E+07	0.1019	4.42	253.5	8.27E+10	134.9	1410.5	0.648	-24.90	38.44	0.999	31.7
South Fork - 01 DS to 4600	6.79E+6	1.71E+07	0.0081	70.68	8365.3	2.68E+12	183.3	2246.5	0.024	-11.44	481.50	1.000	12.0
South Fork - 02 4600 to 10000	5.99E+6	1.71E+07	0.0081	79.42	10079.9	3.12E+12	259.3	3202.6	0.028	-15.11	544.58	1.000	16.2
South Fork - 03 10000 to US	3.81E+6	1.71E+07	0.0081	80.27	9772.4	2.91E+12	281.3	3529.0	0.030	-10.05	333.43	1.000	8.2
South Fork - USBC	2.71E+6	1.71E+07	0.0081	79.74	9601.5	2.83E+12	274.0	3393.1	0.030	-12.25	404.92	1.000	12.1
Steammill - 01 DS to 5200	3.09E+6	1.71E+07	0.1019	5.73	377.7	1.18E+11	230.7	2889.5	0.656	-13.17	20.08	1.000	10.9
Steammill - 02 5200 to US	2.21E+6	1.71E+07	0.1019	6.37	535.1	1.70E+11	381.6	4556.5	0.764	-20.44	26.74	1.000	20.2
Steammill - USBC	5.01E+5	1.71E+07	0.1019	6.41	484.0	1.56E+11	341.1	4151.7	0.748	-16.00	21.38	1.000	14.9
Thornton - 01 DS to 1968 Limits	6.25E+6	1.71E+07	0.1019	2.98	27.6	4.08E+10	3.5	319.1	0.170	-0.73	4.30	0.956	1.1
Thornton - 02 1968 Limits to Steammill	5.53E+6	1.71E+07	0.1019	5.23	243.3	7.07E+10	114.9	2366.3	0.483	-9.27	19.21	0.984	19.0
Thornton - 03 Steammill to US	2.08E+6	1.71E+07	0.1019	5.15	255.4	7.16E+10	160.2	2175.2	0.657	-6.41	9.75	1.000	4.2
Thornton - USBC	1.29E+6	1.71E+07	0.1019	3.90	170.3	5.09E+10	100.2	1051.9	0.667	-9.85	14.76	1.000	10.8
Tolbert-Jones - 01 DS to 3000	6.63E+6	1.71E+07	0.1019	3.62	128.7	3.30E+10	57.5	544.9	0.551	-10.57	19.17	0.999	11.0
Tolbert-Jones - 02 3000 to US	6.01E+6	1.71E+07	0.0081	56.13	2624.2	8.05E+11	57.3	651.1	0.025	-7.79	306.58	1.000	8.9
Tolbert-Jones - USBC	2.86E+6	1.71E+07	0.0081	47.34	1136.3	3.59E+11	22.2	239.3	0.024	-4.01	169.22	0.999	5.2

Reach Key (text)	Regime Volume (m^3/s)	Regime Duration (s/yr)	Fraction Weighted Average Fall Velocity (m/s)	Volume Weighted Efficiency (none)	Volume Weighted Average Applied Power (N/s)	Regime Applied Work (N*m)	Volume Weighted Average Transport Rate (tons/d)	Regime Yield (tons/yr)	Rate-Power Slope (tons/yr)/(N*m)	Rate-Power Y-Intercept (tons/yr)	Rate-Power X-Intercept (N*m)	R^2 (none)	Residual Standard Deviation (N*m)
West Ditch - 01 DS to Res. Bound.	2.00E+7	1.71E+07	0.0081	52.21	1290.3	7.39E+11	13.5	264.1	0.013	-2.21	175.39	0.997	2.3
West Ditch - 02 Res. Bound. To 24300	1.38E+7	1.71E+07	0.1019	7.97	1483.4	4.82E+11	905.6	12493.6	0.668	-63.39	94.82	1.000	73.0
West Ditch - 03 24300 to US	9.55E+6	1.71E+07	0.1019	6.58	940.5	3.20E+11	629.7	7542.0	0.726	-39.73	54.73	1.000	38.3
West Ditch - USBC	3.41E+6	1.71E+07	0.0081	70.72	5179.1	1.83E+12	126.0	1572.7	0.026	-6.50	249.89	1.000	6.3
White's - 01 DS to 1968 Limits	6.90E+6	1.71E+07	0.1019	3.88	77.7	3.83E+10	20.9	557.5	0.275	-1.89	6.86	0.966	4.2
White's - 02 1968 Limits to 8000	6.61E+6	1.71E+07	0.0081	77.44	7481.4	2.20E+12	132.0	1810.8	0.019	-5.95	319.47	1.000	4.4
White's - 03 8000 to US	3.67E+6	1.71E+07	0.0081	70.04	3326.1	1.39E+12	71.7	1043.4	0.023	-4.35	188.17	1.000	2.8
White's - USBC	1.04E+6	1.71E+07	0.0081	58.58	2395.4	7.23E+11	50.5	587.4	0.024	-4.39	186.16	1.000	4.9

Table B-5 Event Energy Details.

Reach Key (text)	Discharge (m^3/s)	Duration (s/yr)	Efficiency (none)	Applied Power (N/s)	Applied Work (N*m)	Sediment Transport Rate (tonnes/d)	Sediment Transport Yield (tonnes/yr)
Basket - 01 DS to 4000	0.1	9.856E+06	2.4	6.4	1.420E+10	0.5	53.8
Basket - 01 DS to 4000	0.3	3.328E+06	3.0	15.5	1.161E+10	2.2	84.1
Basket - 01 DS to 4000	0.6	1.643E+06	3.0	24.9	9.205E+09	4.6	88.2
Basket - 01 DS to 4000	1.1	8.256E+05	3.7	55.1	1.022E+10	13.2	126.1
Basket - 01 DS to 4000	2.3	5.644E+05	4.3	100.6	1.277E+10	26.8	175.3
Basket - 01 DS to 4000	4.5	5.223E+05	4.4	115.2	1.352E+10	25.7	155.5
Basket - 01 DS to 4000	8.9	2.527E+05	3.6	51.6	2.930E+09	5.7	16.7
Basket - 01 DS to 4000	17.7	1.011E+05	2.9	22.2	5.042E+08	1.0	1.1
Basket - 01 DS to 4000	35.1	1.512E+04	1.2	0.6	2.092E+06	0.0	0.0
Basket - 01 DS to 4000	44.3	1.728E+03	1.1	0.4	1.396E+05	0.0	0.0
Basket - 02 4000 to 1968 Limits	0.1	9.856E+06	2.1	4.2	1.005E+10	0.3	37.4
Basket - 02 4000 to 1968 Limits	0.3	3.328E+06	2.6	10.3	8.287E+09	1.5	58.6
Basket - 02 4000 to 1968 Limits	0.5	1.643E+06	3.2	25.4	1.012E+10	5.9	112.5
Basket - 02 4000 to 1968 Limits	1.1	8.256E+05	4.1	63.9	1.281E+10	20.5	195.7
Basket - 02 4000 to 1968 Limits	2.1	5.644E+05	5.1	159.5	2.187E+10	64.6	421.9
Basket - 02 4000 to 1968 Limits	4.2	5.223E+05	6.4	399.3	5.064E+10	192.5	1163.9
Basket - 02 4000 to 1968 Limits	8.3	2.527E+05	8.0	952.4	5.845E+10	517.0	1512.2
Basket - 02 4000 to 1968 Limits	16.4	1.011E+05	9.6	2022.5	4.965E+10	1144.1	1338.6
Basket - 02 4000 to 1968 Limits	32.5	1.512E+04	10.5	3281.3	1.205E+10	1769.3	309.6
Basket - 02 4000 to 1968 Limits	41.0	1.728E+03	10.6	3721.4	1.562E+09	1957.3	39.1
Basket - 03 1968 Limits to 15400	0.1	9.856E+06	2.4	5.6	1.573E+10	0.7	76.5
Basket - 03 1968 Limits to 15400	0.2	3.328E+06	2.9	13.6	1.291E+10	2.8	106.3
Basket - 03 1968 Limits to 15400	0.4	1.643E+06	3.7	33.8	1.586E+10	9.7	184.6
Basket - 03 1968 Limits to 15400	0.9	8.256E+05	4.6	84.8	2.001E+10	31.5	300.9
Basket - 03 1968 Limits to 15400	1.7	5.644E+05	5.8	215.3	3.473E+10	97.9	639.7
Basket - 03 1968 Limits to 15400	3.4	5.223E+05	7.3	539.6	8.056E+10	287.0	1734.8
Basket - 03 1968 Limits to 15400	6.7	2.527E+05	9.0	1304.0	9.421E+10	769.6	2251.3

Reach Key (text)	Discharge (m^3/s)	Duration (s/yr)	Efficiency (none)	Applied Power (N/s)	Applied Work (N*m)	Sediment Transport Rate (tonnes/d)	Sediment Transport Yield (tonnes/yr)
Basket - 03 1968 Limits to 15400	13.4	1.011E+05	11.0	3092.1	8.935E+10	1982.1	2319.2
Basket - 03 1968 Limits to 15400	26.5	1.512E+04	13.4	7162.2	3.096E+10	4837.4	846.6
Basket - 03 1968 Limits to 15400	33.5	1.728E+03	14.3	9514.3	4.700E+09	6514.9	130.3
Basket - 04 15400 to US	0.1	9.856E+06	2.7	5.7	1.428E+10	0.8	95.5
Basket - 04 15400 to US	0.2	3.328E+06	3.2	12.7	1.077E+10	2.7	104.3
Basket - 04 15400 to US	0.3	1.643E+06	3.6	26.5	1.113E+10	7.4	140.4
Basket - 04 15400 to US	0.7	8.256E+05	4.2	57.4	1.212E+10	20.2	192.9
Basket - 04 15400 to US	1.3	5.644E+05	5.0	124.9	1.803E+10	53.6	349.8
Basket - 04 15400 to US	2.7	5.223E+05	6.0	280.1	3.740E+10	140.8	851.4
Basket - 04 15400 to US	5.3	2.527E+05	7.2	627.0	4.052E+10	355.3	1039.3
Basket - 04 15400 to US	10.4	1.011E+05	8.7	1407.7	3.639E+10	854.9	1000.3
Basket - 04 15400 to US	20.7	1.512E+04	10.4	3129.8	1.210E+10	2017.8	353.1
Basket - 04 15400 to US	26.1	1.728E+03	11.1	4127.1	1.823E+09	2698.8	54.0
Basket - USBC	0.0	9.856E+06	1.4	1.6	3.990E+09	0.1	6.0
Basket - USBC	0.1	3.328E+06	1.8	4.2	3.569E+09	0.4	14.1
Basket - USBC	0.2	1.643E+06	2.2	10.4	4.390E+09	1.7	32.5
Basket - USBC	0.3	8.256E+05	2.8	26.3	5.608E+09	7.0	67.0
Basket - USBC	0.7	5.644E+05	3.8	69.4	1.011E+10	26.7	174.5
Basket - USBC	1.3	5.223E+05	5.2	180.0	2.425E+10	88.3	533.7
Basket - USBC	2.6	2.527E+05	6.9	455.7	2.971E+10	262.5	767.9
Basket - USBC	5.1	1.011E+05	8.6	1164.1	3.035E+10	734.2	859.0
Basket - USBC	10.2	1.512E+04	10.9	3058.3	1.193E+10	2099.4	367.4
Basket - USBC	12.9	1.728E+03	11.8	4207.6	1.875E+09	2939.9	58.8
Beard's - 01 DS to 1968 Limits	0.2	9.856E+06	2.3	5.3	1.399E+10	0.5	58.0
Beard's - 01 DS to 1968 Limits	0.3	3.328E+06	2.9	12.7	1.128E+10	2.1	81.6
Beard's - 01 DS to 1968 Limits	0.6	1.643E+06	3.5	29.0	1.274E+10	6.9	131.4
Beard's - 01 DS to 1968 Limits	1.3	8.256E+05	4.2	66.4	1.467E+10	20.4	194.5
Beard's - 01 DS to 1968 Limits	2.5	5.644E+05	5.2	155.0	2.342E+10	57.7	377.0
Beard's - 01 DS to 1968 Limits	5.0	5.223E+05	6.4	353.2	4.939E+10	149.9	906.0

Reach Key (text)	Discharge (m^3/s)	Duration (s/yr)	Efficiency (none)	Applied Power (N/s)	Applied Work (N*m)	Sediment Transport Rate (tonnes/d)	Sediment Transport Yield (tonnes/yr)
Beard's - 01 DS to 1968 Limits	9.9	2.527E+05	7.7	776.0	5.250E+10	360.1	1053.4
Beard's - 01 DS to 1968 Limits	19.6	1.011E+05	9.1	1590.9	4.306E+10	781.5	914.4
Beard's - 01 DS to 1968 Limits	38.9	1.512E+04	10.4	2982.5	1.207E+10	1493.5	261.4
Beard's - 01 DS to 1968 Limits	49.1	1.728E+03	10.8	3609.3	1.670E+09	1816.2	36.3
Beard's - 02 1968 Limits to 10800 Bridge	0.2	9.856E+06	2.9	7.3	2.040E+10	1.2	132.3
Beard's - 02 1968 Limits to 10800 Bridge	0.3	3.328E+06	3.6	17.3	1.637E+10	4.3	167.5
Beard's - 02 1968 Limits to 10800 Bridge	0.6	1.643E+06	4.4	39.6	1.843E+10	13.3	252.2
Beard's - 02 1968 Limits to 10800 Bridge	1.2	8.256E+05	5.3	89.1	2.086E+10	36.9	352.7
Beard's - 02 1968 Limits to 10800 Bridge	2.4	5.644E+05	6.4	204.2	3.269E+10	99.4	649.2
Beard's - 02 1968 Limits to 10800 Bridge	4.9	5.223E+05	7.7	484.3	7.174E+10	267.3	1615.7
Beard's - 02 1968 Limits to 10800 Bridge	9.6	2.527E+05	9.3	1203.8	8.628E+10	724.7	2119.8
Beard's - 02 1968 Limits to 10800 Bridge	19.1	1.011E+05	11.3	3106.8	8.907E+10	2024.1	2368.3
Beard's - 02 1968 Limits to 10800 Bridge	37.8	1.512E+04	12.7	7263.1	3.115E+10	4896.4	856.9
Beard's - 02 1968 Limits to 10800 Bridge	47.8	1.728E+03	13.2	8918.1	4.371E+09	6019.8	120.4
Beard's - 03 10800 Bridge to US	0.1	9.856E+06	36.9	99.7	2.460E+11	1.2	140.9
Beard's - 03 10800 Bridge to US	0.2	3.328E+06	45.4	236.0	1.967E+11	3.6	140.2
Beard's - 03 10800 Bridge to US	0.3	1.643E+06	56.4	566.2	2.329E+11	10.5	199.7
Beard's - 03 10800 Bridge to US	0.7	8.256E+05	70.4	1391.4	2.876E+11	29.8	285.2
Beard's - 03 10800 Bridge to US	1.3	5.644E+05	88.0	3436.3	4.857E+11	82.3	537.4
Beard's - 03 10800 Bridge to US	2.7	5.223E+05	109.5	8434.3	1.103E+12	219.6	1327.6
Beard's - 03 10800 Bridge to US	5.3	2.527E+05	134.9	20427.1	1.293E+12	565.9	1655.4
Beard's - 03 10800 Bridge to US	10.5	1.011E+05	163.0	48602.3	1.230E+12	1404.1	1642.9
Beard's - 03 10800 Bridge to US	20.8	1.512E+04	190.5	111674.5	4.228E+11	3297.2	577.0
Beard's - 03 10800 Bridge to US	26.2	1.728E+03	200.5	143266.6	6.199E+10	4259.5	85.2
Beard's - USBC	0.0	9.856E+06	30.8	57.3	1.423E+11	0.5	58.9
Beard's - USBC	0.1	3.328E+06	39.1	140.4	1.176E+11	1.7	66.0
Beard's - USBC	0.1	1.643E+06	50.0	355.8	1.471E+11	5.4	102.1
Beard's - USBC	0.3	8.256E+05	63.6	885.6	1.841E+11	15.9	152.2
Beard's - USBC	0.5	5.644E+05	80.1	2207.3	3.137E+11	44.6	291.5

Reach Key (text)	Discharge (m^3/s)	Duration (s/yr)	Efficiency (none)	Applied Power (N/s)	Applied Work (N*m)	Sediment Transport Rate (tonnes/d)	Sediment Transport Yield (tonnes/yr)
Beard's - USBC	1.0	5.223E+05	98.9	5304.7	6.976E+11	118.5	716.4
Beard's - USBC	2.1	2.527E+05	121.5	13046.0	8.301E+11	313.9	918.2
Beard's - USBC	4.1	1.011E+05	147.4	31712.7	8.071E+11	814.2	952.6
Beard's - USBC	8.1	1.512E+04	170.4	73625.1	2.803E+11	1965.9	344.1
Beard's - USBC	10.3	1.728E+03	182.8	104183.5	4.533E+10	2867.0	57.3
Billy's - 01 DS to Res. Bound.	0.0	9.856E+06	32.4	37.5	8.771E+10	0.3	36.8
Billy's - 01 DS to Res. Bound.	0.1	3.328E+06	37.3	82.4	6.513E+10	1.0	39.7
Billy's - 01 DS to Res. Bound.	0.2	1.643E+06	37.8	141.9	5.534E+10	2.4	44.7
Billy's - 01 DS to Res. Bound.	0.4	8.256E+05	37.2	195.0	3.822E+10	3.4	32.6
Billy's - 01 DS to Res. Bound.	0.7	5.644E+05	47.6	433.7	5.813E+10	6.4	42.0
Billy's - 01 DS to Res. Bound.	1.4	5.223E+05	37.1	174.7	2.167E+10	0.9	5.6
Billy's - 01 DS to Res. Bound.	2.8	2.527E+05	18.8	16.5	9.904E+08	0.0	0.0
Billy's - 01 DS to Res. Bound.	5.6	1.011E+05	10.6	3.4	8.204E+07	0.0	0.0
Billy's - 01 DS to Res. Bound.	11.1	1.512E+04	9.5	3.6	1.291E+07	0.0	0.0
Billy's - 01 DS to Res. Bound.	14.0	1.728E+03	9.2	3.6	1.484E+06	0.0	0.0
Billy's - 02 Res. Bound. to 1968 Limits	0.0	9.856E+06	1.5	1.5	3.589E+09	0.0	4.0
Billy's - 02 Res. Bound. to 1968 Limits	0.1	3.328E+06	1.9	3.7	2.934E+09	0.2	9.1
Billy's - 02 Res. Bound. to 1968 Limits	0.2	1.643E+06	2.4	9.2	3.597E+09	1.3	25.4
Billy's - 02 Res. Bound. to 1968 Limits	0.3	8.256E+05	3.0	23.0	4.498E+09	5.6	54.0
Billy's - 02 Res. Bound. to 1968 Limits	0.7	5.644E+05	3.9	58.0	7.759E+09	20.2	132.2
Billy's - 02 Res. Bound. to 1968 Limits	1.4	5.223E+05	4.8	140.0	1.735E+10	60.3	364.3
Billy's - 02 Res. Bound. to 1968 Limits	2.7	2.527E+05	6.1	290.7	1.743E+10	138.2	404.2
Billy's - 02 Res. Bound. to 1968 Limits	5.4	1.011E+05	6.8	436.0	1.045E+10	182.5	213.5
Billy's - 02 Res. Bound. to 1968 Limits	10.7	1.512E+04	7.7	714.1	2.561E+09	279.0	48.8
Billy's - 02 Res. Bound. to 1968 Limits	13.5	1.728E+03	8.1	749.6	3.072E+08	267.8	5.4
Billy's - 03 1968 Limits to US	0.0	9.856E+06	1.6	1.7	4.860E+09	0.1	9.3
Billy's - 03 1968 Limits to US	0.1	3.328E+06	2.1	4.4	4.323E+09	0.6	23.0
Billy's - 03 1968 Limits to US	0.2	1.643E+06	2.7	11.7	5.694E+09	3.1	58.3
Billy's - 03 1968 Limits to US	0.3	8.256E+05	3.4	27.8	6.784E+09	10.6	101.0

Reach Key (text)	Discharge (m^3/s)	Duration (s/yr)	Efficiency (none)	Applied Power (N/s)	Applied Work (N*m)	Sediment Transport Rate (tonnes/d)	Sediment Transport Yield (tonnes/yr)
Billy's - 03 1968 Limits to US	0.6	5.644E+05	4.2	66.6	1.113E+10	32.7	213.5
Billy's - 03 1968 Limits to US	1.3	5.223E+05	5.3	163.0	2.519E+10	96.5	583.1
Billy's - 03 1968 Limits to US	2.5	2.527E+05	6.7	402.1	3.008E+10	267.3	781.9
Billy's - 03 1968 Limits to US	5.0	1.011E+05	8.5	998.2	2.987E+10	722.1	844.8
Billy's - 03 1968 Limits to US	10.0	1.512E+04	10.8	2492.9	1.116E+10	1887.0	330.2
Billy's - 03 1968 Limits to US	12.6	1.728E+03	11.7	3408.6	1.743E+09	2605.0	52.1
Billy's - USBC	0.0	9.856E+06	2.0	1.1	3.163E+09	0.1	11.4
Billy's - USBC	0.0	3.328E+06	2.8	3.0	2.786E+09	0.7	27.0
Billy's - USBC	0.0	1.643E+06	3.8	8.1	3.792E+09	3.1	59.7
Billy's - USBC	0.1	8.256E+05	4.2	16.9	3.948E+09	7.7	73.5
Billy's - USBC	0.2	5.644E+05	4.5	35.5	5.687E+09	18.0	117.4
Billy's - USBC	0.3	5.223E+05	4.9	78.2	1.158E+10	43.1	260.5
Billy's - USBC	0.7	2.527E+05	6.0	190.6	1.365E+10	118.5	346.7
Billy's - USBC	1.4	1.011E+05	8.1	488.4	1.399E+10	344.6	403.2
Billy's - USBC	2.7	1.512E+04	10.6	1184.2	5.076E+09	897.1	157.0
Billy's - USBC	3.4	1.728E+03	11.4	1581.8	7.748E+08	1213.2	24.3
Cathey's - 01 DS to 3500	0.1	9.856E+06	3.7	9.5	2.070E+10	2.4	268.9
Cathey's - 01 DS to 3500	0.1	3.328E+06	4.4	20.6	1.524E+10	6.4	245.0
Cathey's - 01 DS to 3500	0.2	1.643E+06	5.1	44.7	1.631E+10	16.2	307.2
Cathey's - 01 DS to 3500	0.5	8.256E+05	6.0	100.6	1.845E+10	41.0	391.6
Cathey's - 01 DS to 3500	1.0	5.644E+05	7.0	230.5	2.889E+10	106.8	697.4
Cathey's - 01 DS to 3500	1.9	5.223E+05	8.4	551.0	6.389E+10	285.6	1726.3
Cathey's - 01 DS to 3500	3.8	2.527E+05	9.6	1169.8	6.564E+10	673.0	1968.7
Cathey's - 01 DS to 3500	7.5	1.011E+05	10.0	2042.5	4.584E+10	1254.2	1467.5
Cathey's - 01 DS to 3500	15.0	1.512E+04	11.0	3613.8	1.213E+10	2163.1	378.6
Cathey's - 01 DS to 3500	18.9	1.728E+03	11.2	4107.3	1.576E+09	2394.5	47.9
Cathey's - 02 3500 to 7500	0.1	9.856E+06	24.7	44.4	1.274E+11	0.3	38.6
Cathey's - 02 3500 to 7500	0.1	3.328E+06	30.5	105.1	1.019E+11	1.1	43.8
Cathey's - 02 3500 to 7500	0.2	1.643E+06	38.1	258.8	1.238E+11	3.6	68.1

Reach Key (text)	Discharge (m^3/s)	Duration (s/yr)	Efficiency (none)	Applied Power (N/s)	Applied Work (N*m)	Sediment Transport Rate (tonnes/d)	Sediment Transport Yield (tonnes/yr)
Cathey's - 02 3500 to 7500	0.5	8.256E+05	48.2	644.9	1.551E+11	10.9	104.4
Cathey's - 02 3500 to 7500	0.9	5.644E+05	61.3	1615.7	2.656E+11	32.1	209.8
Cathey's - 02 3500 to 7500	1.8	5.223E+05	78.0	4079.0	6.205E+11	92.0	556.1
Cathey's - 02 3500 to 7500	3.7	2.527E+05	98.6	10271.2	7.560E+11	254.2	743.5
Cathey's - 02 3500 to 7500	7.2	1.011E+05	122.6	25391.7	7.476E+11	672.5	786.9
Cathey's - 02 3500 to 7500	14.4	1.512E+04	146.5	60441.6	2.662E+11	1673.4	292.9
Cathey's - 02 3500 to 7500	18.1	1.728E+03	154.1	80492.3	4.051E+10	2254.8	45.1
Cathey's - 03 7500 to 12100	0.1	9.856E+06	24.0	30.1	8.089E+10	0.2	22.2
Cathey's - 03 7500 to 12100	0.1	3.328E+06	29.3	70.0	6.341E+10	0.6	24.6
Cathey's - 03 7500 to 12100	0.2	1.643E+06	36.5	170.0	7.604E+10	2.1	39.0
Cathey's - 03 7500 to 12100	0.4	8.256E+05	45.9	423.9	9.532E+10	6.3	60.5
Cathey's - 03 7500 to 12100	0.8	5.644E+05	58.6	1064.0	1.636E+11	18.9	123.7
Cathey's - 03 7500 to 12100	1.5	5.223E+05	73.6	2613.9	3.718E+11	52.8	318.9
Cathey's - 03 7500 to 12100	3.1	2.527E+05	91.7	6388.7	4.397E+11	142.1	415.8
Cathey's - 03 7500 to 12100	6.1	1.011E+05	111.8	15268.6	4.204E+11	364.9	427.0
Cathey's - 03 7500 to 12100	12.0	1.512E+04	133.3	36196.6	1.491E+11	917.5	160.6
Cathey's - 03 7500 to 12100	15.2	1.728E+03	139.9	48429.9	2.279E+10	1249.3	25.0
Cathey's - 04 12100 to US	0.0	9.856E+06	27.3	35.5	1.014E+11	0.3	39.2
Cathey's - 04 12100 to US	0.1	3.328E+06	33.8	87.2	8.402E+10	1.1	43.1
Cathey's - 04 12100 to US	0.2	1.643E+06	41.4	212.5	1.011E+11	3.3	63.5
Cathey's - 04 12100 to US	0.3	8.256E+05	50.9	524.1	1.253E+11	9.7	93.1
Cathey's - 04 12100 to US	0.6	5.644E+05	62.6	1282.8	2.097E+11	27.5	179.4
Cathey's - 04 12100 to US	1.2	5.223E+05	77.2	3164.6	4.786E+11	75.2	454.8
Cathey's - 04 12100 to US	2.5	2.527E+05	96.0	7776.6	5.691E+11	200.9	587.7
Cathey's - 04 12100 to US	4.9	1.011E+05	116.7	18530.4	5.424E+11	505.7	591.7
Cathey's - 04 12100 to US	9.7	1.512E+04	138.7	41460.6	1.815E+11	1175.9	205.8
Cathey's - 04 12100 to US	12.3	1.728E+03	147.7	54213.4	2.713E+10	1548.5	31.0
Cathey's - USBC	0.0	9.856E+06	35.0	41.8	1.194E+11	0.5	61.6
Cathey's - USBC	0.0	3.328E+06	39.1	92.7	8.935E+10	1.4	52.7

Reach Key (text)	Discharge (m^3/s)	Duration (s/yr)	Efficiency (none)	Applied Power (N/s)	Applied Work (N*m)	Sediment Transport Rate (tonnes/d)	Sediment Transport Yield (tonnes/yr)
Cathey's - USBC	0.1	1.643E+06	44.0	210.5	1.001E+11	3.4	65.2
Cathey's - USBC	0.1	8.256E+05	51.2	482.7	1.154E+11	8.8	83.8
Cathey's - USBC	0.3	5.644E+05	61.7	1134.9	1.855E+11	23.1	150.6
Cathey's - USBC	0.5	5.223E+05	74.8	2712.2	4.102E+11	60.8	367.8
Cathey's - USBC	1.1	2.527E+05	94.8	6941.2	5.080E+11	172.8	505.6
Cathey's - USBC	2.1	1.011E+05	117.7	17250.7	5.050E+11	465.9	545.1
Cathey's - USBC	4.2	1.512E+04	142.5	42868.4	1.877E+11	1225.8	214.5
Cathey's - USBC	5.3	1.728E+03	152.3	57922.2	2.898E+10	1684.7	33.7
Hickahala - 01 DS to 12500	3.5	9.856E+06	52.1	4560.9	1.184E+13	80.0	9123.4
Hickahala - 01 DS to 12500	6.9	3.328E+06	65.3	9452.9	8.286E+12	217.1	8363.3
Hickahala - 01 DS to 12500	13.8	1.643E+06	75.3	15345.7	6.641E+12	393.5	7481.5
Hickahala - 01 DS to 12500	27.3	8.256E+05	82.2	18917.0	4.114E+12	545.3	5210.3
Hickahala - 01 DS to 12500	54.1	5.644E+05	85.2	18108.3	2.693E+12	559.3	3654.0
Hickahala - 01 DS to 12500	107.4	5.223E+05	83.7	14009.7	1.928E+12	403.4	2438.4
Hickahala - 01 DS to 12500	212.9	2.527E+05	92.2	18421.5	1.226E+12	556.5	1627.7
Hickahala - 01 DS to 12500	422.3	1.011E+05	106.6	29904.6	7.964E+11	1011.5	1183.5
Hickahala - 01 DS to 12500	837.5	1.512E+04	126.0	52527.6	2.092E+11	1995.8	349.3
Hickahala - 01 DS to 12500	1057.5	1.728E+03	135.4	67514.6	3.073E+10	2699.4	54.0
Hickahala - 02 12500 to 1968 Start	3.4	9.856E+06	29.1	334.1	9.871E+11	2.2	253.2
Hickahala - 02 12500 to 1968 Start	6.8	3.328E+06	34.7	721.3	7.194E+11	6.6	253.6
Hickahala - 02 12500 to 1968 Start	13.5	1.643E+06	34.6	721.5	3.553E+11	5.8	111.1
Hickahala - 02 12500 to 1968 Start	26.8	8.256E+05	39.5	1114.8	2.758E+11	10.8	103.2
Hickahala - 02 12500 to 1968 Start	53.2	5.644E+05	43.2	1395.5	2.361E+11	14.1	92.4
Hickahala - 02 12500 to 1968 Start	105.5	5.223E+05	52.2	3150.0	4.931E+11	46.0	278.3
Hickahala - 02 12500 to 1968 Start	209.3	2.527E+05	62.2	6420.7	4.864E+11	119.5	349.5
Hickahala - 02 12500 to 1968 Start	415.0	1.011E+05	78.5	15700.2	4.757E+11	381.6	446.5
Hickahala - 02 12500 to 1968 Start	823.1	1.512E+04	93.8	28067.8	1.272E+11	745.8	130.5
Hickahala - 02 12500 to 1968 Start	1039.4	1.728E+03	92.4	24234.6	1.255E+10	580.1	11.6
Hickahala - 03 1968 Start to W. Ditch	3.3	9.856E+06	24.7	223.1	6.224E+11	1.1	124.5

Reach Key (text)	Discharge (m^3/s)	Duration (s/yr)	Efficiency (none)	Applied Power (N/s)	Applied Work (N*m)	Sediment Transport Rate (tonnes/d)	Sediment Transport Yield (tonnes/yr)
Hickahala - 03 1968 Start to W. Ditch	6.6	3.328E+06	31.2	530.7	4.999E+11	4.1	156.6
Hickahala - 03 1968 Start to W. Ditch	13.0	1.643E+06	39.5	1316.5	6.122E+11	14.6	276.8
Hickahala - 03 1968 Start to W. Ditch	25.8	8.256E+05	48.8	3139.1	7.336E+11	45.2	432.3
Hickahala - 03 1968 Start to W. Ditch	51.2	5.644E+05	54.7	6065.8	9.691E+11	97.9	639.8
Hickahala - 03 1968 Start to W. Ditch	101.5	5.223E+05	66.5	14337.6	2.120E+12	277.5	1677.4
Hickahala - 03 1968 Start to W. Ditch	201.3	2.527E+05	79.9	26834.7	1.920E+12	584.6	1709.9
Hickahala - 03 1968 Start to W. Ditch	399.1	1.011E+05	89.3	38684.9	1.107E+12	906.6	1060.7
Hickahala - 03 1968 Start to W. Ditch	791.6	1.512E+04	102.7	60887.4	2.606E+11	1567.8	274.4
Hickahala - 03 1968 Start to W. Ditch	999.6	1.728E+03	108.2	71237.9	3.484E+10	1899.9	38.0
Hickahala - 04 W. Ditch to Senatobia	3.0	9.856E+06	38.8	921.5	1.593E+12	11.4	1296.4
Hickahala - 04 W. Ditch to Senatobia	6.0	3.328E+06	43.7	1627.6	9.502E+11	22.2	854.2
Hickahala - 04 W. Ditch to Senatobia	12.0	1.643E+06	52.1	3384.1	9.753E+11	54.6	1038.9
Hickahala - 04 W. Ditch to Senatobia	23.8	8.256E+05	65.8	8167.4	1.183E+12	166.8	1594.0
Hickahala - 04 W. Ditch to Senatobia	47.2	5.644E+05	80.0	13373.8	1.324E+12	275.1	1797.2
Hickahala - 04 W. Ditch to Senatobia	93.6	5.223E+05	35.0	422.1	3.868E+10	0.8	4.9
Hickahala - 04 W. Ditch to Senatobia	185.6	2.527E+05	25.8	158.7	7.035E+09	0.1	0.2
Hickahala - 04 W. Ditch to Senatobia	368.1	1.011E+05	33.9	480.3	8.518E+09	0.9	1.0
Hickahala - 04 W. Ditch to Senatobia	730.0	1.512E+04	45.2	1557.8	4.132E+09	6.9	1.2
Hickahala - 04 W. Ditch to Senatobia	921.8	1.728E+03	50.8	2457.0	7.448E+08	14.3	0.3
Hickahala - 05 Senatobia to Billy's	2.0	9.856E+06	41.1	727.7	1.360E+12	11.6	1327.8
Hickahala - 05 Senatobia to Billy's	4.0	3.328E+06	53.2	1777.1	1.121E+12	37.2	1434.0
Hickahala - 05 Senatobia to Billy's	7.8	1.643E+06	67.4	3815.7	1.188E+12	90.9	1727.7
Hickahala - 05 Senatobia to Billy's	15.5	8.256E+05	82.6	7429.8	1.163E+12	185.6	1773.0
Hickahala - 05 Senatobia to Billy's	30.8	5.644E+05	102.0	15698.5	1.680E+12	424.6	2774.0
Hickahala - 05 Senatobia to Billy's	61.1	5.223E+05	135.0	43417.9	4.299E+12	1411.2	8531.1
Hickahala - 05 Senatobia to Billy's	121.2	2.527E+05	181.6	132951.8	6.370E+12	5233.1	15307.5
Hickahala - 05 Senatobia to Billy's	240.3	1.011E+05	240.9	393489.3	7.541E+12	18683.4	21860.4
Hickahala - 05 Senatobia to Billy's	476.5	1.512E+04	260.9	498138.6	1.428E+12	23365.7	4089.2
Hickahala - 05 Senatobia to Billy's	601.7	1.728E+03	269.6	553833.2	1.814E+11	25990.0	519.8

Reach Key (text)	Discharge (m^3/s)	Duration (s/yr)	Efficiency (none)	Applied Power (N/s)	Applied Work (N*m)	Sediment Transport Rate (tonnes/d)	Sediment Transport Yield (tonnes/yr)
Hickahala - 06 Billy's to Res. Bound.	1.9	9.856E+06	23.8	231.0	5.406E+11	0.7	75.8
Hickahala - 06 Billy's to Res. Bound.	3.8	3.328E+06	33.3	573.2	4.529E+11	3.4	132.0
Hickahala - 06 Billy's to Res. Bound.	7.6	1.643E+06	46.8	1501.6	5.857E+11	15.9	301.4
Hickahala - 06 Billy's to Res. Bound.	15.1	8.256E+05	64.9	4105.4	8.048E+11	66.0	630.2
Hickahala - 06 Billy's to Res. Bound.	30.0	5.644E+05	86.6	10650.4	1.427E+12	226.9	1482.6
Hickahala - 06 Billy's to Res. Bound.	59.5	5.223E+05	112.5	26576.6	3.296E+12	692.6	4187.2
Hickahala - 06 Billy's to Res. Bound.	118.0	2.527E+05	122.7	39829.1	2.390E+12	1029.8	3012.2
Hickahala - 06 Billy's to Res. Bound.	233.9	1.011E+05	153.3	105401.0	2.530E+12	3303.2	3864.9
Hickahala - 06 Billy's to Res. Bound.	463.9	1.512E+04	223.6	516522.5	1.855E+12	21597.1	3779.7
Hickahala - 06 Billy's to Res. Bound.	585.8	1.728E+03	253.8	882674.7	3.622E+11	39073.6	781.5
Hickahala - 07 Res. Bound. to Thornton	1.9	9.856E+06	3.2	44.5	1.090E+11	2.6	298.6
Hickahala - 07 Res. Bound. to Thornton	3.8	3.328E+06	3.3	55.8	4.612E+10	5.3	204.5
Hickahala - 07 Res. Bound. to Thornton	7.5	1.643E+06	4.3	108.8	4.438E+10	16.4	312.6
Hickahala - 07 Res. Bound. to Thornton	15.0	8.256E+05	5.5	237.2	4.864E+10	50.6	483.9
Hickahala - 07 Res. Bound. to Thornton	29.7	5.644E+05	7.0	572.8	8.029E+10	160.7	1050.0
Hickahala - 07 Res. Bound. to Thornton	58.8	5.223E+05	9.1	1579.2	2.049E+11	573.6	3467.5
Hickahala - 07 Res. Bound. to Thornton	116.7	2.527E+05	11.7	4478.4	2.811E+11	2002.7	5858.1
Hickahala - 07 Res. Bound. to Thornton	231.4	1.011E+05	12.6	6332.0	1.590E+11	2831.7	3313.3
Hickahala - 07 Res. Bound. to Thornton	458.8	1.512E+04	15.0	11446.0	4.298E+10	5402.9	945.6
Hickahala - 07 Res. Bound. to Thornton	579.4	1.728E+03	11.0	2932.8	1.259E+09	924.7	18.5
Hickahala - 08 Thornton to Basket	1.8	9.856E+06	3.2	74.9	7.034E+10	14.0	1599.1
Hickahala - 08 Thornton to Basket	3.6	3.328E+06	3.9	168.9	5.352E+10	45.5	1751.6
Hickahala - 08 Thornton to Basket	7.2	1.643E+06	5.0	385.2	6.027E+10	134.6	2559.3
Hickahala - 08 Thornton to Basket	14.2	8.256E+05	6.1	788.7	6.202E+10	316.2	3021.0
Hickahala - 08 Thornton to Basket	28.2	5.644E+05	7.4	1514.5	8.142E+10	657.2	4293.5
Hickahala - 08 Thornton to Basket	55.9	5.223E+05	9.1	3216.4	1.600E+11	1526.3	9227.1
Hickahala - 08 Thornton to Basket	110.9	2.527E+05	11.6	8731.0	2.102E+11	4702.4	13755.1
Hickahala - 08 Thornton to Basket	220.0	1.011E+05	16.4	33796.1	3.254E+11	21713.8	25406.2
Hickahala - 08 Thornton to Basket	436.4	1.512E+04	22.3	99361.1	1.431E+11	69108.7	12094.6

Reach Key (text)	Discharge (m^3/s)	Duration (s/yr)	Efficiency (none)	Applied Power (N/s)	Applied Work (N*m)	Sediment Transport Rate (tonnes/d)	Sediment Transport Yield (tonnes/yr)
Hickahala - 08 Thornton to Basket	551.0	1.728E+03	20.3	60436.0	9.947E+09	39150.9	783.0
Hickahala - 09 Basket to 57350	1.7	9.856E+06	2.4	28.2	6.669E+10	2.3	259.7
Hickahala - 09 Basket to 57350	3.3	3.328E+06	3.2	73.9	5.899E+10	12.2	469.1
Hickahala - 09 Basket to 57350	6.6	1.643E+06	4.2	194.8	7.678E+10	49.4	940.1
Hickahala - 09 Basket to 57350	13.1	8.256E+05	5.4	511.1	1.012E+11	174.8	1670.7
Hickahala - 09 Basket to 57350	25.9	5.644E+05	7.1	1315.7	1.782E+11	555.1	3626.2
Hickahala - 09 Basket to 57350	51.4	5.223E+05	9.1	3311.9	4.150E+11	1620.6	9796.8
Hickahala - 09 Basket to 57350	102.0	2.527E+05	11.6	8722.3	5.288E+11	4778.3	13977.1
Hickahala - 09 Basket to 57350	202.3	1.011E+05	15.3	26444.0	6.413E+11	16427.4	19220.9
Hickahala - 09 Basket to 57350	401.3	1.512E+04	19.8	67786.9	2.459E+11	45159.7	7903.3
Hickahala - 09 Basket to 57350	506.7	1.728E+03	19.6	62592.2	2.595E+10	40938.4	818.8
Hickahala - 10 57350 to Lick	1.6	9.856E+06	3.6	56.2	1.608E+11	9.3	1064.9
Hickahala - 10 57350 to Lick	3.1	3.328E+06	4.3	130.1	1.257E+11	29.5	1136.5
Hickahala - 10 57350 to Lick	6.2	1.643E+06	5.1	300.6	1.434E+11	87.3	1660.2
Hickahala - 10 57350 to Lick	12.4	8.256E+05	6.1	698.3	1.675E+11	252.9	2416.1
Hickahala - 10 57350 to Lick	24.5	5.644E+05	7.5	1590.2	2.608E+11	687.3	4489.8
Hickahala - 10 57350 to Lick	48.7	5.223E+05	9.3	3622.3	5.496E+11	1788.0	10809.0
Hickahala - 10 57350 to Lick	96.5	2.527E+05	11.4	8256.0	6.062E+11	4461.6	13050.8
Hickahala - 10 57350 to Lick	191.4	1.011E+05	14.3	19853.5	5.831E+11	11715.3	13707.5
Hickahala - 10 57350 to Lick	379.6	1.512E+04	18.8	51659.0	2.269E+11	33117.9	5795.9
Hickahala - 10 57350 to Lick	479.3	1.728E+03	21.0	77129.9	3.872E+10	51454.1	1029.1
Hickahala - 11 Lick to Lick Branch	1.5	9.856E+06	2.8	30.5	7.758E+10	3.4	384.1
Hickahala - 11 Lick to Lick Branch	2.9	3.328E+06	3.2	56.7	4.861E+10	8.5	328.4
Hickahala - 11 Lick to Lick Branch	5.8	1.643E+06	3.9	122.9	5.204E+10	25.4	482.8
Hickahala - 11 Lick to Lick Branch	11.6	8.256E+05	4.8	291.8	6.212E+10	79.7	761.8
Hickahala - 11 Lick to Lick Branch	23.0	5.644E+05	6.3	846.4	1.232E+11	311.7	2036.4
Hickahala - 11 Lick to Lick Branch	45.6	5.223E+05	8.2	2387.5	3.215E+11	1082.2	6542.0
Hickahala - 11 Lick to Lick Branch	90.4	2.527E+05	10.5	6325.4	4.122E+11	3254.3	9519.2
Hickahala - 11 Lick to Lick Branch	179.3	1.011E+05	13.2	16122.2	4.202E+11	9178.8	10739.7

Reach Key (text)	Discharge (m^3/s)	Duration (s/yr)	Efficiency (none)	Applied Power (N/s)	Applied Work (N*m)	Sediment Transport Rate (tonnes/d)	Sediment Transport Yield (tonnes/yr)
Hickahala - 11 Lick to Lick Branch	355.5	1.512E+04	17.2	39882.7	1.555E+11	24632.7	4310.9
Hickahala - 11 Lick to Lick Branch	449.0	1.728E+03	19.5	64639.0	2.880E+10	41948.1	839.0
Hickahala - 12 Lick Branch to Wolf	1.5	9.856E+06	2.7	31.1	8.245E+10	3.6	407.3
Hickahala - 12 Lick Branch to Wolf	2.9	3.328E+06	3.4	76.8	6.860E+10	14.5	556.7
Hickahala - 12 Lick Branch to Wolf	5.8	1.643E+06	4.2	184.6	8.145E+10	47.9	909.9
Hickahala - 12 Lick Branch to Wolf	11.5	8.256E+05	5.2	429.1	9.515E+10	139.7	1334.7
Hickahala - 12 Lick Branch to Wolf	22.9	5.644E+05	6.6	1002.2	1.519E+11	389.3	2542.9
Hickahala - 12 Lick Branch to Wolf	45.4	5.223E+05	8.2	2323.7	3.260E+11	1036.5	6266.0
Hickahala - 12 Lick Branch to Wolf	90.1	2.527E+05	10.1	5500.4	3.734E+11	2706.0	7915.3
Hickahala - 12 Lick Branch to Wolf	178.7	1.011E+05	12.3	13380.0	3.633E+11	7225.2	8453.9
Hickahala - 12 Lick Branch to Wolf	354.3	1.512E+04	15.8	33299.3	1.352E+11	19624.5	3434.4
Hickahala - 12 Lick Branch to Wolf	447.4	1.728E+03	17.6	49389.3	2.292E+10	30318.1	606.4
Hickahala - 13 Wolf to White's	0.8	9.856E+06	2.9	22.2	5.114E+10	2.9	334.7
Hickahala - 13 Wolf to White's	1.7	3.328E+06	3.4	50.8	3.946E+10	9.7	371.7
Hickahala - 13 Wolf to White's	3.3	1.643E+06	4.4	122.5	4.701E+10	33.3	633.2
Hickahala - 13 Wolf to White's	6.5	8.256E+05	5.6	289.4	5.582E+10	99.1	946.5
Hickahala - 13 Wolf to White's	12.9	5.644E+05	7.2	682.4	8.998E+10	277.8	1814.7
Hickahala - 13 Wolf to White's	25.5	5.223E+05	8.8	1484.5	1.811E+11	670.2	4051.7
Hickahala - 13 Wolf to Whitc's	50.7	2.527E+05	10.2	2849.4	1.682E+11	1335.1	3905.3
Hickahala - 13 Wolf to White's	100.5	1.011E+05	11.5	4754.0	1.123E+11	2205.6	2580.7
Hickahala - 13 Wolf to White's	199.3	1.512E+04	13.1	9342.4	3.300E+10	4498.2	787.2
Hickahala - 13 Wolf to White's	251.6	1.728E+03	14.0	11541.9	4.660E+09	5628.1	112.6
Hickahala - 14 White's to Beard's	0.7	9.856E+06	45.1	356.5	8.040E+11	2.7	307.5
Hickahala - 14 White's to Beard's	1.4	3.328E+06	54.9	825.0	6.280E+11	8.1	311.6
Hickahala - 14 White's to Beard's	2.8	1.643E+06	67.5	1944.0	7.306E+11	23.8	452.2
Hickahala - 14 White's to Beard's	5.6	8.256E+05	83.6	4709.7	8.896E+11	68.8	657.5
Hickahala - 14 White's to Beard's	11.2	5.644E+05	104.9	11704.5	1.511E+12	197.2	1288.3
Hickahala - 14 White's to Beard's	22.2	5.223E+05	129.4	28582.9	3.415E+12	537.7	3250.3
Hickahala - 14 White's to Beard's	44.0	2.527E+05	159.4	69111.1	3.996E+12	1416.2	4142.6

Reach Key (text)	Discharge (m^3/s)	Duration (s/yr)	Efficiency (none)	Applied Power (N/s)	Applied Work (N*m)	Sediment Transport Rate (tonnes/d)	Sediment Transport Yield (tonnes/yr)
Hickahala - 14 White's to Beard's	87.3	1.011E+05	194.4	162721.4	3.763E+12	3545.7	4148.6
Hickahala - 14 White's to Beard's	173.1	1.512E+04	234.8	370560.1	1.282E+12	8355.7	1462.3
Hickahala - 14 White's to Beard's	218.6	1.728E+03	252.3	497232.6	1.966E+11	11383.6	227.7
Hickahala - 15 Beard's to Cathey's	0.4	9.856E+06	50.7	832.3	1.924E+12	8.4	963.6
Hickahala - 15 Beard's to Cathey's	0.8	3.328E+06	57.8	1565.8	1.222E+12	19.7	759.8
Hickahala - 15 Beard's to Cathey's	1.6	1.643E+06	61.2	2664.1	1.026E+12	40.1	761.9
Hickahala - 15 Beard's to Cathey's	3.2	8.256E+05	67.5	4811.6	9.314E+11	83.2	794.6
Hickahala - 15 Beard's to Cathey's	6.4	5.644E+05	83.8	10365.7	1.372E+12	198.0	1293.8
Hickahala - 15 Beard's to Cathey's	12.7	5.223E+05	105.0	22980.7	2.814E+12	468.2	2830.6
Hickahala - 15 Beard's to Cathey's	25.2	2.527E+05	127.9	49377.6	2.926E+12	1052.1	3077.6
Hickahala - 15 Beard's to Cathey's	49.9	1.011E+05	152.7	101491.4	2.406E+12	2216.5	2593.4
Hickahala - 15 Beard's to Cathey's	99.0	1.512E+04	178.8	201074.4	7.129E+11	4407.0	771.3
Hickahala - 15 Beard's to Cathey's	125.0	1.728E+03	188.1	250645.1	1.016E+11	5463.3	109.3
Hickahala - 16 Cathey's to 109500	0.3	9.856E+06	39.3	281.3	6.906E+11	3.1	353.7
Hickahala - 16 Cathey's to 109500	0.7	3.328E+06	47.5	637.0	5.280E+11	8.8	337.4
Hickahala - 16 Cathey's to 109500	1.3	1.643E+06	59.1	1542.1	6.310E+11	25.2	479.1
Hickahala - 16 Cathey's to 109500	2.7	8.256E+05	73.9	3767.1	7.747E+11	70.4	672.5
Hickahala - 16 Cathey's to 109500	5.3	5.644E+05	92.5	9364.2	1.317E+12	195.8	1279.3
Hickahala - 16 Cathey's to 109500	10.5	5.223E+05	116.4	23625.8	3.074E+12	544.7	3292.9
Hickahala - 16 Cathey's to 109500	20.8	2.527E+05	146.6	60116.6	3.785E+12	1508.6	4412.7
Hickahala - 16 Cathey's to 109500	41.3	1.011E+05	182.8	151153.7	3.806E+12	4024.7	4709.1
Hickahala - 16 Cathey's to 109500	81.8	1.512E+04	221.7	365753.3	1.378E+12	10054.7	1759.6
Hickahala - 16 Cathey's to 109500	103.3	1.728E+03	234.4	485037.6	2.088E+11	13394.2	267.9
Hickahala - 17 109500 to S. Fork	0.3	9.856E+06	35.3	280.5	6.817E+11	1.8	200.8
Hickahala - 17 109500 to S. Fork	0.6	3.328E+06	44.2	639.3	5.245E+11	5.5	211.6
Hickahala - 17 109500 to S. Fork	1.2	1.643E+06	55.3	1462.7	5.924E+11	16.4	312.2
Hickahala - 17 109500 to S. Fork	2.4	8.256E+05	67.5	3302.8	6.723E+11	46.0	439.4
Hickahala - 17 109500 to S. Fork	4.8	5.644E+05	82.2	7625.3	1.061E+12	126.9	828.8
Hickahala - 17 109500 to S. Fork	9.5	5.223E+05	103.0	18561.9	2.390E+12	356.8	2157.1

Reach Key (text)	Discharge (m^3/s)	Duration (s/yr)	Efficiency (none)	Applied Power (N/s)	Applied Work (N*m)	Sediment Transport Rate (tonnes/d)	Sediment Transport Yield (tonnes/yr)
Hickahala - 17 109500 to S. Fork	18.7	2.527E+05	128.3	45612.3	2.842E+12	976.8	2857.4
Hickahala - 17 109500 to S. Fork	37.2	1.011E+05	156.6	110635.7	2.758E+12	2538.3	2969.9
Hickahala - 17 109500 to S. Fork	73.7	1.512E+04	190.5	267667.9	9.979E+11	6512.2	1139.7
Hickahala - 17 109500 to S. Fork	93.1	1.728E+03	201.0	345740.6	1.473E+11	8438.6	168.8
Hickahala - 18 S. Fork to US	0.1	9.856E+06	42.3	98.1	2.251E+11	1.1	126.2
Hickahala - 18 S. Fork to US	0.2	3.328E+06	50.1	228.2	1.767E+11	3.2	122.6
Hickahala - 18 S. Fork to US	0.3	1.643E+06	61.2	542.9	2.076E+11	9.3	177.1
Hickahala - 18 S. Fork to US	0.6	8.256E+05	74.2	1285.6	2.470E+11	26.2	250.5
Hickahala - 18 S. Fork to US	1.2	5.644E+05	91.2	3159.0	4.150E+11	74.7	488.0
Hickahala - 18 S. Fork to US	2.4	5.223E+05	104.8	6996.4	8.504E+11	186.0	1124.5
Hickahala - 18 S. Fork to US	4.8	2.527E+05	121.6	15692.7	9.230E+11	450.0	1316.4
Hickahala - 18 S. Fork to US	9.5	1.011E+05	144.3	36666.9	8.626E+11	1107.8	1296.2
Hickahala - 18 S. Fork to US	18.9	1.512E+04	172.9	84417.8	2.971E+11	2632.2	460.7
Hickahala - 18 S. Fork to US	23.9	1.728E+03	183.9	111799.2	4.496E+10	3518.8	70.4
Hickahala - USBC	0.0	9.856E+06	19.9	23.2	6.119E+10	0.2	20.4
Hickahala - USBC	0.1	3.328E+06	26.7	65.7	5.845E+10	0.8	29.6
Hickahala - USBC	0.1	1.643E+06	34.2	167.6	7.365E+10	2.5	48.1
Hickahala - USBC	0.3	8.256E+05	44.4	437.7	9.666E+10	8.1	77.0
Hickahala - USBC	0.5	5.644E+05	57.2	1134.9	1.713E+11	24.8	161.8
Hickahala - USBC	1.0	5.223E+05	78.6	3006.5	4.200E+11	76.2	460.4
Hickahala - USBC	2.0	2.527E+05	103.1	7421.3	5.017E+11	207.3	606.3
Hickahala - USBC	3.9	1.011E+05	126.4	17715.8	4.790E+11	522.7	611.6
Hickahala - USBC	7.8	1.512E+04	149.3	42638.7	1.724E+11	1309.1	229.1
Hickahala - USBC	9.8	1.728E+03	158.0	57969.1	2.679E+10	1801.1	36.0
James Wolf - 01 DS to 1968 Limits	0.6	9.856E+06	3.4	26.3	6.387E+10	5.2	595.4
James Wolf - 01 DS to 1968 Limits	1.2	3.328E+06	4.3	63.0	5.162E+10	17.7	683.1
James Wolf - 01 DS to 1968 Limits	2.4	1.643E+06	5.3	152.3	6.157E+10	54.7	1039.3
James Wolf - 01 DS to 1968 Limits	4.8	8.256E+05	6.7	372.5	7.566E+10	160.0	1529.2
James Wolf - 01 DS to 1968 Limits	9.6	5.644E+05	8.4	907.9	1.261E+11	452.0	2952.9

Reach Key (text)	Discharge (m^3/s)	Duration (s/yr)	Efficiency (none)	Applied Power (N/s)	Applied Work (N*m)	Sediment Transport Rate (tonnes/d)	Sediment Transport Yield (tonnes/yr)
James Wolf - 01 DS to 1968 Limits	19.0	5.223E+05	10.3	2133.2	2.742E+11	1175.5	7106.2
James Wolf - 01 DS to 1968 Limits	37.7	2.527E+05	12.3	4772.0	2.968E+11	2767.6	8095.6
James Wolf - 01 DS to 1968 Limits	74.9	1.011E+05	13.6	9278.3	2.308E+11	5349.9	6259.6
James Wolf - 01 DS to 1968 Limits	148.5	1.512E+04	14.8	16228.3	6.038E+10	9023.1	1579.1
James Wolf - 01 DS to 1968 Limits	187.5	1.728E+03	14.8	18312.3	7.787E+09	9915.3	198.3
James Wolf - 02 1968 Limits to M. Dale	0.5	9.856E+06	3.4	31.7	7.204E+10	5.2	593.1
James Wolf - 02 1968 Limits to M. Dale	0.9	3.328E+06	4.4	81.2	6.235E+10	20.3	780.5
James Wolf - 02 1968 Limits to M. Dale	1.9	1.643E+06	5.6	196.4	7.441E+10	64.7	1229.5
James Wolf - 02 1968 Limits to M. Dale	3.7	8.256E+05	7.0	469.2	8.934E+10	187.9	1795.5
James Wolf - 02 1968 Limits to M. Dale	7.4	5.644E+05	8.7	1109.0	1.444E+11	516.9	3377.1
James Wolf - 02 1968 Limits to M. Dale	14.7	5.223E+05	10.5	2541.8	3.062E+11	1356.5	8200.5
James Wolf - 02 1968 Limits to M. Dale	29.1	2.527E+05	12.9	5915.6	3.448E+11	3411.4	9978.8
James Wolf - 02 1968 Limits to M. Dale	57.6	1.011E+05	15.8	13670.7	3.188E+11	8440.7	9876.0
James Wolf - 02 1968 Limits to M. Dale	114.3	1.512E+04	19.6	32153.6	1.121E+11	21098.5	3692.4
James Wolf - 02 1968 Limits to M. Dale	144.4	1.728E+03	20.9	42924.4	1.711E+10	28649.5	573.0
James Wolf - 03 M. Dale to 34000	0.2	9.856E+06	2.5	12.4	2.964E+10	2.0	227.6
James Wolf - 03 M. Dale to 34000	0.5	3.328E+06	3.1	30.3	2.449E+10	7.6	292.4
James Wolf - 03 M. Dale to 34000	0.9	1.643E+06	3.9	74.4	2.968E+10	25.7	488.8
James Wolf - 03 M. Dale to 34000	1.9	8.256E+05	5.0	186.0	3.731E+10	81.0	773.6
James Wolf - 03 M. Dale to 34000	3.7	5.644E+05	6.1	460.0	6.306E+10	232.1	1516.3
James Wolf - 03 M. Dale to 34000	7.4	5.223E+05	7.6	1124.5	1.427E+11	625.5	3781.5
James Wolf - 03 M. Dale to 34000	14.6	2.527E+05	9.2	2673.3	1.641E+11	1605.4	4695.9
James Wolf - 03 M. Dale to 34000	29.0	1.011E+05	10.8	6181.9	1.518E+11	3945.5	4616.5
James Wolf - 03 M. Dale to 34000	57.4	1.512E+04	12.7	13432.3	4.934E+10	8793.1	1538.9
James Wolf - 03 M. Dale to 34000	72.5	1.728E+03	13.2	17295.3	7.260E+09	11359.2	227.2
James Wolf - 04 34000 to 45500	0.2	9.856E+06	2.5	11.5	2.800E+10	1.4	161.7
James Wolf - 04 34000 to 45500	0.4	3.328E+06	2.9	24.3	1.996E+10	4.6	177.8
James Wolf - 04 34000 to 45500	0.8	1.643E+06	3.5	56.4	2.283E+10	15.3	291.3
James Wolf - 04 34000 to 45500	1.7	8.256E+05	4.4	135.1	2.750E+10	48.6	464.2

Reach Key (text)	Discharge (m^3/s)	Duration (s/yr)	Efficiency (none)	Applied Power (N/s)	Applied Work (N*m)	Sediment Transport Rate (tonnes/d)	Sediment Transport Yield (tonnes/yr)
James Wolf - 04 34000 to 45500	3.3	5.644E+05	5.5	325.6	4.529E+10	144.3	942.9
James Wolf - 04 34000 to 45500	6.5	5.223E+05	6.8	786.0	1.012E+11	403.0	2435.9
James Wolf - 04 34000 to 45500	13.0	2.527E+05	8.4	1890.6	1.178E+11	1067.4	3122.3
James Wolf - 04 34000 to 45500	25.8	1.011E+05	10.3	4481.2	1.116E+11	2740.8	3206.8
James Wolf - 04 34000 to 45500	51.1	1.512E+04	12.8	10995.8	4.098E+10	7212.7	1262.3
James Wolf - 04 34000 to 45500	64.5	1.728E+03	13.7	14758.3	6.285E+09	9827.4	196.5
James Wolf - 05 45500 to US	0.2	9.856E+06	1.3	4.7	8.355E+09	0.6	69.0
James Wolf - 05 45500 to US	0.3	3.328E+06	1.7	12.8	7.613E+09	2.8	106.3
James Wolf - 05 45500 to US	0.7	1.643E+06	2.3	35.3	1.039E+10	9.1	172.3
James Wolf - 05 45500 to US	1.3	8.256E+05	3.1	102.7	1.518E+10	27.2	260.3
James Wolf - 05 45500 to US	2.6	5.644E+05	4.2	288.6	2.917E+10	83.4	544.9
James Wolf - 05 45500 to US	5.2	5.223E+05	6.0	862.0	8.062E+10	240.3	1452.4
James Wolf - 05 45500 to US	10.4	2.527E+05	8.3	2437.1	1.103E+11	645.7	1888.7
James Wolf - 05 45500 to US	20.5	1.011E+05	11.2	6939.0	1.256E+11	1599.4	1871.3
James Wolf - 05 45500 to US	40.7	1.512E+04	15.0	19336.5	5.236E+10	3859.4	675.4
James Wolf - 05 45500 to US	51.4	1.728E+03	16.5	27116.5	8.391E+09	5208.0	104.2
James Wolf - USBC	0.1	9.856E+06	1.3	4.7	2.844E+09	0.0	0.0
James Wolf - USBC	0.2	3.328E+06	1.7	12.8	2.592E+09	0.0	0.1
James Wolf - USBC	0.4	1.643E+06	2.3	35.3	3.536E+09	0.1	1.1
James Wolf - USBC	0.9	8.256E+05	3.1	102.7	5.168E+09	0.8	7.4
James Wolf - USBC	1.7	5.644E+05	4.2	288.6	9.931E+09	7.4	48.3
James Wolf - USBC	3.4	5.223E+05	6.0	862.0	2.744E+10	42.7	258.3
James Wolf - USBC	6.8	2.527E+05	8.3	2437.1	3.755E+10	191.2	559.3
James Wolf - USBC	13.4	1.011E+05	11.2	6939.0	4.276E+10	655.2	766.6
James Wolf - USBC	26.6	1.512E+04	15.0	19336.5	1.782E+10	1625.9	284.5
James Wolf - USBC	33.5	1.728E+03	16.5	27116.5	2.856E+09	2107.0	42.1
Martin Dale - 01 DS to 4500	0.2	9.856E+06	3.5	20.5	5.167E+10	6.8	778.8
Martin Dale - 01 DS to 4500	0.3	3.328E+06	4.3	48.8	4.158E+10	20.6	791.5
Martin Dale - 01 DS to 4500	0.6	1.643E+06	5.2	110.2	4.633E+10	55.6	1056.5

Reach Key (text)	Discharge (m^3/s)	Duration (s/yr)	Efficiency (none)	Applied Power (N/s)	Applied Work (N*m)	Sediment Transport Rate (tonnes/d)	Sediment Transport Yield (tonnes/yr)
Martin Dale - 01 DS to 4500	1.3	8.256E+05	6.1	250.4	5.290E+10	144.1	1377.2
Martin Dale - 01 DS to 4500	2.5	5.644E+05	7.3	580.4	8.382E+10	359.7	2350.0
Martin Dale - 01 DS to 4500	5.0	5.223E+05	8.8	1337.1	1.787E+11	884.0	5344.1
Martin Dale - 01 DS to 4500	9.9	2.527E+05	10.4	3017.7	1.951E+11	2093.2	6123.0
Martin Dale - 01 DS to 4500	19.7	1.011E+05	12.4	6696.9	1.732E+11	4792.9	5607.9
Martin Dale - 01 DS to 4500	39.1	1.512E+04	14.6	14514.3	5.616E+10	10550.5	1846.4
Martin Dale - 01 DS to 4500	49.4	1.728E+03	15.6	18858.8	8.339E+09	13737.5	274.8
Martin Dale - 02 4500 to US	0.1	9.856E+06	3.1	6.3	1.572E+10	1.5	167.2
Martin Dale - 02 4500 to US	0.1	3.328E+06	3.2	12.1	1.014E+10	3.5	134.5
Martin Dale - 02 4500 to US	0.3	1.643E+06	3.7	26.0	1.073E+10	9.5	180.4
Martin Dale - 02 4500 to US	0.6	8.256E+05	4.4	59.7	1.239E+10	26.4	251.9
Martin Dale - 02 4500 to US	1.1	5.644E+05	5.3	140.7	1.997E+10	72.2	471.4
Martin Dale - 02 4500 to US	2.2	5.223E+05	6.4	332.5	4.366E+10	191.9	1159.9
Martin Dale - 02 4500 to US	4.4	2.527E+05	7.7	786.2	4.996E+10	487.2	1425.2
Martin Dale - 02 4500 to US	8.7	1.011E+05	9.2	1808.3	4.596E+10	1189.3	1391.5
Martin Dale - 02 4500 to US	17.2	1.512E+04	10.8	3970.1	1.509E+10	2724.8	476.9
Martin Dale - 02 4500 to US	21.7	1.728E+03	11.5	5210.4	2.264E+09	3612.1	72.2
Martin Dale - USBC	0.0	9.856E+06	2.7	4.1	1.056E+10	0.9	100.4
Martin Dale - USBC	0.1	3.328E+06	2.8	8.9	7.694E+09	2.2	86.4
Martin Dale - USBC	0.2	1.643E+06	3.1	19.1	8.157E+09	5.9	112.6
Martin Dale - USBC	0.4	8.256E+05	3.8	45.3	9.714E+09	17.8	169.8
Martin Dale - USBC	0.8	5.644E+05	4.6	108.8	1.595E+10	51.5	336.3
Martin Dale - USBC	1.5	5.223E+05	5.7	262.3	3.560E+10	142.2	859.4
Martin Dale - USBC	3.0	2.527E+05	6.9	624.0	4.098E+10	369.1	1079.7
Martin Dale - USBC	6.0	1.011E+05	8.7	1567.2	4.117E+10	1017.8	1190.8
Martin Dale - USBC	11.8	1.512E+04	11.1	4032.5	1.584E+10	2825.4	494.5
Martin Dale - USBC	14.9	1.728E+03	12.0	5570.9	2.501E+09	3988.3	79.8
Mattic - 01 DS to Nelson	0.4	9.856E+06	3.2	61.8	1.517E+11	16.9	1925.0
Mattic - 01 DS to Nelson	0.9	3.328E+06	1.0	0.2	1.495E+08	0.0	0.0

Reach Key (text)	Discharge (m^3/s)	Duration (s/yr)	Efficiency (none)	Applied Power (N/s)	Applied Work (N*m)	Sediment Transport Rate (tonnes/d)	Sediment Transport Yield (tonnes/yr)
Mattic - 01 DS to Nelson	1.7	1.643E+06	2.5	11.1	4.549E+09	1.2	23.6
Mattic - 01 DS to Nelson	3.4	8.256E+05	2.7	12.9	2.650E+09	1.5	14.7
Mattic - 01 DS to Nelson	6.7	5.644E+05	3.2	24.0	3.375E+09	3.9	25.7
Mattic - 01 DS to Nelson	13.2	5.223E+05	3.5	35.1	4.566E+09	6.4	38.6
Mattic - 01 DS to Nelson	26.2	2.527E+05	4.1	67.6	4.252E+09	14.3	41.8
Mattic - 01 DS to Nelson	52.0	1.011E+05	4.8	141.6	3.562E+09	34.0	39.7
Mattic - 01 DS to Nelson	103.2	1.512E+04	5.0	164.0	6.169E+08	33.7	5.9
Mattic - 01 DS to Nelson	130.3	1.728E+03	5.2	214.7	9.231E+07	41.2	0.8
Mattic - 02 Nelson to 13000	0.2	9.856E+06	4.1	22.5	5.350E+10	7.5	852.9
Mattic - 02 Nelson to 13000	0.4	3.328E+06	1.1	0.1	5.402E+07	0.0	0.0
Mattic - 02 Nelson to 13000	0.8	1.643E+06	3.0	6.0	2.395E+09	1.2	23.2
Mattic - 02 Nelson to 13000	1.5	8.256E+05	3.3	9.3	1.848E+09	2.3	21.7
Mattic - 02 Nelson to 13000	3.0	5.644E+05	4.1	22.8	3.100E+09	7.6	49.4
Mattic - 02 Nelson to 13000	5.9	5.223E+05	5.0	54.4	6.862E+09	22.3	134.7
Mattic - 02 Nelson to 13000	11.8	2.527E+05	5.9	126.9	7.742E+09	59.2	173.0
Mattic - 02 Nelson to 13000	23.4	1.011E+05	6.2	273.6	6.677E+09	133.9	156.7
Mattic - 02 Nelson to 13000	46.3	1.512E+04	7.8	671.2	2.450E+09	374.9	65.6
Mattic - 02 Nelson to 13000	58.5	1.728E+03	9.6	1599.1	6.671E+08	963.4	19.3
Mattic - 03 13000 to US	0.2	9.856E+06	2.7	11.3	2.925E+10	1.7	195.0
Mattic - 03 13000 to US	0.3	3.328E+06	0.9	0.0	2.838E+07	0.0	0.0
Mattic - 03 13000 to US	0.7	1.643E+06	2.1	3.5	1.501E+09	0.2	4.7
Mattic - 03 13000 to US	1.3	8.256E+05	2.4	5.3	1.143E+09	0.5	4.8
Mattic - 03 13000 to US	2.6	5.644E+05	2.7	11.5	1.702E+09	1.8	11.4
Mattic - 03 13000 to US	5.2	5.223E+05	3.2	25.4	3.477E+09	5.6	34.1
Mattic - 03 13000 to US	10.2	2.527E+05	3.9	57.9	3.840E+09	17.2	50.4
Mattic - 03 13000 to US	20.3	1.011E+05	4.7	137.2	3.640E+09	50.4	58.9
Mattic - 03 13000 to US	40.2	1.512E+04	5.9	344.3	1.367E+09	153.1	26.8
Mattic - 03 13000 to US	50.8	1.728E+03	7.4	863.2	3.916E+08	443.2	8.9
Mattic - USBC	0.1	9.856E+06	1.9	5.2	1.404E+10	0.4	41.6

Reach Key (text)	Discharge (m^3/s)	Duration (s/yr)	Efficiency (none)	Applied Power (N/s)	Applied Work (N*m)	Sediment Transport Rate (tonnes/d)	Sediment Transport Yield (tonnes/yr)
Mattic - USBC	0.2	3.328E+06	0.7	0.0	1.218E+07	0.0	0.0
Mattic - USBC	0.4	1.643E+06	1.4	1.4	6.265E+08	0.0	0.6
Mattic - USBC	0.9	8.256E+05	1.5	2.2	4.872E+08	0.1	0.6
Mattic - USBC	1.7	5.644E+05	1.9	5.3	8.070E+08	0.4	2.4
Mattic - USBC	3.5	5.223E+05	2.5	13.2	1.879E+09	2.0	12.1
Mattic - USBC	6.9	2.527E+05	3.3	32.4	2.230E+09	7.8	22.9
Mattic - USBC	13.6	1.011E+05	4.2	83.3	2.290E+09	27.8	32.6
Mattic - USBC	27.0	1.512E+04	5.3	206.4	8.492E+08	85.2	14.9
Mattic - USBC	34.1	1.728E+03	6.6	483.9	2.275E+08	229.8	4.6
Nelson - 01 DS to Wilborn	0.2	9.856E+06	2.8	7.1	1.815E+10	0.9	107.1
Nelson - 01 DS to Wilborn	0.4	3.328E+06	3.1	13.8	1.190E+10	2.7	103.1
Nelson - 01 DS to Wilborn	0.9	1.643E+06	3.8	26.1	1.108E+10	6.3	119.6
Nelson - 01 DS to Wilborn	1.7	8.256E+05	4.6	62.1	1.326E+10	19.6	187.4
Nelson - 01 DS to Wilborn	3.4	5.644E+05	5.6	147.8	2.160E+10	57.4	375.1
Nelson - 01 DS to Wilborn	6.8	5.223E+05	6.9	352.7	4.770E+10	160.6	971.0
Nelson - 01 DS to Wilborn	13.5	2.527E+05	8.1	802.7	5.253E+10	416.9	1219.6
Nelson - 01 DS to Wilborn	26.8	1.011E+05	9.8	1851.2	4.846E+10	1056.9	1236.7
Nelson - 01 DS to Wilborn	53.2	1.512E+04	12.0	4317.0	1.690E+10	2670.3	467.3
Nelson - 01 DS to Wilborn	67.2	1.728E+03	14.5	9932.8	4.444E+09	6527.8	130.6
Nelson - 02 Wilborn to US	0.1	9.856E+06	2.0	2.6	6.734E+09	0.2	18.3
Nelson - 02 Wilborn to US	0.2	3.328E+06	2.2	4.1	3.541E+09	0.3	13.4
Nelson - 02 Wilborn to US	0.4	1.643E+06	2.6	9.5	4.034E+09	1.4	27.2
Nelson - 02 Wilborn to US	0.9	8.256E+05	3.3	23.0	4.922E+09	5.5	53.0
Nelson - 02 Wilborn to US	1.7	5.644E+05	4.1	56.1	8.199E+09	18.4	120.3
Nelson - 02 Wilborn to US	3.4	5.223E+05	5.1	137.9	1.866E+10	57.0	344.7
Nelson - 02 Wilborn to US	6.8	2.527E+05	6.3	338.9	2.219E+10	164.8	481.9
Nelson - 02 Wilborn to US	13.5	1.011E+05	7.8	820.5	2.149E+10	451.0	527.7
Nelson - 02 Wilborn to US	26.8	1.512E+04	9.5	1964.0	7.694E+09	1158.4	202.7
Nelson - 02 Wilborn to US	33.9	1.728E+03	11.4	4474.5	2.003E+09	2805.0	56.1

Reach Key (text)	Discharge (m^3/s)	Duration (s/yr)	Efficiency (none)	Applied Power (N/s)	Applied Work (N*m)	Sediment Transport Rate (tonnes/d)	Sediment Transport Yield (tonnes/yr)
Nelson - USBC	0.1	9.856E+06	1.2	1.1	2.697E+09	0.0	0.6
Nelson - USBC	0.2	3.328E+06	1.3	1.5	1.265E+09	0.0	0.5
Nelson - USBC	0.3	1.643E+06	1.5	3.3	1.366E+09	0.1	1.2
Nelson - USBC	0.6	8.256E+05	1.9	7.7	1.588E+09	0.3	3.2
Nelson - USBC	1.2	5.644E+05	2.3	17.3	2.443E+09	1.7	11.3
Nelson - USBC	2.4	5.223E+05	2.9	38.5	5.029E+09	6.8	41.2
Nelson - USBC	4.8	2.527E+05	3.7	87.7	5.538E+09	22.3	65.3
Nelson - USBC	9.5	1.011E+05	4.8	213.5	5.394E+09	72.0	84.2
Nelson - USBC	18.8	1.512E+04	6.1	513.2	1.939E+09	210.8	36.9
Nelson - USBC	23.8	1.728E+03	7.8	1343.9	5.804E+08	659.7	13.2
Senatobia - 01 DS to Res. Bound.	1.0	9.856E+06	23.6	128.0	3.190E+11	0.6	72.0
Senatobia - 01 DS to Res. Bound.	2.1	3.328E+06	22.8	146.3	1.231E+11	0.8	30.7
Senatobia - 01 DS to Res. Bound.	4.1	1.643E+06	28.0	287.7	1.195E+11	2.2	41.2
Senatobia - 01 DS to Res. Bound.	8.2	8.256E+05	33.5	512.6	1.070E+11	4.4	42.2
Senatobia - 01 DS to Res. Bound.	16.2	5.644E+05	38.4	782.2	1.116E+11	6.8	44.2
Senatobia - 01 DS to Res. Bound.	32.1	5.223E+05	44.6	1160.8	1.533E+11	10.0	60.4
Senatobia - 01 DS to Res. Bound.	63.6	2.527E+05	33.1	355.5	2.271E+10	1.0	2.9
Senatobia - 01 DS to Res. Bound.	126.1	1.011E+05	28.9	203.5	5.200E+09	0.3	0.3
Senatobia - 01 DS to Res. Bound.	250.1	1.512E+04	25.8	122.7	4.692E+08	0.1	0.0
Senatobia - 01 DS to Res. Bound.	315.9	1.728E+03	39.3	615.0	2.687E+08	2.0	0.0
Senatobia - 02 Res. Bound. to 15000	1.0	9.856E+06	2.3	12.0	2.941E+10	0.6	66.3
Senatobia - 02 Res. Bound. to 15000	2.0	3.328E+06	2.2	14.5	1.199E+10	0.8	29.5
Senatobia - 02 Res. Bound. to 15000	4.0	1.643E+06	2.7	33.4	1.365E+10	3.7	69.5
Senatobia - 02 Res. Bound. to 15000	7.9	8.256E+05	3.4	82.3	1.688E+10	15.0	143.2
Senatobia - 02 Res. Bound. to 15000	15.7	5.644E+05	4.2	194.9	2.734E+10	48.6	317.6
Senatobia - 02 Res. Bound. to 15000	31.1	5.223E+05	5.1	421.5	5.471E+10	128.0	773.9
Senatobia - 02 Res. Bound. to 15000	61.6	2.527E+05	6.2	945.3	5.937E+10	344.6	1008.1
Senatobia - 02 Res. Bound. to 15000	122.1	1.011E+05	7.9	2408.1	6.049E+10	1069.0	1250.8
Senatobia - 02 Res. Bound. to 15000	242.2	1.512E+04	9.4	4808.6	1.807E+10	2350.0	411.3

Reach Key (text)	Discharge (m^3/s)	Duration (s/yr)	Efficiency (none)	Applied Power (N/s)	Applied Work (N*m)	Sediment Transport Rate (tonnes/d)	Sediment Transport Yield (tonnes/yr)
Senatobia - 02 Res. Bound. to 15000	305.9	1.728E+03	11.5	10506.2	4.511E+09	5851.6	117.0
Senatobia - 03 15000 to G. Springs	1.0	9.856E+06	2.2	9.6	2.441E+10	0.4	49.3
Senatobia - 03 15000 to G. Springs	2.0	3.328E+06	2.3	14.0	1.199E+10	0.8	32.1
Senatobia - 03 15000 to G. Springs	3.9	1.643E+06	2.9	33.0	1.395E+10	3.9	74.2
Senatobia - 03 15000 to G. Springs	7.8	8.256E+05	3.6	76.1	1.617E+10	14.0	133.3
Senatobia - 03 15000 to G. Springs	15.5	5.644E+05	4.6	175.5	2.550E+10	43.0	280.6
Senatobia - 03 15000 to G. Springs	30.7	5.223E+05	5.7	400.2	5.380E+10	121.5	734.5
Senatobia - 03 15000 to G. Springs	60.8	2.527E+05	7.1	926.4	6.027E+10	336.1	983.0
Senatobia - 03 15000 to G. Springs	120.6	1.011E+05	9.0	2320.9	6.040E+10	997.7	1167.3
Senatobia - 03 15000 to G. Springs	239.1	1.512E+04	11.7	7049.3	2.744E+10	3624.0	634.2
Senatobia - 03 15000 to G. Springs	302.0	1.728E+03	15.1	19945.5	8.872E+09	11939.1	238.8
Senatobia - 04 G. Springs to Mattic	0.9	9.856E+06	2.1	6.3	1.522E+10	0.1	16.1
Senatobia - 04 G. Springs to Mattic	1.8	3.328E+06	2.3	9.2	7.528E+09	0.3	12.9
Senatobia - 04 G. Springs to Mattic	3.5	1.643E+06	2.8	22.6	9.157E+09	2.0	38.6
Senatobia - 04 G. Springs to Mattic	7.0	8.256E+05	3.6	58.7	1.198E+10	9.8	94.1
Senatobia - 04 G. Springs to Mattic	13.9	5.644E+05	4.7	159.5	2.224E+10	40.6	265.0
Senatobia - 04 G. Springs to Mattic	27.5	5.223E+05	6.1	449.8	5.803E+10	156.0	943.1
Senatobia - 04 G. Springs to Mattic	54.6	2.527E+05	8.0	1253.6	7.826E+10	540.2	1580.1
Senatobia - 04 G. Springs to Mattic	108.2	1.011E+05	10.2	3300.2	8.241E+10	1641.7	1920.8
Senatobia - 04 G. Springs to Mattic	214.7	1.512E+04	12.3	8297.9	3.099E+10	4536.3	793.9
Senatobia - 04 G. Springs to Mattic	271.1	1.728E+03	15.7	23671.1	1.010E+10	14483.2	289.7
Senatobia - 05 Mattic to T. Jones	0.4	9.856E+06	2.3	8.9	1.952E+10	0.7	78.3
Senatobia - 05 Mattic to T. Jones	0.9	3.328E+06	2.5	13.5	1.003E+10	1.4	54.3
Senatobia - 05 Mattic to T. Jones	1.7	1.643E+06	3.0	30.7	1.125E+10	5.2	99.0
Senatobia - 05 Mattic to T. Jones	3.4	8.256E+05	3.8	77.6	1.429E+10	19.9	190.0
Senatobia - 05 Mattic to T. Jones	6.7	5.644E+05	4.8	200.2	2.520E+10	69.2	451.9
Senatobia - 05 Mattic to T. Jones	13.3	5.223E+05	6.2	521.1	6.071E+10	223.5	1351.3
Senatobia - 05 Mattic to T. Jones	26.4	2.527E+05	7.5	1224.2	6.900E+10	621.2	1817.2
Senatobia - 05 Mattic to T. Jones	52.4	1.011E+05	9.1	2610.2	5.885E+10	1416.7	1657.6

Reach Key (text)	Discharge (m^3/s)	Duration (s/yr)	Efficiency (none)	Applied Power (N/s)	Applied Work (N*m)	Sediment Transport Rate (tonnes/d)	Sediment Transport Yield (tonnes/yr)
Senatobia - 05 Mattic to T. Jones	104.0	1.512E+04	10.8	5313.0	1.792E+10	3007.2	526.3
Senatobia - 05 Mattic to T. Jones	131.3	1.728E+03	13.0	11733.5	4.522E+09	7013.1	140.3
Senatobia - 06 T. Jones to 46000	0.3	9.856E+06	2.4	8.1	1.952E+10	0.9	100.1
Senatobia - 06 T. Jones to 46000	0.7	3.328E+06	2.6	12.3	1.003E+10	1.7	67.0
Senatobia - 06 T. Jones to 46000	1.3	1.643E+06	3.2	29.2	1.175E+10	6.5	123.7
Senatobia - 06 T. Jones to 46000	2.7	8.256E+05	4.1	71.1	1.437E+10	22.1	211.4
Senatobia - 06 T. Jones to 46000	5.3	5.644E+05	5.1	176.2	2.434E+10	69.9	456.4
Senatobia - 06 T. Jones to 46000	10.5	5.223E+05	6.4	435.2	5.565E+10	204.3	1235.2
Senatobia - 06 T. Jones to 46000	20.8	2.527E+05	7.9	1077.3	6.665E+10	576.2	1685.3
Senatobia - 06 T. Jones to 46000	41.3	1.011E+05	9.7	2654.0	6.568E+10	1539.7	1801.5
Senatobia - 06 T. Jones to 46000	81.9	1.512E+04	11.7	6216.1	2.301E+10	3854.1	674.5
Senatobia - 06 T. Jones to 46000	103.4	1.728E+03	13.8	13468.0	5.697E+09	8667.0	173.3
Senatobia - 07 46000 to 62000	0.3	9.856E+06	2.5	8.8	2.236E+10	1.2	140.7
Senatobia - 07 46000 to 62000	0.5	3.328E+06	2.8	13.3	1.136E+10	2.3	90.4
Senatobia - 07 46000 to 62000	1.0	1.643E+06	3.4	30.5	1.293E+10	8.0	152.7
Senatobia - 07 46000 to 62000	2.1	8.256E+05	4.1	72.3	1.538E+10	24.4	233.0
Senatobia - 07 46000 to 62000	4.1	5.644E+05	4.9	171.1	2.488E+10	70.6	461.0
Senatobia - 07 46000 to 62000	8.2	5.223E+05	6.0	409.2	5.507E+10	198.0	1197.0
Senatobia - 07 46000 to 62000	16.2	2.527E+05	7.4	969.1	6.311E+10	526.8	1541.1
Senatobia - 07 46000 to 62000	32.2	1.011E+05	8.8	2218.3	5.779E+10	1285.6	1504.3
Senatobia - 07 46000 to 62000	63.8	1.512E+04	10.3	5047.8	1.967E+10	3059.1	535.4
Senatobia - 07 46000 to 62000	80.5	1.728E+03	12.1	11654.6	5.190E+09	7477.9	149.6
Senatobia - 08 62000 to US	0.2	9.856E+06	2.2	3.4	9.183E+09	0.3	30.8
Senatobia - 08 62000 to US	0.3	3.328E+06	2.3	4.9	4.388E+09	0.5	18.6
Senatobia - 08 62000 to US	0.6	1.643E+06	2.6	10.6	4.709E+09	1.7	31.5
Senatobia - 08 62000 to US	1.3	8.256E+05	3.1	24.6	5.505E+09	5.9	56.0
Senatobia - 08 62000 to US	2.5	5.644E+05	3.7	58.4	8.917E+09	18.5	120.7
Senatobia - 08 62000 to US	5.0	5.223E+05	4.6	140.6	1.988E+10	56.3	340.6
Senatobia - 08 62000 to US	9.9	2.527E+05	5.7	346.8	2.371E+10	167.9	491.0

Reach Key (text)	Discharge (m^3/s)	Duration (s/yr)	Efficiency (none)	Applied Power (N/s)	Applied Work (N*m)	Sediment Transport Rate (tonnes/d)	Sediment Transport Yield (tonnes/yr)
Senatobia - 08 62000 to US	19.5	1.011E+05	7.1	859.1	2.350E+10	475.7	556.6
Senatobia - 08 62000 to US	38.8	1.512E+04	8.9	2100.4	8.593E+09	1263.8	221.2
Senatobia - 08 62000 to US	49.0	1.728E+03	10.6	4949.2	2.314E+09	3154.3	63.1
Senatobia - USBC	0.1	9.856E+06	2.4	2.4	6.446E+09	0.2	26.7
Senatobia - USBC	0.2	3.328E+06	2.4	3.5	3.178E+09	0.4	14.5
Senatobia - USBC	0.3	1.643E+06	2.5	7.5	3.367E+09	1.1	21.1
Senatobia - USBC	0.7	8.256E+05	3.1	17.9	4.058E+09	4.1	39.6
Senatobia - USBC	1.3	5.644E+05	3.7	43.6	6.749E+09	13.8	90.0
Senatobia - USBC	2.6	5.223E+05	4.5	105.6	1.514E+10	41.9	253.5
Senatobia - USBC	5.1	2.527E+05	5.4	256.1	1.776E+10	120.3	351.9
Senatobia - USBC	10.2	1.011E+05	6.6	632.2	1.753E+10	338.5	396.1
Senatobia - USBC	20.2	1.512E+04	8.5	1587.6	6.585E+09	944.2	165.3
Senatobia - USBC	25.5	1.728E+03	10.8	3984.5	1.889E+09	2588.4	51.8
South Fork - 01 DS to 4600	0.1	9.856E+06	24.9	43.0	1.114E+11	0.3	32.9
South Fork - 01 DS to 4600	0.2	3.328E+06	31.1	103.7	9.083E+10	1.0	37.2
South Fork - 01 DS to 4600	0.3	1.643E+06	39.0	259.2	1.120E+11	3.1	58.9
South Fork - 01 DS to 4600	0.6	8.256E+05	48.8	642.9	1.397E+11	9.3	89.1
South Fork - 01 DS to 4600	1.2	5.644E+05	60.9	1587.2	2.357E+11	26.9	175.7
South Fork - 01 DS to 4600	2.4	5.223E+05	75.2	3909.1	5.372E+11	74.8	452.2
South Fork - 01 DS to 4600	4.8	2.527E+05	91.8	9476.8	6.302E+11	198.2	579.7
South Fork - 01 DS to 4600	9.5	1.011E+05	110.5	22347.3	5.944E+11	499.4	584.3
South Fork - 01 DS to 4600	18.9	1.512E+04	132.4	50026.2	1.990E+11	1168.6	204.5
South Fork - 01 DS to 4600	23.9	1.728E+03	141.8	67408.4	3.065E+10	1604.8	32.1
South Fork - 02 4600 to 10000	0.1	9.856E+06	28.2	53.5	1.347E+11	0.5	59.2
South Fork - 02 4600 to 10000	0.1	3.328E+06	35.3	129.8	1.104E+11	1.7	63.7
South Fork - 02 4600 to 10000	0.3	1.643E+06	44.1	320.0	1.343E+11	5.0	95.5
South Fork - 02 4600 to 10000	0.5	8.256E+05	55.4	785.4	1.657E+11	14.5	138.8
South Fork - 02 4600 to 10000	1.1	5.644E+05	68.7	1916.6	2.765E+11	39.9	260.5
South Fork - 02 4600 to 10000	2.1	5.223E+05	84.3	4602.4	6.144E+11	105.1	635.2

Reach Key (text)	Discharge (m^3/s)	Duration (s/yr)	Efficiency (none)	Applied Power (N/s)	Applied Work (N*m)	Sediment Transport Rate (tonnes/d)	Sediment Transport Yield (tonnes/yr)
South Fork - 02 4600 to 10000	4.2	2.527E+05	102.7	11009.1	7.111E+11	270.4	790.8
South Fork - 02 4600 to 10000	8.4	1.011E+05	124.5	26414.8	6.825E+11	687.4	804.3
South Fork - 02 4600 to 10000	16.7	1.512E+04	149.9	63965.1	2.472E+11	1750.3	306.3
South Fork - 02 4600 to 10000	21.0	1.728E+03	159.9	86695.4	3.829E+10	2408.9	48.2
South Fork - 03 10000 to US	0.0	9.856E+06	28.2	50.4	1.226E+11	0.6	69.9
South Fork - 03 10000 to US	0.1	3.328E+06	33.2	116.0	9.527E+10	1.7	64.9
South Fork - 03 10000 to US	0.2	1.643E+06	41.7	291.0	1.180E+11	5.2	98.2
South Fork - 03 10000 to US	0.3	8.256E+05	52.7	718.7	1.465E+11	15.0	143.6
South Fork - 03 10000 to US	0.7	5.644E+05	66.7	1804.2	2.514E+11	42.7	278.9
South Fork - 03 10000 to US	1.4	5.223E+05	84.1	4482.4	5.780E+11	117.2	708.2
South Fork - 03 10000 to US	2.7	2.527E+05	105.3	11033.0	6.884E+11	309.1	904.0
South Fork - 03 10000 to US	5.3	1.011E+05	130.3	26351.2	6.577E+11	772.1	903.4
South Fork - 03 10000 to US	10.6	1.512E+04	157.8	59321.0	2.215E+11	1781.0	311.7
South Fork - 03 10000 to US	13.4	1.728E+03	166.4	76955.3	3.283E+10	2311.7	46.2
South Fork - USBC	0.0	9.856E+06	30.1	52.3	1.273E+11	0.7	76.6
South Fork - USBC	0.1	3.328E+06	36.1	119.2	9.796E+10	1.9	72.3
South Fork - USBC	0.1	1.643E+06	43.6	294.6	1.195E+11	5.3	100.9
South Fork - USBC	0.2	8.256E+05	54.2	708.1	1.443E+11	14.9	142.1
South Fork - USBC	0.5	5.644E+05	67.3	1722.7	2.401E+11	41.0	267.6
South Fork - USBC	1.0	5.223E+05	83.1	4283.6	5.524E+11	110.4	667.5
South Fork - USBC	1.9	2.527E+05	102.7	10506.7	6.556E+11	288.6	844.1
South Fork - USBC	3.8	1.011E+05	125.6	25332.5	6.323E+11	732.5	857.1
South Fork - USBC	7.6	1.512E+04	152.7	60252.9	2.249E+11	1807.1	316.3
South Fork - USBC	9.6	1.728E+03	162.9	80424.0	3.431E+10	2433.0	48.7
Steammill - 01 DS to 5200	0.0	9.856E+06	2.0	2.2	5.339E+09	0.2	22.3
Steammill - 01 DS to 5200	0.1	3.328E+06	2.4	5.2	4.202E+09	0.8	32.1
Steammill - 01 DS to 5200	0.1	1.643E+06	3.1	13.3	5.304E+09	3.5	65.9
Steammill - 01 DS to 5200	0.3	8.256E+05	3.9	32.3	6.490E+09	11.7	112.0
Steammill - 01 DS to 5200	0.6	5.644E+05	4.9	78.6	1.079E+10	36.0	235.1

Reach Key (text)	Discharge (m^3/s)	Duration (s/yr)	Efficiency (none)	Applied Power (N/s)	Applied Work (N*m)	Sediment Transport Rate (tonnes/d)	Sediment Transport Yield (tonnes/yr)
Steammill - 01 DS to 5200	1.1	5.223E+05	6.1	190.1	2.415E+10	101.9	615.8
Steammill - 01 DS to 5200	2.2	2.527E+05	7.6	453.2	2.786E+10	267.8	783.3
Steammill - 01 DS to 5200	4.3	1.011E+05	9.1	1013.5	2.492E+10	639.7	748.4
Steammill - 01 DS to 5200	8.6	1.512E+04	10.6	2108.3	7.753E+09	1361.7	238.3
Steammill - 01 DS to 5200	10.9	1.728E+03	11.2	2757.6	1.159E+09	1808.3	36.2
Steammill - 02 5200 to US	0.0	9.856E+06	2.3	2.6	6.894E+09	0.5	53.3
Steammill - 02 5200 to US	0.1	3.328E+06	2.8	6.4	5.698E+09	1.9	71.4
Steammill - 02 5200 to US	0.1	1.643E+06	3.6	16.1	7.113E+09	6.5	122.9
Steammill - 02 5200 to US	0.2	8.256E+05	4.4	39.6	8.788E+09	19.6	187.5
Steammill - 02 5200 to US	0.4	5.644E+05	5.5	96.5	1.464E+10	55.6	363.4
Steammill - 02 5200 to US	0.8	5.223E+05	6.7	236.0	3.314E+10	148.8	899.7
Steammill - 02 5200 to US	1.6	2.527E+05	8.1	576.5	3.917E+10	390.5	1142.2
Steammill - 02 5200 to US	3.1	1.011E+05	9.9	1407.7	3.826E+10	1019.9	1193.3
Steammill - 02 5200 to US	6.2	1.512E+04	12.2	3417.2	1.389E+10	2586.5	452.7
Steammill - 02 5200 to US	7.8	1.728E+03	13.0	4578.2	2.127E+09	3498.8	70.0
Steammill - USBC	0.0	9.856E+06	1.9	2.0	5.379E+09	0.2	25.3
Steammill - USBC	0.0	3.328E+06	2.7	5.9	5.260E+09	1.5	58.3
Steammill - USBC	0.0	1.643E+06	3.6	15.7	6.951E+09	6.1	116.3
Steammill - USBC	0.0	8.256E+05	4.5	38.4	8.523E+09	18.9	181.0
Steammill - USBC	0.1	5.644E+05	5.6	93.3	1.416E+10	54.0	352.8
Steammill - USBC	0.2	5.223E+05	6.9	224.0	3.146E+10	144.3	872.5
Steammill - USBC	0.4	2.527E+05	8.3	530.3	3.603E+10	360.6	1054.9
Steammill - USBC	0.7	1.011E+05	10.1	1249.0	3.395E+10	893.2	1045.1
Steammill - USBC	1.4	1.512E+04	11.9	2968.7	1.207E+10	2197.4	384.6
Steammill - USBC	1.8	1.728E+03	12.8	4059.8	1.886E+09	3039.2	60.8
Thornton - 01 DS to 1968 Limits	0.1	9.856E+06	2.0	2.7	5.369E+09	0.2	17.4
Thornton - 01 DS to 1968 Limits	0.1	3.328E+06	2.6	7.3	5.003E+09	0.8	30.8
Thornton - 01 DS to 1968 Limits	0.3	1.643E+06	4.2	24.6	8.307E+09	3.9	74.9
Thornton - 01 DS to 1968 Limits	0.6	8.256E+05	4.9	55.7	9.446E+09	10.1	96.8

Reach Key (text)	Discharge (m^3/s)	Duration (s/yr)	Efficiency (none)	Applied Power (N/s)	Applied Work (N*m)	Sediment Transport Rate (tonnes/d)	Sediment Transport Yield (tonnes/yr)
Thornton - 01 DS to 1968 Limits	1.1	5.644E+05	3.6	50.7	5.871E+09	8.7	56.7
Thornton - 01 DS to 1968 Limits	2.2	5.223E+05	3.4	50.0	5.358E+09	6.3	38.4
Thornton - 01 DS to 1968 Limits	4.4	2.527E+05	2.8	22.6	1.175E+09	1.2	3.6
Thornton - 01 DS to 1968 Limits	8.8	1.011E+05	2.4	15.3	3.177E+08	0.4	0.5
Thornton - 01 DS to 1968 Limits	17.4	1.512E+04	0.7	0.5	1.606E+06	0.0	0.0
Thornton - 01 DS to 1968 Limits	22.0	1.728E+03	0.6	0.3	8.882E+04	0.0	0.0
Thornton - 02 1968 Limits to Steammill	0.1	9.856E+06	2.0	3.4	4.781E+09	0.3	30.1
Thornton - 02 1968 Limits to Steammill	0.1	3.328E+06	2.4	8.1	3.823E+09	1.2	47.9
Thornton - 02 1968 Limits to Steammill	0.3	1.643E+06	3.0	18.9	4.439E+09	4.7	90.1
Thornton - 02 1968 Limits to Steammill	0.5	8.256E+05	3.9	45.2	5.322E+09	15.7	150.2
Thornton - 02 1968 Limits to Steammill	1.0	5.644E+05	5.0	106.0	8.537E+09	45.6	297.9
Thornton - 02 1968 Limits to Steammill	2.0	5.223E+05	6.1	241.5	1.800E+10	119.5	722.1
Thornton - 02 1968 Limits to Steammill	3.9	2.527E+05	7.2	445.1	1.606E+10	228.1	667.3
Thornton - 02 1968 Limits to Steammill	7.8	1.011E+05	7.6	631.5	9.111E+09	296.3	346.6
Thornton - 02 1968 Limits to Steammill	15.4	1.512E+04	5.9	281.2	6.068E+08	79.5	13.9
Thornton - 02 1968 Limits to Steammill	19.5	1.728E+03	3.9	67.1	1.655E+07	8.2	0.2
Thornton - 03 Steammill to US	0.0	9.856E+06	3.2	3.5	7.002E+09	0.9	101.7
Thornton - 03 Steammill to US	0.0	3.328E+06	2.6	4.6	3.086E+09	1.2	44.9
Thornton - 03 Steammill to US	0.1	1.643E+06	2.8	9.3	3.077E+09	2.9	55.6
Thornton - 03 Steammill to US	0.2	8.256E+05	3.4	22.1	3.668E+09	8.7	83.3
Thornton - 03 Steammill to US	0.4	5.644E+05	4.2	53.9	6.120E+09	26.5	173.2
Thornton - 03 Steammill to US	0.7	5.223E+05	5.3	131.5	1.381E+10	74.1	447.8
Thornton - 03 Steammill to US	1.5	2.527E+05	6.5	311.0	1.580E+10	190.6	557.5
Thornton - 03 Steammill to US	2.9	1.011E+05	7.8	697.8	1.418E+10	453.4	530.5
Thornton - 03 Steammill to US	5.8	1.512E+04	8.9	1382.5	4.203E+09	903.1	158.0
Thornton - 03 Steammill to US	7.3	1.728E+03	9.1	1734.2	6.025E+08	1134.3	22.7
Thornton - USBC	0.0	9.856E+06	0.9	0.5	1.316E+09	0.0	0.7
Thornton - USBC	0.0	3.328E+06	1.4	1.7	1.528E+09	0.1	3.0
Thornton - USBC	0.1	1.643E+06	2.0	4.4	1.927E+09	0.6	11.7

Reach Key (text)	Discharge (m^3/s)	Duration (s/yr)	Efficiency (none)	Applied Power (N/s)	Applied Work (N*m)	Sediment Transport Rate (tonnes/d)	Sediment Transport Yield (tonnes/yr)
Thornton - USBC	0.1	8.256E+05	2.6	11.2	2.483E+09	3.0	28.4
Thornton - USBC	0.2	5.644E+05	3.3	28.4	4.293E+09	10.5	68.4
Thornton - USBC	0.5	5.223E+05	4.1	70.7	9.889E+09	32.9	199.1
Thornton - USBC	0.9	2.527E+05	5.1	178.8	1.209E+10	94.9	277.6
Thornton - USBC	1.8	1.011E+05	6.4	446.9	1.210E+10	268.6	314.3
Thornton - USBC	3.6	1.512E+04	8.0	1121.9	4.542E+09	732.4	128.2
Thornton - USBC	4.6	1.728E+03	8.6	1523.0	7.046E+08	1018.0	20.4
Tolbert-Jones - 01 DS to 3000	0.1	9.856E+06	1.6	1.8	3.591E+09	0.0	4.2
Tolbert-Jones - 01 DS to 3000	0.2	3.328E+06	1.8	2.5	1.685E+09	0.1	3.2
Tolbert-Jones - 01 DS to 3000	0.3	1.643E+06	2.1	5.1	1.720E+09	0.4	7.4
Tolbert-Jones - 01 DS to 3000	0.6	8.256E+05	2.5	10.7	1.808E+09	1.5	14.2
Tolbert-Jones - 01 DS to 3000	1.2	5.644E+05	3.1	23.1	2.660E+09	4.9	31.9
Tolbert-Jones - 01 DS to 3000	2.4	5.223E+05	3.7	50.2	5.352E+09	14.3	86.2
Tolbert-Jones - 01 DS to 3000	4.7	2.527E+05	4.5	119.4	6.163E+09	43.3	126.6
Tolbert-Jones - 01 DS to 3000	9.3	1.011E+05	5.6	319.8	6.603E+09	144.5	169.1
Tolbert-Jones - 01 DS to 3000	18.5	1.512E+04	7.1	899.8	2.778E+09	475.4	83.2
Tolbert-Jones - 01 DS to 3000	23.4	1.728E+03	8.7	1714.4	6.050E+08	944.2	18.9
Tolbert-Jones - 02 3000 to US	0.1	9.856E+06	24.3	30.5	7.334E+10	0.2	18.0
Tolbert-Jones - 02 3000 to US	0.1	3.328E+06	26.2	43.1	3.499E+10	0.3	10.3
Tolbert-Jones - 02 3000 to US	0.3	1.643E+06	31.0	92.2	3.689E+10	0.8	15.3
Tolbert-Jones - 02 3000 to US	0.5	8.256E+05	37.7	207.5	4.173E+10	2.4	23.1
Tolbert-Jones - 02 3000 to US	1.1	5.644E+05	46.6	484.0	6.656E+10	7.1	46.3
Tolbert-Jones - 02 3000 to US	2.1	5.223E+05	57.6	1143.6	1.455E+11	19.9	120.6
Tolbert-Jones - 02 3000 to US	4.3	2.527E+05	71.4	2732.0	1.682E+11	54.5	159.3
Tolbert-Jones - 02 3000 to US	8.4	1.011E+05	88.3	6621.3	1.631E+11	146.9	171.9
Tolbert-Jones - 02 3000 to US	16.7	1.512E+04	108.1	15936.2	5.871E+10	382.1	66.9
Tolbert-Jones - 02 3000 to US	21.1	1.728E+03	131.6	38252.3	1.611E+10	973.0	19.5
Tolbert-Jones - USBC	0.0	9.856E+06	24.4	10.6	2.792E+10	0.1	7.2
Tolbert-Jones - USBC	0.1	3.328E+06	25.6	16.1	1.429E+10	0.1	4.0

Reach Key (text)	Discharge (m^3/s)	Duration (s/yr)	Efficiency (none)	Applied Power (N/s)	Applied Work (N*m)	Sediment Transport Rate (tonnes/d)	Sediment Transport Yield (tonnes/yr)
Tolbert-Jones - USBC	0.1	1.643E+06	27.8	33.9	1.487E+10	0.3	5.1
Tolbert-Jones - USBC	0.3	8.256E+05	32.0	79.5	1.751E+10	0.8	7.6
Tolbert-Jones - USBC	0.5	5.644E+05	37.6	188.4	2.835E+10	2.3	14.8
Tolbert-Jones - USBC	1.0	5.223E+05	45.9	460.7	6.417E+10	6.7	40.5
Tolbert-Jones - USBC	2.0	2.527E+05	58.7	1158.9	7.811E+10	20.1	58.7
Tolbert-Jones - USBC	4.0	1.011E+05	74.5	2871.9	7.743E+10	56.3	65.9
Tolbert-Jones - USBC	8.0	1.512E+04	92.9	7058.3	2.846E+10	153.7	26.9
Tolbert-Jones - USBC	10.0	1.728E+03	115.1	17848.1	8.225E+09	424.5	8.5
West Ditch - 01 DS to Res. Bound.	0.2	9.856E+06	28.5	48.9	1.209E+11	0.2	23.3
West Ditch - 01 DS to Res. Bound.	0.5	3.328E+06	34.3	103.2	8.614E+10	0.6	23.4
West Ditch - 01 DS to Res. Bound.	0.9	1.643E+06	40.1	196.8	8.111E+10	1.4	27.5
West Ditch - 01 DS to Res. Bound.	1.8	8.256E+05	46.2	350.5	7.260E+10	3.0	28.4
West Ditch - 01 DS to Res. Bound.	3.6	5.644E+05	52.7	598.1	8.470E+10	5.5	36.0
West Ditch - 01 DS to Res. Bound.	7.2	5.223E+05	52.2	718.3	9.413E+10	5.1	31.0
West Ditch - 01 DS to Res. Bound.	14.2	2.527E+05	57.7	1263.1	8.009E+10	9.8	28.6
West Ditch - 01 DS to Res. Bound.	28.2	1.011E+05	73.8	3722.1	9.440E+10	43.7	51.1
West Ditch - 01 DS to Res. Bound.	55.8	1.512E+04	80.3	5983.0	2.270E+10	77.0	13.5
West Ditch - 01 DS to Res. Bound.	70.5	1.728E+03	77.8	5299.8	2.298E+09	62.2	1.2
West Ditch - 02 Res. Bound. To 24300	0.2	9.856E+06	3.6	12.7	2.978E+10	3.2	360.9
West Ditch - 02 Res. Bound. To 24300	0.3	3.328E+06	4.2	27.4	2.179E+10	8.9	341.5
West Ditch - 02 Res. Bound. To 24300	0.6	1.643E+06	4.9	63.0	2.471E+10	25.0	475.2
West Ditch - 02 Res. Bound. To 24300	1.3	8.256E+05	5.9	147.7	2.911E+10	68.1	650.6
West Ditch - 02 Res. Bound. To 24300	2.5	5.644E+05	7.1	349.7	4.710E+10	183.0	1195.2
West Ditch - 02 Res. Bound. To 24300	4.9	5.223E+05	8.3	786.6	9.803E+10	439.9	2659.3
West Ditch - 02 Res. Bound. To 24300	9.8	2.527E+05	9.9	1727.0	1.041E+11	1003.8	2936.2
West Ditch - 02 Res. Bound. To 24300	19.4	1.011E+05	11.8	3787.4	9.136E+10	2333.0	2729.7
West Ditch - 02 Res. Bound. To 24300	38.4	1.512E+04	14.4	8602.3	3.104E+10	5634.2	986.0
West Ditch - 02 Res. Bound. To 24300	48.5	1.728E+03	15.5	11843.1	4.883E+09	7948.5	159.0
West Ditch - 03 24300 to US	0.1	9.856E+06	2.4	5.6	1.533E+10	0.8	86.1

Reach Key (text)	Discharge (m^3/s)	Duration (s/yr)	Efficiency (none)	Applied Power (N/s)	Applied Work (N*m)	Sediment Transport Rate (tonnes/d)	Sediment Transport Yield (tonnes/yr)
West Ditch - 03 24300 to US	0.2	3.328E+06	2.9	12.8	1.192E+10	3.0	114.8
West Ditch - 03 24300 to US	0.4	1.643E+06	3.7	30.9	1.416E+10	10.3	196.2
West Ditch - 03 24300 to US	0.9	8.256E+05	4.6	74.6	1.718E+10	32.1	306.8
West Ditch - 03 24300 to US	1.7	5.644E+05	5.6	176.8	2.786E+10	90.6	592.1
West Ditch - 03 24300 to US	3.4	5.223E+05	6.9	426.7	6.221E+10	248.4	1501.7
West Ditch - 03 24300 to US	6.8	2.527E+05	8.5	1028.5	7.255E+10	651.9	1906.8
West Ditch - 03 24300 to US	13.4	1.011E+05	10.4	2486.8	7.017E+10	1697.6	1986.3
West Ditch - 03 24300 to US	26.6	1.512E+04	12.6	5885.4	2.484E+10	4223.0	739.1
West Ditch - 03 24300 to US	33.6	1.728E+03	13.2	7726.0	3.727E+09	5607.2	112.1
West Ditch - USBC	0.0	9.856E+06	26.7	28.2	7.992E+10	0.3	29.8
West Ditch - USBC	0.1	3.328E+06	33.8	69.4	6.648E+10	0.8	32.7
West Ditch - USBC	0.2	1.643E+06	42.1	172.2	8.147E+10	2.5	48.5
West Ditch - USBC	0.3	8.256E+05	51.5	412.8	9.816E+10	7.1	68.2
West Ditch - USBC	0.6	5.644E+05	62.8	998.0	1.622E+11	19.5	127.1
West Ditch - USBC	1.2	5.223E+05	75.6	2400.1	3.611E+11	51.4	310.5
West Ditch - USBC	2.4	2.527E+05	90.3	5725.1	4.168E+11	132.2	386.6
West Ditch - USBC	4.8	1.011E+05	107.9	13983.4	4.072E+11	347.0	406.0
West Ditch - USBC	9.5	1.512E+04	124.1	31615.4	1.377E+11	820.6	143.6
West Ditch - USBC	12.0	1.728E+03	126.7	37910.8	1.887E+10	982.3	19.6
White's - 01 DS to 1968 Limits	0.1	9.856E+06	1.8	2.2	3.921E+09	0.1	9.4
White's - 01 DS to 1968 Limits	0.2	3.328E+06	2.3	5.3	3.185E+09	0.5	18.2
White's - 01 DS to 1968 Limits	0.3	1.643E+06	2.8	12.1	3.578E+09	1.9	36.7
White's - 01 DS to 1968 Limits	0.6	8.256E+05	3.4	26.2	3.907E+09	5.9	56.4
White's - 01 DS to 1968 Limits	1.2	5.644E+05	4.1	52.9	5.387E+09	14.7	95.8
White's - 01 DS to 1968 Limits	2.5	5.223E+05	4.6	94.5	8.908E+09	28.7	173.7
White's - 01 DS to 1968 Limits	4.9	2.527E+05	4.9	137.7	6.278E+09	40.6	118.7
White's - 01 DS to 1968 Limits	9.7	1.011E+05	4.8	160.1	2.922E+09	39.9	46.7
White's - 01 DS to 1968 Limits	19.3	1.512E+04	3.8	81.0	2.211E+08	10.5	1.8
White's - 01 DS to 1968 Limits	24.3	1.728E+03	2.7	17.3	5.404E+06	0.5	0.0

Reach Key (text)	Discharge (m^3/s)	Duration (s/yr)	Efficiency (none)	Applied Power (N/s)	Applied Work (N*m)	Sediment Transport Rate (tonnes/d)	Sediment Transport Yield (tonnes/yr)
White's - 02 1968 Limits to 8000	0.1	9.856E+06	30.7	55.4	1.149E+11	0.2	24.6
White's - 02 1968 Limits to 8000	0.2	3.328E+06	36.9	126.2	8.826E+10	0.7	27.7
White's - 02 1968 Limits to 8000	0.3	1.643E+06	45.2	298.5	1.031E+11	2.4	45.1
White's - 02 1968 Limits to 8000	0.6	8.256E+05	54.9	708.3	1.229E+11	7.4	70.7
White's - 02 1968 Limits to 8000	1.2	5.644E+05	67.6	1748.2	2.074E+11	23.2	151.3
White's - 02 1968 Limits to 8000	2.4	5.223E+05	83.4	4306.0	4.728E+11	68.7	415.1
White's - 02 1968 Limits to 8000	4.7	2.527E+05	100.9	9890.0	5.254E+11	175.1	512.2
White's - 02 1968 Limits to 8000	9.3	1.011E+05	119.1	20723.3	4.404E+11	374.3	438.0
White's - 02 1968 Limits to 8000	18.4	1.512E+04	125.3	34382.5	1.093E+11	640.1	112.0
White's - 02 1968 Limits to 8000	23.3	1.728E+03	126.5	38428.1	1.396E+10	708.3	14.2
White's - 03 8000 to US	0.0	9.856E+06	30.9	36.0	9.733E+10	0.3	30.2
White's - 03 8000 to US	0.1	3.328E+06	42.0	97.8	8.935E+10	1.0	37.6
White's - 03 8000 to US	0.2	1.643E+06	50.3	214.0	9.651E+10	2.6	50.4
White's - 03 8000 to US	0.3	8.256E+05	61.0	485.2	1.099E+11	7.3	69.4
White's - 03 8000 to US	0.7	5.644E+05	71.3	1033.0	1.600E+11	17.9	117.1
White's - 03 8000 to US	1.3	5.223E+05	70.5	1713.4	2.456E+11	33.1	200.0
White's - 03 8000 to US	2.6	2.527E+05	82.2	3752.3	2.603E+11	78.6	229.8
White's - 03 8000 to US	5.2	1.011E+05	98.7	8556.2	2.374E+11	189.7	222.0
White's - 03 8000 to US	10.3	1.512E+04	117.0	18880.0	7.836E+10	433.2	75.8
White's - 03 8000 to US	12.9	1.728E+03	123.1	24278.2	1.152E+10	558.9	11.2
White's - USBC	0.0	9.856E+06	22.2	13.2	3.284E+10	0.1	7.0
White's - USBC	0.0	3.328E+06	26.0	30.2	2.527E+10	0.2	7.8
White's - USBC	0.0	1.643E+06	31.6	72.6	2.998E+10	0.7	13.2
White's - USBC	0.1	8.256E+05	39.1	178.4	3.704E+10	2.2	21.5
White's - USBC	0.2	5.644E+05	48.9	447.4	6.351E+10	6.8	44.1
White's - USBC	0.4	5.223E+05	60.9	1085.0	1.425E+11	19.1	115.6
White's - USBC	0.7	2.527E+05	75.6	2620.0	1.665E+11	51.5	150.6

Reach Key (text)	Discharge (m^3/s)	Duration (s/yr)	Efficiency (none)	Applied Power (N/s)	Applied Work (N*m)	Sediment Transport Rate (tonnes/d)	Sediment Transport Yield (tonnes/yr)
White's - USBC	1.5	1.011E+05	92.9	6277.6	1.596E+11	134.7	157.6
White's - USBC	2.9	1.512E+04	112.8	14956.8	5.687E+10	344.9	60.4
White's - USBC	3.7	1.728E+03	120.7	20555.6	8.932E+09	486.6	9.7

Table B-6 Regime Energy.

Reach Key (text)	Regime Volume (m^3/s)	Regime Duration (s/yr)	Fraction Weighted Average Fall Velocity (m/s)	Volume Weighted Efficiency (none)	Volume Weighted Average Applied Power (N/s)	Regime Applied Work (N*m)	Volume Weighted Average Transport Rate (tonnes/d)	Regime Yield (tonnes/yr)	Yield-Work Slope (tonnes/d)/(N/s)	Yield-Work Y-Intercept (tonnes/d)	Yield-Work X-Intercept (N/s)	R^2 (none)	Residual Standard Deviation (tonnes/d)
Basket - 01 DS to 4000	1.26E+7	1.71E+07	0.1019	3.39	52.1	7.50E+10	10.2	700.9	0.000	1.05	-1.12E+08	0.867	344.3
Basket - 02 4000 to 1968 Limits	1.16E+7	1.71E+07	0.1019	6.03	717.6	2.35E+11	386.3	5189.5	0.000	-3159.95	8.84E+10	0.996	294.0
Basket - 03 1968 Limits to 15400	9.51E+6	1.71E+07	0.1019	6.90	1166.3	3.99E+11	730.2	8590.2	0.000	-4509.42	1.36E+11	0.999	397.2
Basket - 04 15400 to US	7.44E+6	1.71E+07	0.1019	5.79	541.3	1.95E+11	320.1	4181.1	0.000	-4935.74	1.06E+11	0.999	133.4
Basket - USBC	3.65E+6	1.71E+07	0.1019	5.02	445.6	1.26E+11	277.7	2881.0	0.000	-1637.89	4.52E+10	0.998	207.2
Beard's - 01 DS to 1968 Limits	1.39E+7	1.71E+07	0.1019	5.97	603.6	2.35E+11	285.9	4014.2	0.000	-3957.04	1.15E+11	0.993	268.2
Beard's - 02 1968 Limits to 10800 Bridge	1.36E+7	1.71E+07	0.1019	7.31	1139.9	3.91E+11	724.3	8634.9	0.000	-4882.64	1.42E+11	1.000	186.4
Beard's - 03 10800 Bridge to US	7.45E+6	1.71E+07	0.0081	103.14	18220.1	5.56E+12	517.9	6591.5	0.000	-2256.57	1.42E+12	1.000	48.6
Beard's - USBC	2.92E+6	1.71E+07	0.0081	92.72	11909.0	3.57E+12	300.8	3659.4	0.000	-1443.14	1.00E+12	0.999	107.3
Billy's - 01 DS to Res. Bound.	3.98E+6	1.71E+07	0.0081	29.31	116.5	3.27E+11	1.4	201.4	0.000	3.01	-4.69E+09	0.943	82.4
Billy's - 02 Res. Bound. to 1968 Limits	3.83E+6	1.71E+07	0.1019	4.43	183.4	7.05E+10	77.8	1260.8	0.000	-1055.07	3.19E+10	0.974	170.6
Billy's - 03 1968 Limits to US	3.59E+6	1.71E+07	0.1019	5.16	380.2	1.31E+11	268.2	2997.3	0.000	-1753.33	4.85E+10	0.999	151.7
Billy's - USBC	9.74E+5	1.71E+07	0.1019	5.17	183.2	6.45E+10	125.9	1480.6	0.000	-1086.34	2.73E+10	0.999	48.8
Cathey's - 01 DS to 3500	5.36E+6	1.71E+07	0.1019	7.55	817.2	2.89E+11	473.9	7499.0	0.000	-5879.83	1.24E+11	0.957	888.1
Cathey's - 02 3500 to 7500	5.14E+6	1.71E+07	0.0081	74.73	9510.3	3.20E+12	247.5	2889.1	0.000	-1209.48	9.41E+11	1.000	71.0
Cathey's - 03 7500 to 12100	4.32E+6	1.71E+07	0.0081	69.64	5776.0	1.88E+12	135.9	1617.1	0.000	-796.48	6.17E+11	0.999	56.8
Cathey's - 04 12100 to US	3.47E+6	1.71E+07	0.0081	74.16	6918.1	2.42E+12	185.5	2289.4	0.000	-954.61	7.09E+11	1.000	50.8
Cathey's - USBC	1.50E+6	1.71E+07	0.0081	75.36	6589.5	2.25E+12	175.2	2080.7	0.000	-950.60	7.02E+11	1.000	40.2

Reach Key (text)	Regime Volume (m^3/s)	Regime Duration (s/yr)	*Fraction* Weighted Average Fall Velocity (m/s)	Volume Weighted Efficiency (none)	*Volume* Weighted Average Applied Power (N/s)	Regime Applied Work (N*m)	*Volume* Weighted Average Transport Rate (tonnes/d)	Regime Yield (tonnes/yr)	Yield-Work Slope (tonnes/d)/(N/s)	Yield-Work Y-Intercept (tonnes/d)	Yield-Work X-Intercept (N/s)	R^2 (none)	Residual Standard Deviation (tonnes/d)
Hickahala - 01 DS to 12500	3.00E+8	1.71E+07	0.0081	84.95	18458.7	3.78E+13	572.6	39485.3	0.000	6002.46	-6.52E+12	0.971	9741.6
Hickahala - 02 12500 to 1968 Start	2.95E+8	1.71E+07	0.0081	52.54	5674.2	4.17E+12	122.7	2029.8	0.000	1499.02	-1.09E+13	0.431	754.2
Hickahala - 03 1968 Start to W. Ditch	2.84E+8	1.71E+07	0.0081	61.83	17001.1	8.88E+12	377.9	6390.4	0.000	-1379.40	1.57E+12	0.683	2019.1
Hickahala - 04 W. Ditch to Senatobia	2.62E+8	1.71E+07	0.0081	43.00	2715.2	6.09E+12	48.3	6588.4	0.000	-223.47	1.98E+11	0.962	2315.0
Hickahala - 05 Senatobia to Billy's	1.71E+8	1.71E+07	0.0081	135.06	114883.6	2.63E+13	5067.8	59344.5	0.000	-30918.46	8.76E+12	0.992	5890.8
Hickahala - 06 Billy's to Res. Bound.	1.66E+8	1.71E+07	0.0081	98.23	55795.1	1.42E+13	1960.9	18247.5	0.000	-15192.29	6.37E+12	0.998	2801.1
Hickahala - 07 Res. Bound. to Thornton	1.65E+8	1.71E+07	0.1019	8.36	2591.2	1.02E+12	1123.9	15952.4	0.000	-8693.57	3.50E+11	0.863	5465.6
Hickahala - 08 Thornton to Basket	1.57E+8	1.71E+07	0.1019	9.43	11788.5	1.18E+12	7471.1	74490.4	0.000	-39205.49	4.05E+11	0.998	5288.9
Hickahala - 09 Basket to 57350	1.44E+8	1.71E+07	0.1019	8.86	9374.3	2.34E+12	5721.2	58682.7	0.000	-24042.98	6.69E+11	0.998	3641.7
Hickahala - 10 57350 to Lick	1.36E+8	1.71E+07	0.1019	9.09	7877.7	2.86E+12	4606.4	55159.9	0.000	-38890.39	1.19E+12	1.000	1268.8
Hickahala - 11 Lick to Lick Branch	1.28E+8	1.71E+07	0.1019	8.00	6069.5	1.70E+12	3423.6	35944.4	0.000	-18246.58	5.63E+11	0.999	2152.4
Hickahala - 12 Lick Branch to Wolf	1.27E+8	1.71E+07	0.1019	7.81	5182.7	1.70E+12	2772.2	32427.5	0.000	-21894.71	6.83E+11	0.999	1086.0
Hickahala - 13 Wolf to White's	7.15E+7	1.71E+07	0.1019	7.82	2034.3	7.83E+11	941.0	15538.3	0.000	-14094.95	3.67E+11	0.960	1934.3
Hickahala - 14 White's to Beard's	6.21E+7	1.71E+07	0.0081	123.21	61294.7	1.72E+13	1307.7	16248.7	0.000	-7437.99	5.39E+12	1.000	288.1
Hickahala - 15 Beard's to Cathey's	3.55E+7	1.71E+07	0.0081	101.35	39393.7	1.54E+13	841.8	13955.9	0.000	-4969.30	4.07E+12	0.517	3379.1
Hickahala - 16 Cathey's to 109500	2.93E+7	1.71E+07	0.0081	112.32	56457.2	1.62E+13	1477.2	17564.2	0.000	-5904.79	4.06E+12	1.000	237.8
Hickahala - 17 109500 to S. Fork	2.65E+7	1.71E+07	0.0081	98.75	41949.9	1.27E+13	946.2	11285.7	0.000	-6923.00	4.83E+12	1.000	121.6
Hickahala - 18 S. Fork to US	6.78E+6	1.71E+07	0.0081	98.40	14056.1	4.25E+12	415.8	5432.5	0.000	-2997.79	1.52E+12	0.999	153.4
Hickahala - USBC	2.77E+6	1.71E+07	0.0081	74.66	6758.0	2.06E+12	196.1	2280.3	0.000	-835.70	5.50E+11	0.999	98.1

Reach Key (text)	Regime Volume (m^3/s)	Regime Duration (s/yr)	Fraction Weighted Average Fall Velocity (m/s)	Volume Weighted Efficiency (none)	Volume Weighted Average Applied Power (N/s)	Regime Applied Work (N*m)	Volume Weighted Average Transport Rate (tonnes/d)	Regime Yield (tonnes/yr)	Yield-Work Slope (tonnes/d)/(N/s)	Yield-Work Y-Intercept (tonnes/d)	Yield-Work X-Intercept (N/s)	R^2 (none)	Residual Standard Deviation (tonnes/d)
James Wolf - 01 DS to 1968 Limits	5.32E+7	1.71E+07	0.1019	9.25	3507.4	1.25E+12	1980.6	30038.6	0.000	-16010.06	4.33E+11	0.999	663.3
James Wolf - 02 1968 Limits to M. Dale	4.10E+7	1.71E+07	0.1019	10.05	5265.4	1.54E+12	3200.8	40096.4	0.000	-24066.72	5.77E+11	0.999	1448.9
James Wolf - 03 M. Dale to 34000	2.06E+7	1.71E+07	0.1019	7.04	2308.9	6.99E+11	1437.3	18158.5	0.000	-8470.36	2.22E+11	1.000	333.6
James Wolf - 04 34000 to 45500	1.83E+7	1.71E+07	0.1019	6.53	1728.0	5.21E+11	1040.8	12261.7	0.000	-8044.17	2.06E+11	1.000	107.1
James Wolf - 05 45500 to US	1.46E+7	1.71E+07	0.1019	6.06	2606.5	4.48E+11	594.0	7144.8	0.000	1063.87	-8.49E+10	0.983	1116.9
James Wolf - USBC	9.52E+6	1.71E+07	0.1019	6.06	2606.2	1.53E+11	217.6	1967.7	0.000	-778.98	4.44E+10	0.988	446.2
Martin Dale - 01 DS to 4500	1.40E+7	1.71E+07	0.1019	8.30	2560.1	8.88E+11	1803.0	25550.1	0.000	-11741.37	2.80E+11	1.000	398.9
Martin Dale - 02 4500 to US	6.15E+6	1.71E+07	0.1019	6.16	682.6	2.26E+11	440.2	5731.1	0.000	-3838.27	9.06E+10	0.998	225.0
Martin Dale - USBC	4.23E+6	1.71E+07	0.1019	5.60	605.5	1.88E+11	388.6	4509.6	0.000	-2700.63	7.04E+10	1.000	31.7
Mattic - 01 DS to Nelson	3.70E+7	1.71E+07	0.1019	3.46	58.4	1.75E+11	12.8	2115.8	0.000	-135.73	1.06E+10	1.000	133.8
Mattic - 02 Nelson to 13000	1.66E+7	1.71E+07	0.1019	4.71	115.9	8.53E+10	57.4	1496.4	0.000	247.87	-1.55E+10	0.977	477.8
Mattic - 03 13000 to US	1.44E+7	1.71E+07	0.1019	3.25	57.5	4.63E+10	20.9	395.1	0.000	173.90	-2.58E+10	0.836	333.8
Mattic - USBC	9.69E+6	1.71E+07	0.1019	2.59	33.2	2.35E+10	10.8	132.2	0.000	111.44	-3.29E+10	0.501	209.4
Nelson - 01 DS to Wilborn	1.91E+7	1.71E+07	0.1019	6.49	738.1	2.46E+11	414.9	4917.4	0.000	-3793.29	1.08E+11	0.997	460.9
Nelson - 02 Wilborn to US	9.64E+6	1.71E+07	0.1019	4.91	321.4	9.95E+10	172.3	1845.3	0.000	-1425.31	4.34E+10	0.998	161.7
Nelson - USBC	6.76E+6	1.71E+07	0.1019	2.92	85.8	2.78E+10	28.6	257.6	0.000	-535.14	1.87E+10	0.996	63.2
Senatobia - 01 DS to Res. Bound.	8.97E+7	1.71E+07	0.0081	32.69	483.9	9.62E+11	3.4	293.9	0.000	41.03	-1.56E+11	0.933	93.9
Senatobia - 02 Res. Bound. to 15000	8.69E+7	1.71E+07	0.1019	4.99	888.1	2.96E+11	378.8	4187.1	0.000	-5771.73	1.70E+11	0.988	922.4
Senatobia - 03 15000 to G. Springs	8.58E+7	1.71E+07	0.1019	5.57	1017.3	3.03E+11	455.9	4327.6	0.000	-4818.77	1.59E+11	0.999	445.7
Senatobia - 04 G. Springs to Mattic	7.70E+7	1.71E+07	0.1019	6.00	1295.1	3.26E+11	643.6	5954.2	0.000	-3846.80	1.25E+11	0.999	568.0

Reach Key (text)	Regime Volume (m^3/s)	Regime Duration (s/yr)	Fraction Weighted Average Fall Velocity (m/s)	Volume Weighted Efficiency (none)	Volume Weighted Average Applied Power (N/s)	Regime Applied Work (N*m)	Volume Weighted Average Transport Rate (tonnes/d)	Regime Yield (tonnes/yr)	Yield-Work Slope (tonnes/d)/(N/s)	Yield-Work Y-Intercept (tonnes/d)	Yield-Work X-Intercept (N/s)	R^2 (none)	Residual Standard Deviation (tonnes/d)
Senatobia - 05 Mattic to T. Jones	3.73E+7	1.71E+07	0.1019	5.78	1014.0	2.91E+11	533.2	6366.1	0.000	-4674.92	1.23E+11	0.996	622.1
Senatobia - 06 T. Jones to 46000	2.94E+7	1.71E+07	0.1019	6.12	1022.6	2.97E+11	584.8	6528.5	0.000	-3946.48	1.12E+11	0.998	518.3
Senatobia - 07 46000 to 62000	2.29E+7	1.71E+07	0.1019	5.78	876.2	2.88E+11	498.5	6005.1	0.000	-3887.99	1.14E+11	0.996	654.1
Senatobia - 08 62000 to US	1.39E+7	1.71E+07	0.1019	4.55	338.8	1.11E+11	183.3	1930.1	0.000	-1646.55	5.12E+10	0.996	276.4
Senatobia - USBC	7.25E+6	1.71E+07	0.1019	4.42	253.5	8.27E+10	134.9	1410.5	0.000	-1193.47	3.78E+10	0.999	139.2
South Fork - 01 DS to 4600	6.79E+6	1.71E+07	0.0081	70.68	8365.3	2.68E+12	183.3	2246.5	0.000	-1047.55	8.47E+11	0.999	81.9
South Fork - 02 4600 to 10000	5.99E+6	1.71E+07	0.0081	79.42	10079.9	3.12E+12	259.3	3202.6	0.000	-1311.24	9.01E+11	1.000	73.6
South Fork - 03 10000 to US	3.81E+6	1.71E+07	0.0081	80.27	9772.4	2.91E+12	281.3	3529.0	0.000	-1218.89	7.47E+11	1.000	54.5
South Fork - USBC	2.71E+6	1.71E+07	0.0081	79.74	9601.5	2.83E+12	274.0	3393.1	0.000	-1198.70	7.37E+11	1.000	38.0
Steammill - 01 DS to 5200	3.09E+6	1.71E+07	0.1019	5.73	377.7	1.18E+11	230.7	2889.5	0.000	-1884.93	4.64E+10	0.999	116.7
Steammill - 02 5200 to US	2.21E+6	1.71E+07	0.1019	6.37	535.1	1.70E+11	381.6	4556.5	0.000	-1954.77	5.09E+10	1.000	48.2
Steammill - USBC	5.01E+5	1.71E+07	0.1019	6.41	484.0	1.56E+11	341.1	4151.7	0.000	-1849.96	4.82E+10	0.999	110.2
Thornton - 01 DS to 1968 Limits	6.25E+6	1.71E+07	0.1019	2.98	27.6	4.08E+10	3.5	319.1	0.000	-64.68	6.71E+09	0.969	112.9
Thornton - 02 1968 Limits to Steammill	5.53E+6	1.71E+07	0.1019	5.23	243.3	7.07E+10	114.9	2366.3	0.000	-722.90	1.68E+10	0.916	583.1
Thornton - 03 Steammill to US	2.08E+6	1.71E+07	0.1019	5.15	255.4	7.16E+10	160.2	2175.2	0.000	-1651.96	3.07E+10	0.986	225.2
Thornton - USBC	1.29E+6	1.71E+07	0.1019	3.90	170.3	5.09E+10	100.2	1051.9	0.000	-645.06	1.91E+10	0.996	106.8
Tolbert-Jones - 01 DS to 3000	6.63E+6	1.71E+07	0.1019	3.62	128.7	3.30E+10	57.5	544.9	0.000	-802.50	2.00E+10	0.986	170.3
Tolbert-Jones - 02 3000 to US	6.01E+6	1.71E+07	0.0081	56.13	2624.2	8.05E+11	57.3	651.1	0.000	-503.35	3.53E+11	0.995	97.7
Tolbert-Jones - USBC	2.86E+6	1.71E+07	0.0081	47.34	1136.3	3.59E+11	22.2	239.3	0.000	-178.28	1.52E+11	0.999	17.5
West Ditch - 01 DS to Res. Bound.	2.00E+7	1.71E+07	0.0081	52.21	1290.3	7.39E+11	13.5	264.1	0.000	159.43	-9.90E+11	0.522	75.2

Reach Key (text)	Regime Volume (m^3/s)	Regime Duration (s/yr)	Fraction Weighted Average Fall Velocity (m/s)	Volume Weighted Efficiency (none)	Volume Weighted Average Applied Power (N/s)	Regime Applied Work (N*m)	Volume Weighted Average Transport Rate (tonnes/d)	Regime Yield (tonnes/yr)	Yield-Work Slope (tonnes/d)/(N/s)	Yield-Work Y-Intercept (tonnes/d)	Yield-Work X-Intercept (N/s)	R^2 (none)	Residual Standard Deviation (tonnes/d)
West Ditch - 02 Res. Bound. To 24300	1.38E+7	1.71E+07	0.1019	7.97	1483.4	4.82E+11	905.6	12493.6	0.000	-7578.08	1.81E+11	1.000	168.8
West Ditch - 03 24300 to US	9.55E+6	1.71E+07	0.1019	6.58	940.5	3.20E+11	629.7	7542.0	0.000	-4306.22	1.16E+11	1.000	51.5
West Ditch - USBC	3.41E+6	1.71E+07	0.0081	70.72	5179.1	1.83E+12	126.0	1572.7	0.000	-683.40	5.51E+11	0.999	49.2
White's - 01 DS to 1968 Limits	6.90E+6	1.71E+07	0.1019	3.88	77.7	3.83E+10	20.9	557.5	0.000	-60.80	4.05E+09	0.788	221.6
White's - 02 1968 Limits to 8000	6.61E+6	1.71E+07	0.0081	77.44	7481.4	2.20E+12	132.0	1810.8	0.000	-1308.28	9.05E+11	0.989	158.7
White's - 03 8000 to US	3.67E+6	1.71E+07	0.0081	70.04	3326.1	1.39E+12	71.7	1043.4	0.000	-1234.61	7.66E+11	0.959	151.8
White's - USBC	1.04E+6	1.71E+07	0.0081	58.58	2395.4	7.23E+11	50.5	587.4	0.000	-350.65	2.68E+11	0.999	25.1

Table B-7 Regime-energy Details.

Reach Key (text)	Discharge (m^3/s)	Duration (s/yr)	Efficiency (none)	Applied Power (N/s)	Applied Work (N*m)	Sediment Transport Rate (tonnes/d)	Sediment Transport Yield (tonnes/yr)
Basket - 01 DS to 4000	0.1	8.55E+07	2.4	6.4	1.23E+11	0.5	467.2
Basket - 01 DS to 4000	0.3	4.32E+07	3.0	15.5	1.51E+11	2.2	1091.2
Basket - 01 DS to 4000	0.6	2.18E+07	3.0	24.9	1.22E+11	4.6	1170.2
Basket - 01 DS to 4000	1.1	1.10E+07	3.7	55.1	1.36E+11	13.2	1682.0
Basket - 01 DS to 4000	2.3	5.55E+06	4.3	100.6	1.26E+11	26.8	1724.3
Basket - 01 DS to 4000	4.5	2.80E+06	4.4	115.2	7.25E+10	25.7	834.0
Basket - 01 DS to 4000	8.9	1.41E+06	3.6	51.6	1.64E+10	5.7	93.0
Basket - 01 DS to 4000	17.7	7.12E+05	2.9	22.2	3.55E+09	1.0	8.1
Basket - 01 DS to 4000	35.1	3.59E+05	1.2	0.6	4.97E+07	0.0	0.0
Basket - 01 DS to 4000	44.3	2.84E+05	1.1	0.4	2.30E+07	0.0	0.0
Basket - 02 4000 to 1968 Limits	0.1	8.57E+07	2.1	4.2	8.73E+10	0.3	324.8
Basket - 02 4000 to 1968 Limits	0.3	4.33E+07	2.6	10.3	1.08E+11	1.5	761.9
Basket - 02 4000 to 1968 Limits	0.5	2.19E+07	3.2	25.4	1.35E+11	5.9	1497.7
Basket - 02 4000 to 1968 Limits	1.1	1.10E+07	4.1	63.9	1.71E+11	20.5	2605.1
Basket - 02 4000 to 1968 Limits	2.1	5.55E+06	5.1	159.5	2.15E+11	64.6	4146.7
Basket - 02 4000 to 1968 Limits	4.2	2.80E+06	6.4	399.3	2.71E+11	192.5	6236.5
Basket - 02 4000 to 1968 Limits	8.3	1.41E+06	8.0	952.4	3.26E+11	517.0	8442.0
Basket - 02 4000 to 1968 Limits	16.4	7.12E+05	9.6	2022.5	3.49E+11	1144.1	9421.8
Basket - 02 4000 to 1968 Limits	32.5	3.59E+05	10.5	3281.3	2.86E+11	1769.3	7346.5
Basket - 02 4000 to 1968 Limits	41.0	2.84E+05	10.6	3721.4	2.57E+11	1957.3	6436.1
Basket - 03 1968 Limits to 15400	0.1	8.61E+07	2.4	5.6	1.37E+11	0.7	668.8
Basket - 03 1968 Limits to 15400	0.2	4.31E+07	2.9	13.6	1.67E+11	2.8	1375.9
Basket - 03 1968 Limits to 15400	0.4	2.18E+07	3.7	33.8	2.11E+11	9.7	2452.0
Basket - 03 1968 Limits to 15400	0.9	1.10E+07	4.6	84.8	2.67E+11	31.5	4014.8
Basket - 03 1968 Limits to 15400	1.7	5.54E+06	5.8	215.3	3.41E+11	97.9	6283.1
Basket - 03 1968 Limits to 15400	3.4	2.80E+06	7.3	539.6	4.31E+11	287.0	9291.7
Basket - 03 1968 Limits to 15400	6.7	1.41E+06	9.0	1304.0	5.26E+11	769.6	12564.5

Reach Key (text)	Discharge (m^3/s)	Duration (s/yr)	Efficiency (none)	Applied Power (N/s)	Applied Work (N*m)	Sediment Transport Rate (tonnes/d)	Sediment Transport Yield (tonnes/yr)
Basket - 03 1968 Limits to 15400	13.4	7.11E+05	11.0	3092.1	6.29E+11	1982.1	16315.8
Basket - 03 1968 Limits to 15400	26.5	3.59E+05	13.4	7162.2	7.34E+11	4837.4	20077.8
Basket - 03 1968 Limits to 15400	33.5	2.84E+05	14.3	9514.3	7.72E+11	6514.9	21413.2
Basket - 04 15400 to US	0.1	8.47E+07	2.7	5.7	1.23E+11	0.8	821.2
Basket - 04 15400 to US	0.2	4.31E+07	3.2	12.7	1.39E+11	2.7	1349.8
Basket - 04 15400 to US	0.3	2.19E+07	3.6	26.5	1.48E+11	7.4	1870.7
Basket - 04 15400 to US	0.7	1.10E+07	4.2	57.4	1.62E+11	20.2	2578.6
Basket - 04 15400 to US	1.3	5.56E+06	5.0	124.9	1.78E+11	53.6	3449.3
Basket - 04 15400 to US	2.7	2.80E+06	6.0	280.1	2.01E+11	140.8	4569.6
Basket - 04 15400 to US	5.3	1.41E+06	7.2	627.0	2.27E+11	355.3	5813.7
Basket - 04 15400 to US	10.4	7.13E+05	8.7	1407.7	2.56E+11	854.9	7050.9
Basket - 04 15400 to US	20.7	3.59E+05	10.4	3129.8	2.88E+11	2017.8	8392.9
Basket - 04 15400 to US	26.1	2.85E+05	11.1	4127.1	3.00E+11	2698.8	8889.0
Basket - USBC	0.0	8.60E+07	1.4	1.6	3.48E+10	0.1	52.6
Basket - USBC	0.1	4.30E+07	1.8	4.2	4.61E+10	0.4	181.6
Basket - USBC	0.2	2.19E+07	2.2	10.4	5.84E+10	1.7	432.2
Basket - USBC	0.3	1.10E+07	2.8	26.3	7.49E+10	7.0	894.3
Basket - USBC	0.7	5.56E+06	3.8	69.4	9.96E+10	26.7	1718.5
Basket - USBC	1.3	2.80E+06	5.2	180.0	1.30E+11	88.3	2858.1
Basket - USBC	2.6	1.41E+06	6.9	455.7	1.66E+11	262.5	4286.5
Basket - USBC	5.1	7.11E+05	8.6	1164.1	2.14E+11	734.2	6043.3
Basket - USBC	10.2	3.59E+05	10.9	3058.3	2.83E+11	2099.4	8715.1
Basket - USBC	12.9	2.84E+05	11.8	4207.6	3.08E+11	2939.9	9663.9
Beard's - 01 DS to 1968 Limits	0.2	8.63E+07	2.3	5.3	1.23E+11	0.5	508.3
Beard's - 01 DS to 1968 Limits	0.3	4.32E+07	2.9	12.7	1.46E+11	2.1	1058.5
Beard's - 01 DS to 1968 Limits	0.6	2.18E+07	3.5	29.0	1.69E+11	6.9	1742.0
Beard's - 01 DS to 1968 Limits	1.3	1.10E+07	4.2	66.4	1.96E+11	20.4	2593.1
Beard's - 01 DS to 1968 Limits	2.5	5.55E+06	5.2	155.0	2.30E+11	57.7	3705.6
Beard's - 01 DS to 1968 Limits	5.0	2.80E+06	6.4	353.2	2.64E+11	149.9	4849.7

Reach Key (text)	Discharge (m^3/s)	Duration (s/yr)	Efficiency (none)	Applied Power (N/s)	Applied Work (N*m)	Sediment Transport Rate (tonnes/d)	Sediment Transport Yield (tonnes/yr)
Beard's - 01 DS to 1968 Limits	9.9	1.41E+06	7.7	776.0	2.93E+11	360.1	5876.8
Beard's - 01 DS to 1968 Limits	19.6	7.11E+05	9.1	1590.9	3.03E+11	781.5	6431.2
Beard's - 01 DS to 1968 Limits	38.9	3.58E+05	10.4	2982.5	2.86E+11	1493.5	6196.2
Beard's - 01 DS to 1968 Limits	49.1	2.84E+05	10.8	3609.3	2.74E+11	1816.2	5967.3
Beard's - 02 1968 Limits to 10800 Bridge	0.2	8.56E+07	2.9	7.3	1.77E+11	1.2	1149.4
Beard's - 02 1968 Limits to 10800 Bridge	0.3	4.32E+07	3.6	17.3	2.13E+11	4.3	2175.0
Beard's - 02 1968 Limits to 10800 Bridge	0.6	2.18E+07	4.4	39.6	2.45E+11	13.3	3346.4
Beard's - 02 1968 Limits to 10800 Bridge	1.2	1.10E+07	5.3	89.1	2.78E+11	36.9	4700.2
Beard's - 02 1968 Limits to 10800 Bridge	2.4	5.55E+06	6.4	204.2	3.21E+11	99.4	6384.6
Beard's - 02 1968 Limits to 10800 Bridge	4.9	2.80E+06	7.7	484.3	3.85E+11	267.3	8661.1
Beard's - 02 1968 Limits to 10800 Bridge	9.6	1.41E+06	9.3	1203.8	4.82E+11	724.7	11838.8
Beard's - 02 1968 Limits to 10800 Bridge	19.1	7.12E+05	11.3	3106.8	6.27E+11	2024.1	16675.9
Beard's - 02 1968 Limits to 10800 Bridge	37.8	3.59E+05	12.7	7263.1	7.39E+11	4896.4	20338.7
Beard's - 02 1968 Limits to 10800 Bridge	47.8	2.84E+05	13.2	8918.1	7.19E+11	6019.8	19802.8
Beard's - 03 10800 Bridge to US	0.1	8.49E+07	36.9	99.7	2.12E+12	1.2	1213.8
Beard's - 03 10800 Bridge to US	0.2	4.31E+07	45.4	236.0	2.55E+12	3.6	1818.0
Beard's - 03 10800 Bridge to US	0.3	2.19E+07	56.4	566.2	3.11E+12	10.5	2666.1
Beard's - 03 10800 Bridge to US	0.7	1.10E+07	70.4	1391.4	3.84E+12	29.8	3804.2
Beard's - 03 10800 Bridge to US	1.3	5.55E+06	88.0	3436.3	4.78E+12	82.3	5287.5
Beard's - 03 10800 Bridge to US	2.7	2.80E+06	109.5	8434.3	5.92E+12	219.6	7124.8
Beard's - 03 10800 Bridge to US	5.3	1.41E+06	134.9	20427.1	7.23E+12	565.9	9254.2
Beard's - 03 10800 Bridge to US	10.5	7.12E+05	163.0	48602.3	8.67E+12	1404.1	11576.9
Beard's - 03 10800 Bridge to US	20.8	3.59E+05	190.5	111674.5	1.00E+13	3297.2	13707.3
Beard's - 03 10800 Bridge to US	26.2	2.84E+05	200.5	143266.6	1.02E+13	4259.5	14023.8
Beard's - USBC	0.0	8.60E+07	30.8	57.3	1.24E+12	0.5	513.8
Beard's - USBC	0.1	4.30E+07	39.1	140.4	1.52E+12	1.7	853.3
Beard's - USBC	0.1	2.20E+07	50.0	355.8	1.97E+12	5.4	1365.5
Beard's - USBC	0.3	1.10E+07	63.6	885.6	2.45E+12	15.9	2023.9
Beard's - USBC	0.5	5.55E+06	80.1	2207.3	3.08E+12	44.6	2866.2

Reach Key (text)	Discharge (m^3/s)	Duration (s/yr)	Efficiency (none)	Applied Power (N/s)	Applied Work (N*m)	Sediment Transport Rate (tonnes/d)	Sediment Transport Yield (tonnes/yr)
Beard's - USBC	1.0	2.80E+06	98.9	5304.7	3.74E+12	118.5	3836.8
Beard's - USBC	2.1	1.41E+06	121.5	13046.0	4.63E+12	313.9	5123.1
Beard's - USBC	4.1	7.11E+05	147.4	31712.7	5.68E+12	814.2	6703.0
Beard's - USBC	8.1	3.59E+05	170.4	73625.1	6.65E+12	1965.9	8160.4
Beard's - USBC	10.3	2.84E+05	182.8	104183.5	7.45E+12	2867.0	9422.4
Billy's - 01 DS to Res. Bound.	0.0	8.78E+07	32.4	37.5	7.81E+11	0.3	328.0
Billy's - 01 DS to Res. Bound.	0.1	4.26E+07	37.3	82.4	8.33E+11	1.0	508.3
Billy's - 01 DS to Res. Bound.	0.2	2.19E+07	37.8	141.9	7.39E+11	2.4	596.9
Billy's - 01 DS to Res. Bound.	0.4	1.10E+07	37.2	195.0	5.08E+11	3.4	432.6
Billy's - 01 DS to Res. Bound.	0.7	5.53E+06	47.6	433.7	5.69E+11	6.4	411.1
Billy's - 01 DS to Res. Bound.	1.4	2.79E+06	37.1	174.7	1.16E+11	0.9	30.0
Billy's - 01 DS to Res. Bound.	2.8	1.41E+06	18.8	16.5	5.52E+09	0.0	0.0
Billy's - 01 DS to Res. Bound.	5.6	7.10E+05	10.6	3.4	5.76E+08	0.0	0.0
Billy's - 01 DS to Res. Bound.	11.1	3.58E+05	9.5	3.6	3.06E+08	0.0	0.0
Billy's - 01 DS to Res. Bound.	14.0	2.84E+05	9.2	3.6	2.43E+08	0.0	0.0
Billy's - 02 Res. Bound. to 1968 Limits	0.0	8.46E+07	1.5	1.5	3.08E+10	0.0	34.1
Billy's - 02 Res. Bound. to 1968 Limits	0.1	4.37E+07	1.9	3.7	3.85E+10	0.2	119.8
Billy's - 02 Res. Bound. to 1968 Limits	0.2	2.18E+07	2.4	9.2	4.78E+10	1.3	337.7
Billy's - 02 Res. Bound. to 1968 Limits	0.3	1.10E+07	3.0	23.0	6.00E+10	5.6	719.8
Billy's - 02 Res. Bound. to 1968 Limits	0.7	5.55E+06	3.9	58.0	7.63E+10	20.2	1299.3
Billy's - 02 Res. Bound. to 1968 Limits	1.4	2.80E+06	4.8	140.0	9.31E+10	60.3	1955.5
Billy's - 02 Res. Bound. to 1968 Limits	2.7	1.41E+06	6.1	290.7	9.74E+10	138.2	2258.2
Billy's - 02 Res. Bound. to 1968 Limits	5.4	7.12E+05	6.8	436.0	7.36E+10	182.5	1504.1
Billy's - 02 Res. Bound. to 1968 Limits	10.7	3.59E+05	7.7	714.1	6.08E+10	279.0	1159.7
Billy's - 02 Res. Bound. to 1968 Limits	13.5	2.84E+05	8.1	749.6	5.06E+10	267.8	881.5
Billy's - 03 1968 Limits to US	0.0	8.46E+07	1.6	1.7	4.17E+10	0.1	79.7
Billy's - 03 1968 Limits to US	0.1	4.37E+07	2.1	4.4	5.68E+10	0.6	301.9
Billy's - 03 1968 Limits to US	0.2	2.19E+07	2.7	11.7	7.58E+10	3.1	775.5
Billy's - 03 1968 Limits to US	0.3	1.10E+07	3.4	27.8	9.06E+10	10.6	1349.6

Reach Key (text)	Discharge (m^3/s)	Duration (s/yr)	Efficiency (none)	Applied Power (N/s)	Applied Work (N*m)	Sediment Transport Rate (tonnes/d)	Sediment Transport Yield (tonnes/yr)
Billy's - 03 1968 Limits to US	0.6	5.56E+06	4.2	66.6	1.10E+11	32.7	2104.6
Billy's - 03 1968 Limits to US	1.3	2.80E+06	5.3	163.0	1.35E+11	96.5	3125.9
Billy's - 03 1968 Limits to US	2.5	1.41E+06	6.7	402.1	1.68E+11	267.3	4365.2
Billy's - 03 1968 Limits to US	5.0	7.12E+05	8.5	998.2	2.10E+11	722.1	5948.3
Billy's - 03 1968 Limits to US	10.0	3.59E+05	10.8	2492.9	2.65E+11	1887.0	7838.7
Billy's - 03 1968 Limits to US	12.6	2.84E+05	11.7	3408.6	2.87E+11	2605.0	8568.7
Billy's - USBC	0.0	8.60E+07	2.0	1.1	2.76E+10	0.1	99.0
Billy's - USBC	0.0	4.30E+07	2.8	3.0	3.60E+10	0.7	348.5
Billy's - USBC	0.0	2.15E+07	3.8	8.1	4.96E+10	3.1	781.3
Billy's - USBC	0.1	1.11E+07	4.2	16.9	5.31E+10	7.7	988.5
Billy's - USBC	0.2	5.55E+06	4.5	35.5	5.59E+10	18.0	1154.2
Billy's - USBC	0.3	2.80E+06	4.9	78.2	6.20E+10	43.1	1394.8
Billy's - USBC	0.7	1.42E+06	6.0	190.6	7.65E+10	118.5	1941.8
Billy's - USBC	1.4	7.12E+05	8.1	488.4	9.86E+10	344.6	2840.0
Billy's - USBC	2.7	3.59E+05	10.6	1184.2	1.21E+11	897.1	3731.7
Billy's - USBC	3.4	2.85E+05	11.4	1581.8	1.28E+11	1213.2	3998.1
Cathey's - 01 DS to 3500	0.1	8.61E+07	3.7	9.5	1.81E+11	2.4	2349.5
Cathey's - 01 DS to 3500	0.1	4.31E+07	4.4	20.6	1.97E+11	6.4	3169.8
Cathey's - 01 DS to 3500	0.2	2.18E+07	5.1	44.7	2.16E+11	16.2	4072.2
Cathey's - 01 DS to 3500	0.5	1.10E+07	6.0	100.6	2.46E+11	41.0	5223.6
Cathey's - 01 DS to 3500	1.0	5.56E+06	7.0	230.5	2.84E+11	106.8	6864.5
Cathey's - 01 DS to 3500	1.9	2.80E+06	8.4	551.0	3.42E+11	285.6	9248.3
Cathey's - 01 DS to 3500	3.8	1.41E+06	9.6	1169.8	3.66E+11	673.0	10987.7
Cathey's - 01 DS to 3500	7.5	7.11E+05	10.0	2042.5	3.22E+11	1254.2	10322.6
Cathey's - 01 DS to 3500	15.0	3.59E+05	11.0	3613.8	2.88E+11	2163.1	8977.6
Cathey's - 01 DS to 3500	18.9	2.84E+05	11.2	4107.3	2.59E+11	2394.5	7870.1
Cathey's - 02 3500 to 7500	0.1	8.65E+07	24.7	44.4	1.12E+12	0.3	338.9
Cathey's - 02 3500 to 7500	0.1	4.32E+07	30.5	105.1	1.32E+12	1.1	569.6
Cathey's - 02 3500 to 7500	0.2	2.19E+07	38.1	258.8	1.65E+12	3.6	906.7

Reach Key (text)	Discharge (m^3/s)	Duration (s/yr)	Efficiency (none)	Applied Power (N/s)	Applied Work (N*m)	Sediment Transport Rate (tonnes/d)	Sediment Transport Yield (tonnes/yr)
Cathey's - 02 3500 to 7500	0.5	1.10E+07	48.2	644.9	2.07E+12	10.9	1392.5
Cathey's - 02 3500 to 7500	0.9	5.54E+06	61.3	1615.7	2.61E+12	32.1	2058.1
Cathey's - 02 3500 to 7500	1.8	2.79E+06	78.0	4079.0	3.32E+12	92.0	2975.0
Cathey's - 02 3500 to 7500	3.7	1.41E+06	98.6	10271.2	4.21E+12	254.2	4142.1
Cathey's - 02 3500 to 7500	7.2	7.10E+05	122.6	25391.7	5.25E+12	672.5	5527.1
Cathey's - 02 3500 to 7500	14.4	3.58E+05	146.5	60441.6	6.30E+12	1673.4	6933.4
Cathey's - 02 3500 to 7500	18.1	2.83E+05	154.1	80492.3	6.65E+12	2254.8	7398.5
Cathey's - 03 7500 to 12100	0.1	8.48E+07	24.0	30.1	6.96E+11	0.2	190.9
Cathey's - 03 7500 to 12100	0.1	4.36E+07	29.3	70.0	8.31E+11	0.6	322.0
Cathey's - 03 7500 to 12100	0.2	2.18E+07	36.5	170.0	1.01E+12	2.1	518.3
Cathey's - 03 7500 to 12100	0.4	1.10E+07	45.9	423.9	1.27E+12	6.3	804.5
Cathey's - 03 7500 to 12100	0.8	5.55E+06	58.6	1064.0	1.61E+12	18.9	1216.6
Cathey's - 03 7500 to 12100	1.5	2.80E+06	73.6	2613.9	1.99E+12	52.8	1710.5
Cathey's - 03 7500 to 12100	3.1	1.41E+06	91.7	6388.7	2.46E+12	142.1	2323.6
Cathey's - 03 7500 to 12100	6.1	7.13E+05	111.8	15268.6	2.96E+12	364.9	3009.4
Cathey's - 03 7500 to 12100	12.0	3.59E+05	133.3	36196.6	3.54E+12	917.5	3815.1
Cathey's - 03 7500 to 12100	15.2	2.84E+05	139.9	48429.9	3.75E+12	1249.3	4113.6
Cathey's - 04 12100 to US	0.0	8.75E+07	27.3	35.5	9.00E+11	0.3	348.2
Cathey's - 04 12100 to US	0.1	4.37E+07	33.8	87.2	1.10E+12	1.1	566.0
Cathey's - 04 12100 to US	0.2	2.19E+07	41.4	212.5	1.35E+12	3.3	845.7
Cathey's - 04 12100 to US	0.3	1.09E+07	50.9	524.1	1.66E+12	9.7	1232.8
Cathey's - 04 12100 to US	0.6	5.52E+06	62.6	1282.8	2.05E+12	27.5	1752.7
Cathey's - 04 12100 to US	1.2	2.79E+06	77.2	3164.6	2.56E+12	75.2	2428.7
Cathey's - 04 12100 to US	2.5	1.41E+06	96.0	7776.6	3.17E+12	200.9	3269.0
Cathey's - 04 12100 to US	4.9	7.09E+05	116.7	18530.4	3.80E+12	505.7	4147.2
Cathey's - 04 12100 to US	9.7	3.57E+05	138.7	41460.6	4.29E+12	1175.9	4862.3
Cathey's - 04 12100 to US	12.3	2.83E+05	147.7	54213.4	4.44E+12	1548.5	5071.2
Cathey's - USBC	0.0	8.82E+07	35.0	41.8	1.07E+12	0.5	551.2
Cathey's - USBC	0.0	4.41E+07	39.1	92.7	1.18E+12	1.4	698.6

Reach Key (text)	Discharge (m^3/s)	Duration (s/yr)	Efficiency (none)	Applied Power (N/s)	Applied Work (N*m)	Sediment Transport Rate (tonnes/d)	Sediment Transport Yield (tonnes/yr)
Cathey's - USBC	0.1	2.20E+07	44.0	210.5	1.34E+12	3.4	875.2
Cathey's - USBC	0.1	1.10E+07	51.2	482.7	1.54E+12	8.8	1118.7
Cathey's - USBC	0.3	5.51E+06	61.7	1134.9	1.81E+12	23.1	1470.7
Cathey's - USBC	0.5	2.77E+06	74.8	2712.2	2.18E+12	60.8	1950.6
Cathey's - USBC	1.1	1.40E+06	94.8	6941.2	2.81E+12	172.8	2799.7
Cathey's - USBC	2.1	7.06E+05	117.7	17250.7	3.53E+12	465.9	3808.9
Cathey's - USBC	4.2	3.56E+05	142.5	42868.4	4.42E+12	1225.8	5050.8
Cathey's - USBC	5.3	2.82E+05	152.3	57922.2	4.73E+12	1684.7	5495.7
Hickahala - 01 DS to 12500	3.5	8.58E+07	52.1	4560.9	1.03E+14	80.0	79437.1
Hickahala - 01 DS to 12500	6.9	4.33E+07	65.3	9452.9	1.08E+14	217.1	108769.1
Hickahala - 01 DS to 12500	13.8	2.18E+07	75.3	15345.7	8.82E+13	393.5	99380.0
Hickahala - 01 DS to 12500	27.3	1.10E+07	82.2	18917.0	5.48E+13	545.3	69443.0
Hickahala - 01 DS to 12500	54.1	5.55E+06	85.2	18108.3	2.65E+13	559.3	35918.4
Hickahala - 01 DS to 12500	107.4	2.80E+06	83.7	14009.7	1.03E+13	403.4	13060.7
Hickahala - 01 DS to 12500	212.9	1.41E+06	92.2	18421.5	6.85E+12	556.5	9085.3
Hickahala - 01 DS to 12500	422.3	7.11E+05	106.6	29904.6	5.60E+12	1011.5	8327.4
Hickahala - 01 DS to 12500	837.5	3.59E+05	126.0	52527.6	4.96E+12	1995.8	8284.7
Hickahala - 01 DS to 12500	1057.5	2.84E+05	135.4	67514.6	5.05E+12	2699.4	8873.9
Hickahala - 02 12500 to 1968 Start	3.4	8.58E+07	29.1	334.1	8.59E+12	2.2	2204.0
Hickahala - 02 12500 to 1968 Start	6.8	4.33E+07	34.7	721.3	9.36E+12	6.6	3298.4
Hickahala - 02 12500 to 1968 Start	13.5	2.18E+07	34.6	721.5	4.72E+12	5.8	1475.9
Hickahala - 02 12500 to 1968 Start	26.8	1.10E+07	39.5	1114.8	3.68E+12	10.8	1375.8
Hickahala - 02 12500 to 1968 Start	53.2	5.55E+06	43.2	1395.5	2.32E+12	14.1	908.0
Hickahala - 02 12500 to 1968 Start	105.5	2.80E+06	52.2	3150.0	2.64E+12	46.0	1490.8
Hickahala - 02 12500 to 1968 Start	209.3	1.41E+06	62.2	6420.7	2.71E+12	119.5	1950.7
Hickahala - 02 12500 to 1968 Start	415.0	7.11E+05	78.5	15700.2	3.35E+12	381.6	3141.4
Hickahala - 02 12500 to 1968 Start	823.1	3.59E+05	93.8	28067.8	3.02E+12	745.8	3095.9
Hickahala - 02 12500 to 1968 Start	1039.4	2.84E+05	92.4	24234.6	2.06E+12	580.1	1907.2
Hickahala - 03 1968 Start to W. Ditch	3.3	8.58E+07	24.7	223.1	5.42E+12	1.1	1084.1

Reach Key (text)	Discharge (m^3/s)	Duration (s/yr)	Efficiency (none)	Applied Power (N/s)	Applied Work (N*m)	Sediment Transport Rate (tonnes/d)	Sediment Transport Yield (tonnes/yr)
Hickahala - 03 1968 Start to W. Ditch	6.6	4.33E+07	31.2	530.7	6.50E+12	4.1	2036.3
Hickahala - 03 1968 Start to W. Ditch	13.0	2.18E+07	39.5	1316.5	8.13E+12	14.6	3676.8
Hickahala - 03 1968 Start to W. Ditch	25.8	1.10E+07	48.8	3139.1	9.78E+12	45.2	5762.2
Hickahala - 03 1968 Start to W. Ditch	51.2	5.55E+06	54.7	6065.8	9.53E+12	97.9	6288.8
Hickahala - 03 1968 Start to W. Ditch	101.5	2.80E+06	66.5	14337.6	1.14E+13	277.5	8984.6
Hickahala - 03 1968 Start to W. Ditch	201.3	1.41E+06	79.9	26834.7	1.07E+13	584.6	9544.2
Hickahala - 03 1968 Start to W. Ditch	399.1	7.11E+05	89.3	38684.9	7.79E+12	906.6	7463.3
Hickahala - 03 1968 Start to W. Ditch	791.6	3.59E+05	102.7	60887.4	6.18E+12	1567.8	6508.2
Hickahala - 03 1968 Start to W. Ditch	999.6	2.84E+05	108.2	71237.9	5.73E+12	1899.9	6245.4
Hickahala - 04 W. Ditch to Senatobia	3.0	8.58E+07	38.8	921.5	1.39E+13	11.4	11291.6
Hickahala - 04 W. Ditch to Senatobia	6.0	4.33E+07	43.7	1627.6	1.24E+13	22.2	11111.0
Hickahala - 04 W. Ditch to Senatobia	12.0	2.18E+07	52.1	3384.1	1.30E+13	54.6	13799.9
Hickahala - 04 W. Ditch to Senatobia	23.8	1.10E+07	65.8	8167.4	1.58E+13	166.8	21244.4
Hickahala - 04 W. Ditch to Senatobia	47.2	5.55E+06	80.0	13373.8	1.30E+13	275.1	17665.5
Hickahala - 04 W. Ditch to Senatobia	93.6	2.80E+06	35.0	422.1	2.07E+11	0.8	26.3
Hickahala - 04 W. Ditch to Senatobia	185.6	1.41E+06	25.8	158.7	3.93E+10	0.1	1.4
Hickahala - 04 W. Ditch to Senatobia	368.1	7.11E+05	33.9	480.3	5.99E+10	0.9	7.3
Hickahala - 04 W. Ditch to Senatobia	730.0	3.59E+05	45.2	1557.8	9.80E+10	6.9	28.7
Hickahala - 04 W. Ditch to Senatobia	921.8	2.84E+05	50.8	2457.0	1.22E+11	14.3	47.0
Hickahala - 05 Senatobia to Billy's	2.0	8.59E+07	41.1	727.7	1.18E+13	11.6	11565.6
Hickahala - 05 Senatobia to Billy's	4.0	4.33E+07	53.2	1777.1	1.46E+13	37.2	18644.5
Hickahala - 05 Senatobia to Billy's	7.8	2.18E+07	67.4	3815.7	1.58E+13	90.9	22948.3
Hickahala - 05 Senatobia to Billy's	15.5	1.10E+07	82.6	7429.8	1.55E+13	185.6	23631.1
Hickahala - 05 Senatobia to Billy's	30.8	5.55E+06	102.0	15698.5	1.65E+13	424.6	27267.9
Hickahala - 05 Senatobia to Billy's	61.1	2.80E+06	135.0	43417.9	2.30E+13	1411.2	45693.5
Hickahala - 05 Senatobia to Billy's	121.2	1.41E+06	181.6	132951.8	3.56E+13	5233.1	85440.1
Hickahala - 05 Senatobia to Billy's	240.3	7.11E+05	240.9	393489.3	5.31E+13	18683.4	153810.5
Hickahala - 05 Senatobia to Billy's	476.5	3.59E+05	260.9	498138.6	3.39E+13	23365.7	96993.3
Hickahala - 05 Senatobia to Billy's	601.7	2.84E+05	269.6	553833.2	2.98E+13	25990.0	85437.0

Reach Key (text)	Discharge (m^3/s)	Duration (s/yr)	Efficiency (none)	Applied Power (N/s)	Applied Work (N*m)	Sediment Transport Rate (tonnes/d)	Sediment Transport Yield (tonnes/yr)
Hickahala - 06 Billy's to Res. Bound.	1.9	8.58E+07	23.8	231.0	4.71E+12	0.7	659.6
Hickahala - 06 Billy's to Res. Bound.	3.8	4.33E+07	33.3	573.2	5.89E+12	3.4	1716.8
Hickahala - 06 Billy's to Res. Bound.	7.6	2.18E+07	46.8	1501.6	7.78E+12	15.9	4004.3
Hickahala - 06 Billy's to Res. Bound.	15.1	1.10E+07	64.9	4105.4	1.07E+13	66.0	8400.2
Hickahala - 06 Billy's to Res. Bound.	30.0	5.55E+06	86.6	10650.4	1.40E+13	226.9	14574.6
Hickahala - 06 Billy's to Res. Bound.	59.5	2.80E+06	112.5	26576.6	1.77E+13	692.6	22429.1
Hickahala - 06 Billy's to Res. Bound.	118.0	1.41E+06	122.7	39829.1	1.33E+13	1029.8	16814.4
Hickahala - 06 Billy's to Res. Bound.	233.9	7.11E+05	153.3	105401.0	1.78E+13	3303.2	27195.9
Hickahala - 06 Billy's to Res. Bound.	463.9	3.59E+05	223.6	516522.5	4.40E+13	21597.1	89658.2
Hickahala - 06 Billy's to Res. Bound.	585.8	2.84E+05	253.8	882674.7	5.95E+13	39073.6	128457.0
Hickahala - 07 Res. Bound. to Thornton	1.9	8.58E+07	3.2	44.5	9.49E+11	2.6	2600.0
Hickahala - 07 Res. Bound. to Thornton	3.8	4.33E+07	3.3	55.8	6.00E+11	5.3	2659.3
Hickahala - 07 Res. Bound. to Thornton	7.5	2.18E+07	4.3	108.8	5.90E+11	16.4	4152.4
Hickahala - 07 Res. Bound. to Thornton	15.0	1.10E+07	5.5	237.2	6.48E+11	50.6	6450.0
Hickahala - 07 Res. Bound. to Thornton	29.7	5.55E+06	7.0	572.8	7.89E+11	160.7	10320.8
Hickahala - 07 Res. Bound. to Thornton	58.8	2.80E+06	9.1	1579.2	1.10E+12	573.6	18572.6
Hickahala - 07 Res. Bound. to Thornton	116.7	1.41E+06	11.7	4478.4	1.57E+12	2002.7	32696.9
Hickahala - 07 Res. Bound. to Thornton	231.4	7.11E+05	12.6	6332.0	1.12E+12	2831.7	23311.9
Hickahala - 07 Res. Bound. to Thornton	458.8	3.59E+05	15.0	11446.0	1.02E+12	5402.9	22427.7
Hickahala - 07 Res. Bound. to Thornton	579.4	2.84E+05	11.0	2932.8	2.07E+11	924.7	3039.9
Hickahala - 08 Thornton to Basket	1.8	8.58E+07	3.2	74.9	6.12E+11	14.0	13923.7
Hickahala - 08 Thornton to Basket	3.6	4.33E+07	3.9	168.9	6.96E+11	45.5	22782.3
Hickahala - 08 Thornton to Basket	7.2	2.18E+07	5.0	385.2	8.01E+11	134.6	33994.3
Hickahala - 08 Thornton to Basket	14.2	1.10E+07	6.1	788.7	8.27E+11	316.2	40263.6
Hickahala - 08 Thornton to Basket	28.2	5.55E+06	7.4	1514.5	8.00E+11	657.2	42203.1
Hickahala - 08 Thornton to Basket	55.9	2.80E+06	9.1	3216.4	8.57E+11	1526.3	49423.2
Hickahala - 08 Thornton to Basket	110.9	1.41E+06	11.6	8731.0	1.17E+12	4702.4	76775.9
Hickahala - 08 Thornton to Basket	220.0	7.11E+05	16.4	33796.1	2.29E+12	21713.8	178760.5
Hickahala - 08 Thornton to Basket	436.4	3.59E+05	22.3	99361.1	3.39E+12	69108.7	286878.8

Reach Key (text)	Discharge (m^3/s)	Duration (s/yr)	Efficiency (none)	Applied Power (N/s)	Applied Work (N*m)	Sediment Transport Rate (tonnes/d)	Sediment Transport Yield (tonnes/yr)
Hickahala - 08 Thornton to Basket	551.0	2.84E+05	20.3	60436.0	1.63E+12	39150.9	128701.9
Hickahala - 09 Basket to 57350	1.7	8.58E+07	2.4	28.2	5.81E+11	2.3	2262.2
Hickahala - 09 Basket to 57350	3.3	4.33E+07	3.2	73.9	7.67E+11	12.2	6102.4
Hickahala - 09 Basket to 57350	6.6	2.18E+07	4.2	194.8	1.02E+12	49.4	12487.2
Hickahala - 09 Basket to 57350	13.1	1.10E+07	5.4	511.1	1.35E+12	174.8	22264.6
Hickahala - 09 Basket to 57350	25.9	5.55E+06	7.1	1315.7	1.75E+12	555.1	35643.6
Hickahala - 09 Basket to 57350	51.4	2.80E+06	9.1	3311.9	2.22E+12	1620.6	52472.4
Hickahala - 09 Basket to 57350	102.0	1.41E+06	11.6	8722.3	2.95E+12	4778.3	78010.4
Hickahala - 09 Basket to 57350	202.3	7.11E+05	15.3	26444.0	4.51E+12	16427.4	135232.2
Hickahala - 09 Basket to 57350	401.3	3.59E+05	19.8	67786.9	5.83E+12	45159.7	187452.7
Hickahala - 09 Basket to 57350	506.7	2.84E+05	19.6	62592.2	4.26E+12	40938.4	134569.9
Hickahala - 10 57350 to Lick	1.6	8.58E+07	3.6	56.2	1.40E+12	9.3	9275.1
Hickahala - 10 57350 to Lick	3.1	4.33E+07	4.3	130.1	1.63E+12	29.5	14778.3
Hickahala - 10 57350 to Lick	6.2	2.18E+07	5.1	300.6	1.91E+12	87.3	22053.6
Hickahala - 10 57350 to Lick	12.4	1.10E+07	6.1	698.3	2.23E+12	252.9	32202.1
Hickahala - 10 57350 to Lick	24.5	5.55E+06	7.5	1590.2	2.56E+12	687.3	44132.5
Hickahala - 10 57350 to Lick	48.7	2.80E+06	9.3	3622.3	2.94E+12	1788.0	57894.8
Hickahala - 10 57350 to Lick	96.5	1.41E+06	11.4	8256.0	3.38E+12	4461.6	72843.2
Hickahala - 10 57350 to Lick	191.4	7.11E+05	14.3	19853.5	4.10E+12	11715.3	96444.7
Hickahala - 10 57350 to Lick	379.6	3.59E+05	18.8	51659.0	5.38E+12	33117.9	137472.5
Hickahala - 10 57350 to Lick	479.3	2.84E+05	21.0	77129.9	6.36E+12	51454.1	169141.1
Hickahala - 11 Lick to Lick Branch	1.5	8.58E+07	2.8	30.5	6.75E+11	3.4	3343.3
Hickahala - 11 Lick to Lick Branch	2.9	4.33E+07	3.2	56.7	6.32E+11	8.5	4270.1
Hickahala - 11 Lick to Lick Branch	5.8	2.18E+07	3.9	122.9	6.91E+11	25.4	6413.4
Hickahala - 11 Lick to Lick Branch	11.6	1.10E+07	4.8	291.8	8.28E+11	79.7	10155.9
Hickahala - 11 Lick to Lick Branch	23.0	5.55E+06	6.3	846.4	1.21E+12	311.7	20019.7
Hickahala - 11 Lick to Lick Branch	45.6	2.80E+06	8.2	2387.5	1.72E+12	1082.2	35044.9
Hickahala - 11 Lick to Lick Branch	90.4	1.41E+06	10.5	6325.4	2.30E+12	3254.3	53138.5
Hickahala - 11 Lick to Lick Branch	179.3	7.11E+05	13.2	16122.2	2.96E+12	9178.8	75573.0

Reach Key (text)	Discharge (m^3/s)	Duration (s/yr)	Efficiency (none)	Applied Power (N/s)	Applied Work (N*m)	Sediment Transport Rate (tonnes/d)	Sediment Transport Yield (tonnes/yr)
Hickahala - 11 Lick to Lick Branch	355.5	3.59E+05	17.2	39882.7	3.69E+12	24632.7	102263.8
Hickahala - 11 Lick to Lick Branch	449.0	2.84E+05	19.5	64639.0	4.73E+12	41948.1	137910.8
Hickahala - 12 Lick Branch to Wolf	1.5	8.58E+07	2.7	31.1	7.18E+11	3.6	3546.1
Hickahala - 12 Lick Branch to Wolf	2.9	4.33E+07	3.4	76.8	8.92E+11	14.5	7239.4
Hickahala - 12 Lick Branch to Wolf	5.8	2.18E+07	4.2	184.6	1.08E+12	47.9	12089.2
Hickahala - 12 Lick Branch to Wolf	11.5	1.10E+07	5.2	429.1	1.27E+12	139.7	17790.5
Hickahala - 12 Lick Branch to Wolf	22.9	5.55E+06	6.6	1002.2	1.49E+12	389.3	24997.1
Hickahala - 12 Lick Branch to Wolf	45.4	2.80E+06	8.2	2323.7	1.75E+12	1036.5	33562.1
Hickahala - 12 Lick Branch to Wolf	90.1	1.41E+06	10.1	5500.4	2.08E+12	2706.0	44180.8
Hickahala - 12 Lick Branch to Wolf	178.7	7.11E+05	12.3	13380.0	2.56E+12	7225.2	59483.0
Hickahala - 12 Lick Branch to Wolf	354.3	3.59E+05	15.8	33299.3	3.21E+12	19624.5	81464.6
Hickahala - 12 Lick Branch to Wolf	447.4	2.84E+05	17.6	49389.3	3.77E+12	30318.1	99666.3
Hickahala - 13 Wolf to White's	0.8	8.58E+07	2.9	22.2	4.45E+11	2.9	2915.1
Hickahala - 13 Wolf to White's	1.7	4.33E+07	3.4	50.8	5.13E+11	9.7	4836.2
Hickahala - 13 Wolf to White's	3.3	2.18E+07	4.4	122.5	6.24E+11	33.3	8408.4
Hickahala - 13 Wolf to White's	6.5	1.10E+07	5.6	289.4	7.44E+11	99.1	12613.2
Hickahala - 13 Wolf to White's	12.9	5.55E+06	7.2	682.4	8.84E+11	277.8	17837.7
Hickahala - 13 Wolf to White's	25.5	2.80E+06	8.8	1484.5	9.70E+11	670.2	21701.1
Hickahala - 13 Wolf to White's	50.7	1.41E+06	10.2	2849.4	9.39E+11	1335.1	21797.8
Hickahala - 13 Wolf to White's	100.5	7.11E+05	11.5	4754.0	7.90E+11	2205.6	18157.2
Hickahala - 13 Wolf to White's	199.3	3.59E+05	13.1	9342.4	7.83E+11	4498.2	18672.0
Hickahala - 13 Wolf to White's	251.6	2.84E+05	14.0	11541.9	7.66E+11	5628.1	18500.9
Hickahala - 14 White's to Beard's	0.7	8.60E+07	45.1	356.5	7.01E+12	2.7	2681.7
Hickahala - 14 White's to Beard's	1.4	4.32E+07	54.9	825.0	8.16E+12	8.1	4048.8
Hickahala - 14 White's to Beard's	2.8	2.18E+07	67.5	1944.0	9.70E+12	23.8	6005.3
Hickahala - 14 White's to Beard's	5.6	1.10E+07	83.6	4709.7	1.19E+13	68.8	8760.7
Hickahala - 14 White's to Beard's	11.2	5.55E+06	104.9	11704.5	1.49E+13	197.2	12661.9
Hickahala - 14 White's to Beard's	22.2	2.80E+06	129.4	28582.9	1.83E+13	537.7	17408.1
Hickahala - 14 White's to Beard's	44.0	1.41E+06	159.4	69111.1	2.23E+13	1416.2	23119.8

Reach Key (text)	Discharge (m^3/s)	Duration (s/yr)	Efficiency (none)	Applied Power (N/s)	Applied Work (N*m)	Sediment Transport Rate (tonnes/d)	Sediment Transport Yield (tonnes/yr)
Hickahala - 14 White's to Beard's	87.3	7.11E+05	194.4	162721.4	2.65E+13	3545.7	29186.3
Hickahala - 14 White's to Beard's	173.1	3.59E+05	234.8	370560.1	3.04E+13	8355.7	34681.7
Hickahala - 14 White's to Beard's	218.6	2.84E+05	252.3	497232.6	3.23E+13	11383.6	37417.6
Hickahala - 15 Beard's to Cathey's	0.4	8.59E+07	50.7	832.3	1.68E+13	8.4	8397.3
Hickahala - 15 Beard's to Cathey's	0.8	4.32E+07	57.8	1565.8	1.59E+13	19.7	9873.6
Hickahala - 15 Beard's to Cathey's	1.6	2.18E+07	61.2	2664.1	1.36E+13	40.1	10115.5
Hickahala - 15 Beard's to Cathey's	3.2	1.10E+07	67.5	4811.6	1.24E+13	83.2	10587.5
Hickahala - 15 Beard's to Cathey's	6.4	5.55E+06	83.8	10365.7	1.35E+13	198.0	12718.6
Hickahala - 15 Beard's to Cathey's	12.7	2.80E+06	105.0	22980.7	1.51E+13	468.2	15162.9
Hickahala - 15 Beard's to Cathey's	25.2	1.41E+06	127.9	49377.6	1.63E+13	1052.1	17178.8
Hickahala - 15 Beard's to Cathey's	49.9	7.11E+05	152.7	101491.4	1.69E+13	2216.5	18248.2
Hickahala - 15 Beard's to Cathey's	99.0	3.59E+05	178.8	201074.4	1.69E+13	4407.0	18294.5
Hickahala - 15 Beard's to Cathey's	125.0	2.84E+05	188.1	250645.1	1.67E+13	5463.3	17960.3
Hickahala - 16 Cathey's to 109500	0.3	8.57E+07	39.3	281.3	6.00E+12	3.1	3073.6
Hickahala - 16 Cathey's to 109500	0.7	4.34E+07	47.5	637.0	6.88E+12	8.8	4396.8
Hickahala - 16 Cathey's to 109500	1.3	2.18E+07	59.1	1542.1	8.38E+12	25.2	6362.8
Hickahala - 16 Cathey's to 109500	2.7	1.10E+07	73.9	3767.1	1.03E+13	70.4	8962.1
Hickahala - 16 Cathey's to 109500	5.3	5.55E+06	92.5	9364.2	1.29E+13	195.8	12574.6
Hickahala - 16 Cathey's to 109500	10.5	2.80E+06	116.4	23625.8	1.65E+13	544.7	17640.2
Hickahala - 16 Cathey's to 109500	20.8	1.41E+06	146.6	60116.6	2.11E+13	1508.6	24636.5
Hickahala - 16 Cathey's to 109500	41.3	7.11E+05	182.8	151153.7	2.68E+13	4024.7	33138.9
Hickahala - 16 Cathey's to 109500	81.8	3.59E+05	221.7	365753.3	3.27E+13	10054.7	41745.7
Hickahala - 16 Cathey's to 109500	103.3	2.84E+05	234.4	485037.6	3.43E+13	13394.2	44039.8
Hickahala - 17 109500 to S. Fork	0.3	8.57E+07	35.3	280.5	5.93E+12	1.8	1745.8
Hickahala - 17 109500 to S. Fork	0.6	4.32E+07	44.2	639.3	6.82E+12	5.5	2750.4
Hickahala - 17 109500 to S. Fork	1.2	2.18E+07	55.3	1462.7	7.87E+12	16.4	4147.3
Hickahala - 17 109500 to S. Fork	2.4	1.10E+07	67.5	3302.8	8.96E+12	46.0	5856.4
Hickahala - 17 109500 to S. Fork	4.8	5.55E+06	82.2	7625.3	1.04E+13	126.9	8150.2
Hickahala - 17 109500 to S. Fork	9.5	2.80E+06	103.0	18561.9	1.28E+13	356.8	11557.2

Reach Key (text)	Discharge (m^3/s)	Duration (s/yr)	Efficiency (none)	Applied Power (N/s)	Applied Work (N*m)	Sediment Transport Rate (tonnes/d)	Sediment Transport Yield (tonnes/yr)
Hickahala - 17 109500 to S. Fork	18.7	1.41E+06	128.3	45612.3	1.59E+13	976.8	15955.4
Hickahala - 17 109500 to S. Fork	37.2	7.12E+05	156.6	110635.7	1.94E+13	2538.3	20903.6
Hickahala - 17 109500 to S. Fork	73.7	3.59E+05	190.5	267667.9	2.37E+13	6512.2	27042.6
Hickahala - 17 109500 to S. Fork	93.1	2.84E+05	201.0	345740.6	2.42E+13	8438.6	27750.4
Hickahala - 18 S. Fork to US	0.1	8.55E+07	42.3	98.1	1.95E+12	1.1	1094.0
Hickahala - 18 S. Fork to US	0.2	4.35E+07	50.1	228.2	2.31E+12	3.2	1603.7
Hickahala - 18 S. Fork to US	0.3	2.18E+07	61.2	542.9	2.75E+12	9.3	2345.7
Hickahala - 18 S. Fork to US	0.6	1.10E+07	74.2	1285.6	3.30E+12	26.2	3346.1
Hickahala - 18 S. Fork to US	1.2	5.55E+06	91.2	3159.0	4.08E+12	74.7	4800.3
Hickahala - 18 S. Fork to US	2.4	2.80E+06	104.8	6996.4	4.56E+12	186.0	6026.4
Hickahala - 18 S. Fork to US	4.8	1.41E+06	121.6	15692.7	5.15E+12	450.0	7345.5
Hickahala - 18 S. Fork to US	9.5	7.11E+05	144.3	36666.9	6.07E+12	1107.8	9119.1
Hickahala - 18 S. Fork to US	18.9	3.59E+05	172.9	84417.8	7.05E+12	2632.2	10926.0
Hickahala - 18 S. Fork to US	23.9	2.84E+05	183.9	111799.2	7.39E+12	3518.8	11567.5
Hickahala - USBC	0.0	8.91E+07	19.9	23.2	5.53E+11	0.2	184.2
Hickahala - USBC	0.1	4.26E+07	26.7	65.7	7.48E+11	0.8	379.0
Hickahala - USBC	0.1	2.18E+07	34.2	167.6	9.76E+11	2.5	637.8
Hickahala - USBC	0.3	1.10E+07	44.4	437.7	1.29E+12	8.1	1026.8
Hickahala - USBC	0.5	5.54E+06	57.2	1134.9	1.68E+12	24.8	1586.8
Hickahala - USBC	1.0	2.78E+06	78.6	3006.5	2.24E+12	76.2	2453.9
Hickahala - USBC	2.0	1.40E+06	103.1	7421.3	2.79E+12	207.3	3367.9
Hickahala - USBC	3.9	7.08E+05	126.4	17715.8	3.35E+12	522.7	4283.4
Hickahala - USBC	7.8	3.57E+05	149.3	42638.7	4.07E+12	1309.1	5410.7
Hickahala - USBC	9.8	2.83E+05	158.0	57969.1	4.38E+12	1801.1	5895.3
James Wolf - 01 DS to 1968 Limits	0.6	8.58E+07	3.4	26.3	5.56E+11	5.2	5185.6
James Wolf - 01 DS to 1968 Limits	1.2	4.33E+07	4.3	63.0	6.72E+11	17.7	8892.5
James Wolf - 01 DS to 1968 Limits	2.4	2.18E+07	5.3	152.3	8.17E+11	54.7	13799.5
James Wolf - 01 DS to 1968 Limits	4.8	1.10E+07	6.7	372.5	1.01E+12	160.0	20376.7
James Wolf - 01 DS to 1968 Limits	9.6	5.55E+06	8.4	907.9	1.24E+12	452.0	29023.6

Reach Key (text)	Discharge (m^3/s)	Duration (s/yr)	Efficiency (none)	Applied Power (N/s)	Applied Work (N*m)	Sediment Transport Rate (tonnes/d)	Sediment Transport Yield (tonnes/yr)
James Wolf - 01 DS to 1968 Limits	19.0	2.80E+06	10.3	2133.2	1.47E+12	1175.5	38058.9
James Wolf - 01 DS to 1968 Limits	37.7	1.41E+06	12.3	4772.0	1.66E+12	2767.6	45182.9
James Wolf - 01 DS to 1968 Limits	74.9	7.11E+05	13.6	9278.3	1.62E+12	5349.9	44040.1
James Wolf - 01 DS to 1968 Limits	148.5	3.59E+05	14.8	16228.3	1.43E+12	9023.1	37452.7
James Wolf - 01 DS to 1968 Limits	187.5	2.84E+05	14.8	18312.3	1.28E+12	9915.3	32591.9
James Wolf - 02 1968 Limits to M. Dale	0.5	8.57E+07	3.4	31.7	6.26E+11	5.2	5156.7
James Wolf - 02 1968 Limits to M. Dale	0.9	4.32E+07	4.4	81.2	8.10E+11	20.3	10140.3
James Wolf - 02 1968 Limits to M. Dale	1.9	2.18E+07	5.6	196.4	9.90E+11	64.7	16348.6
James Wolf - 02 1968 Limits to M. Dale	3.7	1.10E+07	7.0	469.2	1.19E+12	187.9	23933.9
James Wolf - 02 1968 Limits to M. Dale	7.4	5.55E+06	8.7	1109.0	1.42E+12	516.9	33200.0
James Wolf - 02 1968 Limits to M. Dale	14.7	2.80E+06	10.5	2541.8	1.64E+12	1356.5	43939.0
James Wolf - 02 1968 Limits to M. Dale	29.1	1.41E+06	12.9	5915.6	1.93E+12	3411.4	55712.2
James Wolf - 02 1968 Limits to M. Dale	57.6	7.11E+05	15.8	13670.7	2.24E+12	8440.7	69505.4
James Wolf - 02 1968 Limits to M. Dale	114.3	3.59E+05	19.6	32153.6	2.66E+12	21098.5	87604.2
James Wolf - 02 1968 Limits to M. Dale	144.4	2.84E+05	20.9	42924.4	2.81E+12	28649.5	94205.4
James Wolf - 03 M. Dale to 34000	0.2	8.56E+07	2.5	12.4	2.57E+11	2.0	1976.4
James Wolf - 03 M. Dale to 34000	0.5	4.33E+07	3.1	30.3	3.19E+11	7.6	3806.2
James Wolf - 03 M. Dale to 34000	0.9	2.19E+07	3.9	74.4	3.95E+11	25.7	6501.5
James Wolf - 03 M. Dale to 34000	1.9	1.10E+07	5.0	186.0	4.98E+11	81.0	10315.5
James Wolf - 03 M. Dale to 34000	3.7	5.55E+06	6.1	460.0	6.20E+11	232.1	14911.0
James Wolf - 03 M. Dale to 34000	7.4	2.80E+06	7.6	1124.5	7.64E+11	625.5	20255.1
James Wolf - 03 M. Dale to 34000	14.6	1.41E+06	9.2	2673.3	9.16E+11	1605.4	26212.9
James Wolf - 03 M. Dale to 34000	29.0	7.11E+05	10.8	6181.9	1.07E+12	3945.5	32486.0
James Wolf - 03 M. Dale to 34000	57.4	3.59E+05	12.7	13432.3	1.17E+12	8793.1	36504.7
James Wolf - 03 M. Dale to 34000	72.5	2.84E+05	13.2	17295.3	1.19E+12	11359.2	37346.0
James Wolf - 04 34000 to 45500	0.2	8.62E+07	2.5	11.5	2.45E+11	1.4	1413.8
James Wolf - 04 34000 to 45500	0.4	4.34E+07	2.9	24.3	2.60E+11	4.6	2318.1
James Wolf - 04 34000 to 45500	0.8	2.18E+07	3.5	56.4	3.03E+11	15.3	3872.1
James Wolf - 04 34000 to 45500	1.7	1.10E+07	4.4	135.1	3.66E+11	48.6	6180.1

Reach Key (text)	Discharge (m^3/s)	Duration (s/yr)	Efficiency (none)	Applied Power (N/s)	Applied Work (N*m)	Sediment Transport Rate (tonnes/d)	Sediment Transport Yield (tonnes/yr)
James Wolf - 04 34000 to 45500	3.3	5.54E+06	5.5	325.6	4.45E+11	144.3	9260.0
James Wolf - 04 34000 to 45500	6.5	2.79E+06	6.8	786.0	5.41E+11	403.0	13032.7
James Wolf - 04 34000 to 45500	13.0	1.41E+06	8.4	1890.6	6.57E+11	1067.4	17412.3
James Wolf - 04 34000 to 45500	25.8	7.11E+05	10.3	4481.2	7.85E+11	2740.8	22543.7
James Wolf - 04 34000 to 45500	51.1	3.58E+05	12.8	10995.8	9.71E+11	7212.7	29913.2
James Wolf - 04 34000 to 45500	64.5	2.84E+05	13.7	14758.3	1.03E+12	9827.4	32276.1
James Wolf - 05 45500 to US	0.2	8.60E+07	1.3	4.7	7.29E+10	0.6	601.6
James Wolf - 05 45500 to US	0.3	4.33E+07	1.7	12.8	9.91E+10	2.8	1384.5
James Wolf - 05 45500 to US	0.7	2.19E+07	2.3	35.3	1.38E+11	9.1	2291.6
James Wolf - 05 45500 to US	1.3	1.10E+07	3.1	102.7	2.02E+11	27.2	3466.5
James Wolf - 05 45500 to US	2.6	5.55E+06	4.2	288.6	2.87E+11	83.4	5352.9
James Wolf - 05 45500 to US	5.2	2.80E+06	6.0	862.0	4.32E+11	240.3	7777.0
James Wolf - 05 45500 to US	10.4	1.41E+06	8.3	2437.1	6.15E+11	645.7	10535.8
James Wolf - 05 45500 to US	20.5	7.11E+05	11.2	6939.0	8.83E+11	1599.4	13160.1
James Wolf - 05 45500 to US	40.7	3.58E+05	15.0	19336.5	1.24E+12	3859.4	16012.9
James Wolf - 05 45500 to US	51.4	2.84E+05	16.5	27116.5	1.38E+12	5208.0	17111.8
James Wolf - USBC	0.1	8.62E+07	1.3	4.7	2.49E+10	0.0	0.0
James Wolf - USBC	0.2	4.31E+07	1.7	12.8	3.36E+10	0.0	1.3
James Wolf - USBC	0.4	2.18E+07	2.3	35.3	4.70E+10	0.1	14.3
James Wolf - USBC	0.9	1.10E+07	3.1	102.7	6.88E+10	0.8	98.2
James Wolf - USBC	1.7	5.55E+06	4.2	288.6	9.76E+10	7.4	474.7
James Wolf - USBC	3.4	2.80E+06	6.0	862.0	1.47E+11	42.7	1382.4
James Wolf - USBC	6.8	1.41E+06	8.3	2437.1	2.09E+11	191.2	3120.8
James Wolf - USBC	13.4	7.11E+05	11.2	6939.0	3.01E+11	655.2	5392.2
James Wolf - USBC	26.6	3.59E+05	15.0	19336.5	4.23E+11	1625.9	6746.5
James Wolf - USBC	33.5	2.84E+05	16.5	27116.5	4.69E+11	2107.0	6923.7
Martin Dale - 01 DS to 4500	0.2	8.54E+07	3.5	20.5	4.48E+11	6.8	6747.2
Martin Dale - 01 DS to 4500	0.3	4.34E+07	4.3	48.8	5.43E+11	20.6	10334.4
Martin Dale - 01 DS to 4500	0.6	2.18E+07	5.2	110.2	6.15E+11	55.6	14033.4

Reach Key (text)	Discharge (m^3/s)	Duration (s/yr)	Efficiency (none)	Applied Power (N/s)	Applied Work (N*m)	Sediment Transport Rate (tonnes/d)	Sediment Transport Yield (tonnes/yr)
Martin Dale - 01 DS to 4500	1.3	1.10E+07	6.1	250.4	7.05E+11	144.1	18360.7
Martin Dale - 01 DS to 4500	2.5	5.55E+06	7.3	580.4	8.25E+11	359.7	23118.8
Martin Dale - 01 DS to 4500	5.0	2.80E+06	8.8	1337.1	9.57E+11	884.0	28631.7
Martin Dale - 01 DS to 4500	9.9	1.41E+06	10.4	3017.7	1.09E+12	2093.2	34187.9
Martin Dale - 01 DS to 4500	19.7	7.12E+05	12.4	6696.9	1.22E+12	4792.9	39471.9
Martin Dale - 01 DS to 4500	39.1	3.59E+05	14.6	14514.3	1.33E+12	10550.5	43809.1
Martin Dale - 01 DS to 4500	49.4	2.84E+05	15.6	18858.8	1.37E+12	13737.5	45174.9
Martin Dale - 02 4500 to US	0.1	8.69E+07	3.1	6.3	1.39E+11	1.5	1474.1
Martin Dale - 02 4500 to US	0.1	4.34E+07	3.2	12.1	1.32E+11	3.5	1756.6
Martin Dale - 02 4500 to US	0.3	2.17E+07	3.7	26.0	1.42E+11	9.5	2385.0
Martin Dale - 02 4500 to US	0.6	1.10E+07	4.4	59.7	1.65E+11	26.4	3346.9
Martin Dale - 02 4500 to US	1.1	5.54E+06	5.3	140.7	1.96E+11	72.2	4627.9
Martin Dale - 02 4500 to US	2.2	2.79E+06	6.4	332.5	2.33E+11	191.9	6200.8
Martin Dale - 02 4500 to US	4.4	1.41E+06	7.7	786.2	2.78E+11	487.2	7939.5
Martin Dale - 02 4500 to US	8.7	7.10E+05	9.2	1808.3	3.23E+11	1189.3	9774.9
Martin Dale - 02 4500 to US	17.2	3.58E+05	10.8	3970.1	3.57E+11	2724.8	11292.2
Martin Dale - 02 4500 to US	21.7	2.84E+05	11.5	5210.4	3.71E+11	3612.1	11854.6
Martin Dale - USBC	0.0	8.79E+07	2.7	4.1	9.42E+10	0.9	896.0
Martin Dale - USBC	0.1	4.27E+07	2.8	8.9	9.87E+10	2.2	1108.5
Martin Dale - USBC	0.2	2.17E+07	3.1	19.1	1.08E+11	5.9	1485.2
Martin Dale - USBC	0.4	1.10E+07	3.8	45.3	1.29E+11	17.8	2260.0
Martin Dale - USBC	0.8	5.54E+06	4.6	108.8	1.56E+11	51.5	3297.9
Martin Dale - USBC	1.5	2.79E+06	5.7	262.3	1.90E+11	142.2	4596.7
Martin Dale - USBC	3.0	1.41E+06	6.9	624.0	2.28E+11	369.1	6018.2
Martin Dale - USBC	6.0	7.10E+05	8.7	1567.2	2.89E+11	1017.8	8364.3
Martin Dale - USBC	11.8	3.58E+05	11.1	4032.5	3.75E+11	2825.4	11707.3
Martin Dale - USBC	14.9	2.84E+05	12.0	5570.9	4.10E+11	3988.3	13087.1
Mattic - 01 DS to Nelson	0.4	8.60E+07	3.2	61.8	1.32E+12	16.9	16788.6
Mattic - 01 DS to Nelson	0.9	4.33E+07	1.0	0.2	1.94E+09	0.0	0.0

Reach Key (text)	Discharge (m^3/s)	Duration (s/yr)	Efficiency (none)	Applied Power (N/s)	Applied Work (N*m)	Sediment Transport Rate (tonnes/d)	Sediment Transport Yield (tonnes/yr)
Mattic - 01 DS to Nelson	1.7	2.18E+07	2.5	11.1	6.04E+10	1.2	312.7
Mattic - 01 DS to Nelson	3.4	1.10E+07	2.7	12.9	3.53E+10	1.5	195.4
Mattic - 01 DS to Nelson	6.7	5.55E+06	3.2	24.0	3.32E+10	3.9	252.2
Mattic - 01 DS to Nelson	13.2	2.80E+06	3.5	35.1	2.45E+10	6.4	206.9
Mattic - 01 DS to Nelson	26.2	1.41E+06	4.1	67.6	2.37E+10	14.3	233.0
Mattic - 01 DS to Nelson	52.0	7.11E+05	4.8	141.6	2.51E+10	34.0	279.6
Mattic - 01 DS to Nelson	103.2	3.59E+05	5.0	164.0	1.46E+10	33.7	139.8
Mattic - 01 DS to Nelson	130.3	2.84E+05	5.2	214.7	1.52E+10	41.2	135.4
Mattic - 02 Nelson to 13000	0.2	8.62E+07	4.1	22.5	4.68E+11	7.5	7462.4
Mattic - 02 Nelson to 13000	0.4	4.31E+07	1.1	0.1	7.00E+08	0.0	0.0
Mattic - 02 Nelson to 13000	0.8	2.18E+07	3.0	6.0	3.18E+10	1.2	308.0
Mattic - 02 Nelson to 13000	1.5	1.10E+07	3.3	9.3	2.46E+10	2.3	288.7
Mattic - 02 Nelson to 13000	3.0	5.55E+06	4.1	22.8	3.05E+10	7.6	485.1
Mattic - 02 Nelson to 13000	5.9	2.80E+06	5.0	54.4	3.67E+10	22.3	721.0
Mattic - 02 Nelson to 13000	11.8	1.41E+06	5.9	126.9	4.32E+10	59.2	965.6
Mattic - 02 Nelson to 13000	23.4	7.11E+05	6.2	273.6	4.70E+10	133.9	1102.0
Mattic - 02 Nelson to 13000	46.3	3.59E+05	7.8	671.2	5.81E+10	374.9	1555.8
Mattic - 02 Nelson to 13000	58.5	2.84E+05	9.6	1599.1	1.10E+11	963.4	3166.2
Mattic - 03 13000 to US	0.2	8.63E+07	2.7	11.3	2.56E+11	1.7	1706.8
Mattic - 03 13000 to US	0.3	4.31E+07	0.9	0.0	3.68E+08	0.0	0.0
Mattic - 03 13000 to US	0.7	2.18E+07	2.1	3.5	2.00E+10	0.2	63.0
Mattic - 03 13000 to US	1.3	1.10E+07	2.4	5.3	1.52E+10	0.5	64.5
Mattic - 03 13000 to US	2.6	5.55E+06	2.7	11.5	1.67E+10	1.8	112.4
Mattic - 03 13000 to US	5.2	2.80E+06	3.2	25.4	1.86E+10	5.6	182.5
Mattic - 03 13000 to US	10.2	1.41E+06	3.9	57.9	2.14E+10	17.2	281.2
Mattic - 03 13000 to US	20.3	7.11E+05	4.7	137.2	2.56E+10	50.4	414.4
Mattic - 03 13000 to US	40.2	3.58E+05	5.9	344.3	3.24E+10	153.1	635.2
Mattic - 03 13000 to US	50.8	2.84E+05	7.4	863.2	6.43E+10	443.2	1456.2
Mattic - USBC	0.1	8.55E+07	1.9	5.2	1.22E+11	0.4	361.3

Reach Key (text)	Discharge (m^3/s)	Duration (s/yr)	Efficiency (none)	Applied Power (N/s)	Applied Work (N*m)	Sediment Transport Rate (tonnes/d)	Sediment Transport Yield (tonnes/yr)
Mattic - USBC	0.2	4.33E+07	0.7	0.0	1.58E+08	0.0	0.0
Mattic - USBC	0.4	2.18E+07	1.4	1.4	8.31E+09	0.0	7.4
Mattic - USBC	0.9	1.10E+07	1.5	2.2	6.49E+09	0.1	7.7
Mattic - USBC	1.7	5.55E+06	1.9	5.3	7.94E+09	0.4	23.8
Mattic - USBC	3.5	2.80E+06	2.5	13.2	1.01E+10	2.0	64.7
Mattic - USBC	6.9	1.41E+06	3.3	32.4	1.25E+10	7.8	127.8
Mattic - USBC	13.6	7.12E+05	4.2	83.3	1.61E+10	27.8	229.2
Mattic - USBC	27.0	3.59E+05	5.3	206.4	2.01E+10	85.2	353.7
Mattic - USBC	34.1	2.84E+05	6.6	483.9	3.74E+10	229.8	755.6
Nelson - 01 DS to Wilborn	0.2	8.54E+07	2.8	7.1	1.57E+11	0.9	927.9
Nelson - 01 DS to Wilborn	0.4	4.32E+07	3.1	13.8	1.55E+11	2.7	1339.4
Nelson - 01 DS to Wilborn	0.9	2.18E+07	3.8	26.1	1.47E+11	6.3	1589.5
Nelson - 01 DS to Wilborn	1.7	1.10E+07	4.6	62.1	1.77E+11	19.6	2497.9
Nelson - 01 DS to Wilborn	3.4	5.55E+06	5.6	147.8	2.12E+11	57.4	3690.1
Nelson - 01 DS to Wilborn	6.8	2.80E+06	6.9	352.7	2.56E+11	160.6	5206.4
Nelson - 01 DS to Wilborn	13.5	1.41E+06	8.1	802.7	2.93E+11	416.9	6813.6
Nelson - 01 DS to Wilborn	26.8	7.12E+05	9.8	1851.2	3.41E+11	1056.9	8708.3
Nelson - 01 DS to Wilborn	53.2	3.59E+05	12.0	4317.0	4.01E+11	2670.3	11094.1
Nelson - 01 DS to Wilborn	67.2	2.84E+05	14.5	9932.8	7.31E+11	6527.8	21476.5
Nelson - 02 Wilborn to US	0.1	8.51E+07	2.0	2.6	5.82E+10	0.2	157.8
Nelson - 02 Wilborn to US	0.2	4.31E+07	2.2	4.1	4.59E+10	0.3	173.5
Nelson - 02 Wilborn to US	0.4	2.18E+07	2.6	9.5	5.36E+10	1.4	361.3
Nelson - 02 Wilborn to US	0.9	1.10E+07	3.3	23.0	6.57E+10	5.5	707.9
Nelson - 02 Wilborn to US	1.7	5.56E+06	4.1	56.1	8.07E+10	18.4	1184.1
Nelson - 02 Wilborn to US	3.4	2.80E+06	5.1	137.9	1.00E+11	57.0	1849.7
Nelson - 02 Wilborn to US	6.8	1.41E+06	6.3	338.9	1.24E+11	164.8	2694.5
Nelson - 02 Wilborn to US	13.5	7.12E+05	7.8	820.5	1.51E+11	451.0	3719.0
Nelson - 02 Wilborn to US	26.8	3.59E+05	9.5	1964.0	1.83E+11	1158.4	4815.6
Nelson - 02 Wilborn to US	33.9	2.84E+05	11.4	4474.5	3.30E+11	2805.0	9234.9

Reach Key (text)	Discharge (m^3/s)	Duration (s/yr)	Efficiency (none)	Applied Power (N/s)	Applied Work (N*m)	Sediment Transport Rate (tonnes/d)	Sediment Transport Yield (tonnes/yr)
Nelson - USBC	0.1	8.53E+07	1.2	1.1	2.33E+10	0.0	5.5
Nelson - USBC	0.2	4.34E+07	1.3	1.5	1.65E+10	0.0	6.6
Nelson - USBC	0.3	2.19E+07	1.5	3.3	1.82E+10	0.1	15.8
Nelson - USBC	0.6	1.10E+07	1.9	7.7	2.12E+10	0.3	43.1
Nelson - USBC	1.2	5.55E+06	2.3	17.3	2.40E+10	1.7	110.7
Nelson - USBC	2.4	2.80E+06	2.9	38.5	2.69E+10	6.8	220.9
Nelson - USBC	4.8	1.41E+06	3.7	87.7	3.09E+10	22.3	364.5
Nelson - USBC	9.5	7.12E+05	4.8	213.5	3.80E+10	72.0	592.9
Nelson - USBC	18.8	3.59E+05	6.1	513.2	4.60E+10	210.8	875.3
Nelson - USBC	23.8	2.84E+05	7.8	1343.9	9.54E+10	659.7	2169.6
Senatobia - 01 DS to Res. Bound.	1.0	8.59E+07	23.6	128.0	2.78E+12	0.6	626.9
Senatobia - 01 DS to Res. Bound.	2.1	4.33E+07	22.8	146.3	1.60E+12	0.8	399.8
Senatobia - 01 DS to Res. Bound.	4.1	2.18E+07	28.0	287.7	1.59E+12	2.2	546.7
Senatobia - 01 DS to Res. Bound.	8.2	1.10E+07	33.5	512.6	1.43E+12	4.4	562.8
Senatobia - 01 DS to Res. Bound.	16.2	5.55E+06	38.4	782.2	1.10E+12	6.8	434.2
Senatobia - 01 DS to Res. Bound.	32.1	2.80E+06	44.6	1160.8	8.21E+11	10.0	323.3
Senatobia - 01 DS to Res. Bound.	63.6	1.41E+06	33.1	355.5	1.27E+11	1.0	16.3
Senatobia - 01 DS to Res. Bound.	126.1	7.11E+05	28.9	203.5	3.66E+10	0.3	2.3
Senatobia - 01 DS to Res. Bound.	250.1	3.59E+05	25.8	122.7	1.11E+10	0.1	0.3
Senatobia - 01 DS to Res. Bound.	315.9	2.84E+05	39.3	615.0	4.42E+10	2.0	6.4
Senatobia - 02 Res. Bound. to 15000	1.0	8.59E+07	2.3	12.0	2.56E+11	0.6	578.4
Senatobia - 02 Res. Bound. to 15000	2.0	4.33E+07	2.2	14.5	1.56E+11	0.8	383.5
Senatobia - 02 Res. Bound. to 15000	4.0	2.18E+07	2.7	33.4	1.81E+11	3.7	922.8
Senatobia - 02 Res. Bound. to 15000	7.9	1.10E+07	3.4	82.3	2.25E+11	15.0	1907.9
Senatobia - 02 Res. Bound. to 15000	15.7	5.55E+06	4.2	194.9	2.69E+11	48.6	3121.1
Senatobia - 02 Res. Bound. to 15000	31.1	2.80E+06	5.1	421.5	2.93E+11	128.0	4144.5
Senatobia - 02 Res. Bound. to 15000	61.6	1.41E+06	6.2	945.3	3.31E+11	344.6	5625.7
Senatobia - 02 Res. Bound. to 15000	122.1	7.11E+05	7.9	2408.1	4.26E+11	1069.0	8799.1
Senatobia - 02 Res. Bound. to 15000	242.2	3.59E+05	9.4	4808.6	4.28E+11	2350.0	9753.7

Reach Key (text)	Discharge (m^3/s)	Duration (s/yr)	Efficiency (none)	Applied Power (N/s)	Applied Work (N*m)	Sediment Transport Rate (tonnes/d)	Sediment Transport Yield (tonnes/yr)
Senatobia - 02 Res. Bound. to 15000	305.9	2.84E+05	11.5	10506.2	7.41E+11	5851.6	19232.7
Senatobia - 03 15000 to G. Springs	1.0	8.58E+07	2.2	9.6	2.13E+11	0.4	429.3
Senatobia - 03 15000 to G. Springs	2.0	4.33E+07	2.3	14.0	1.56E+11	0.8	418.0
Senatobia - 03 15000 to G. Springs	3.9	2.18E+07	2.9	33.0	1.85E+11	3.9	986.1
Senatobia - 03 15000 to G. Springs	7.8	1.10E+07	3.6	76.1	2.16E+11	14.0	1777.2
Senatobia - 03 15000 to G. Springs	15.5	5.55E+06	4.6	175.5	2.51E+11	43.0	2758.9
Senatobia - 03 15000 to G. Springs	30.7	2.80E+06	5.7	400.2	2.88E+11	121.5	3934.5
Senatobia - 03 15000 to G. Springs	60.8	1.41E+06	7.1	926.4	3.36E+11	336.1	5487.1
Senatobia - 03 15000 to G. Springs	120.6	7.11E+05	9.0	2320.9	4.25E+11	997.7	8213.6
Senatobia - 03 15000 to G. Springs	239.1	3.59E+05	11.7	7049.3	6.51E+11	3624.0	15044.1
Senatobia - 03 15000 to G. Springs	302.0	2.84E+05	15.1	19945.5	1.46E+12	11939.1	39249.3
Senatobia - 04 G. Springs to Mattic	0.9	8.58E+07	2.1	6.3	1.32E+11	0.1	139.8
Senatobia - 04 G. Springs to Mattic	1.8	4.33E+07	2.3	9.2	9.80E+10	0.3	167.7
Senatobia - 04 G. Springs to Mattic	3.5	2.18E+07	2.8	22.6	1.22E+11	2.0	512.8
Senatobia - 04 G. Springs to Mattic	7.0	1.10E+07	3.6	58.7	1.60E+11	9.8	1254.1
Senatobia - 04 G. Springs to Mattic	13.9	5.55E+06	4.7	159.5	2.19E+11	40.6	2605.1
Senatobia - 04 G. Springs to Mattic	27.5	2.80E+06	6.1	449.8	3.11E+11	156.0	5051.5
Senatobia - 04 G. Springs to Mattic	54.6	1.41E+06	8.0	1253.6	4.37E+11	540.2	8820.2
Senatobia - 04 G. Springs to Mattic	108.2	7.11E+05	10.2	3300.2	5.80E+11	1641.7	13515.9
Senatobia - 04 G. Springs to Mattic	214.7	3.59E+05	12.3	8297.9	7.35E+11	4536.3	18831.5
Senatobia - 04 G. Springs to Mattic	271.1	2.84E+05	15.7	23671.1	1.66E+12	14483.2	47613.3
Senatobia - 05 Mattic to T. Jones	0.4	8.60E+07	2.3	8.9	1.70E+11	0.7	683.5
Senatobia - 05 Mattic to T. Jones	0.9	4.33E+07	2.5	13.5	1.30E+11	1.4	706.4
Senatobia - 05 Mattic to T. Jones	1.7	2.18E+07	3.0	30.7	1.49E+11	5.2	1315.8
Senatobia - 05 Mattic to T. Jones	3.4	1.10E+07	3.8	77.6	1.90E+11	19.9	2530.6
Senatobia - 05 Mattic to T. Jones	6.7	5.55E+06	4.8	200.2	2.48E+11	69.2	4440.5
Senatobia - 05 Mattic to T. Jones	13.3	2.80E+06	6.2	521.1	3.25E+11	223.5	7234.7
Senatobia - 05 Mattic to T. Jones	26.4	1.41E+06	7.5	1224.2	3.85E+11	621.2	10138.3
Senatobia - 05 Mattic to T. Jones	52.4	7.11E+05	9.1	2610.2	4.14E+11	1416.7	11657.3

Reach Key (text)	Discharge (m^3/s)	Duration (s/yr)	Efficiency (none)	Applied Power (N/s)	Applied Work (N*m)	Sediment Transport Rate (tonnes/d)	Sediment Transport Yield (tonnes/yr)
Senatobia - 05 Mattic to T. Jones	104.0	3.58E+05	10.8	5313.0	4.25E+11	3007.2	12477.2
Senatobia - 05 Mattic to T. Jones	131.3	2.84E+05	13.0	11733.5	7.43E+11	7013.1	23043.3
Senatobia - 06 T. Jones to 46000	0.3	8.57E+07	2.4	8.1	1.70E+11	0.9	870.4
Senatobia - 06 T. Jones to 46000	0.7	4.32E+07	2.6	12.3	1.30E+11	1.7	870.2
Senatobia - 06 T. Jones to 46000	1.3	2.18E+07	3.2	29.2	1.56E+11	6.5	1643.8
Senatobia - 06 T. Jones to 46000	2.7	1.10E+07	4.1	71.1	1.92E+11	22.1	2819.5
Senatobia - 06 T. Jones to 46000	5.3	5.55E+06	5.1	176.2	2.39E+11	69.9	4487.8
Senatobia - 06 T. Jones to 46000	10.5	2.80E+06	6.4	435.2	2.98E+11	204.3	6617.4
Senatobia - 06 T. Jones to 46000	20.8	1.41E+06	7.9	1077.3	3.72E+11	576.2	9408.4
Senatobia - 06 T. Jones to 46000	41.3	7.11E+05	9.7	2654.0	4.62E+11	1539.7	12678.3
Senatobia - 06 T. Jones to 46000	81.9	3.59E+05	11.7	6216.1	5.46E+11	3854.1	16002.2
Senatobia - 06 T. Jones to 46000	103.4	2.84E+05	13.8	13468.0	9.37E+11	8667.0	28496.9
Senatobia - 07 46000 to 62000	0.3	8.59E+07	2.5	8.8	1.95E+11	1.2	1226.9
Senatobia - 07 46000 to 62000	0.5	4.32E+07	2.8	13.3	1.48E+11	2.3	1173.2
Senatobia - 07 46000 to 62000	1.0	2.18E+07	3.4	30.5	1.72E+11	8.0	2028.9
Senatobia - 07 46000 to 62000	2.1	1.10E+07	4.1	72.3	2.05E+11	24.4	3105.6
Senatobia - 07 46000 to 62000	4.1	5.55E+06	4.9	171.1	2.45E+11	70.6	4531.5
Senatobia - 07 46000 to 62000	8.2	2.80E+06	6.0	409.2	2.95E+11	198.0	6412.2
Senatobia - 07 46000 to 62000	16.2	1.41E+06	7.4	969.1	3.52E+11	526.8	8600.4
Senatobia - 07 46000 to 62000	32.2	7.11E+05	8.8	2218.3	4.07E+11	1285.6	10583.2
Senatobia - 07 46000 to 62000	63.8	3.59E+05	10.3	5047.8	4.66E+11	3059.1	12698.0
Senatobia - 07 46000 to 62000	80.5	2.84E+05	12.1	11654.6	8.53E+11	7477.9	24580.0
Senatobia - 08 62000 to US	0.2	8.61E+07	2.2	3.4	8.02E+10	0.3	269.4
Senatobia - 08 62000 to US	0.3	4.34E+07	2.3	4.9	5.73E+10	0.5	242.4
Senatobia - 08 62000 to US	0.6	2.18E+07	2.6	10.6	6.25E+10	1.7	417.8
Senatobia - 08 62000 to US	1.3	1.10E+07	3.1	24.6	7.34E+10	5.9	746.4
Senatobia - 08 62000 to US	2.5	5.54E+06	3.7	58.4	8.76E+10	18.5	1185.5
Senatobia - 08 62000 to US	5.0	2.80E+06	4.6	140.6	1.06E+11	56.3	1823.1
Senatobia - 08 62000 to US	9.9	1.41E+06	5.7	346.8	1.32E+11	167.9	2738.4

Reach Key (text)	Discharge (m^3/s)	Duration (s/yr)	Efficiency (none)	Applied Power (N/s)	Applied Work (N*m)	Sediment Transport Rate (tonnes/d)	Sediment Transport Yield (tonnes/yr)
Senatobia - 08 62000 to US	19.5	7.11E+05	7.1	859.1	1.65E+11	475.7	3912.9
Senatobia - 08 62000 to US	38.8	3.58E+05	8.9	2100.4	2.04E+11	1263.8	5241.7
Senatobia - 08 62000 to US	49.0	2.84E+05	10.6	4949.2	3.80E+11	3154.3	10360.2
Senatobia - USBC	0.1	8.54E+07	2.4	2.4	5.58E+10	0.2	231.2
Senatobia - USBC	0.2	4.34E+07	2.4	3.5	4.15E+10	0.4	188.6
Senatobia - USBC	0.3	2.19E+07	2.5	7.5	4.49E+10	1.1	281.6
Senatobia - USBC	0.7	1.10E+07	3.1	17.9	5.40E+10	4.1	527.8
Senatobia - USBC	1.3	5.56E+06	3.7	43.6	6.64E+10	13.8	885.5
Senatobia - USBC	2.6	2.80E+06	4.5	105.6	8.11E+10	41.9	1358.5
Senatobia - USBC	5.1	1.41E+06	5.4	256.1	9.91E+10	120.3	1964.8
Senatobia - USBC	10.2	7.11E+05	6.6	632.2	1.23E+11	338.5	2787.3
Senatobia - USBC	20.2	3.59E+05	8.5	1587.6	1.56E+11	944.2	3920.3
Senatobia - USBC	25.5	2.84E+05	10.8	3984.5	3.10E+11	2588.4	8510.1
South Fork - 01 DS to 4600	0.1	8.56E+07	24.9	43.0	9.67E+11	0.3	285.5
South Fork - 01 DS to 4600	0.2	4.36E+07	31.1	103.7	1.19E+12	1.0	486.8
South Fork - 01 DS to 4600	0.3	2.18E+07	39.0	259.2	1.49E+12	3.1	781.2
South Fork - 01 DS to 4600	0.6	1.10E+07	48.8	642.9	1.86E+12	9.3	1185.6
South Fork - 01 DS to 4600	1.2	5.55E+06	60.9	1587.2	2.32E+12	26.9	1726.6
South Fork - 01 DS to 4600	2.4	2.80E+06	75.2	3909.1	2.88E+12	74.8	2423.7
South Fork - 01 DS to 4600	4.8	1.41E+06	91.8	9476.8	3.52E+12	198.2	3234.9
South Fork - 01 DS to 4600	9.5	7.11E+05	110.5	22347.3	4.18E+12	499.4	4110.8
South Fork - 01 DS to 4600	18.9	3.59E+05	132.4	50026.2	4.72E+12	1168.6	4850.8
South Fork - 01 DS to 4600	23.9	2.84E+05	141.8	67408.4	5.04E+12	1604.8	5276.0
South Fork - 02 4600 to 10000	0.1	8.46E+07	28.2	53.5	1.16E+12	0.5	508.5
South Fork - 02 4600 to 10000	0.1	4.32E+07	35.3	129.8	1.43E+12	1.7	827.0
South Fork - 02 4600 to 10000	0.3	2.18E+07	44.1	320.0	1.78E+12	5.0	1268.1
South Fork - 02 4600 to 10000	0.5	1.10E+07	55.4	785.4	2.21E+12	14.5	1852.1
South Fork - 02 4600 to 10000	1.1	5.57E+06	68.7	1916.6	2.73E+12	39.9	2568.9
South Fork - 02 4600 to 10000	2.1	2.81E+06	84.3	4602.4	3.30E+12	105.1	3412.3

Reach Key (text)	Discharge (m^3/s)	Duration (s/yr)	Efficiency (none)	Applied Power (N/s)	Applied Work (N*m)	Sediment Transport Rate (tonnes/d)	Sediment Transport Yield (tonnes/yr)
South Fork - 02 4600 to 10000	4.2	1.41E+06	102.7	11009.1	3.98E+12	270.4	4424.8
South Fork - 02 4600 to 10000	8.4	7.13E+05	124.5	26414.8	4.81E+12	687.4	5672.6
South Fork - 02 4600 to 10000	16.7	3.59E+05	149.9	63965.1	5.88E+12	1750.3	7282.2
South Fork - 02 4600 to 10000	21.0	2.85E+05	159.9	86695.4	6.31E+12	2408.9	7937.1
South Fork - 03 10000 to US	0.0	8.42E+07	28.2	50.4	1.05E+12	0.6	596.7
South Fork - 03 10000 to US	0.1	4.35E+07	33.2	116.0	1.24E+12	1.7	847.8
South Fork - 03 10000 to US	0.2	2.17E+07	41.7	291.0	1.56E+12	5.2	1298.9
South Fork - 03 10000 to US	0.3	1.10E+07	52.7	718.7	1.96E+12	15.0	1920.2
South Fork - 03 10000 to US	0.7	5.57E+06	66.7	1804.2	2.48E+12	42.7	2750.3
South Fork - 03 10000 to US	1.4	2.81E+06	84.1	4482.4	3.11E+12	117.2	3805.1
South Fork - 03 10000 to US	2.7	1.41E+06	105.3	11033.0	3.85E+12	309.1	5061.1
South Fork - 03 10000 to US	5.3	7.13E+05	130.3	26351.2	4.64E+12	772.1	6375.3
South Fork - 03 10000 to US	10.6	3.60E+05	157.8	59321.0	5.27E+12	1781.0	7416.0
South Fork - 03 10000 to US	13.4	2.85E+05	166.4	76955.3	5.41E+12	2311.7	7622.4
South Fork - USBC	0.0	8.70E+07	30.1	52.3	1.12E+12	0.7	676.1
South Fork - USBC	0.1	4.35E+07	36.1	119.2	1.28E+12	1.9	945.6
South Fork - USBC	0.1	2.18E+07	43.6	294.6	1.58E+12	5.3	1336.1
South Fork - USBC	0.2	1.10E+07	54.2	708.1	1.92E+12	14.9	1893.5
South Fork - USBC	0.5	5.53E+06	67.3	1722.7	2.35E+12	41.0	2622.5
South Fork - USBC	1.0	2.79E+06	83.1	4283.6	2.95E+12	110.4	3565.8
South Fork - USBC	1.9	1.41E+06	102.7	10506.7	3.65E+12	288.6	4700.8
South Fork - USBC	3.8	7.09E+05	125.6	25332.5	4.44E+12	732.5	6014.8
South Fork - USBC	7.6	3.58E+05	152.7	60252.9	5.32E+12	1807.1	7483.1
South Fork - USBC	9.6	2.83E+05	162.9	80424.0	5.63E+12	2433.0	7978.3
Steammill - 01 DS to 5200	0.0	8.40E+07	2.0	2.2	4.55E+10	0.2	189.7
Steammill - 01 DS to 5200	0.1	4.37E+07	2.4	5.2	5.52E+10	0.8	422.0
Steammill - 01 DS to 5200	0.1	2.18E+07	3.1	13.3	7.05E+10	3.5	876.9
Steammill - 01 DS to 5200	0.3	1.10E+07	3.9	32.3	8.67E+10	11.7	1497.0
Steammill - 01 DS to 5200	0.6	5.57E+06	4.9	78.6	1.07E+11	36.0	2321.7

Reach Key (text)	Discharge (m^3/s)	Duration (s/yr)	Efficiency (none)	Applied Power (N/s)	Applied Work (N*m)	Sediment Transport Rate (tonnes/d)	Sediment Transport Yield (tonnes/yr)
Steammill - 01 DS to 5200	1.1	2.80E+06	6.1	190.1	1.30E+11	101.9	3302.1
Steammill - 01 DS to 5200	2.2	1.41E+06	7.6	453.2	1.56E+11	267.8	4379.9
Steammill - 01 DS to 5200	4.3	7.13E+05	9.1	1013.5	1.76E+11	639.7	5278.8
Steammill - 01 DS to 5200	8.6	3.59E+05	10.6	2108.3	1.84E+11	1361.7	5665.0
Steammill - 01 DS to 5200	10.9	2.85E+05	11.2	2757.6	1.91E+11	1808.3	5956.7
Steammill - 02 5200 to US	0.0	8.68E+07	2.3	2.6	6.07E+10	0.5	470.0
Steammill - 02 5200 to US	0.1	4.34E+07	2.8	6.4	7.43E+10	1.9	932.2
Steammill - 02 5200 to US	0.1	2.17E+07	3.6	16.1	9.40E+10	6.5	1624.2
Steammill - 02 5200 to US	0.2	1.10E+07	4.4	39.6	1.17E+11	19.6	2499.3
Steammill - 02 5200 to US	0.4	5.54E+06	5.5	96.5	1.44E+11	55.6	3569.1
Steammill - 02 5200 to US	0.8	2.79E+06	6.7	236.0	1.77E+11	148.8	4808.0
Steammill - 02 5200 to US	1.6	1.41E+06	8.1	576.5	2.18E+11	390.5	6364.0
Steammill - 02 5200 to US	3.1	7.10E+05	9.9	1407.7	2.69E+11	1019.9	8379.3
Steammill - 02 5200 to US	6.2	3.58E+05	12.2	3417.2	3.29E+11	2586.5	10717.4
Steammill - 02 5200 to US	7.8	2.84E+05	13.0	4578.2	3.49E+11	3498.8	11483.4
Steammill - USBC	0.0	8.85E+07	1.9	2.0	4.83E+10	0.2	227.6
Steammill - USBC	0.0	4.43E+07	2.7	5.9	7.00E+10	1.5	775.5
Steammill - USBC	0.0	2.21E+07	3.6	15.7	9.37E+10	6.1	1567.8
Steammill - USBC	0.0	1.11E+07	4.5	38.4	1.14E+11	18.9	2426.5
Steammill - USBC	0.1	5.53E+06	5.6	93.3	1.39E+11	54.0	3459.2
Steammill - USBC	0.2	2.77E+06	6.9	224.0	1.67E+11	144.3	4622.1
Steammill - USBC	0.4	1.39E+06	8.3	530.3	1.99E+11	360.6	5820.3
Steammill - USBC	0.7	7.03E+05	10.1	1249.0	2.36E+11	893.2	7265.1
Steammill - USBC	1.4	3.54E+05	11.9	2968.7	2.83E+11	2197.4	9007.5
Steammill - USBC	1.8	2.81E+05	12.8	4059.8	3.06E+11	3039.2	9871.8
Thornton - 01 DS to 1968 Limits	0.1	8.49E+07	2.0	2.7	4.62E+10	0.2	150.0
Thornton - 01 DS to 1968 Limits	0.1	4.33E+07	2.6	7.3	6.51E+10	0.8	400.9
Thornton - 01 DS to 1968 Limits	0.3	2.19E+07	4.2	24.6	1.11E+11	3.9	996.6
Thornton - 01 DS to 1968 Limits	0.6	1.10E+07	4.9	55.7	1.26E+11	10.1	1293.7

Reach Key (text)	Discharge (m^3/s)	Duration (s/yr)	Efficiency (none)	Applied Power (N/s)	Applied Work (N*m)	Sediment Transport Rate (tonnes/d)	Sediment Transport Yield (tonnes/yr)
Thornton - 01 DS to 1968 Limits	1.1	5.56E+06	3.6	50.7	5.78E+10	8.7	558.5
Thornton - 01 DS to 1968 Limits	2.2	2.80E+06	3.4	50.0	2.87E+10	6.3	205.9
Thornton - 01 DS to 1968 Limits	4.4	1.41E+06	2.8	22.6	6.56E+09	1.2	20.1
Thornton - 01 DS to 1968 Limits	8.8	7.12E+05	2.4	15.3	2.24E+09	0.4	3.3
Thornton - 01 DS to 1968 Limits	17.4	3.59E+05	0.7	0.5	3.81E+07	0.0	0.0
Thornton - 01 DS to 1968 Limits	22.0	2.84E+05	0.6	0.3	1.46E+07	0.0	0.0
Thornton - 02 1968 Limits to Steammill	0.1	8.49E+07	2.0	3.4	4.12E+10	0.3	259.0
Thornton - 02 1968 Limits to Steammill	0.1	4.34E+07	2.4	8.1	4.99E+10	1.2	625.2
Thornton - 02 1968 Limits to Steammill	0.3	2.19E+07	3.0	18.9	5.93E+10	4.7	1203.3
Thornton - 02 1968 Limits to Steammill	0.5	1.10E+07	3.9	45.2	7.11E+10	15.7	2008.5
Thornton - 02 1968 Limits to Steammill	1.0	5.55E+06	5.0	106.0	8.39E+10	45.6	2929.4
Thornton - 02 1968 Limits to Steammill	2.0	2.80E+06	6.1	241.5	9.65E+10	119.5	3869.4
Thornton - 02 1968 Limits to Steammill	3.9	1.41E+06	7.2	445.1	8.97E+10	228.1	3726.8
Thornton - 02 1968 Limits to Steammill	7.8	7.12E+05	7.6	631.5	6.41E+10	296.3	2440.2
Thornton - 02 1968 Limits to Steammill	15.4	3.59E+05	5.9	281.2	1.44E+10	79.5	330.1
Thornton - 02 1968 Limits to Steammill	19.5	2.84E+05	3.9	67.1	2.72E+09	8.2	26.9
Thornton - 03 Steammill to US	0.0	8.16E+07	3.2	3.5	5.80E+10	0.9	842.5
Thornton - 03 Steammill to US	0.0	4.32E+07	2.6	4.6	4.01E+10	1.2	583.8
Thornton - 03 Steammill to US	0.1	2.23E+07	2.8	9.3	4.17E+10	2.9	753.4
Thornton - 03 Steammill to US	0.2	1.11E+07	3.4	22.1	4.95E+10	8.7	1123.4
Thornton - 03 Steammill to US	0.4	5.57E+06	4.2	53.9	6.04E+10	26.5	1707.9
Thornton - 03 Steammill to US	0.7	2.82E+06	5.3	131.5	7.44E+10	74.1	2413.9
Thornton - 03 Steammill to US	1.5	1.42E+06	6.5	311.0	8.87E+10	190.6	3128.9
Thornton - 03 Steammill to US	2.9	7.15E+05	7.8	697.8	1.00E+11	453.4	3754.3
Thornton - 03 Steammill to US	5.8	3.61E+05	8.9	1382.5	1.00E+11	903.1	3770.4
Thornton - 03 Steammill to US	7.3	2.86E+05	9.1	1734.2	9.96E+10	1134.3	3749.3
Thornton - USBC	0.0	9.14E+07	0.9	0.5	1.22E+10	0.0	6.7
Thornton - USBC	0.0	4.16E+07	1.4	1.7	1.91E+10	0.1	38.1
Thornton - USBC	0.1	2.18E+07	2.0	4.4	2.55E+10	0.6	155.7

Reach Key (text)	Discharge (m^3/s)	Duration (s/yr)	Efficiency (none)	Applied Power (N/s)	Applied Work (N*m)	Sediment Transport Rate (tonnes/d)	Sediment Transport Yield (tonnes/yr)
Thornton - USBC	0.1	1.09E+07	2.6	11.2	3.27E+10	3.0	375.1
Thornton - USBC	0.2	5.51E+06	3.3	28.4	4.19E+10	10.5	667.4
Thornton - USBC	0.5	2.79E+06	4.1	70.7	5.28E+10	32.9	1062.4
Thornton - USBC	0.9	1.41E+06	5.1	178.8	6.73E+10	94.9	1545.2
Thornton - USBC	1.8	7.08E+05	6.4	446.9	8.47E+10	268.6	2200.0
Thornton - USBC	3.6	3.57E+05	8.0	1121.9	1.07E+11	732.4	3027.3
Thornton - USBC	4.6	2.83E+05	8.6	1523.0	1.15E+11	1018.0	3331.2
Tolbert-Jones - 01 DS to 3000	0.1	8.67E+07	1.6	1.8	3.16E+10	0.0	37.0
Tolbert-Jones - 01 DS to 3000	0.2	4.33E+07	1.8	2.5	2.19E+10	0.1	41.2
Tolbert-Jones - 01 DS to 3000	0.3	2.19E+07	2.1	5.1	2.29E+10	0.4	98.3
Tolbert-Jones - 01 DS to 3000	0.6	1.10E+07	2.5	10.7	2.41E+10	1.5	189.1
Tolbert-Jones - 01 DS to 3000	1.2	5.53E+06	3.1	23.1	2.61E+10	4.9	313.1
Tolbert-Jones - 01 DS to 3000	2.4	2.79E+06	3.7	50.2	2.86E+10	14.3	460.7
Tolbert-Jones - 01 DS to 3000	4.7	1.41E+06	4.5	119.4	3.43E+10	43.3	705.3
Tolbert-Jones - 01 DS to 3000	9.3	7.10E+05	5.6	319.8	4.64E+10	144.5	1187.9
Tolbert-Jones - 01 DS to 3000	18.5	3.58E+05	7.1	899.8	6.58E+10	475.4	1970.0
Tolbert-Jones - 01 DS to 3000	23.4	2.83E+05	8.7	1714.4	9.93E+10	944.2	3098.0
Tolbert-Jones - 02 3000 to US	0.1	8.49E+07	24.3	30.5	6.32E+11	0.2	155.3
Tolbert-Jones - 02 3000 to US	0.1	4.33E+07	26.2	43.1	4.56E+11	0.3	133.9
Tolbert-Jones - 02 3000 to US	0.3	2.19E+07	31.0	92.2	4.92E+11	0.8	203.7
Tolbert-Jones - 02 3000 to US	0.5	1.10E+07	37.7	207.5	5.56E+11	2.4	307.7
Tolbert-Jones - 02 3000 to US	1.1	5.56E+06	46.6	484.0	6.56E+11	7.1	456.0
Tolbert-Jones - 02 3000 to US	2.1	2.80E+06	57.6	1143.6	7.81E+11	19.9	646.8
Tolbert-Jones - 02 3000 to US	4.3	1.41E+06	71.4	2732.0	9.40E+11	54.5	890.0
Tolbert-Jones - 02 3000 to US	8.4	7.12E+05	88.3	6621.3	1.15E+12	146.9	1210.9
Tolbert-Jones - 02 3000 to US	16.7	3.59E+05	108.1	15936.2	1.39E+12	382.1	1588.1
Tolbert-Jones - 02 3000 to US	21.1	2.84E+05	131.6	38252.3	2.65E+12	973.0	3202.4
Tolbert-Jones - USBC	0.0	8.41E+07	24.4	10.6	2.38E+11	0.1	61.6
Tolbert-Jones - USBC	0.1	4.39E+07	25.6	16.1	1.89E+11	0.1	53.0

Reach Key (text)	Discharge (m^3/s)	Duration (s/yr)	Efficiency (none)	Applied Power (N/s)	Applied Work (N*m)	Sediment Transport Rate (tonnes/d)	Sediment Transport Yield (tonnes/yr)
Tolbert-Jones - USBC	0.1	2.19E+07	27.8	33.9	1.99E+11	0.3	68.3
Tolbert-Jones - USBC	0.3	1.10E+07	32.0	79.5	2.33E+11	0.8	101.3
Tolbert-Jones - USBC	0.5	5.55E+06	37.6	188.4	2.79E+11	2.3	145.4
Tolbert-Jones - USBC	1.0	2.80E+06	45.9	460.7	3.45E+11	6.7	217.6
Tolbert-Jones - USBC	2.0	1.41E+06	58.7	1158.9	4.36E+11	20.1	327.8
Tolbert-Jones - USBC	4.0	7.13E+05	74.5	2871.9	5.46E+11	56.3	464.6
Tolbert-Jones - USBC	8.0	3.59E+05	92.9	7058.3	6.76E+11	153.7	639.1
Tolbert-Jones - USBC	10.0	2.84E+05	115.1	17848.1	1.35E+12	424.5	1397.6
West Ditch - 01 DS to Res. Bound.	0.2	8.62E+07	28.5	48.9	1.06E+12	0.2	203.5
West Ditch - 01 DS to Res. Bound.	0.5	4.34E+07	34.3	103.2	1.12E+12	0.6	305.1
West Ditch - 01 DS to Res. Bound.	0.9	2.18E+07	40.1	196.8	1.08E+12	1.4	365.6
West Ditch - 01 DS to Res. Bound.	1.8	1.10E+07	46.2	350.5	9.66E+11	3.0	378.3
West Ditch - 01 DS to Res. Bound.	3.6	5.54E+06	52.7	598.1	8.32E+11	5.5	353.7
West Ditch - 01 DS to Res. Bound.	7.2	2.80E+06	52.2	718.3	5.04E+11	5.1	165.9
West Ditch - 01 DS to Res. Bound.	14.2	1.41E+06	57.7	1263.1	4.47E+11	9.8	159.7
West Ditch - 01 DS to Res. Bound.	28.2	7.11E+05	73.8	3722.1	6.64E+11	43.7	359.4
West Ditch - 01 DS to Res. Bound.	55.8	3.58E+05	80.3	5983.0	5.38E+11	77.0	319.5
West Ditch - 01 DS to Res. Bound.	70.5	2.84E+05	77.8	5299.8	3.77E+11	62.2	204.2
West Ditch - 02 Res. Bound. To 24300	0.2	8.53E+07	3.6	12.7	2.58E+11	3.2	3124.5
West Ditch - 02 Res. Bound. To 24300	0.3	4.34E+07	4.2	27.4	2.84E+11	8.9	4456.8
West Ditch - 02 Res. Bound. To 24300	0.6	2.18E+07	4.9	63.0	3.28E+11	25.0	6310.4
West Ditch - 02 Res. Bound. To 24300	1.3	1.10E+07	5.9	147.7	3.88E+11	68.1	8673.3
West Ditch - 02 Res. Bound. To 24300	2.5	5.55E+06	7.1	349.7	4.63E+11	183.0	11758.3
West Ditch - 02 Res. Bound. To 24300	4.9	2.80E+06	8.3	786.6	5.25E+11	439.9	14249.9
West Ditch - 02 Res. Bound. To 24300	9.8	1.41E+06	9.9	1727.0	5.82E+11	1003.8	16399.8
West Ditch - 02 Res. Bound. To 24300	19.4	7.12E+05	11.8	3787.4	6.43E+11	2333.0	19217.2
West Ditch - 02 Res. Bound. To 24300	38.4	3.59E+05	14.4	8602.3	7.37E+11	5634.2	23401.5
West Ditch - 02 Res. Bound. To 24300	48.5	2.84E+05	15.5	11843.1	8.03E+11	7948.5	26144.1
West Ditch - 03 24300 to US	0.1	8.65E+07	2.4	5.6	1.34E+11	0.8	754.9

Reach Key (text)	Discharge (m^3/s)	Duration (s/yr)	Efficiency (none)	Applied Power (N/s)	Applied Work (N*m)	Sediment Transport Rate (tonnes/d)	Sediment Transport Yield (tonnes/yr)
West Ditch - 03 24300 to US	0.2	4.32E+07	2.9	12.8	1.55E+11	3.0	1491.5
West Ditch - 03 24300 to US	0.4	2.18E+07	3.7	30.9	1.88E+11	10.3	2597.4
West Ditch - 03 24300 to US	0.9	1.10E+07	4.6	74.6	2.29E+11	32.1	4080.9
West Ditch - 03 24300 to US	1.7	5.55E+06	5.6	176.8	2.74E+11	90.6	5817.5
West Ditch - 03 24300 to US	3.4	2.80E+06	6.9	426.7	3.33E+11	248.4	8038.0
West Ditch - 03 24300 to US	6.8	1.41E+06	8.5	1028.5	4.05E+11	651.9	10639.3
West Ditch - 03 24300 to US	13.4	7.11E+05	10.4	2486.8	4.93E+11	1697.6	13967.4
West Ditch - 03 24300 to US	26.6	3.58E+05	12.6	5885.4	5.89E+11	4223.0	17520.3
West Ditch - 03 24300 to US	33.6	2.84E+05	13.2	7726.0	6.12E+11	5607.2	18423.1
West Ditch - USBC	0.0	8.59E+07	26.7	28.2	6.97E+11	0.3	259.8
West Ditch - USBC	0.1	4.30E+07	33.8	69.4	8.59E+11	0.8	421.7
West Ditch - USBC	0.2	2.19E+07	42.1	172.2	1.08E+12	2.5	645.5
West Ditch - USBC	0.3	1.10E+07	51.5	412.8	1.31E+12	7.1	912.1
West Ditch - USBC	0.6	5.54E+06	62.8	998.0	1.59E+12	19.5	1249.1
West Ditch - USBC	1.2	2.80E+06	75.6	2400.1	1.93E+12	51.4	1663.5
West Ditch - USBC	2.4	1.41E+06	90.3	5725.1	2.33E+12	132.2	2157.7
West Ditch - USBC	4.8	7.11E+05	107.9	13983.4	2.86E+12	347.0	2856.4
West Ditch - USBC	9.5	3.59E+05	124.1	31615.4	3.27E+12	820.6	3406.2
West Ditch - USBC	12.0	2.84E+05	126.7	37910.8	3.10E+12	982.3	3228.9
White's - 01 DS to 1968 Limits	0.1	8.70E+07	1.8	2.2	3.46E+10	0.1	83.3
White's - 01 DS to 1968 Limits	0.2	4.35E+07	2.3	5.3	4.16E+10	0.5	238.3
White's - 01 DS to 1968 Limits	0.3	2.18E+07	2.8	12.1	4.74E+10	1.9	485.5
White's - 01 DS to 1968 Limits	0.6	1.10E+07	3.4	26.2	5.19E+10	5.9	749.4
White's - 01 DS to 1968 Limits	1.2	5.54E+06	4.1	52.9	5.28E+10	14.7	939.4
White's - 01 DS to 1968 Limits	2.5	2.79E+06	4.6	94.5	4.76E+10	28.7	928.1
White's - 01 DS to 1968 Limits	4.9	1.41E+06	4.9	137.7	3.50E+10	40.6	661.1
White's - 01 DS to 1968 Limits	9.7	7.10E+05	4.8	160.1	2.05E+10	39.9	328.1
White's - 01 DS to 1968 Limits	19.3	3.58E+05	3.8	81.0	5.23E+09	10.5	43.5
White's - 01 DS to 1968 Limits	24.3	2.83E+05	2.7	17.3	8.86E+08	0.5	1.6

Reach Key (text)	Discharge (m^3/s)	Duration (s/yr)	Efficiency (none)	Applied Power (N/s)	Applied Work (N*m)	*Sediment* Transport Rate (tonnes/d)	*Sediment* Transport Yield (tonnes/yr)
White's - 02 1968 Limits to 8000	0.1	8.64E+07	30.7	55.4	1.01E+12	0.2	215.7
White's - 02 1968 Limits to 8000	0.2	4.32E+07	36.9	126.2	1.15E+12	0.7	360.0
White's - 02 1968 Limits to 8000	0.3	2.18E+07	45.2	298.5	1.37E+12	2.4	598.6
White's - 02 1968 Limits to 8000	0.6	1.10E+07	54.9	708.3	1.64E+12	7.4	942.9
White's - 02 1968 Limits to 8000	1.2	5.54E+06	67.6	1748.2	2.04E+12	23.2	1485.4
White's - 02 1968 Limits to 8000	2.4	2.79E+06	83.4	4306.0	2.53E+12	68.7	2220.9
White's - 02 1968 Limits to 8000	4.7	1.41E+06	100.9	9890.0	2.93E+12	175.1	2855.8
White's - 02 1968 Limits to 8000	9.3	7.11E+05	119.1	20723.3	3.10E+12	374.3	3078.5
White's - 02 1968 Limits to 8000	18.4	3.58E+05	125.3	34382.5	2.59E+12	640.1	2654.3
White's - 02 1968 Limits to 8000	23.3	2.84E+05	126.5	38428.1	2.29E+12	708.3	2326.2
White's - 03 8000 to US	0.0	8.64E+07	30.9	36.0	8.53E+11	0.3	265.0
White's - 03 8000 to US	0.1	4.32E+07	42.0	97.8	1.16E+12	1.0	487.7
White's - 03 8000 to US	0.2	2.20E+07	50.3	214.0	1.29E+12	2.6	673.7
White's - 03 8000 to US	0.3	1.10E+07	61.0	485.2	1.46E+12	7.3	923.9
White's - 03 8000 to US	0.7	5.54E+06	71.3	1033.0	1.57E+12	17.9	1148.9
White's - 03 8000 to US	1.3	2.79E+06	70.5	1713.4	1.31E+12	33.1	1069.4
White's - 03 8000 to US	2.6	1.41E+06	82.2	3752.3	1.45E+12	78.6	1280.8
White's - 03 8000 to US	5.2	7.10E+05	98.7	8556.2	1.67E+12	189.7	1559.4
White's - 03 8000 to US	10.3	3.58E+05	117.0	18880.0	1.86E+12	433.2	1795.0
White's - 03 8000 to US	12.9	2.84E+05	123.1	24278.2	1.89E+12	558.9	1834.2
White's - USBC	0.0	9.20E+07	22.2	13.2	3.07E+11	0.1	65.1
White's - USBC	0.0	4.09E+07	26.0	30.2	3.11E+11	0.2	96.2
White's - USBC	0.0	2.17E+07	31.6	72.6	3.95E+11	0.7	173.5
White's - USBC	0.1	1.08E+07	39.1	178.4	4.86E+11	2.2	281.3
White's - USBC	0.2	5.58E+06	48.9	447.4	6.27E+11	6.8	436.0
White's - USBC	0.4	2.79E+06	60.9	1085.0	7.61E+11	19.1	617.3
White's - USBC	0.7	1.40E+06	75.6	2620.0	9.26E+11	51.5	837.1

Reach Key (text)	Discharge (m^3/s)	Duration (s/yr)	Efficiency (none)	Applied Power (N/s)	Applied Work (N*m)	Sediment Transport Rate (tonnes/d)	Sediment Transport Yield (tonnes/yr)
White's - USBC	1.5	7.09E+05	92.9	6277.6	1.12E+12	134.7	1105.3
White's - USBC	2.9	3.58E+05	112.8	14956.8	1.35E+12	344.9	1427.9
White's - USBC	3.7	2.83E+05	120.7	20555.6	1.46E+12	486.6	1595.7

APPENDIX C

EXISTING SIAM APPLICATIONS

The following projects have used the SIAM model during development and have contributed to understanding model behavior and needs:

- USACE Basins (Charlie Little, personal communication 2007)
    1. Pistol Creek in Maryville, Tennessee
    2. Arkansas-White River Cut-off, Arkansas
    3. Arkansas River Navigation System, Pools 7, 8, 9, Ozark and Dardanelle
    4. Bronx River, New York
- Bureau of Reclamation Projects
    1. Yakima River, Washington
    2. Sacramento River, California
    3. Rio Grande River, New Mexico
- CSU Projects
    1. Judy's Branch, Illinois
    2. Yalobusha River, Mississippi

C.1 Reference

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