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EPA/600/R-11/058b
August 2011
External Review Draft

MBP Report Tables and Figures

Table 1-1. Breakout group participants for the expert elicitation workshop (see Appendix A for further details on selection criteria and credentials)

Sediment Retention Group	Community Interactions Group
Susan Adamowicz Rachel Carson National Wildlife Refuge	**Walter Berry** U.S. EPA Atlantic Ecology Division
Britt Argow Wellesley College	**Robert Buchsbaum** Massachusetts Audubon Society
Chris Hein Boston University	**Dave Burdick** University of New Hampshire
David Ralston Woods Hole Oceanographic Institution	**Michelle Dionne** Wells National Estuarine Research Reserve
John Ramsey Applied Coastal Research and Engineering	**David Johnson** Woods Hole Marine Biological Laboratory
Peter Rosen Northeastern University	**Gregg Moore** University of New Hampshire
John Teal Woods Hole Oceanographic Institute	**Cathy Wigand** U.S. EPA Atlantic Ecology Division

Table 2-1. Summary of Climate Scenario A ("Lower-Range" Scenario) and Climate Scenario B ("Higher-Range" Scenario): averages for mid-century

		"Lower Range" Scenario (3-model average of B1)*	**"Higher Range" Scenario (3-model average of A1Fi)***
Temperature	Annual Average	+3.6°F	+5.6°F
	Geographically	Boston "moves" to Philadelphia, PA	Boston "moves" to Washington, DC
	Days > 90°F [a]	20 days	34 days
	Coldest Day of Year	+4.3 °F	+6.5 °F
	Growing Season	+3 weeks	+4 weeks
Precipitation	Winter change	+10.6%	+15.1%
	Summer Change	+7.9%	+11.2%
	Spring Change	+15.0%	+14.1%
	Fall Change	+1.9%	-2.2%
	Heavy Events	~8% increase in the max amount of precip to fall within a 5-day period	~12.5% increase in the max amount of precip to fall within a 5-day period
	Yearly Snow Depth	-9 cm	-11 cm
Sea Level	Total Increase	17 cm (SLAMM model A1B scenario)	41 cm (SLAMM mid-century model estimate using 1.5 m scenario by end of century)[b]
Storms/Wind		NECIA (2006) suggests little change in the frequency of winter-time storms for the East Coast. However, under the "higher range" scenario, between 5 and 15% of these storms (an additional 1 storm per year) will move northward during late winter (Jan, Feb, March), affecting the Northeast. (No change for the "lower range" scenario.) In addition, the impact of a higher sea level will increase the likelihood of storm damage to coastal locations. For hurricanes, the most current understanding is that rising sea surface temperatures will increase evaporation, increasing the amount of rainfall associated with any given hurricane, but there is too much uncertainty in projections of hurricane frequency and wind intensity to say much about future trends.	
Ice-out		2 weeks earlier	4 weeks earlier
Spring peak flow period		7 days earlier	10 days earlier
Summer low flow period		1 week longer	2 weeks longer
Drought[c] frequency		2 every three years (compared to 1 every 2 years today)	
Winter flooding events		2-fold increase in number of events	
General increases in salinity of estuarine waters, freshwater tributaries, and coastal aquifers during summer			
*Please refer to Appendix C for more information on the development of the climate scenarios.			

[a] Compared to the 1960-1990 annual average of 9 days with temperatures above 90°F.
[b] The total difference in range between mean and spring tides of 1.3 ft (39.6 cm) is very close to the higher emission scenario rise of 41 cm. Based on data for Plum Island Sound (south entrance), the spring high tide is generally 0.65 feet (19.8 cm) higher than the mean high tide. http://tidesandcurrents.noaa.gov/tides10/tab2ec1b.html#8.
[c] Defined as the monthly soil moisture is more than 10% below the long-term mean (relative to historic simulations).

Table 2-2. Coding scheme used during the workshop exercise to characterize influences. "Small" and "large" changes in variables are defined relative to the current range of variation for each variable, with "small" indicating that the variable is within its current range of variation and "large" indicating that the variable has moved outside its current range of variation

Option	Type and Degree of Influence Definition
0	No influence: We know that changes in X have no effect on changes in Y, holding all other variables constant.
1	Unknown influence: We don't know whether an increase in X will increase, decrease, or have no effect on Y.
2	Proportional increase: A large increase in X is likely to cause a large increase in Y. A small increase is likely to cause a small increase.
3	Proportional decrease: A large decrease in X is likely to cause a large decrease in Y. A small decrease is likely to cause a small decrease.
4	Inverse decrease: A small increase in X is likely to cause a small decrease in Y. A large increase in X is likely to cause a large decrease in Y.
5	Inverse increase: A small decrease in X is likely to cause a small increase in Y. A large decrease in X is likely to cause a large increase in Y.
6	A small increase in X is likely to cause a large increase in Y.
7	A small increase in X is likely to cause a large decrease in Y.
8	A large increase in X is likely to cause a small increase in Y.
9	A large increase in X is likely to cause a small decrease in Y.
10	A small decrease in X is likely to cause a large increase in Y.
11	A small decrease in X is likely to cause a large decrease in Y.
12	A large decrease in X is likely to cause a small increase in Y.
13	A large decrease in X is likely to cause a small decrease in Y.

Table 2-3. Coding scheme used during the workshop exercise to characterize interactive influences

Interactive Influence	Definition
Independence	The effect of X on Y is independent of Z (default situation)
Synergy	The effect of X on Y increases with increase in Z
AND Gate	The effect of X on Y happens only with large Z
NOR Gate	The effect of X on Y happens only with small Z
Competition	The effect of X on Y decreases with increase in Z

Table 2-4. Coding scheme used during the workshop exercise to characterize confidence

Confidence	Definition
LH	Low evidence, High agreement = Established but incomplete
LL	Low evidence, Low agreement = Speculative
HH	High evidence, High agreement = Well established
HL	High evidence, Low agreement = Competing explanations

Table 2-5. Sediment Retention variable definitions

Variable	Definition Agreed Upon by Group
Nutrient Inputs	Annual loading rate (of Nitrogen & Phosphorous)
Altered Flows: Tidal Restrictions	% reduction compared to unrestricted flow
Land Cover: % Impervious Cover	% impervious cover
Marsh High Water Level	High tide limit, measured by where marsh vegetation changes to upland vegetation – includes integrated sea level
Storms	Frequency & intensity of (severe) storms
Tidal Exchange	Tidal prism
Freshwater Flow	Rate of freshwater inflow to the estuary from the watershed
Sediment Supply	External sources (terrestrial and marine) of inorganic material feeding the marsh, as measured by mass flux
Coastal and Nearshore Erosion	Net volume of eroded sediment from coastal zone
Surface Roughness	The interaction of stem density, height and diameter (based on plant species characteristics) with hydrodynamic regime
Marsh Edge Erosion	Volume of peat calved off marsh edges
Inundation Regime	Frequency, depth, and duration of marsh flooding
Below Ground Biomass	Below-ground biomass accumulation rate
Net Accretion	Net elevation change
Sediment Deposition / Retention	Amount per year (e.g., mm/yr)

Table 2-6. Sediment Retention group influence judgments; columns A-FF represent individual influences (arrows) in the influence diagram and rows represent individual respondents: dark green = agreement on influence type and degree, light green = agreement on type but not degree, gray = no agreement; within columns, green numbers = same (majority) grouping of type (though degree may be different), pink numbers = disagreement about type, red outline = threshold response

CURRENT	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	BB	CC	DD	EE	FF
Resp. 1	2^6	2	2	9	2	2^6	0	2^6	2^6	6	6	6	2	12	6	2^8	2^8	2	2^6^7	0^2	0^2	2	2^6	2^6	4	2^4	2^4	2^4	2	2	4	2
Resp. 2	2/3	6|3	8^9	1	7	2/3	4/5	2/3	2/3	6|3	2	2/3	8/13	4/5	2/3	2/3	1^2	6	2/3	2/3	1	2/3	4^6	0	4/5	2^4	4/5	1	6/11	2/3	2/3	2/3
Resp. 3	2/3	2/3	2/3	4/5	2/3	4/5	0	2/3	2/3	2/3	2/3	2/3	8/13	1	2/3	2/3	2/3	2/3	1	8/13	1	2/3	2/3	2/3	4/5	2/3	4/5	1	2/3	2/3	4/5	2/3
Resp. 4	0	2	2	4	7	4	1	2/3	2	6	2	2	2	9	9	2	2	2	1	2	2	2	2	2	4	2	1	9	2	2	5	3
Resp. 5	6	8	6	9	6	7	0	6	6	6	6	1^6	8	6	2	2	8	2	0	9	0	6	2	0	0	2	8	2	1	3	1	2
Resp. 6	2	2	2	8	2	2	0	8	2	2	2	8	9	9	2	8	2	2	9	8	8	8	2	1	9	2^4	4	2	2	2	4	2
Resp. 7	2	2	2	5	4	4	0^3	2	2	2	2	2	0^2	4^6	2	2	2	2	1	1	1	2	2	2	5	2^4	2	2^4	4	2^4	4	2
CLIMATE A	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	BB	CC	DD	EE	FF
Resp. 1	2	2	2	2^9	9	2^6	0	2^6	2^6	6	6	6	2	5	6	2^8	2^8	2	2^7	0	2^4	2^4	2^6	0	4	2^4	4	2^4	8	2	4	2
Resp. 2	2/3	6	2	0^4	7	4	4/5	6	6	6	6	2	8		2	8	1	6		2		2	2/3		0	2^4	4	2	8	2/3	2/3	8
Resp. 3	2/3	2/3	2/3	1	2/3	4/5	0	2/3	2/3	2/3	2/3	2/3	8/13	1	2/3	6/11	2/3	2/3	1	8/13	1	6/11	2/3	2/3	4/5	2/3	4/5	1	2/3	2/3	4/5	2/3
Resp. 4	0	2	2	4	7	4	1	2/3	2	6	2	2	1	2^9	2^9	2	2	2	4	8	1	2	2	2	4	2	1	9	2	2	5	3
Resp. 5	6	6	6	9	4	7	0	6	6	6	6	6	0	6	8	8	8	8	2	6	2	6	2	0	0	2	8	1	1	2	2	2
Resp. 6	2	2	2	8	2	2	0	8	2	2	2	8	9	9	2	8	2	2	9	8	8	2	2	1	0	2^4	4	3		2	2	
Resp. 7	2	2	2	5	4	2		2	2	2	2	2	0^2	4^6	2	2	2	2	4	1	1	1^2	2/3	2	5	2^4	2^4	2^4	2^4	2^4	4	2
CLIMATE B	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	BB	CC	DD	EE	FF
Resp. 1	2^6	2	2^6	2^9	9	2^6	0	6	6	6	6	6	2	5	6	2^8	2^8	2	2^7	0	2^4	2^4	6	0	4	2^4	4	2^4	8	2	4	2
Resp. 2	2/3	2	8	0^4	7	4	4/5	6	6	6	6	2	8		2	8	1	6		2		2	2/3		0	2^4	4	4	8	2/3	2/3	8
Resp. 3	2/3	2/3	2/3	1	2/3	4/5	0	2/3	2/3	2/3	2/3	2/3	8/13	1	2/3	6/11	2/3	2/3	1	8/13	1	6/11	2/3	2/3	4/5	2/3	4/5	1	2/3	2/3	4/5	2/3
Resp. 4	0	2	2	4	7	4	1	2/3	2	6	2	2	1	2^9	2^9	2	2	2	4	8	1	2	2	2	4	2	1	9	2	2	5	3
Resp. 5	6	6	6	9	4	7	0	6	6	6	6	6	0	8	8	8	8	8	2	6	2	6	2	0	0	2	8	1	1	2	2	2
Resp. 6	2	2	2	8	2	2	0	8	2	2	2	2	2	9	2	8	2	2^4	4^9	8	8	2	2	1^2	6	2^4	4	3		2	2	
Resp. 7	2	2^6	2^6	5	4	2		2^6	2^6	2^6	2^6	2^6	0^2^6	4^6	2	2	2^6	2^6	4	1	1	1^2	2/3	3	5	2^4	2^4	2^4	2	2	2	2

Table 2-7. Sediment Retention group confidence for influences with agreement: NA = No agreement; HH = High evidence, High agreement; HL = High evidence, Low agreement; LH = Low evidence, High agreement; LL = Low evidence, Low agreement

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	T	V	W	X	Y	AA	CC	DD	EE	FF
CURRENT	HH	HH	HH	NA	NA	HH	HH	HH	HH	NA	HH	NA	NA	NA	HH	HH	NA	HH	NA	HH	HH	NA	HH	NA	NA	HH	NA	HH
SCENARIO A	HH	HH	HH	NA	NA	HH	NA	HH	HH	HH	HH	HH	NA	NA	HH	HH	NA	HH	NA	HH	HH	NA	NA	NA	NA	HH	NA	NA
SCENARIO B	HH	HH	HH	NA	NA	HH	NA	HH	HH	HH	HH	HH	NA	NA	NA	HH	NA	HH	NA	HH	HH	NA	NA	NA	NA	HH	NA	NA

Table 2-8. Sediment Retention group interactive influences with agreement under current conditions and Climate Scenarios A and B: NA = No agreement; HH = High evidence, High agreement; HL = High evidence, Low agreement; LH = Low evidence, High agreement; LL = Low evidence, Low agreement; () = Number of respondents

						CURRENT		**CLIMATE A**		**CLIMATE B**	
Interaction	**Variable X**	**on**	**Variable Y**	**with**	**Variable Z**	**Interactive Influence**	**Confidence**	**Interactive Influence**	**Confidence**	**Interactive Influence**	**Confidence**
B+C	Marsh High Water Level	on	Inundation Regime	with	Storms	Synergy (4)	HH	Synergy (6)	HH	Synergy (6)	HH
H+I	Land Cover: % Impervious Cover	on	Freshwater Flow	with	Storms	NA	NA	Synergy (3)	HH	Synergy (3)	NA
V+W	Surface Roughness	on	Sediment Deposition / Retention	with	Sediment Supply	Synergy (3)	NA	NA	NA	NA	NA
W+V	Sediment Supply	on	Sediment Deposition / Retention	with	Surface Roughness	NA	NA	Synergy (3)	HH	Synergy (3)	HH

Table 2-9. Community Interactions variable definitions

Variable	Definition Agreed Upon by Group
Open Marsh Water Management (OMWM)	Acreage in projects
Sea Level	Water height (mm) at mean lower low water
Freshwater Flow	[1] cfs at gauging stations on Ipswich and Parker Rivers, trends over time [EPA] Rate of freshwater inflow to the estuary from the watershed
Land Use / Land Cover: Residential Development	[1] (relative area of upland cleared *0.5) + (relative area of impervious surface) [2] % border developed and proximity (km) from sensitive habitats (i.e., marsh) [3] % watershed developed (all human made structures and landscapes) [4] % residential (among others) [5] Lawn/asphalt in shoreland zone
Soil Temperature	Soil temperature in ^{o}C or ^{o}F
Tidal Restrictions	Any restriction to tidal inundation into the marshes (e.g., road crossings or any other barrier to inflow)
Inundation Regime	% time high marsh under water during April-October
Sedimentation	Average concentration of suspended sediment in the water column (mg/l)
Nitrogen	[1] Unit N/unit area/year (g $N/m^2/yr$) [2] Total inorganic Nitrogen inputs from uplands [3] kg/ha/yr to Plum Island Sound measured from permanent Long Term Ecological Research Network (LTER) sampling stations
Above Ground Plant Biomass	[1] Biomass accumulation rate [EPA] Total mass of plant material
Salinity	Soil salinity (ppt)
Below Ground Plant Biomass	% organic matter
Ratio of Native High Marsh to *Phragmites*	% extent (m) of high marsh vegetation to *Phragmites* cover
Marsh Elevation	Height above mean lower low water
Ratio Low Marsh to High Marsh	[1] % extent (m) of low marsh vegetation to high marsh vegetation [2] % cover, species composition/abundance
Saltmarsh Sharp-Tailed Sparrow Nesting Habitat	% extent of habitat as proportion of total marsh extent, or total area (m^2) available as habitat

Table 2-10. Community Interactions group influence judgments; columns A-FF represent individual influences (arrows) in the influence diagram and rows represent individual respondents: dark green = agreement on influence type and degree, light green = agreement on type but not degree, gray = no agreement; within columns, green numbers = same (majority) grouping of type (though degree may be different), pink numbers = disagreement about type, red outline = threshold response

CURRENT	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	BB	CC	DD	EE	FF
Resp. 1	6	2/3	4	2/3	2/3	6	6	6/11	7|3	6^9	2/3	2/3	2/3	9	2/3	7	2	2/3	4/5	7	2	2	0	0	10	6/11	11	2/3	2/3	5	4	4
Resp. 2	2	2	9	8	2	8	9	2	7	4	1	2	6	8^9	8	9	2	1	3	8	2	12	2|12	2	4	8	3	3	8	2/3	12	
Resp. 3	2|5	2	9	8	2	2	4	9	4	2	2	2	2	2	2	4	2	2	4	2^4	2	2	2	4	4	2	2	4	2/3	2|5	12	4/5
Resp. 4	2	2	4	8	2	8	8	1^2	1	7	2	2	2	2^4	2	7	2	2	4	4	8	3	0	0	4	8	8	7	0	7^8	12	
Resp. 5	2/3	2	4/5		2/3		4/5						2/3		2/3	4/5	2/3		4/5	4/5	2/3	2/3					2/3	4/5	2/3	4/5	2/3	
Resp. 6	2	2	4	2	1	1	4	6	1	4^6	2	2/3	2	2/3	2	4	2	1	4	1	2	2	0^4	0	5	8	6	12	2	2|5	12	2
Resp. 7			4/5	8|12	2	2/3	2/3	4/5	4/5	2/3	2/3	2/3	2/3	2/3	2/3	7	2/3	2/3	2/3	4/5	2/3	2/3	1			2/3	7|11	4/5	2/3	7	5	4/5
CLIMATE A	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**	**L**	**M**	**N**	**O**	**P**	**Q**	**R**	**S**	**T**	**U**	**V**	**W**	**X**	**Y**	**Z**	**AA**	**BB**	**CC**	**DD**	**EE**	**FF**
Resp. 1	6	2/3	4	2/3	2/3	6	6	6/11	3|7	6^9	2/3	2/3	2/3	9	2/3	7	2	2/3	4/5	7	2	2	0	0	10	6/11	11	2/3	2/3	5	4	4
Resp. 2	2^6	6	9	8	2	8	9	2		4	2	2	6	8^9	2	4	2		4	8	2	2|12	2	2/3	4	8	2/3	3	8	2/3	12	5
Resp. 3		2	9	8	2	6	7	9	4	2	2	2	6	2	2	4	8	2	4	2^4	2	8	2			2			8			
Resp. 4	9	2^6	4	0^8	2	8	8	1	2	2^7	2	2	2	2^4	2	7	2	8	4^9	9	8	3	0	13	4	0^8	8	7	8	7^8	12	3
Resp. 5	2/3	2	4/5		2/3		4/5						2/3		2/3	4/5	2/3		4/5	4/5	2/3	2/3					2/3	2/3	2/3	4/5	2/3	
Resp. 6	2	2	4	2	4	1	4	2	1	2^4	2^4	2	2	2^4	2	4	2	2	4	1	2	2	0	0	5	8	6	4	2	2|5	4	2^4
Resp. 7		7|11	4/5	8|12	2	2/3	2/3	4/5	4/5	2/3	2/3	2/3	2/3	2/3	2/3	7	2/3	2/3	2/3	4/5	2/3	2/3	1			2/3	7|11	4/5	2/3	7	4	4/5
CLIMATE B	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**	**L**	**M**	**N**	**O**	**P**	**Q**	**R**	**S**	**T**	**U**	**V**	**W**	**X**	**Y**	**Z**	**AA**	**BB**	**CC**	**DD**	**EE**	**FF**
Resp. 1	6	2/3	4	2/3	2/3	6	6	7	7	6^9	2/3	2/3	2/3	9	2/3	7	2	2/3	4/5	7	2	6	0	0	10	6/11	11	2/3	2/3	5	4	4
Resp. 2	8	8	9	8	2	8	9	3		4		2	6	8^9	2	4	2		4	8	1	1	1		4	8	2/3	3	8	2/3	12	5
Resp. 3		2	9	8	2	6	7	9	4	7	9		6	2	6	4	8	7	7	2^4	1	8	2			8			8			
Resp. 4	9	2^6	4	8	2^6	8	2	1	1	7	9	2^8	2	2^4	2^9	7	2	2	4^9	9	2^8	3^11	0	13	4	1	8	1	8	8	12	3
Resp. 5	2/3	2	4/5		2/3		4/5						2/3		2/3	4/5	2/3		4/5	4/5	2/3	2/3					2/3	2/3	2/3	4/5	2/3	
Resp. 6	8	2	4	2	4	1	4	3	1	4	2^4	2^8	2	2^4	2	4	2|5	2	4	1	2	2	0	0	5	4	2	4	2	2	4	2^4
Resp. 7		7|11	4/5	8|12	2	2/3	2/3	4/5	4/5	4	2/3	2/3	2/3	2/3	2/3	7	2/3	2/3	2/3	4/5	2/3	2/3	1			2/3	11	4/5	2/3	7	4	4/5

Table 2-11. Community Interactions group confidence for influences with agreement: NA = No agreement; HH = High evidence, High agreement; HL = High evidence, Low agreement; LH = Low evidence, High agreement; LL = Low evidence, Low agreement

	A	B	C	D	E	F	G	I	J	K	L	M	O	P	Q	R	S	T	U	V	Y	Z	AA	BB	CC	DD	EE
CURRENT	NA	HH	HH	NA	HH	NA	NA	NA	NA	HH	HH	HH	HH	HH	HH	NA	NA	NA	HH	HH	HH	NA	LH	LH	HH	HH	HH
SCENARIO A	NA	NA	HH	NA	HH	NA	NA	NA	NA	NA	HH	HH	NA	NA	HH	NA	NA	NA	HH	NA	NA	NA	LH	NA	NA	NA	NA
SCENARIO B	NA	NA	HH	NA	HH	NA	NA	NA	NA	NA	NA	HH	LH	NA	NA	NA	NA	NA	NA	NA	NA	NA	LH	NA	NA	NA	NA

Table 2-12. Adaptation strategies and associated top pathways for management (see section 3.2 for pathways). SG=Sediment Retention Green pathway; SB=Sediment Retention Blue pathway; SP=Sediment Retention Purple pathway; CG=Community Interactions Green pathway; CB=Community Interactions Blue pathway; CP=Community Interactions Purple pathway.

Adaptation Strategies	Pathways
Conduct “multi-habitat restoration” (i.e., restore the “habitat mosaic”) with a priority on habitats with the highest values	CG
Recognize and take advantage of the ability of marshes to “restore” themselves under the right conditions	SG, CG, CB, CP
Monitor the composition of the inorganic sediments in the marsh, as well as the structure of the peat	SB, SP
Measure local maximum growth rates to determine the degree of sea level rise that vegetation can withstand, and manage around that threshold/target level	CG, CB, SB
Monitor the line between high and low marsh areas to determine how the marshes are holding up against sea level rise	SG, CG, CP
Identify, acquire and/or protect potential areas where marsh can grow and expand, and remove barriers to marsh migration	SG, CG, CB
Upgrade sewage treatment plants (e.g., tertiary treatment) and combined sewer overflow systems to reduce the flow of excess nutrients into the marsh	SB, CG
Improve stormwater management to reduce non-point source nutrient inputs into the marsh	SB, CG
Promote more absorbent land cover and “rain catchers” to prevent additional runoff	SB, CG
Control the hydrodynamic regime (including through channel creation/ditch modification) to favor certain vegetation types	CG, CP
Restore tidal connections (e.g., remove tidal restrictions) in the near term, with awareness that negative effects could arise under climate change	SG, CB
Control invasive species (e.g., *Phragmites*)	CG
Conduct activities to control erosion, (e.g., create “no wake zones” to reduce marsh edge erosion from boat wakes)	SP
Plant oysters for habitat, filtering of pollutants and erosion control.	SP, CG
Work with programs responsible for protecting coastal infrastructure to ensure that marsh protection is included in management plans (i.e., take advantage of capacity of marshes to buffer infrastructure against coastal storms and sea level rise)	SP, CG
Conduct education and outreach to promote good practices for marsh management	SB, SP, CG
Avoid potential maladaptations (e.g., placement of dikes that result in an unintentional magnification of erosion effects on adjacent salt marshes)	SP
Where change is unavoidable, manage and sustain new habitats that are created when others are wiped out (e.g., when mudflats replace low marsh areas)	SG, SP, CG

Table 3-1. Sediment Retention group crosswalk for comparison of influence type and degree, sensitivity and relative impact for current conditions and climate scenarios. NA = No agreement; Prop = Proportional; Disprop = Disproportional; L = Low sensitivity; I = Intermediate sensitivity; H = High sensitivity; H-trend = No agreement but trending toward high sensitivity; ↑ = Increasing relative impact from current; () = Number of respondents; Ranking column orders the influences according to completeness of information

				CURRENT			CLIMATE A			CLIMATE B			
Influence	**Variable X**	**on**	**Variable Y**	**Influence**	**Sensitivity**	**Relative Impact**	**Influence**	**Sensitivity**	**Relative Impact**	**Influence**	**Sensitivity**	**Relative Impact**	**Ranking**
L	Storms	on	Marsh Edge Erosion	Direct prop (4)	I (4)	Secondary	Direct prop (4)	I (4)	Secondary	Direct prop (5)	I (4)	Secondary	1
J	Marsh High Water Level	on	Coastal and Nearshore Erosion	Direct disprop strong (4)	I(4)/H(4)	Primary	Direct disprop strong (4)	H (4)	Primary	Direct disprop strong (5)	H (4)	Primary	1
O	Freshwater Flow	on	Nutrient Inputs	Direct prop (5)	I (5)	Secondary	Direct prop (4)	I (4)	Secondary	Direct prop (4)	I (4)	Secondary	1
W	Sediment Supply	on	Sediment Deposition / Retention	Direct prop (6)	I (5)	Primary	Direct prop (7)	I (6)	Primary	Direct prop (6)	I (6)	Primary	1
Y	Sediment Deposition / Retention	on	Inundation Regime	Inverse prop (5)	I (5)	Secondary	Inverse prop (4)	I (4)	Secondary	Inverse prop (4)	I (4)	Secondary	1
DD	Sediment Deposition / Retention	on	Net Accretion	Direct prop (6)	I (7)	Primary	Direct prop (6)	I (7)	Primary	Direct prop (7)	I (7)	Primary	1
FF	Below Ground Biomass	on	Net Accretion	Direct prop (7)	I (7)	Primary	Direct prop (5)	I (5)	Primary	Direct prop (5)	I (5)	Primary	1
B	Marsh High Water Level	on	Inundation Regime	Direct prop (6)	I (5)	Primary	Direct prop (5)	I (5)	↑	Direct prop (6)	I (5)	↑	1
C	Storms	on	Inundation Regime	Direct prop (5)	I (5)	Primary	Direct prop (6)	I (6)	Primary	Direct prop (5)	NA	Primary	2
R	Tidal Exchange	on	Inundation Regime	Direct prop (6)	I (6)	Primary	Direct prop (5)	I (5)	Primary	Direct (6)	I (4)	Primary	2
AA	Marsh Edge Erosion	on	Sediment Deposition / Retention	NA	I (5)	Secondary	Inverse prop (4)	I (5)	Secondary [threshold]	Inverse prop (4)	I (5)	Secondary [threshold]	2
E	Nutrient Inputs	on	Below Ground Biomass	Direct (4)	I (4)	Primary	Inverse (5)	I (4)	Primary [threshold]	Inverse (5)	I (4)	↑ [threshold]	3

				CURRENT			CLIMATE A			CLIMATE B			
Influence	**Variable X**	**on**	**Variable Y**	**Influence**	**Sensitivity**	**Relative Impact**	**Influence**	**Sensitivity**	**Relative Impact**	**Influence**	**Sensitivity**	**Relative Impact**	**Ranking**
I	Storms	on	Freshwater Flow	Direct prop (6)	I (5)	Secondary	Direct prop (5)	I (4)	Secondary	Direct (7)	NA	Secondary	3
K	Storms	on	Coastal and Nearshore Erosion	Direct prop (5)	I (5)	Primary	Direct prop (4)	I (4)	Primary	Direct (7)	NA	Primary	3
Q	Coastal and Nearshore Erosion	on	Sediment Supply	Direct prop (6)	I (4)	Primary	Direct prop (5)	I (4)	Primary	Direct (6)	NA	Primary	3
V	Surface Roughness	on	Sediment Deposition / Retention	Direct prop (5)	I (5)	Primary	Direct (6)	I (4)	Primary	Direct (5)	I (4)	↑	3
EE	Net Accretion	on	Sediment Deposition / Retention	Inverse prop (5)	I (6)		Inverse prop (4)	I (7)		Direct prop (4)	I (7)	[threshold]	3
A	Land Cover: % Impervious Cover	on	Nutrient Inputs	Direct prop (5)	I (4)		Direct prop (5)	I (5)		Direct prop (5)	I (4)		4
F	Altered Flows: Tidal Restrictions	on	Tidal Exchange	Inverse (4)	I (5)	Primary	Inverse (4)	I (5)	Primary	Inverse (4)	I (5)	Primary	4
H	Land Cover: % Impervious Cover	on	Freshwater Flow	Direct prop (4)	I (5)	Secondary	Direct (7)	NA	Secondary	Direct (7)	NA	Secondary	5
P	Freshwater Flow	on	Sediment Supply	Direct prop (6)	I (5)	Secondary	Direct (7)	NA	Secondary	Direct (7)	NA	Secondary	5
CC	Below Ground Biomass	on	Sediment Deposition / Retention	Direct prop (4)	I (5)	Secondary	Direct (4)	NA	↑ Primary	Direct (5)	NA	↓ Secondary	5
M	Coastal and Nearshore Erosion	on	Tidal Exchange	Direct (6)	L (4)	Very little impact	Direct (4)	NA	Very little impact	Direct (5)	NA	Very little impact	6
Z	Inundation Regime	on	Sediment Deposition / Retention	NA	I (6)	Primary [threshold]	NA	I (7)	Primary [threshold]	NA	I (7)	Primary [threshold]	6
D	Nutrient Inputs	on	Net Accretion	Inverse (5)	NA	Secondary	Inverse (4)	NA	Secondary	Inverse (4)	NA	Secondary	7

This document is a draft for review purposes only and does not constitute Agency policy.

				CURRENT			CLIMATE A			CLIMATE B			
Influence	**Variable X**	**on**	**Variable Y**	**Influence**	**Sensitivity**	**Relative Impact**	**Influence**	**Sensitivity**	**Relative Impact**	**Influence**	**Sensitivity**	**Relative Impact**	**Ranking**
BB	Inundation Regime	on	Below Ground Biomass	NA	I (4)	[threshold]	NA	I (4)	[threshold]	NA	I (4)	[threshold]	8
G	Altered Flows: Tidal Restrictions	on	Freshwater Flow	No Influence (4)	No Influence (4)		No Influence (4)	No Influence (4)		No Influence (4)	No Influence (4)		9
S	Inundation Regime	on	Surface Roughness	NA	NA	Primary	NA	NA	Primary	NA	NA	Primary	9
T	Freshwater Flow	on	Inundation Regime	Direct (5)	NA		Direct (5)	NA		Direct (5)	NA		9
U	Freshwater Flow	on	Surface Roughness	NA	NA	Secondary	NA	NA	Secondary	NA	NA	Secondary	9
N	Tidal Exchange	on	Nutrient Inputs	Inverse (4)	NA		NA	NA		NA	NA		10
X	Inundation Regime	on	Sediment Supply	Direct (4)	NA	Uncertain impact	NA	NA	Uncertain impact	NA	NA	Uncertain impact	10

Table 3-2. Community Interactions group crosswalk for comparison of influence type and degree, sensitivity and relative impact for current conditions and climate scenarios. NA = No agreement; Prop = Proportional; Disprop = Disproportional; L = Low sensitivity; I = Intermediate sensitivity; H = High sensitivity; H-trend = No agreement but trending toward high sensitivity; ↑ = Increasing relative impact from current; () = Number of respondents; Ranking column orders the influences according to completeness of information

				CURRENT			CLIMATE A			CLIMATE B			
Influence	**Variable X**	**on**	**Variable Y**	**Influence**	**Sensitivity**	**Relative Impact**	**Influence**	**Sensitivity**	**Relative Impact**	**Influence**	**Sensitivity**	**Relative Impact**	**Ranking**
B	Sea Level	on	Inundation Regime	Direct prop (6)	I (6)	Primary	Direct prop (5)	I (4)		Direct prop (5)	I (4)		1
C	Freshwater Flow	on	Salinity	Inverse prop (5)	I (5)	Primary	Inverse prop (5)	I (5)		Inverse prop (5)	I (5)		1
E	Land Use / Land Cover: Residential Development	on	Freshwater Flow	Direct prop (6)	I (6)	Primary	Direct prop (6)	I (7)		Direct prop (6)	I (6)		1
M	Nitrogen	on	Above Ground Plant Biomass	Direct prop (6)	I (6)	Primary	Direct prop (5)	I (5)		Direct prop (5)	I (5)		1
O	Inundation Regime	on	Ratio Low Marsh to High Marsh	Direct prop (6)	I (6)	Interactive with R	Direct prop (7)	I (7)	↑	Direct prop (5)	I (5)	↑	1
R	Nitrogen	on	Ratio Low Marsh to High Marsh	Direct prop (4)	I (4)	Interactive with O	Direct prop (4)	I (4)		Direct prop (4)	I (4)		1
S	Nitrogen	on	Ratio of Native High Marsh to Phragmites	Inverse prop (5)	I (7)	Interactive with V	Inverse prop (6)	I (6)		Inverse prop (5)	I (5)		1
D	Freshwater Flow	on	Inundation Regime	Direct disprop weak (4)	L (4)		Direct disprop weak (4)	L (4)		Direct disprop weak (4)	L (4)		2
L	Inundation Regime	on	Sedimentation	Direct prop (6)	I (6)		Direct prop (6)	I (6)	↑	Direct prop (5)	NA	↑	2
P	Inundation Regime	on	Saltmarsh Sharp-Tailed Sparrow Nesting Habitat	Inverse (7)	NA	Primary	Inverse prop (4)	I (4)		Inverse prop (4)	I (4)		2

				CURRENT			CLIMATE A			CLIMATE B			
Influence	**Variable X**	**on**	**Variable Y**	**Influence**	**Sensitivity**	**Relative Impact**	**Influence**	**Sensitivity**	**Relative Impact**	**Influence**	**Sensitivity**	**Relative Impact**	**Ranking**
Q	Sedimentation	on	Marsh Elevation	Direct prop (7)	I (7)		Direct prop (6)	I (6)		Direct prop (6)	I (6)		2
U	Above Ground Plant Biomass	on	Sedimentation	Direct prop (6)	I (6)		Direct prop (6)	I (6)		Direct prop (5)	I (4)		2
V	Salinity	on	Ratio of Native High Marsh to Phragmites	Direct prop (6)	I (6)	Interactive with S	Direct prop (6)	I (5)	↑	Direct (6)	NA	↑	2
CC	Below Ground Plant Biomass	on	Marsh Elevation	Direct prop (5)	I (5)		Direct prop (4)	I (4)		Direct prop (4)	I (4)		2
EE	Ratio of Native High Marsh to Phragmites	on	Marsh Elevation	Inverse disprop weak (4)	L (4)		Inverse (5)	I (4)	[threshold]	Inverse (5)	I (4)	[threshold]	3
A	OMWM	on	Inundation Regime	Direct prop (5)	I (5)	Primary	Direct (4)	NA		Direct (4)	NA		4
DD	Tidal Restrictions	on	Inundation Regime	Inverse prop (4)	I (5)	Primary	NA	I (4)		NA	I (4)		4
K	Inundation Regime	on	Nitrogen	Direct prop (5)	I (5)		Direct prop (5)	I (6)		NA	NA		5
G	Land Use / Land Cover: Residential Development	on	Ratio of Native High Marsh to Phragmites	Inverse (4)	I (4)		Inverse (4)	NA		Inverse (4)	I (4)		6
N	Inundation Regime	on	Salinity	NA	I (4)	Primary	NA	I (4)		NA	I (4)		6
Y	Marsh Elevation	on	Ratio Low Marsh to High Marsh	Inverse prop (4)	I (4)		Inverse (4)	NA		Inverse (4)	NA		6
AA	Marsh Elevation	on	Saltmarsh Sharp-Tailed Sparrow Nesting Habitat	Direct (7)	NA	Primary	Direct (6)	NA		Direct (6)	NA		6
BB	Ratio Low Marsh to High Marsh	on	Saltmarsh Sharp-Tailed Sparrow Nesting Habitat	Inverse (5)	I (5)	Some	NA	I (5)		NA	I (5)		6

				CURRENT			CLIMATE A			CLIMATE B			
Influence	**Variable X**	**on**	**Variable Y**	**Influence**	**Sensitivity**	**Relative Impact**	**Influence**	**Sensitivity**	**Relative Impact**	**Influence**	**Sensitivity**	**Relative Impact**	**Ranking**
J	Inundation Regime	on	Above Ground Plant Biomass	NA	NA		NA	I (4)	↑ Interactive with H	Inverse (5)	NA	↑ Interactive with H [threshold]	7
T	Nitrogen	on	Below Ground Plant Biomass	Inverse (4)	I (4)		Inverse (4)	NA		Inverse (4)	NA		7
F	Land Use / Land Cover: Residential Development	on	Ratio Low Marsh to High Marsh	Direct (5)	NA		Direct (5)	NA		Direct (5)	NA		8
Z	Ratio Low Marsh to High Marsh	on	Above Ground Plant Biomass	Direct (6)	NA		Direct (6)	NA		Direct (4)	NA		8
FF	Ratio of Native High Marsh to Phragmites	on	Above Ground Plant Biomass	NA	I (4)		NA	I (5)		NA	I (5)		8
X	Ratio of Native High Marsh to Phragmites	on	Ratio Low Marsh to High Marsh	NA	NA	Some	NA	NA		NA	NA		9
H	Soil Temperature	on	Above Ground Plant Biomass	NA	NA		NA	NA	↑ Interactive with J	NA	NA	↑ Interactive with J	10
I	Soil Temperature	on	Below Ground Plant Biomass	Inverse (4)	NA		NA	NA		NA	NA		10
W	Salinity	on	Ratio Low Marsh to High Marsh	NA	NA		NA	NA		NA	NA		11

Table B-1. Sediment Retention breakout group participants, affiliations, and qualifications

Name	Affiliation	Qualifications
Susan Adamowicz	Rachel Carson National Wildlife Refuge	U.S. Fish and Wildlife Service Land Management Research Demonstration Biologist. Expertise in salt marsh ecology, habitat management, restoration, and tipping points.
Britt Argow	Wellesley College	Research on salt marsh and estuarine sedimentology, geomorphology, and hydrology. Expertise in geosciences and coastal sedimentology.
Chris Hein	Boston University	Research on inorganic sediment processes in coastal systems. Expertise in coastal sedimentology.
David Ralston	Woods Hole Oceanographic Institution	Research on fluid mechanics and scalar transport in estuaries and the coastal systems. Expertise in estuarine physics and sediment transport.
John Ramsey	Applied Coastal Research and Engineering Inc.	Serves on Climate Change Adaptation Advisory Committee for Massachusetts, and has provided consulting on coastal engineering projects. Expertise in coastal processes and engineering.
Peter Rosen	Northeastern University	Research on coastal processes, geomorphology and sedimentology. Developing a model for the evolution of Boston Harbor Island shorelines in response to rising sea levels. Expertise in coastal geology.
John Teal	Woods Hole Oceanographic Institution	Research and consulting on coastal wetlands, salt marsh restoration, submerged aquatic vegetation, and nutrients. Currently involved with marsh restoration in fresh, brackish and salt wetlands. Expertise in wetlands ecology.

Table B-2. Community Interactions breakout group participants, affiliations, and qualifications

Name	Affiliation	Areas of Expertise
Walter Berry	U.S. EPA Atlantic Ecology Division	Research on human disturbance impacts on avian species. Expertise in salt marsh ecology.
Robert Buchsbaum	Massachusetts Audubon Society	Directs Massachusetts Audubon's Ecological Inventory and Monitoring Project. Research on coastal plant and animal species, nutrients, and climate change. Expertise in salt marsh ecology.
Dave Burdick	University of New Hampshire	Research on salt marsh restoration, invasive species, and tidal restoration. Recent research on *Spartina patens* and *Phragmites australis*. Expertise in restoration ecology.
Michele Dionne	Wells National Estuarine Research Reserve	Research on aquatic habitats, marsh-estuarine food web ecology, and wetland restoration. Established monitoring protocols for restoration projects in the New England region. Expertise in aquatic, coastal, and salt marsh ecology.
David Johnson	Woods Hole Marine Biological Laboratory	Research on aquatic species, nutrients, and salt marsh habitat. Recent study on salt marsh infauna and nutrient enrichment in Plum Island. Expertise in salt marsh and invertebrate ecology.
Gregg Moore	University of New Hampshire	Research on aquatic species, restoration ecology, invasive species, and plant zonation. Recent project comparing natural versus tidally restricted salt marshes in Cape Cod. Expertise in coastal wetland ecology.
Cathy Wigand	U.S. EPA Atlantic Ecology Division	Research on plant species, nutrients, and human disturbance impacts on salt marshes in New England. Expertise in wetland ecology.

Table B-3. Example of expert elicitation handout for influences under current conditions (Sediment Retention group)

Instructions: Please assess the effect of X on Y by selecting the appropriate "degree of influence" and its associated "confidence".

	Current Conditions					
	Variable X		**Variable Y**	**Degree of influence (Please select 0-13)**	**Confidence (LH, LL, HH, HL)**	**Notes**
Relationship A	Land Cover: % Impervious Cover	on	Nutrient Inputs			
Relationship B	Marsh High Water Level	on	Inundation Regime			
Relationship C	Storms	on	Inundation Regime			
Relationship D	Nutrient Inputs	on	Net Accretion			
Relationship E	Nutrient Inputs	on	Below Ground Biomass			
Relationship F	Altered Flows: Tidal Restrictions	on	Tidal Exchange			
Relationship G	Altered Flows: Tidal Restrictions	on	Freshwater Flow			

Table B-4. Example of expert elicitation handout for influences under climate scenarios (Community Interactions group)

Instructions: Please assess the effect of X on Y by selecting the appropriate "degree of influence" and its associated "confidence".

				Climate Scenario A		Climate Scenario B		
	Variable X		**Variable Y**	**Degree of influence (Please select 0-13)**	**Confidence (LH, LL, HH, HL)**	**Degree of influence (Please select 0-13)**	**Confidence (LH, LL, HH, HL)**	**Notes**
Relationship A	OMWM	on	Inundation Regime					
Relationship B	Sea Level	on	Inundation Regime					
Relationship C	Freshwater Flow	on	Salinity					
Relationship D	Freshwater Flow	on	Inundation Regime					
Relationship E	Land Use / Land Cover: Residential Development	on	Freshwater Flow					
Relationship F	Land Use / Land Cover: Residential Development	on	Ratio Low Marsh to High Marsh					
Relationship G	Land Use / Land Cover: Residential Development	on	Ratio of Native High Marsh to Phragmites					

Table B-5. Example of expert elicitation handout for interactive influences under climate scenarios (Sediment Retention group)

Instructions: Please assess the effect of X on Y with Z by selecting the appropriate "interactive influence" and its associated "confidence".

						Climate Scenario A		Climate Scenario B		
	Variable X	on	Variable Y	with	Variable Z	Interactive Influence	Confidence (LH, LL, HH, HL)	Interactive Influence	Confidence (LH, LL, HH, HL)	Notes
Example 1: Relationship B+C	*Marsh High Water Level*	*on*	*Inundation Regime*	*with*	*Storms*					
Example 2: Relationship G+H	*Altered Flows: Tidal Restrictions*	*on*	*Freshwater Flow*	*with*	*Land Cover: % Impervious Cover*					

Salt Marsh
Sediment Retention

Community Interactions:
Saltmarsh Sharp-Tailed Sparrow Nesting Habitat

The balance between the processes of removal and deposition of sediment

Relationship between native *Spartina* species compared to invasive *Phragmites* for Saltmarsh Sharp-tailed Sparrow nesting habitat

Figure ES-1. Selected ecosystem processes for the pilot vulnerability assessment.

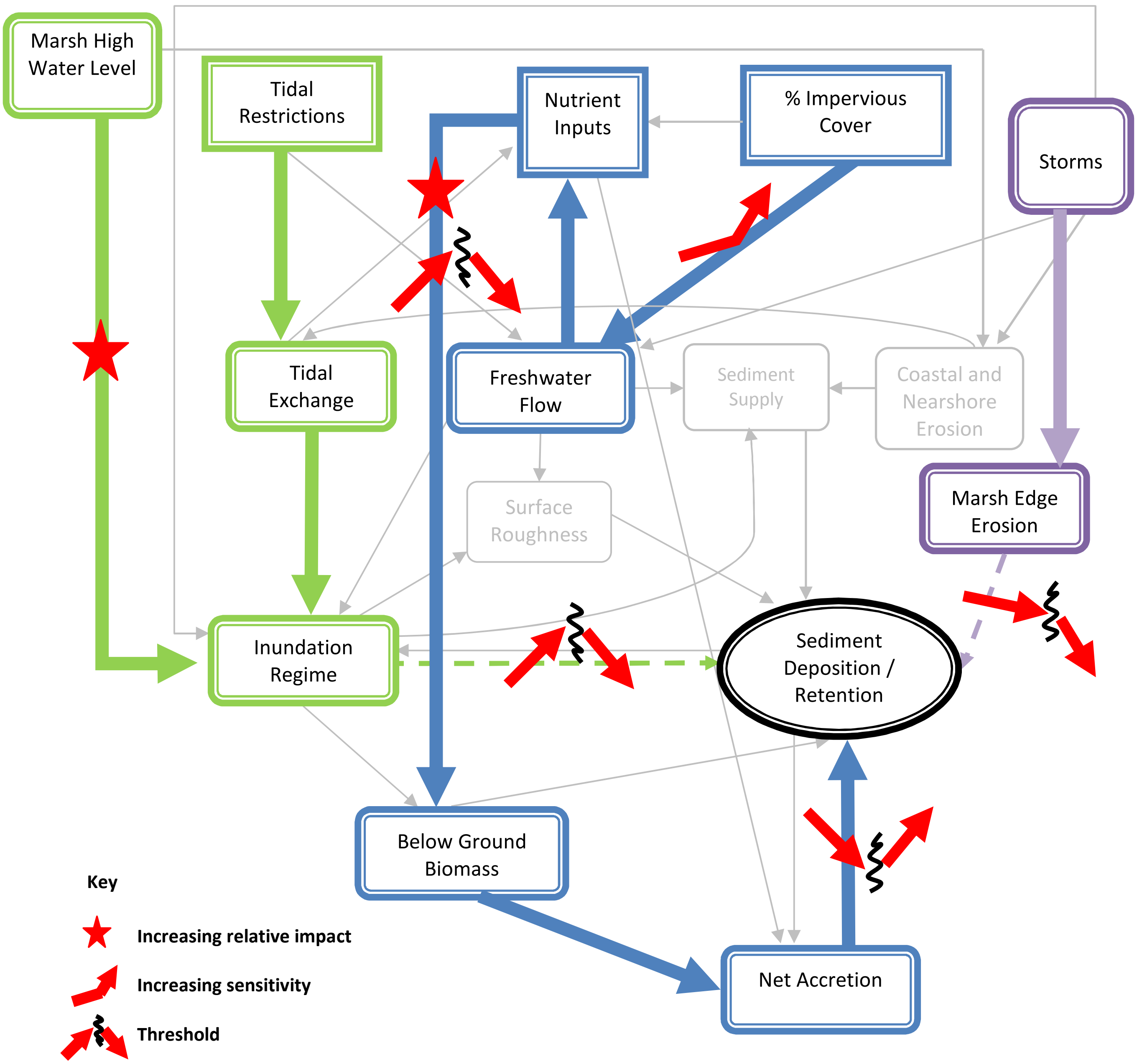


Figure ES-2. Top pathways for management of the Sediment Deposition/ Retention endpoint. Colors are used to distinguish different pathways. Red symbols highlight potential changes under future climate conditions.

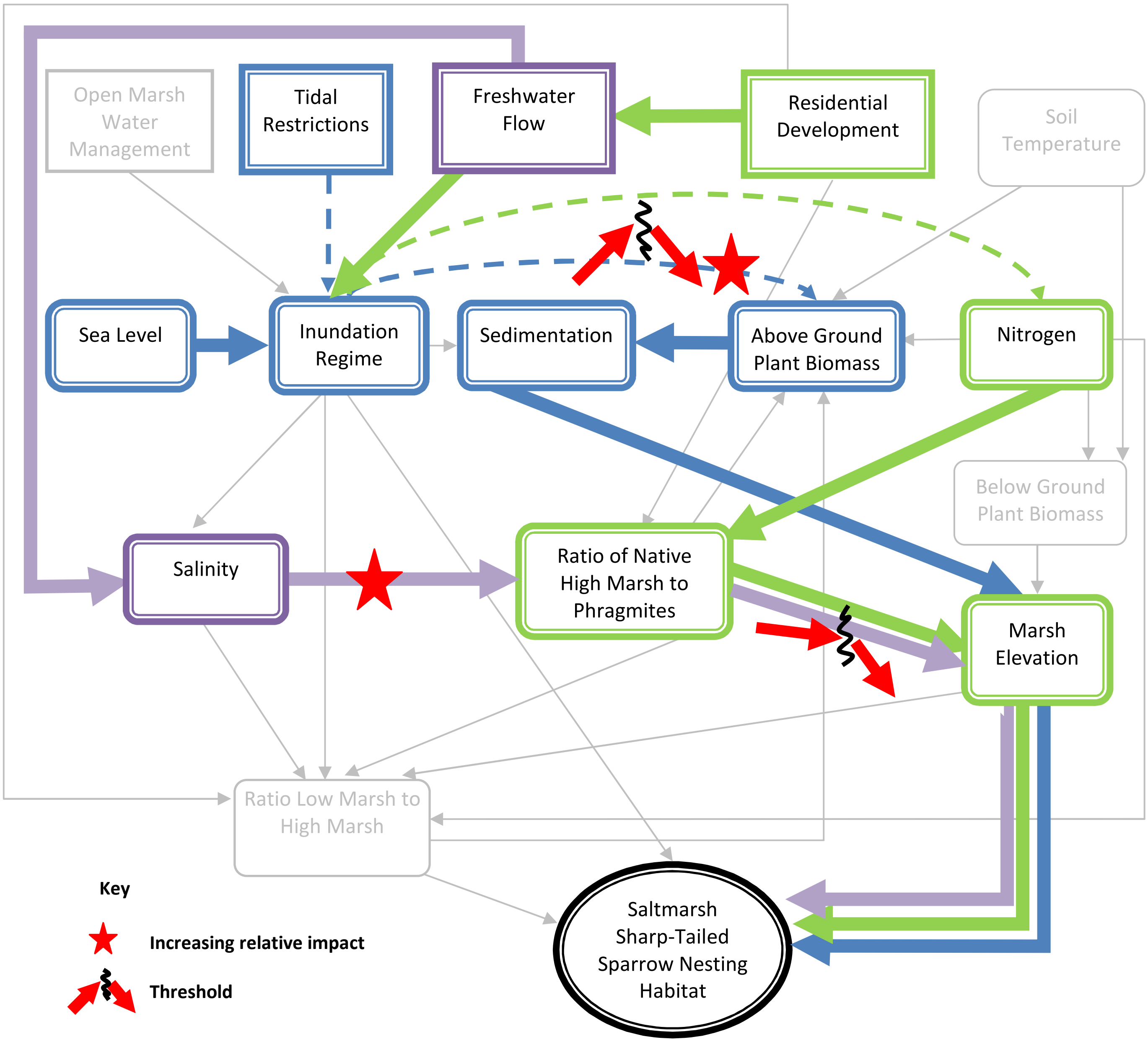
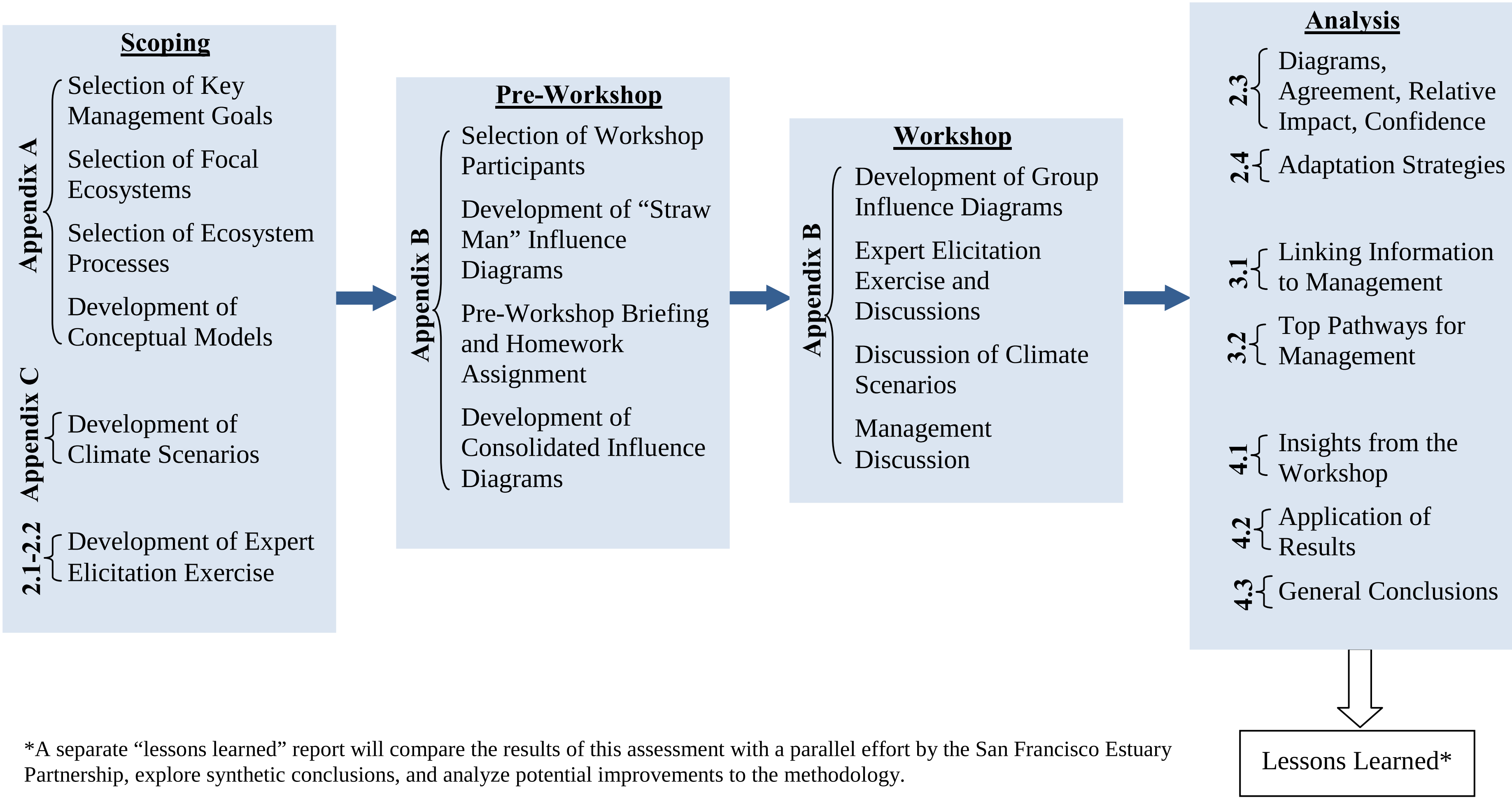


Figure ES-3. Top pathways for management of the Saltmarsh Sharp-Tailed Sparrow Nesting Habitat endpoint. Colors are used to distinguish different pathways. Red symbols highlight potential changes under future climate conditions.



*A separate “lessons learned” report will compare the results of this assessment with a parallel effort by the San Francisco Estuary Partnership, explore synthetic conclusions, and analyze potential improvements to the methodology.

Figure 1-1. Vulnerability assessment process.

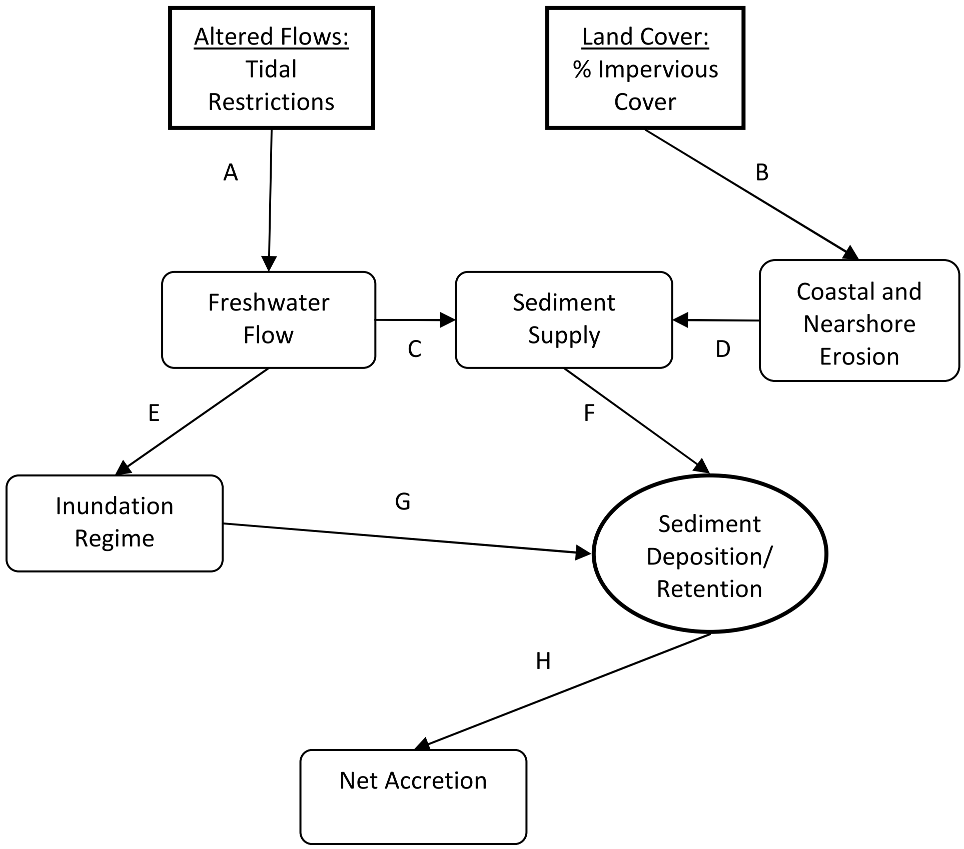


Figure 2-1. Simplified influence diagram for sediment retention.

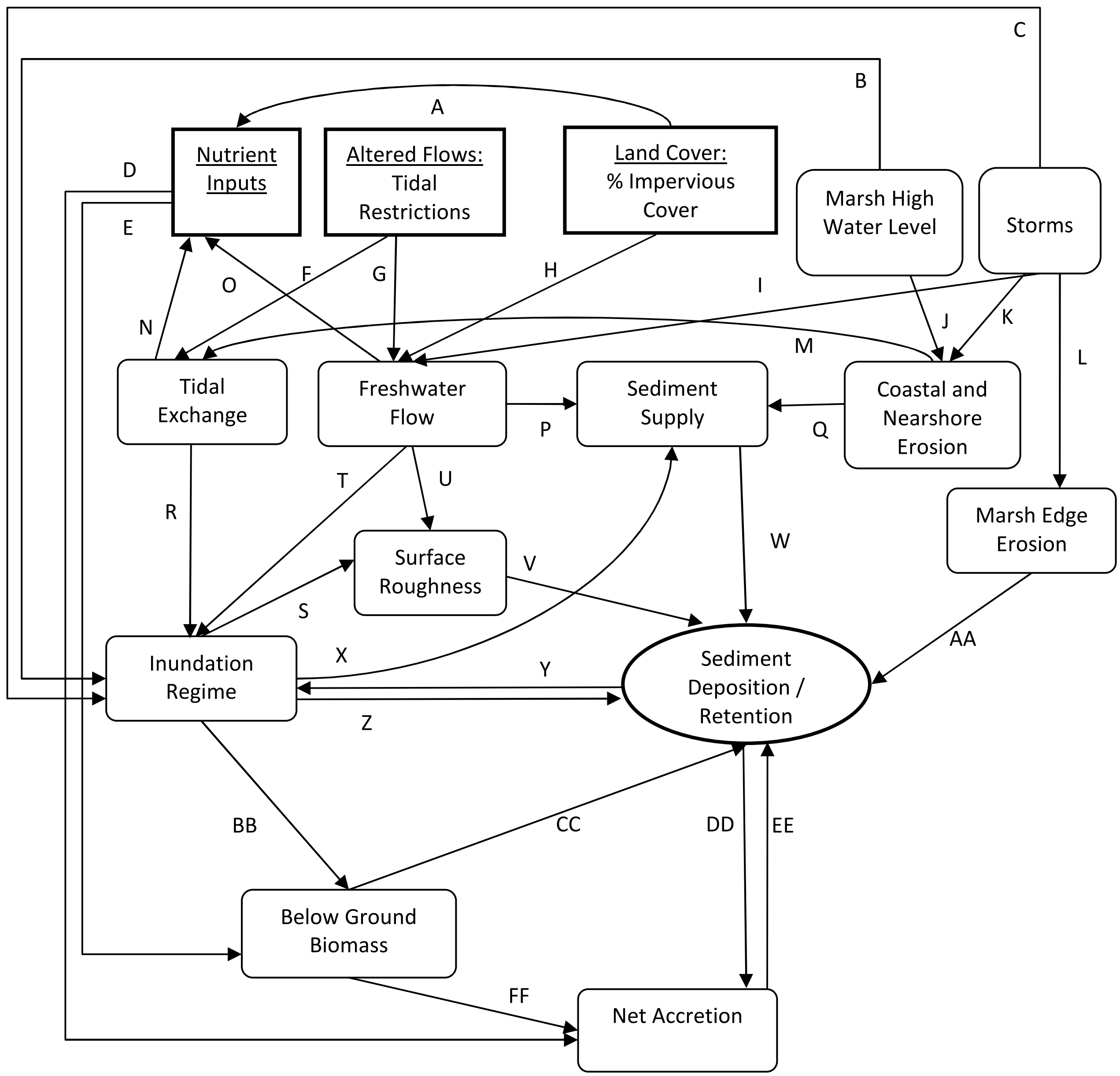


Figure 2-2. Sediment Retention group influence diagram.

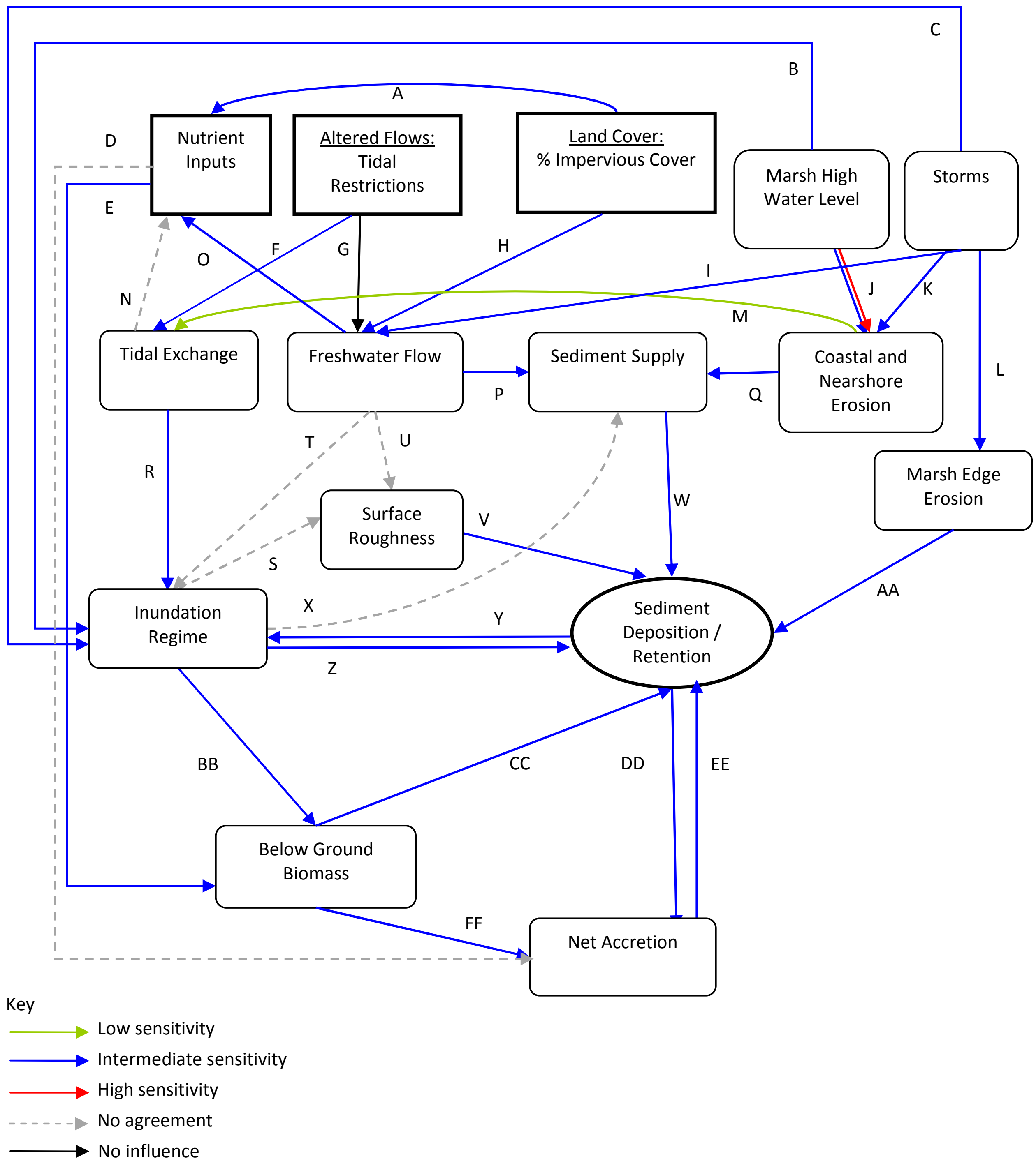


Figure 2-3. Sediment Retention group summary influence diagram of sensitivities under current conditions.

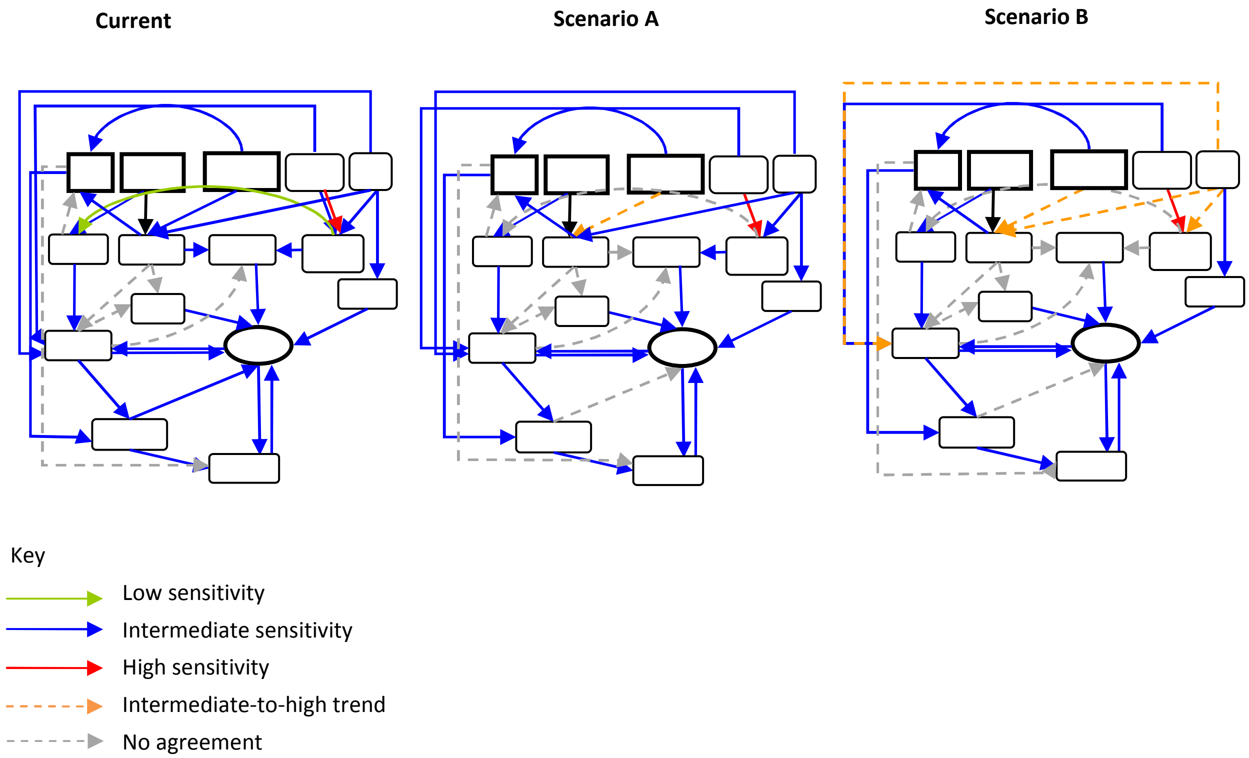


Figure 2-4. Sediment Retention group summary influence diagrams of sensitivities: variance across current conditions and two climate scenarios.

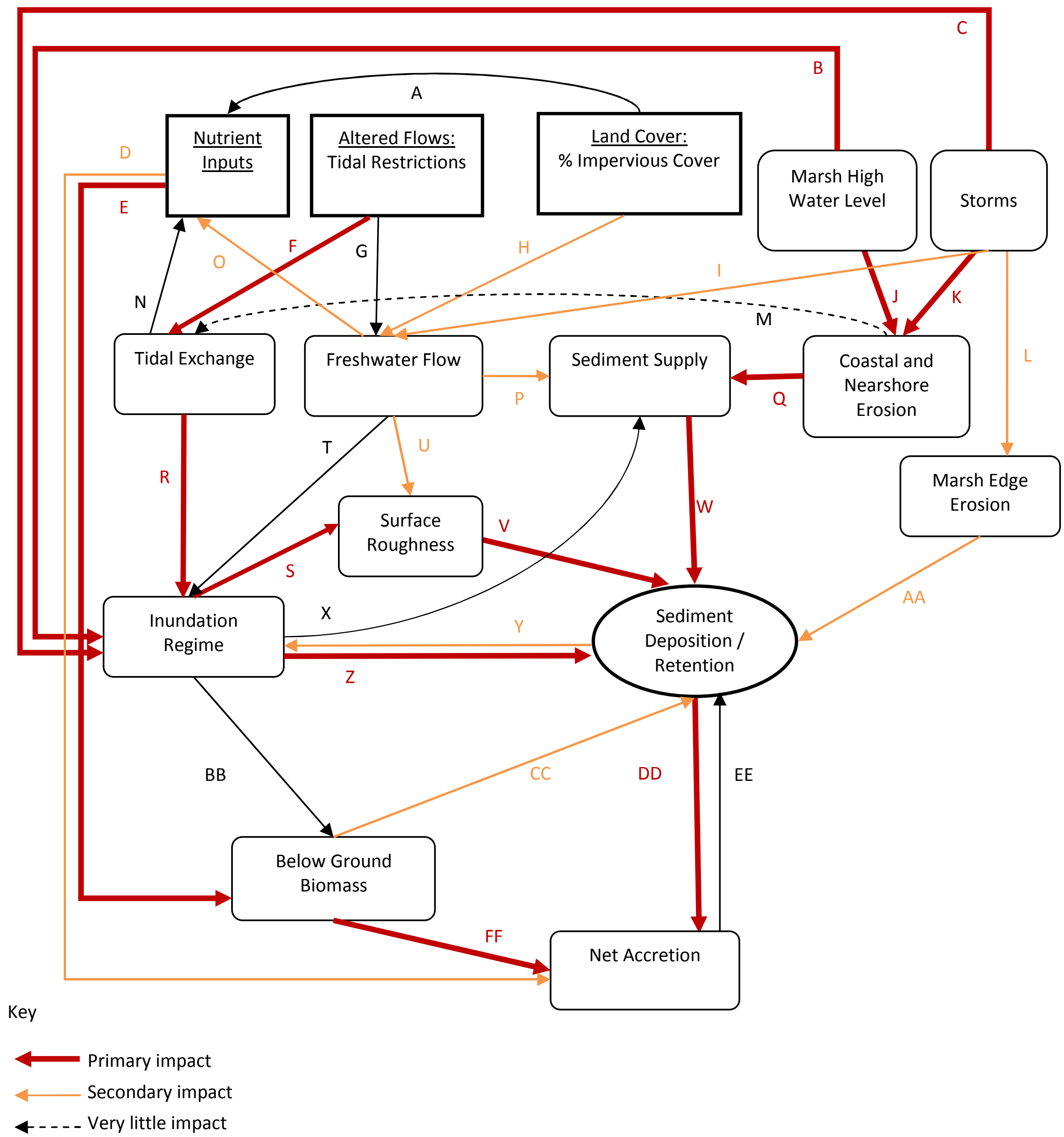


Figure 2-5. Sediment Retention influences indicated as having high *relative impact* under current conditions.

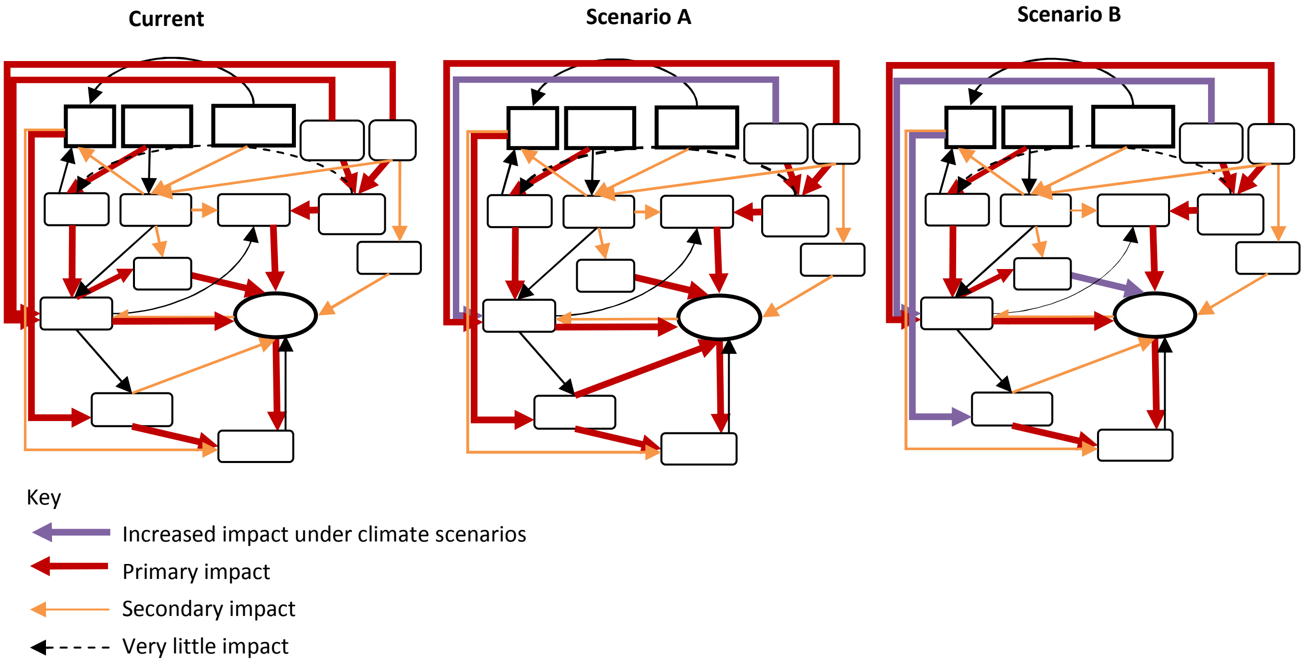


Figure 2-6. Sediment Retention influences indicated as having high *relative impact*: variance across current conditions and two climate scenarios.

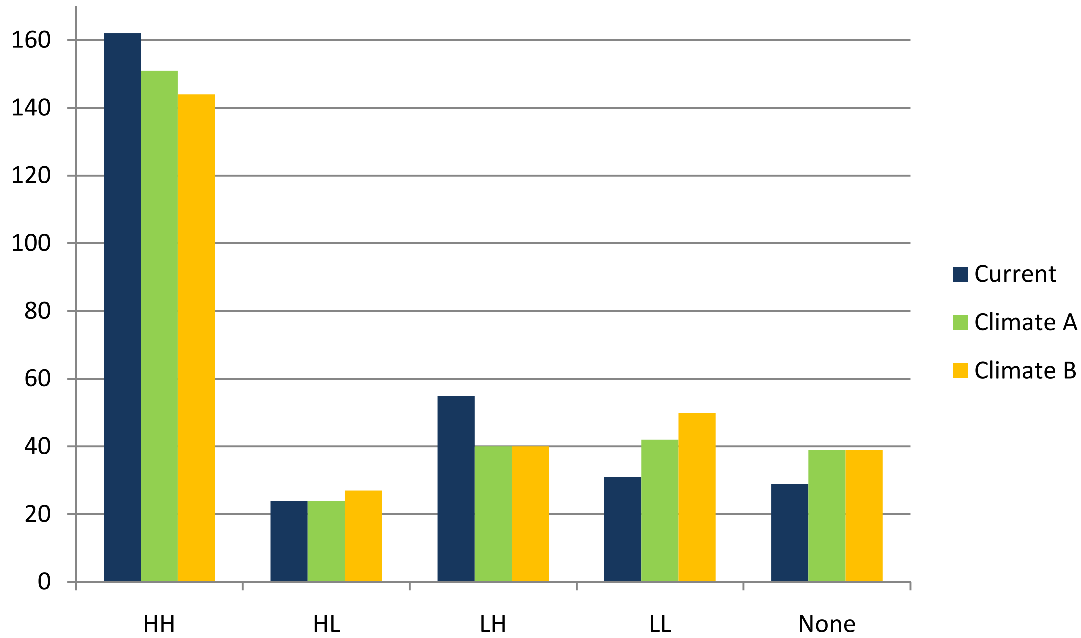


Figure 2-7. Sediment Retention group confidence results for all influences; HH = High evidence, High agreement; HL = High evidence, Low agreement; LH = Low evidence, High agreement; LL = Low evidence, Low agreement.

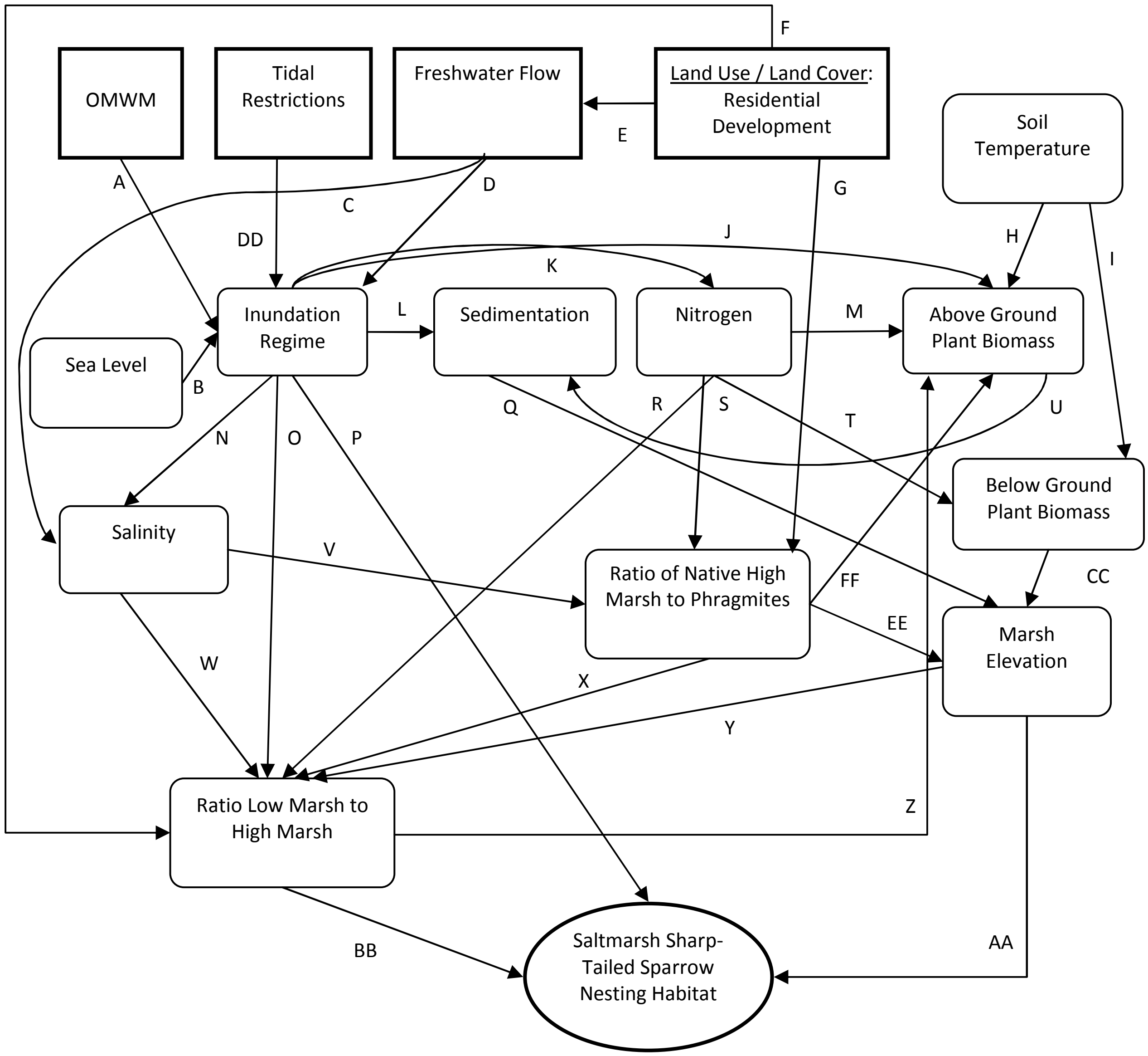


Figure 2-8. Community Interactions group influence diagram.

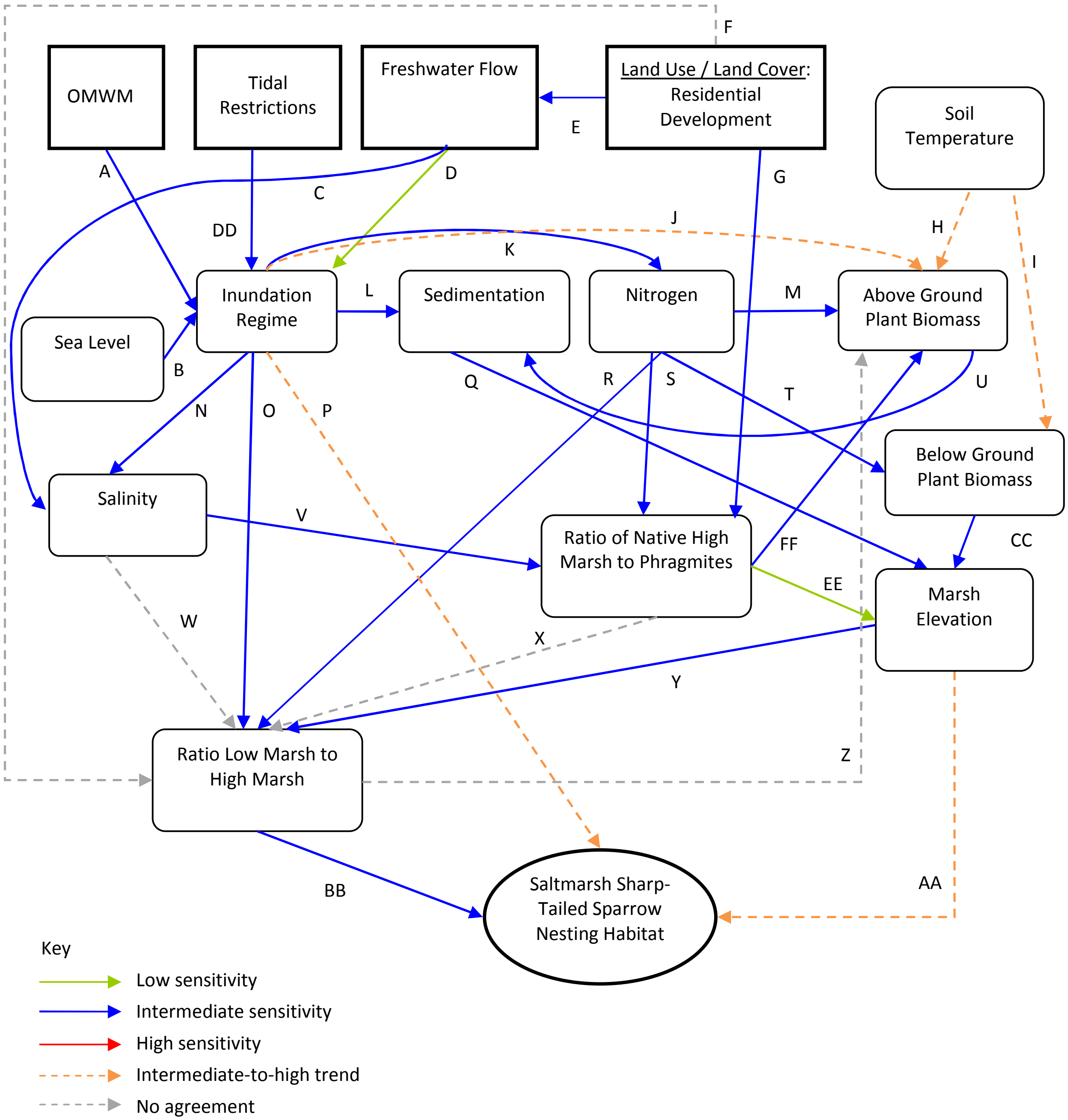


Figure 2-9. Community Interactions group summary influence diagram of sensitivities under current conditions.

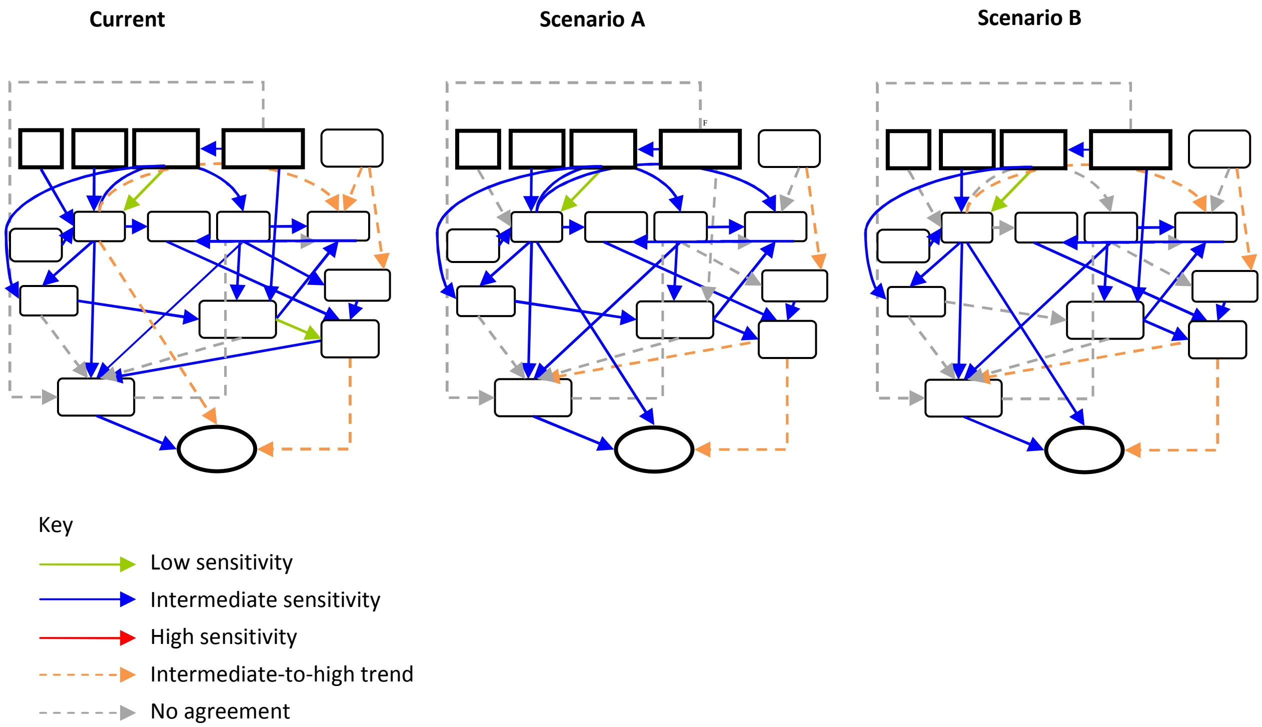


Figure 2-10. Community Interactions group summary influence diagrams of sensitivities: variance across current conditions and two climate scenarios.

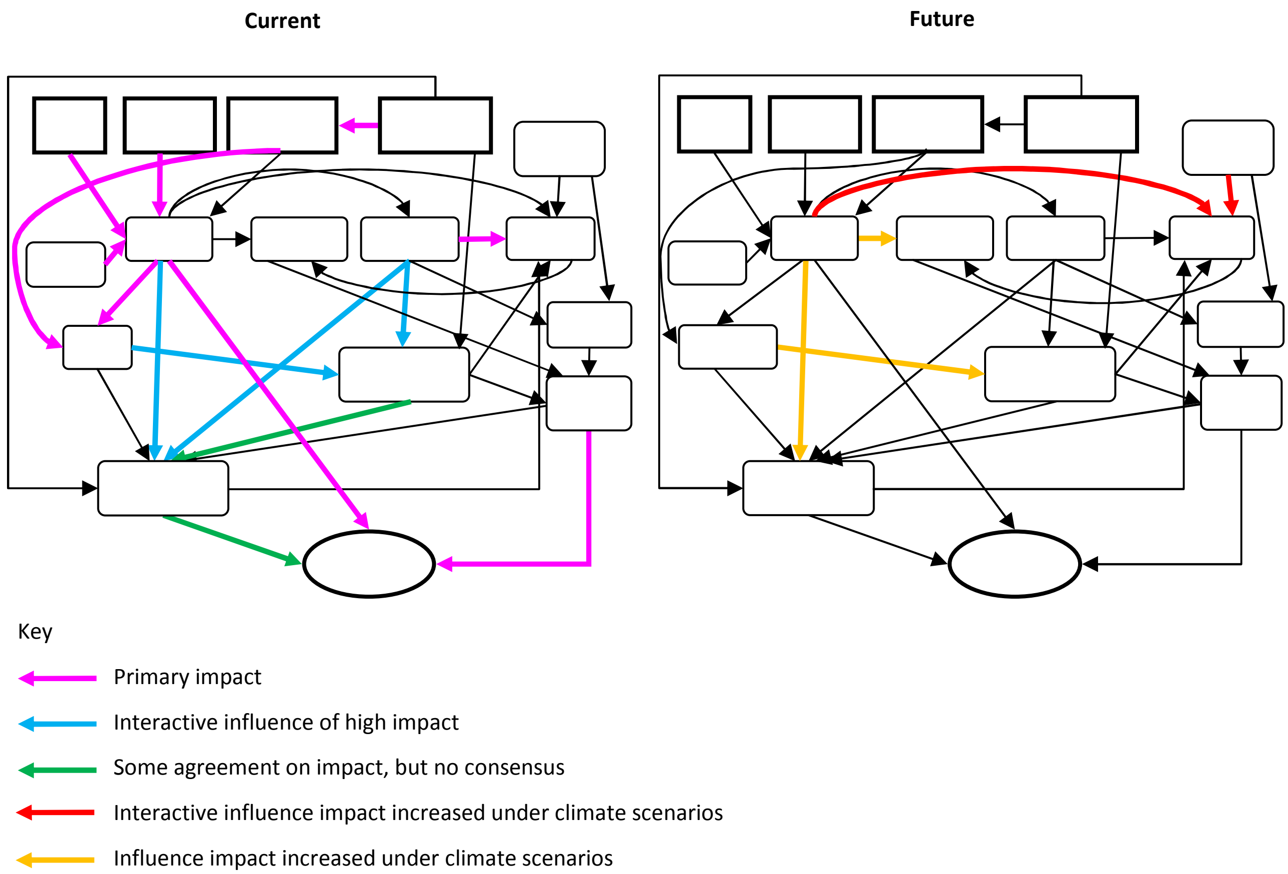


Figure 2-11. Community Interactions group influences indicated as having high *relative impact* under current conditions and the climate scenarios.

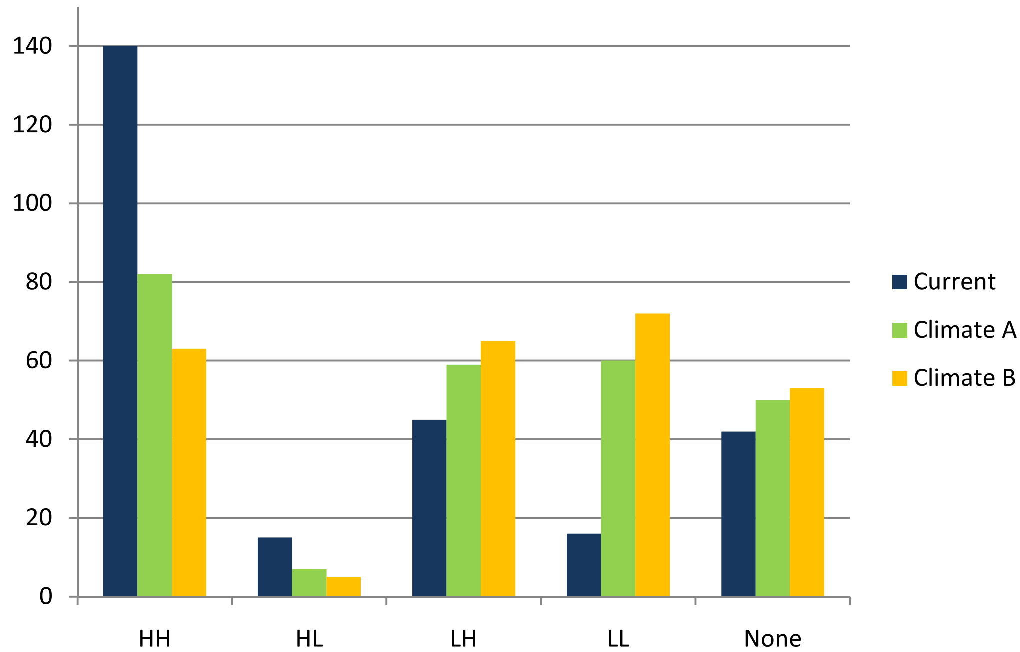


Figure 2-12. Community Interactions group confidence results for all influences; HH = High evidence, High agreement; HL = High evidence, Low agreement; LH = Low evidence, High agreement; LL = Low evidence, Low agreement.

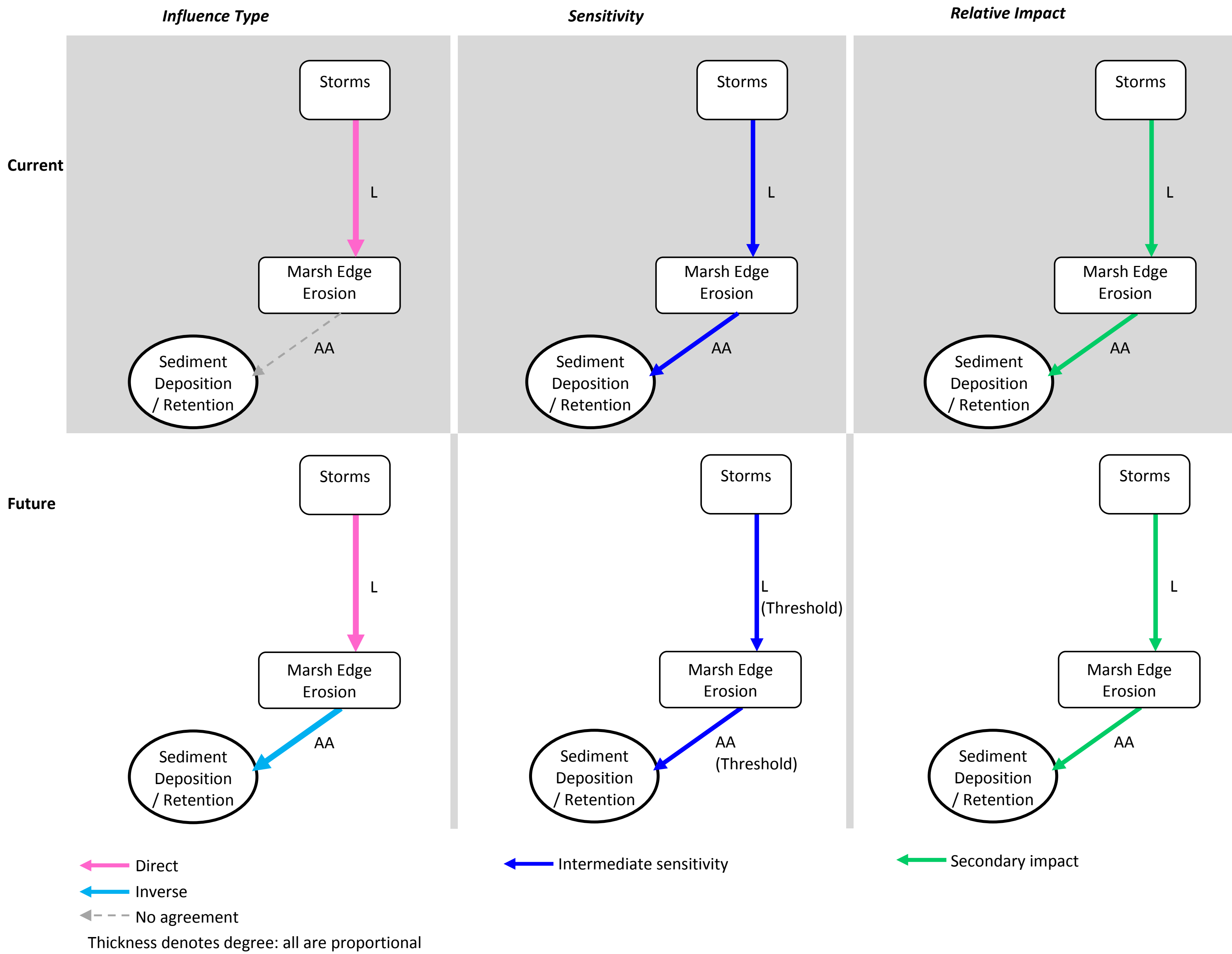


Figure 3-1. Sediment Retention example pathway. Future = Climate Scenario B.

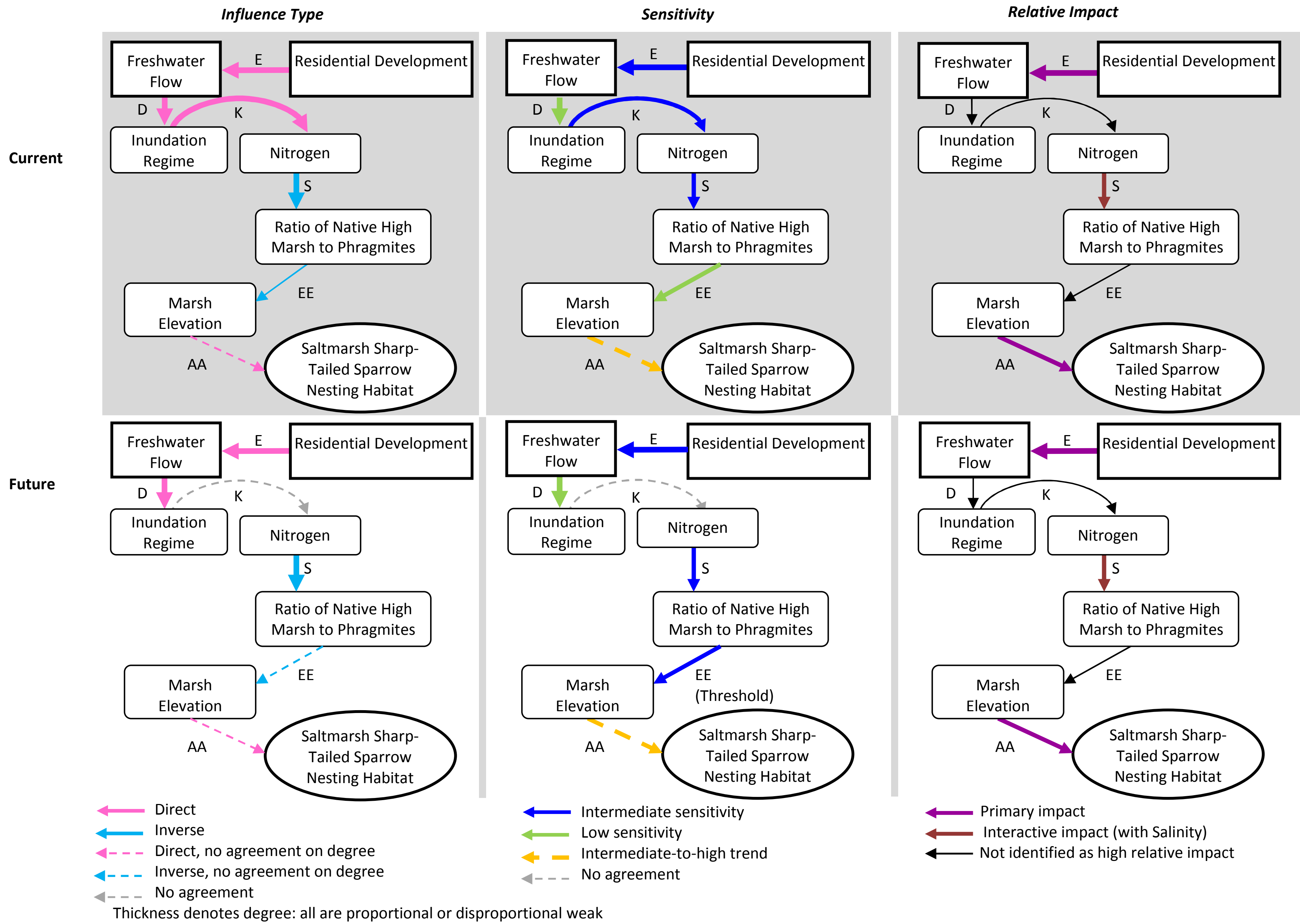


Figure 3-2. Community Interactions example pathway. Future = Climate Scenario B.

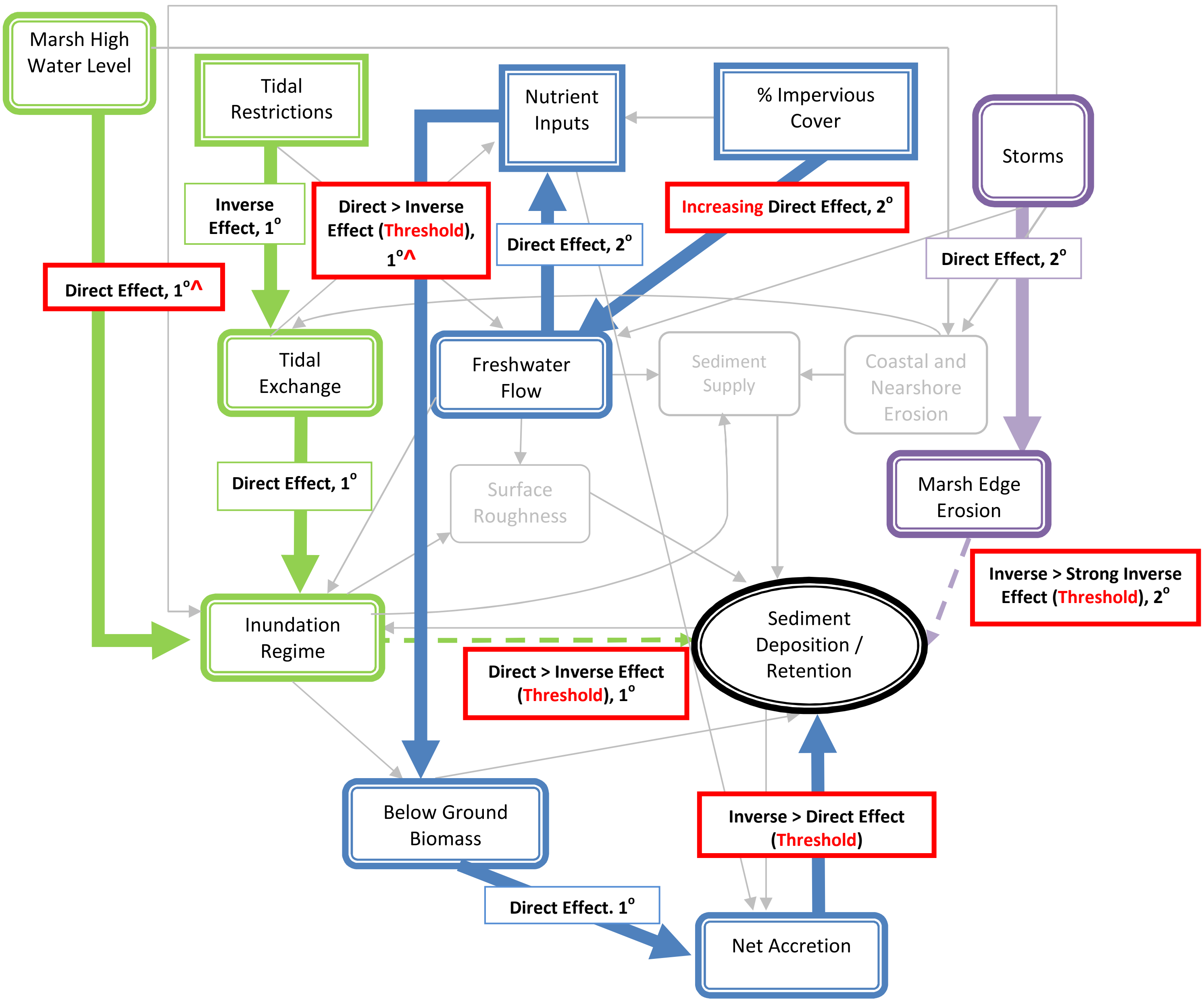


Figure 3-3. Key pathways for management of the Sediment Deposition/ Retention endpoint. Green, blue and purple colors are used to distinguish different pathways. Red boxes highlight changes under future climate conditions. 1° and 2° indicate primary and secondary relative impact under current conditions. ^ indicates increasing relative impact under future conditions. A threshold is where an effect under current conditions may shift to an opposite or much stronger effect under future climate conditions. Dashed lines indicate inconsistent agreement across scenarios of current and future conditions.

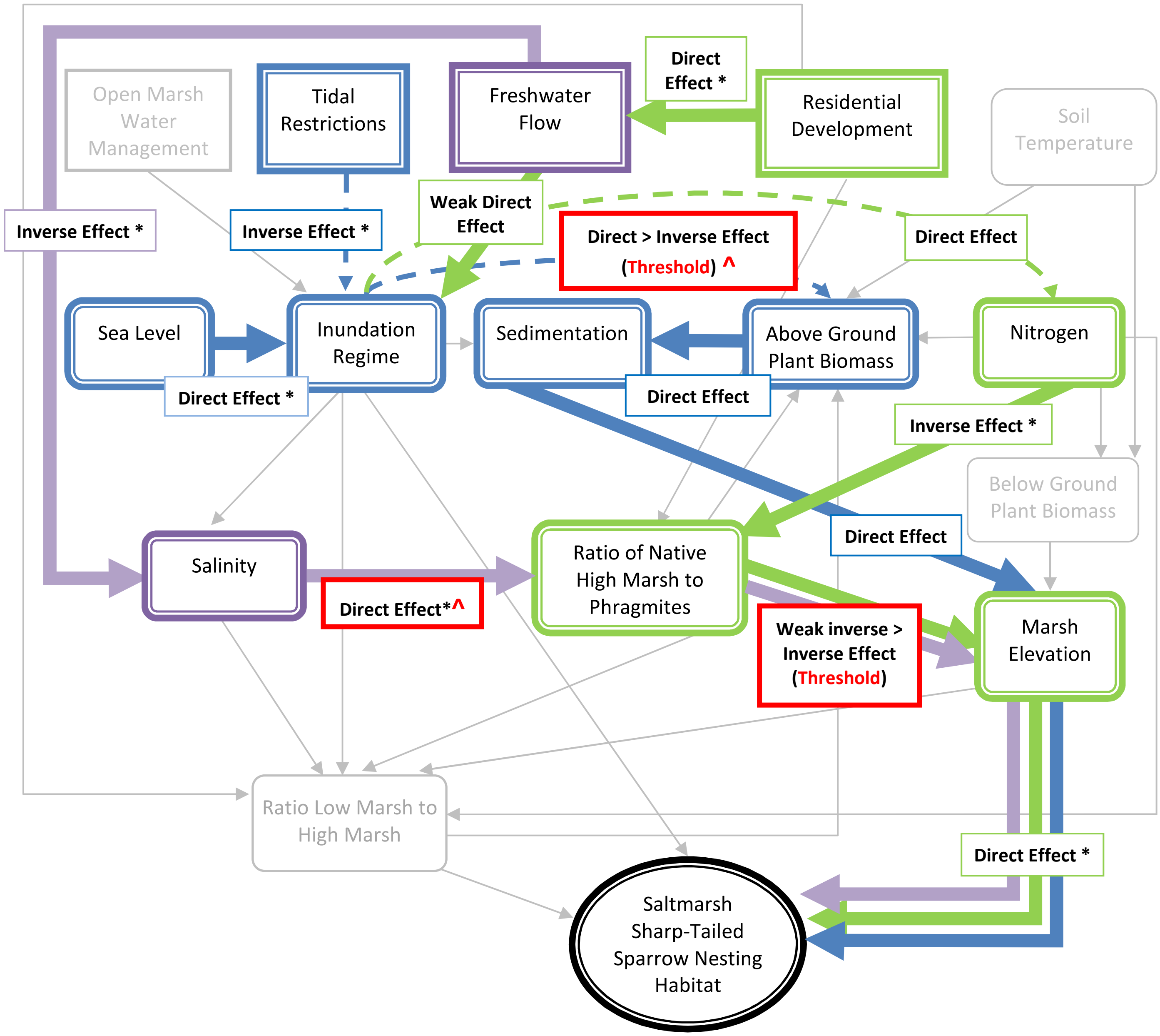


Figure 3-4. Key pathways for management of the Saltmarsh Sharp-tailed Sparrow nesting habitat endpoint. Purple, blue and green colors are used to distinguish different pathways. Red boxes highlight changes under future climate conditions. * indicates high relative impact under current conditions. ^ indicates increasing relative impact under future conditions. A threshold is where an effect under current conditions may shift to an opposite or much stronger effect under future climate conditions. Dashed lines indicate inconsistent agreement across scenarios of current and future conditions.

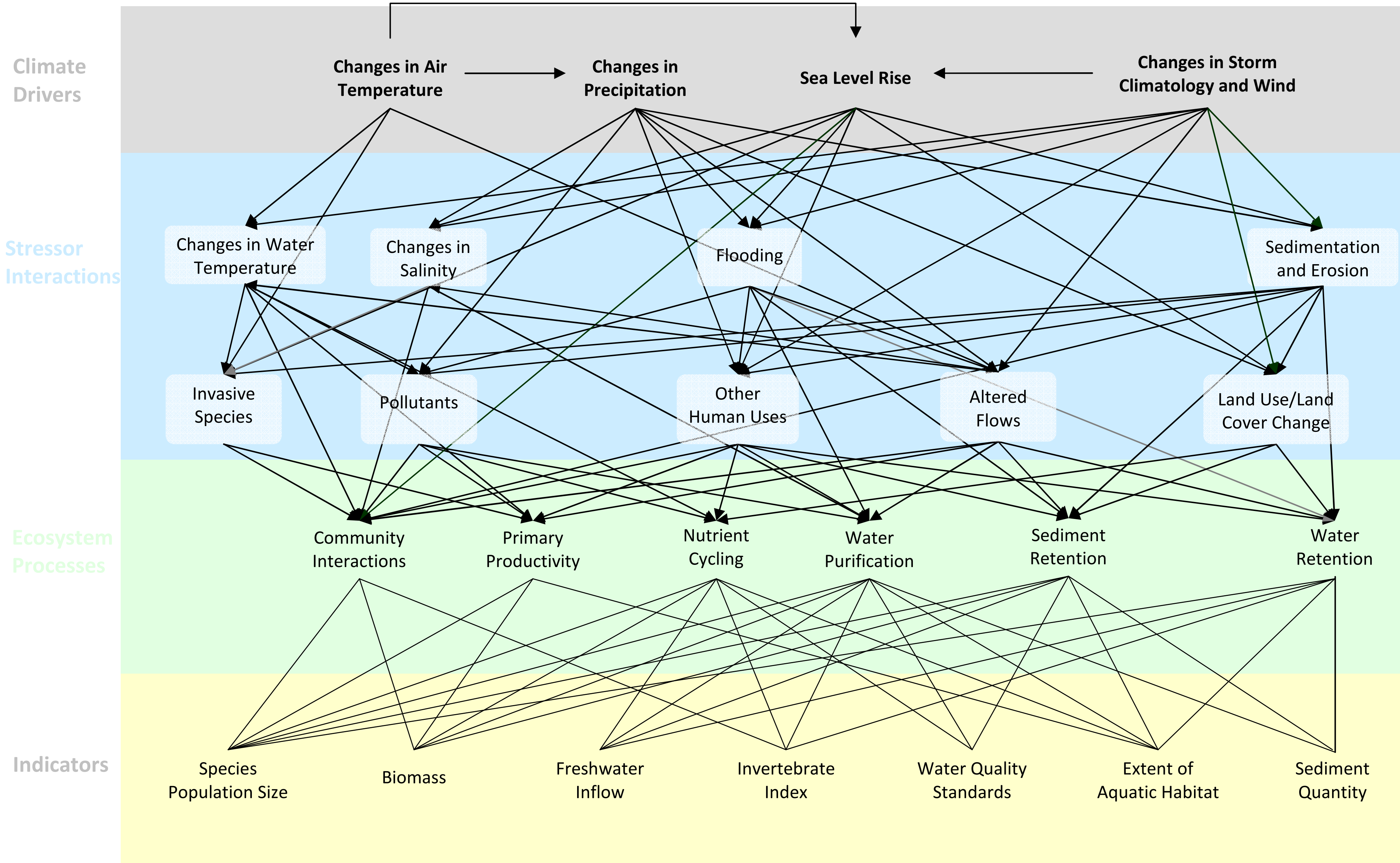


Figure A-1. Salt Marsh Conceptual Model.

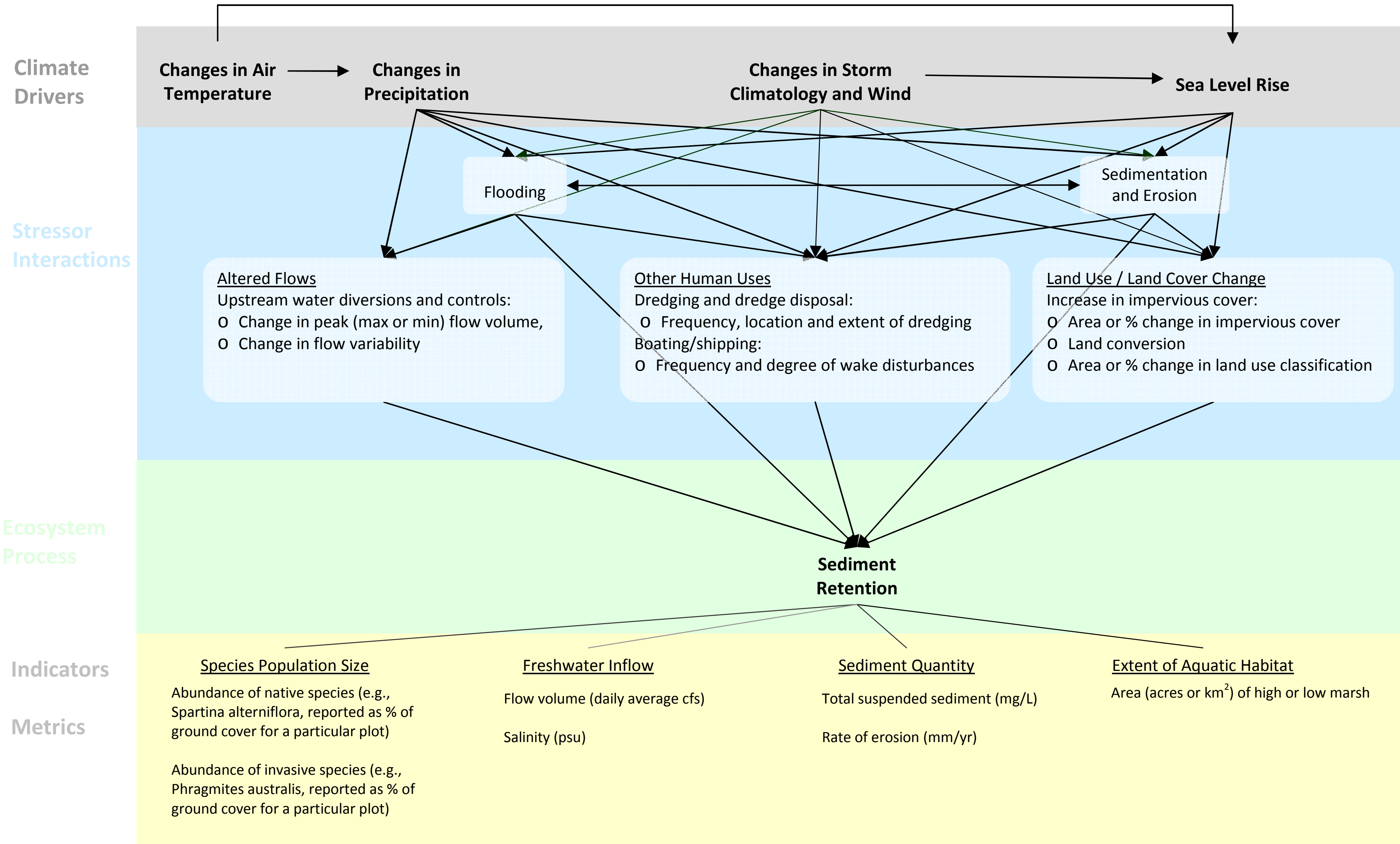


Figure A-2. Sediment Retention sub-model.

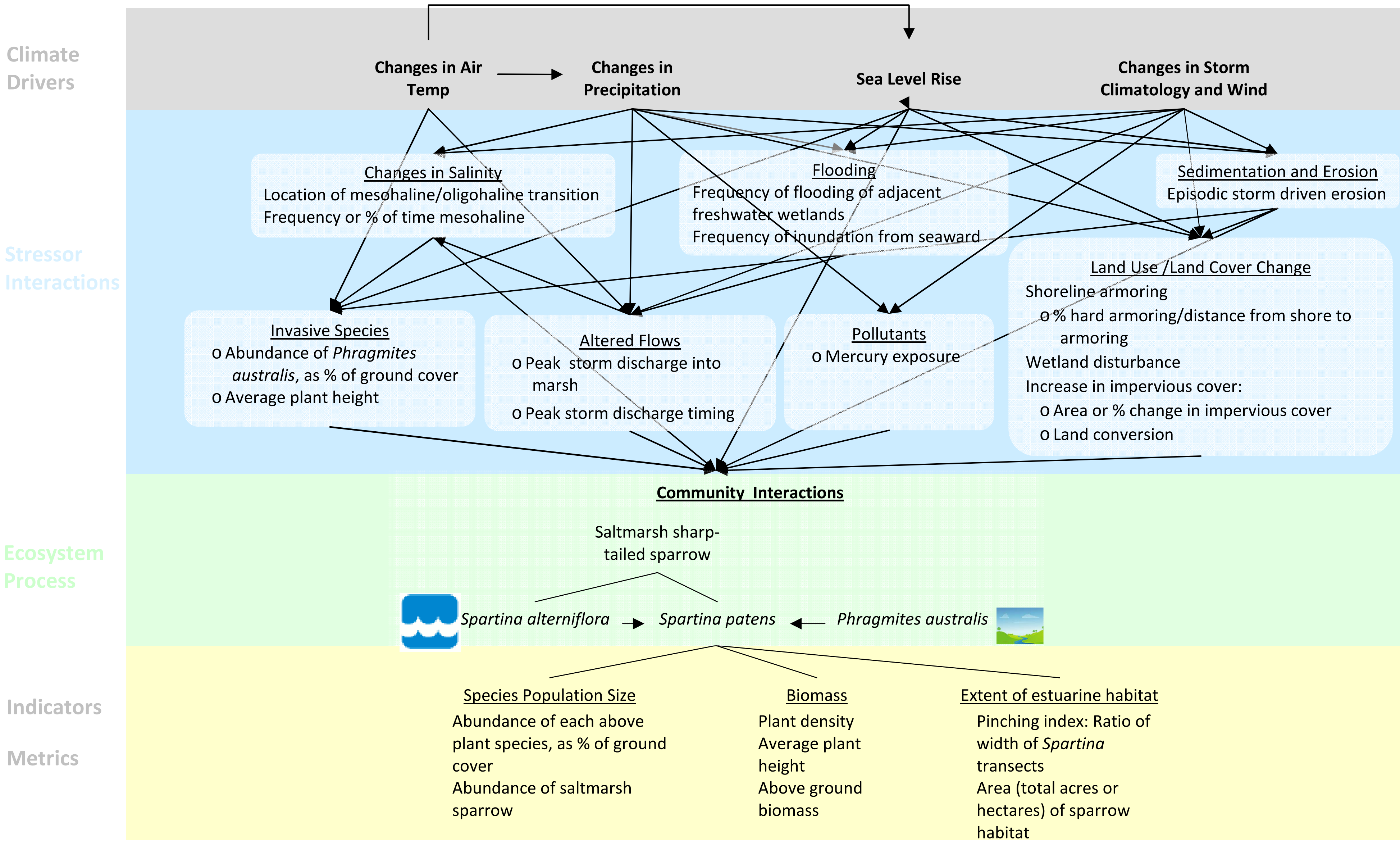


Figure A-3. Community Interactions sub-model.

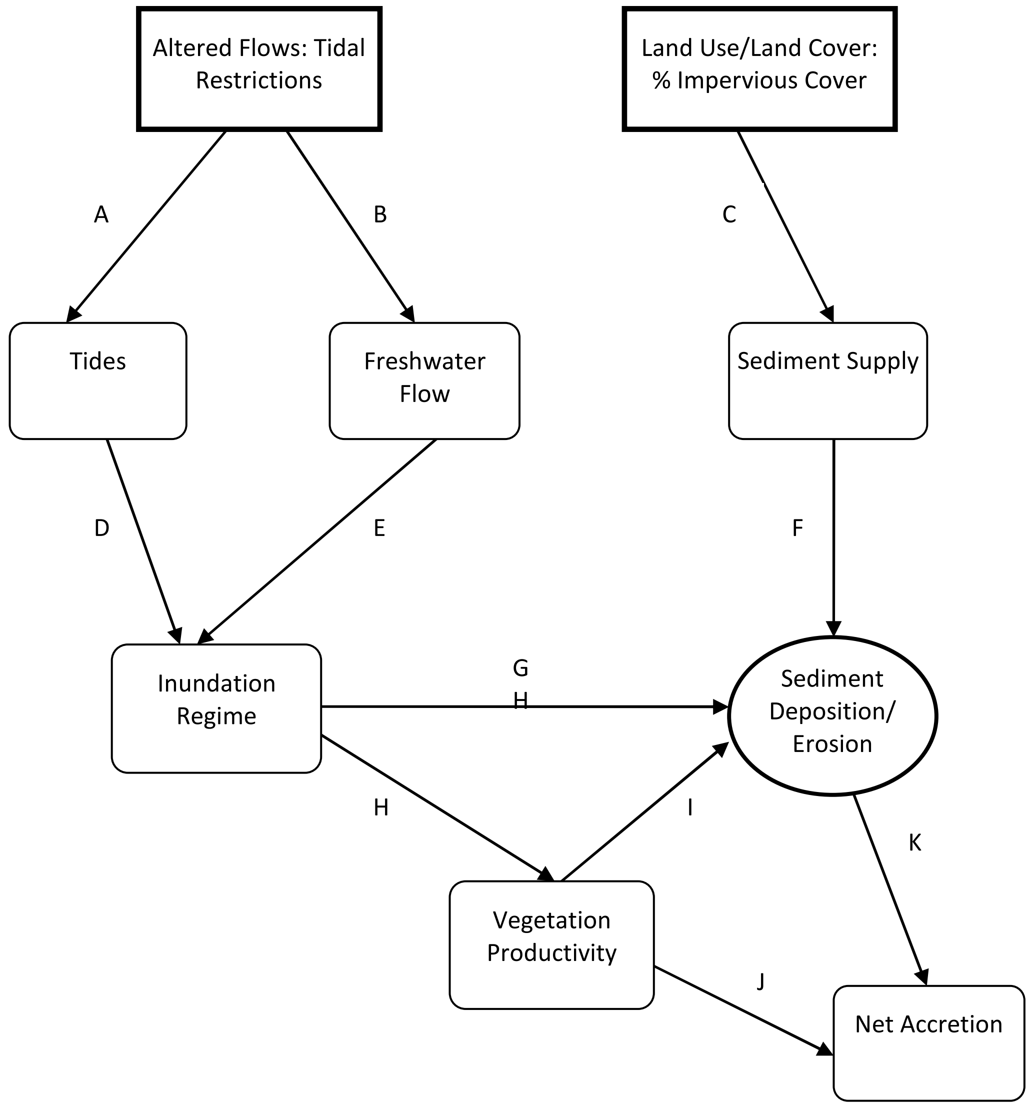


Figure B-1. Sediment Retention "straw-man" influence diagram.

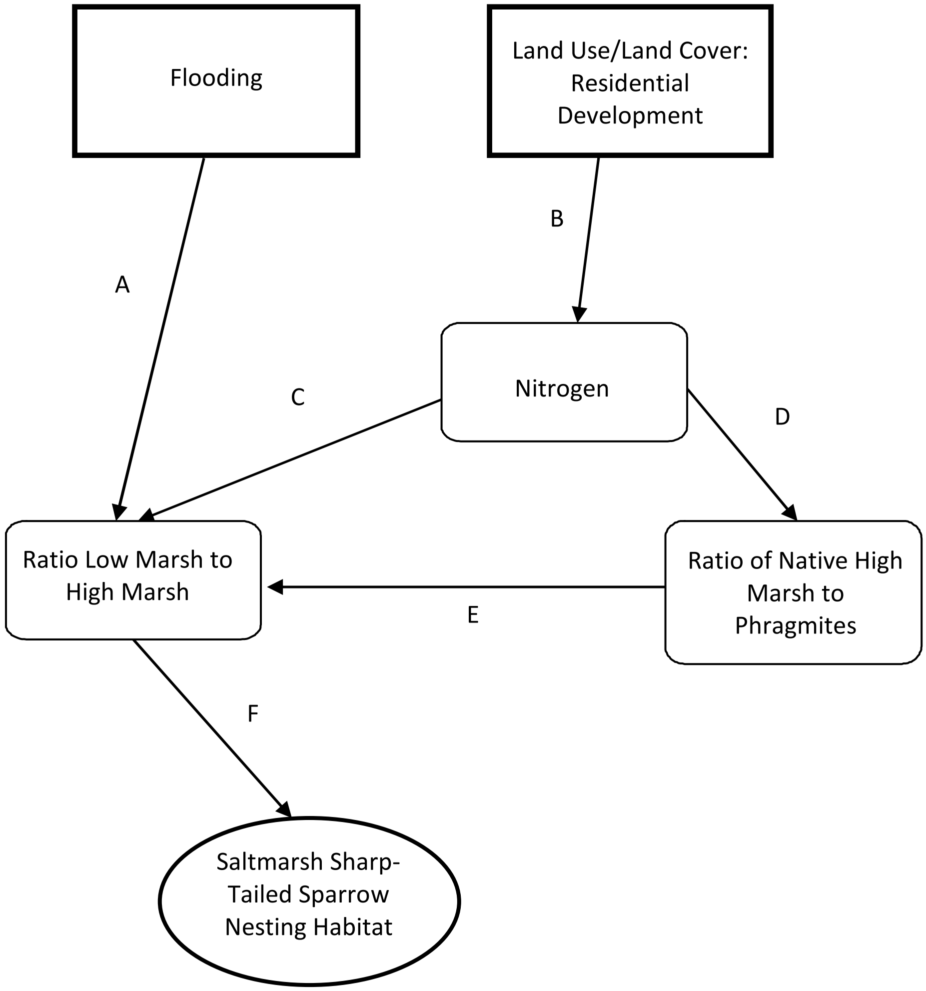


Figure B-2. Community Interactions "straw-man" influence diagram.

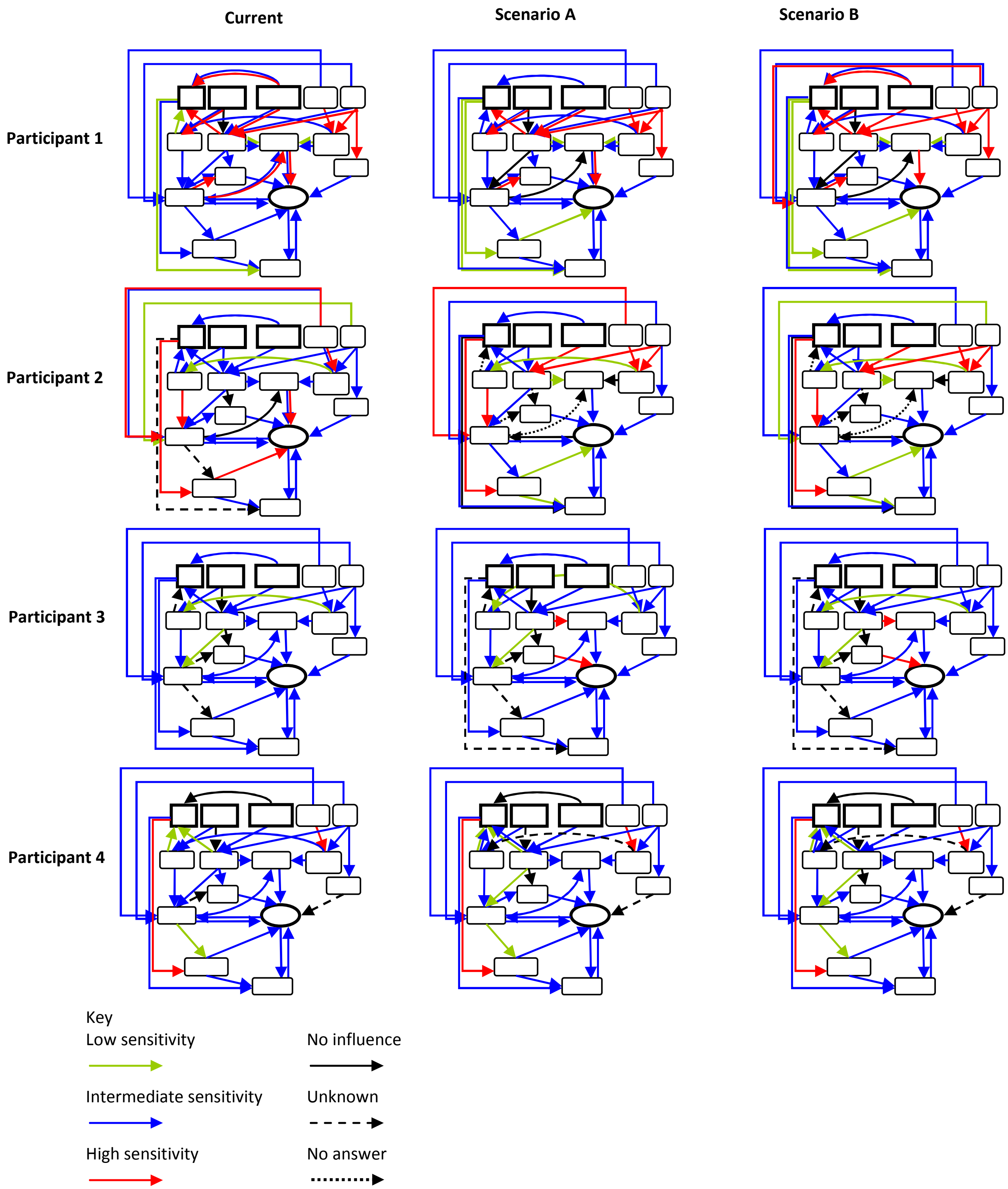


Figure B-3. Sediment Retention group summary influence diagrams of sensitivities: variance across participants (continued on next page).

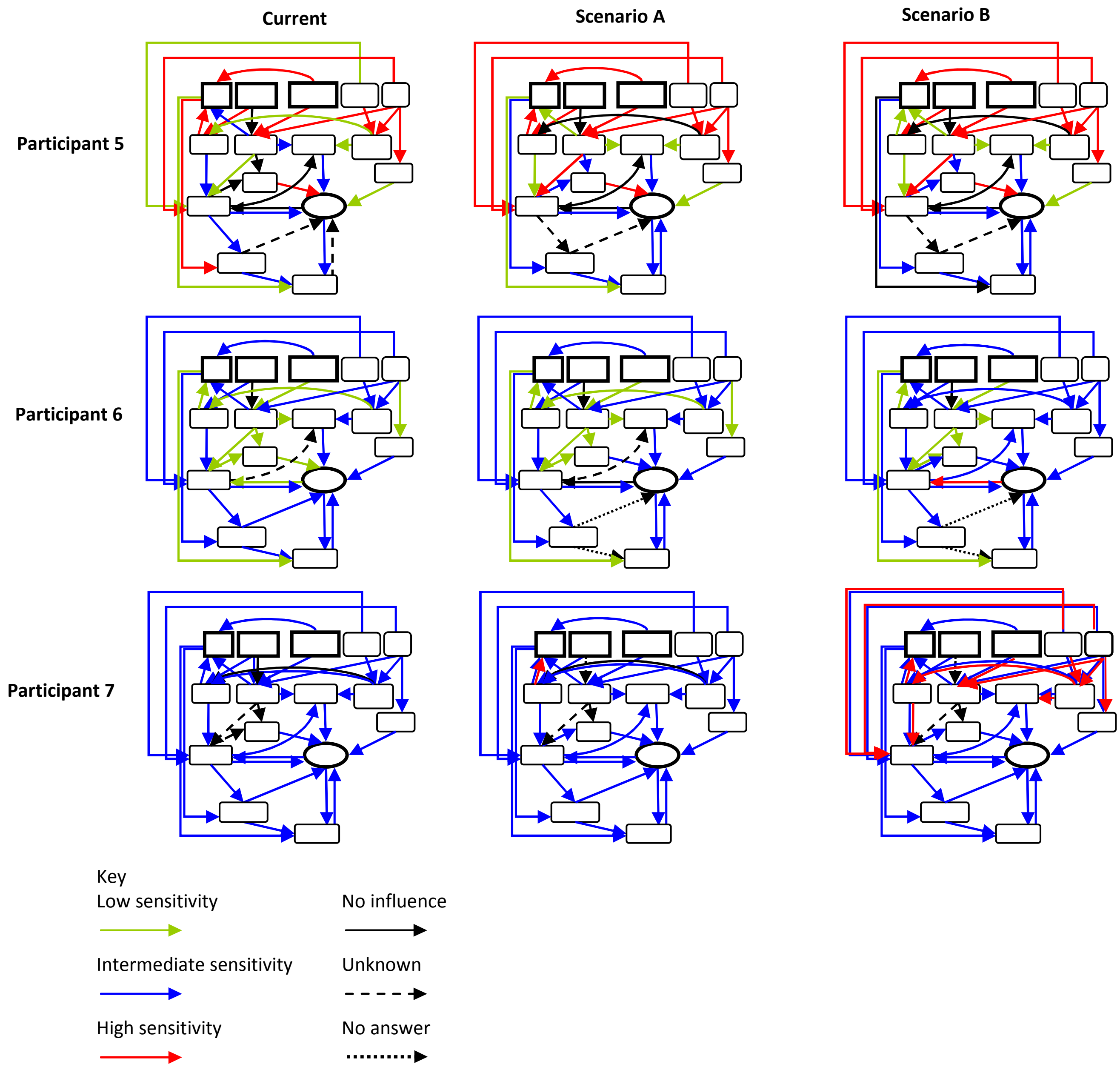


Figure B-3 (cont). Sediment Retention group summary influence diagrams of sensitivities: variance across participants.

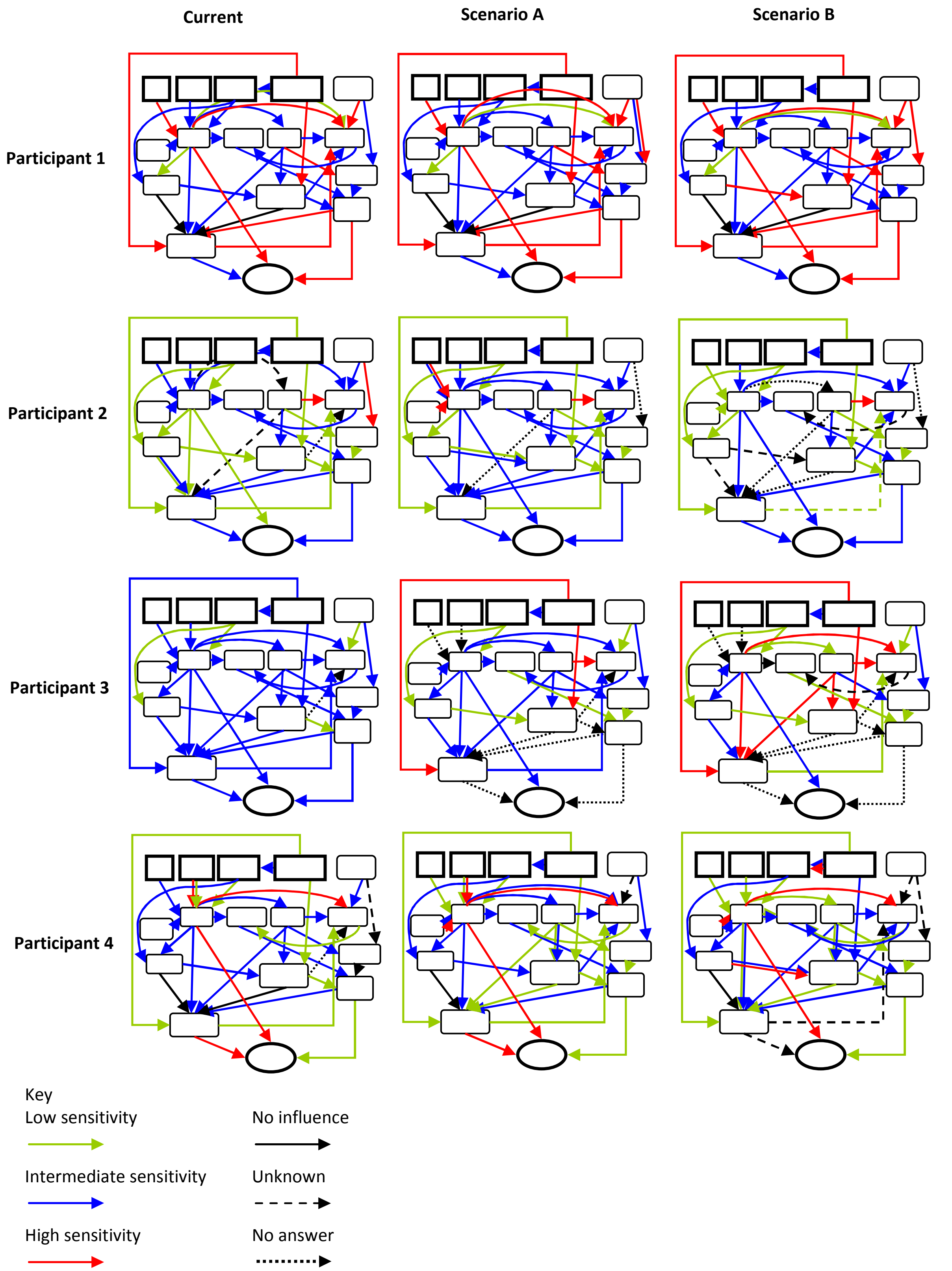


Figure B-4. Community Interactions group summary influence diagrams of sensitivities: variance across participants (continued on next page).

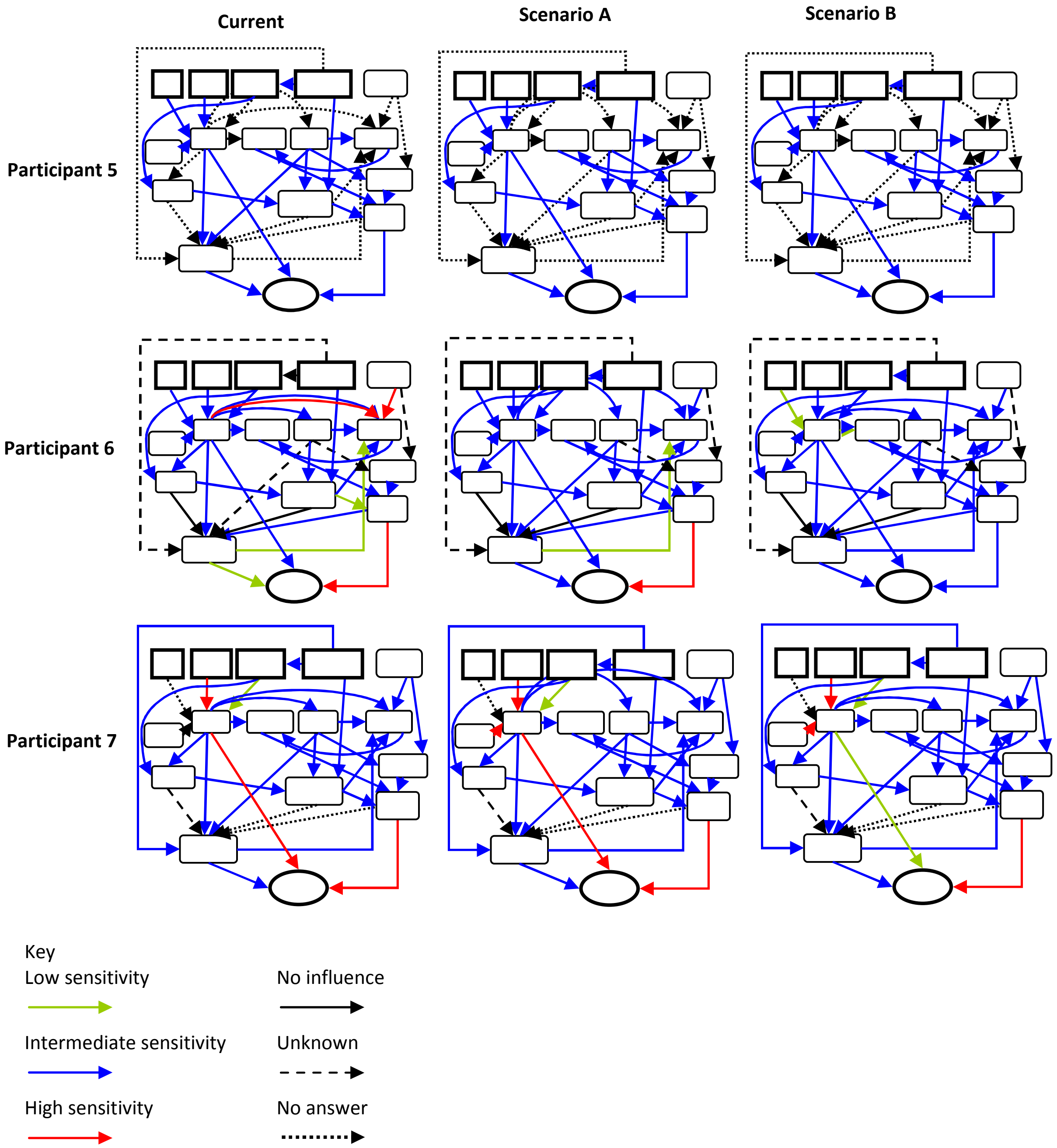


Figure B-4 (cont). Community Interactions group summary influence diagrams of sensitivities: variance across participants.