ALLOCATION IN THE SEDIMENT CASE

Matthew A. Low, Esq.

Director, Energy and Environmental Programs
Project Performance Corporation

June 12, 2008

I. INTRODUCTION

Developing an allocation in a sediment case, particularly one involving numerous parties, can be a painstaking process, involving many disciplines. It requires incorporation of dispute resolution principles and the need to recognize that the ultimate goal is a settlement. It requires extensive information management and analysis to organize and distill large volumes of documents, analytical data, and testimonial evidence. It also requires investigation and legal analysis to support systematic and disciplined fact finding and informed treatment of legal issues.

The discussion in this outline is drawn from my work as an arbitrator in the Fields Brook Superfund case in Ohio. In that case, approximately 20 manufacturing facilities, operating over a 50-year period in a 5.4 square mile watershed, contributed to sediment contamination in a stream running through the industrial complex, into the Ashtabula River and, ultimately, Lake Erie. After ten years of litigation, the arbitration process took two years and resulted in a recommendation that was agreed to by all participants. This outline also incorporates experience drawn from my work as an allocator for a group of parties involved in the Hylebos Waterway and Commencement Bay, in Tacoma. There, over the course of a multi-year allocation process, I developed an allocation for over 70 parcels and more than 120 entities that had engaged in a wide variety of industrial and commercial activities over a more than 50-year period, resulting in the need to remediate contaminated sediments under Superfund authority.

In cases involving contaminated sediments, a discrete number of facilities adjacent, or in proximity, to a waterway typically have engaged in operations through which a wide array of chemicals have been released into the environment over a significant number of years. Through various pathways (storm sewers, process discharges, spills, direct dumping, lagoons, groundwater, surface water, etc.) the chemicals have been released into the adjacent or proximate waterway, ultimately causing sediment contamination. The owners and operators of these facilities generally share the liability for their respective releases and the resulting contamination.

Unlike a traditional landfill case, a sediment case does not involve a large number of generators who have arranged with waste transporters for their solid or hazardous wastes to be disposed in a landfill.[1] Thus, allocation according to status or to traditional allocation labels used in disposal site cases - e.g., generator class, transporter class and owner/operator class - are not generally applicable to a sediment case.[2] Rather, allocations in sediment cases are based primarily on an assessment of which parties contributed to the contamination at issue – i.e., contaminants that are driving the need for investigation and remediation of sediments.[3] And even where the releases of contaminants are from off-site sources (e.g., slag sent to a log yard for use as ballast, transformers sent to a site for scrapping), courts have allocated the major portion of the site response costs to those parties responsible for the contamination.[4]

There are four main elements to a complicated sediment case:

1) The Allocation Process

2) Investigating and Fact Finding

3) Analyzing Legal Issues and Incorporating Legal Precedent

4) Developing the Allocation Methodology

II. THE ALLOCATION PROCESS

---

[1] In many landfill cases, site, transporter, or generator records or other evidence is available to document the volume of waste disposed of in the landfill by the respective parties, and the allocations are based on an analysis of waste-in volumes.

[2] An entity's status is primarily relevant to an assessment of whether the entity is liable under Section 107 of CERCLA.

[3] See, e.g., *Dent v. Beazer Materials and Services*, 993 F. Supp. 923 (D.S.C. 1995 (Neighboring source allocated 100%); *Control Data v. S.C.S.C. Corp. et al.*, 53 F.3d 930 (8th Cir. 1995) (Owner of property 66.3%; Neighboring owner, 33.3%. Court found, and appeals court affirmed, that even though the defendants, the neighbors, were only responsible for 10% of the contamination, they were assigned 33.3% of the costs because the PCE contributed by the neighbor was more toxic and more difficult to remove than the TCA contributed by the owner (in a merged plume). "Those parties who can show that their contribution to the harm is relatively small in terms of amount of waste, toxicity of the waste, involvement with the waste, and care, stand in a better position to be allocated a smaller portion of response costs." A primary focus of these factors is the harm that each party causes the environment."

[4] *Central Maine Power Co. v. F.J. O'Connor Co. et al.*, 838 F. Supp. 641 (D. Me., 1993) (Former owner/operators allocated 12.5%; suppliers of contaminated transformers 87.5%); *Louisiana-PacificCorp. v. Asarco, Inc.*, 21 CWLR 1165 (W.D. Wash. 1991) (Owners and operators of log yards allocated *deminimis* shares, supplier of slag allocated between 90% and 100% of response costs for arsenic contamination at log yards)

The allocation process is important in helping shape the expectations of the parties and their confidence in the final outcome. Process is defined by the following considerations:

- the mandate given to the allocator.
  - binding arbitration
  - non-binding arbitration
  - mediation

- the manner in which procedural issues will be addressed.
  - by vote
  - by consensus
  - by discretion of the allocator

- the parties included in the allocation.
  - participating group members
  - solvent parties not participating in the group
  - insolvent or unavailable parties (for purposes of developing an orphan share)

- the extent to which the allocator or others will engage in fact-finding.
  - public agency review
  - disclosure questionnaires
  - interviews
  - depositions

- the opportunities and forums for the parties to make their positions known to the allocator.
  - written submissions
    - ❑ comments on factual findings
    - ❑ comments on allocation factors
    - ❑ comments on allocation recommendations
  - oral arguments

- the treatment afforded to documents produced by the parties and work product of the allocator.
  - confidential business information
  - settlement privilege
  - attorney-client and work product privileges

- treatment of smaller parties.
  - opportunities for early cash-outs
  - process costs

- costs to be allocated.
  - investigation costs
  - ROD negotiation costs
  - remedial design costs
  - remediation costs
  - government past costs
  - NRD costs

The amount of "process" will affect transaction costs for each party. For every opportunity to submit a position paper, there are associated costs, particularly if rebuttal positions are allowed. One the other hand, to the extent that the process provides a basis for full disclosure of relevant facts, allowing all parties to become better informed, it will provide a strong impetus for settlement.

III. INVESTIGATION AND FACT-FINDING

As a general proposition, the sediment case usually involves a contaminated river, stream or waterway. Typically, in a complicated sediment case, there is a wide range of contaminants of concern requiring remediation, including metals, organics, PAH compounds, and PCBs. The complicated sediment case commonly involves consideration of contributions to these contaminants of concern by many businesses operating on many parcels over an extended time period. There are four principal areas of inquiry that help shape the allocation

A. Sediment Characterization

Sediment is typically characterized during remedial investigation and remedial design. This data provides the basis for the ROD and remedial design. Basic components of the characterization include:

- Analytical data regarding investigation contaminants

Preliminary investigation usually dictates that a panoply of chemicals will be sampled as part of the remedial investigation and remedial design. It can be argued that all chemicals required to be sampled are relevant to the allocation.

- Analytical data regarding contaminants of concern

Sampling will be available for various segments of the affected waterway. Cleanup goals will be negotiated with relevant government agencies. These cleanup goals can change over time. To the extent that negotiated clean up goals become less stringent, it may reduce the number of contaminants of concern, or reduce the segments of the waterway requiring remediation because of various chemicals. This will affect the allocation analysis.

- Surface watershed boundaries.

Surface watershed characterization is important in defining the parcels which could have contributed to sediment contamination. However, current surface watershed boundaries may not be indicative of historical watershed boundaries since construction, grading, lagoons, historical drainage ditches and other physical changes may have occurred over time.

- Groundwater watershed boundaries.

The current groundwater watershed may be more indicative of historical groundwater flows. However, hydraulic conditions are affected by wells, and groundwater containment systems put in place over time.

- Stream dynamics.

An analysis of stream dynamic may be an important component of the allocation analysis, since an understanding of water flow and areas of potential sediment accumulation can help link certain parcels to contaminated sediment.

B. Source Control Characterization and Mitigation

- Analytical data regarding investigation and remedial contaminants of concern.

Sources contributing to the sediment contamination must be characterized to assure that they will not continue to cause contamination. This may either be done systematically for all parcels in the watershed as a requirement of the ROD and remedial design (e.g., as in Fields Brook), or it may be done through discrete Superfund actions or RCRA corrective actions on the parcels that are most likely to be continuing sources of contamination (e.g., as in Hylebos Waterway). Analytical data on a parcel provide indications of activities on the parcel and may permit inferences regarding historical releases and pathways for contaminating sediment.

- Analysis of current surface water and groundwater pathways

Major sources are characterized to determine whether there are continuing releases affecting the waterway through routine process discharges, surface water releases or groundwater releases. This analysis will provide a basis for factual findings relevant to the allocation.

C. Historical Operation Profiles

This is the heart of the fact-finding effort. For each parcel, and each operating period on the parcel, facts are developed regarding the history, evolution and changes in operations as they affect potential contamination. It is not enough to take the current condition of the parcel. Historical documents and interviews or depositions are necessary to develop a reasonably comprehensive picture of:

- Owners and operators.

- Types of operations on the parcel.

- Manufacturing processes.
    - raw materials
    - process description
    - waste streams
    - waste stream constituents

- Materials and waste storage, handling and disposal methods.

- Discharge pathways.
    includes air emissions

- Historical sampling of waste streams, lagoons, surface waters and soils.

- Housekeeping practices.

- Spills and other release incidents.

- Physical characteristics.
    - drainage ditches
    - sewers
    - lagoons/ponds
    - landfills
    - collection sumps

- underground storage tanks
- above ground storage tank containment
- condensers
- transformers
- hydraulic systems
- heat transfer systems
- drum storage
- paving and grading

- Regulatory/enforcement history.

- Permits.

D. Chemical Fate and Mobility

What happens to chemicals when they are in a waste stream or when they are released into surface waters, soils and groundwater may allow inferences regarding contributions of some parties to current sediment contamination. Often, such technical information is introduced through expert testimony or affidavits. Examples of issues regarding chemical fate and mobility include:

- Time period for aerobic and anaerobic biodegradation of PAH compounds.

- Breakdown and transformation of certain chlorinated organic compounds.

- Sources and mobility of metals

- Variations in Aroclor species of PCBs.

IV. ANALYSIS OF LEGAL ISSUES AND INCORPORATION OF LEGAL PRECEDENT

There are two basic types of legal issues that must be addressed. The first relates to elements of a prima facie case or legal defenses under CERCLA. The second relates to judicial guidance on legal and equitable principles in allocating liability.

- Elements of prima facie case and legal defenses.
  - Hazardous substances
  - Arranging for treatment or disposal
  - Federal permit exclusion
  - Petroleum exclusion
  - Bevill amendment wastes (slag, fly ash)
  - Generation and/or sale of useful product
  - Indemnification Agreements

- Successor-in-interest issues

- Application of legal and equitable principles in allocation.

  - Divisibility (Alcan cases; United States v. Alcan Aluminum, 964 F.2d 253 (3rd Cir.1992), Alcan 1; and U.S. v. Alcan Aluminum, 990 F.2d 711 (2nd Cir. 1993), Alcan 2)
  - Allocation by parcel (Ottati & Goss, et. al., 694 F.Supp. 977 (D.N.H. 1988))
  - Equitable Factors
  - Joint and several versus fair share in allocations of orphan shares

V. DEVELOPMENT OF THE ALLOCATION METHODOLOGY

The allocation methodology is the basis upon which allocation shares will be developed for each party. The methodology generally is an outgrowth of the information available (since that determines the reasonable boundaries of fact-finding) and the positions of the parties. If there is consensus among the parties to incorporate certain factors and exclude others, there usually is no reason to ignore these expressions. On the other hand, if there is strong sentiment behind a certain methodology that might not be feasible to incorporate due to data availability or cost reasons, it is the allocator's responsibility to advise the Group of these limitations.

The ultimate goal is an equitable allocation, and the analysis is often referred to as an equitable analysis. There are a number of allocation considerations, or "factors" that typically are discussed, and, in some cases incorporated into an analysis. These factors really are a combination of equitable, technical and legal considerations, which must be combined in some systematic way, either through derivation of a "formula" or "model," or through narrative exposition that reflects the best judgment of the allocator.

A. The Gore Factors

There are six factors in a 1980 amendment to Superfund offered by then-Representative Gore. Although this amendment was never enacted into law, numerous courts have held that these factors provide a logical starting point for allocation in cost recovery and contribution cases. These are:

i. The ability of the party to demonstrate that its contribution to a discharge, release or disposal of a hazardous substance can be distinguished.

ii. The amount of hazardous substances involved;

iii. The degree of the toxicity of the hazardous substances involved;

iv. The degree of involvement by the party in the generation, transportation, treatment, storage, or disposal of the hazardous substance;

v. The degree of care exercised by the party with respect to the hazardous substance concerned, taking into account the characteristics of such hazardous substance; and

vi. The degree of cooperation by the party with federal, state, or local officials to prevent any harm to the public health or the environment.

See, e.g., United States v. A&F Materials Co., Inc., 578 F.Supp. 1249, 1256-1257 (S.D. Ill. 1984). These factors tend to be relevant to varying degrees in Superfund cases, and may be relevant specifically in sediment cases.

B. Key Sediment Case Factors

In a sediment case allocation considerations and/or factors that I have found to be particularly relevant include:

- **Investigation Costs versus Remedial Costs**

Remedial investigation activities are usually directed to a wide array of contaminants of concern. The efforts necessary to fully characterize a waterway, river or stream can be significant and lead to substantial costs. Ultimately, at the completion of the investigation, a smaller number of contaminants will be found to exceed cleanup goals in sediment segments and, these, in effect, will be driving the need to excavate and/or treat sediment. Sediments in close proximity to certain parcels may not require remediation – raising questions as to whether parties involved with those parcels should bear any responsibility for the investigation costs.

Thus, one issue is whether investigation costs should be distributed more broadly to take into account both common purpose of the investigation effort and the contribution of each party to the full panoply of chemicals investigated, as opposed to allocation of investigation costs on the basis of contribution to contaminants driving the need for remediation.

- **Allocation based on parcels or by party.**

If allocating among numerous parcels, a question arises as to whether each parcel should be allocated a separate share and then whether only viable parties connected to that site should bear the responsibility for that share. This would require for example, a current owner to bear responsibility for the contamination caused by 60 years of operation if all other entities historically connected to that parcel are no longer viable.

- **Volume of wastes produced/discharged/released.**

An analysis of waste volumes may provide a useful basis for distinguishing among parties. However, it can be misleading if the constituents and concentrations of the waste streams are not taken into account. In addition, the handling of wastes generated (discharged, collection for off-site treatment, settling in collection ponds, etc.) must also be considered.

- **Type and constituents of wastes produced (including effect on remedy).**

This is a highly relevant factor, since waste constituents provide a ready means of linking activities to investigation or cleanup chemicals in the sediment. In addition, to the extent that certain chemicals are responsible for specific components of a remedial plan, then parties linked to such chemicals may fairly be expected to bear the costs of those components.

- **Location of the parcels in relation to areas of contaminated sediment.**

This factor may be important if the patterns of water flow can be related to the fate and transport of various chemicals known to have been released by different parcels.

- **Comparative likelihood of parcels providing pathways for release of chemicals**

An analysis of historical pathways for release or discharge of chemicals from a parcel into the sediment is a highly relevant factor.

- **Degree of control and involvement in the operations**

Particularly in comparisons of respective owners, or owners and operators, it may be relevant to analyze the amount of control or involvement that each had in the activities producing the contamination, or their respective abilities to mitigate environmental damage.

- **Degree of care**

A party's degree of care in handling waste may be considered an important distinguishing factor, particularly if absolute and/or credible technical distinctions are difficult to make. It may allow distinctions between respective owners of an entity producing hazardous substances. On the other hand, this factor may not be highly relevant if the allocation methodology is based on a fairly credible technical analysis of volumes of releases and waste types, since the degree of care only affects the magnitude of releases which should otherwise be taken into account.

- **Degree of knowledge**

A party's knowledge concerning its potential to cause environmental harm may be a relevant factor in distinguishing parties, particularly if it can be determined that options were available to parties with such knowledge that could have mitigated such harm.

- **Distribution of economic benefits**

To the extent that certain parties have or can be expected to receive anomalous economic benefits from the remediation of a parcel or of the sediment immediately adjacent to a parcel, this can be taken into account.

- **Assessment of risk**

A risk analysis can be performed that relates certain chemicals to risks to health, taking into account their toxicity, and concentrations. This risk assessment can be the basis for allocation.

- **Degree of cooperation**

The extent to which parties have participated differently in remedial investigation may be relevant. For example, if it can be shown that early involvement by certain private parties has been instrumental in lowering investigation or remediation costs for all parties, it may be equitable for such parties to receive a discount in their allocated shares.

- **Mitigation measures taken by respective parties.**

The extent to which certain parties have implemented clean up actions on their properties or in adjacent sediments can be a distinguishing factor. This is particularly true if it can be shown that the mitigation measures were implemented in such a way as to remedy the contamination caused by that party's activities.

- **Strength of evidence**

An analysis of historical operations of many facilities is often uneven, owing to variations in the amount of information or conflicts in testimony relating to their activities. In some cases, this disparate level of evidence may need to be incorporated into the allocation analysis, either in the factual findings made by the allocator, or in the way allocation shares are derived.

C. Allocation Methodology

The basis for deriving or calculating shares is the allocation methodology. There are different ways of developing an allocation methodology. I have used different methodologies for allocation of investigation and remedial costs. Generally, investigation costs are distributed more broadly to take into account both the common purpose of the investigation effort and the contribution of each party to the full panoply of chemicals investigated. In allocating remedial costs, it is more feasible to allocate based on specific contribution to contaminants driving the need for specific sediment segments requiring remediation.

1. Investigation Costs Methodology

For investigation costs, one approach is to score each parcel proximate to the waterway on the following basis:

- **Years of operation and impact –** this will take into account not only the years of actual operation, but, if appropriate, the extent to which contamination present at on a property may have continued to impact the waterway after operations ceased.

- **Average annual release magnitude** -- this score would represent an attempt tocompare properties and parties based on the size, and type of facilities operating on the properties, taking into account what evidence exists about actual discharges and other releases.

- **Categories and severity of chemicals released –** this score represents an attempt to distinguish properties and parties based on the likely content of their discharges and releases and allow consideration, as appropriate, of the relationship between contaminants of potential concern and the types of chemicals associated with each site. Categories of chemicals could include metals, volatile organics, semi-volatile organics, PCBs, dioxins or furans, etc., in order to take into account the related costs of sampling for different analytes. Some chemicals may be more broadly dispersed in or present at substantially higher concentrations, facts that could be taken into account in evaluating this factor.

- **The likelihood that the site's releases reached the waterway –** this multiplier takes into account evidence on the likelihood that releases on or from a property impacted the waterway. To the extent that facilities have combinations of permitted process or storm water discharges along with releases that resulted in other pathways into a waterway (unpermitted surface pathways, unpermitted direct dumping, groundwater influences, etc.) they may be treated separately.

- **The extent of the waterway impacted –** this multiplier takes into account the location of the sites in relation to segments of the waterway subject to the RI and the extent to which the waterway is influenced by tidal fluctuations.

Under this approach, which should be transparent to the parties involved in the case, the final calculations produce a "Total Score" for each party, which is the product of:

(Number of Years Assumed or Likely Impact) **x** (Release Magnitude Score) **x** (Chemical Category Score) **x** (Likelihood of Releases Impacting Waterway Multiplier) **x** (Percentage of Study Area Impacted Multiplier)

The allocation percentages are calculated by dividing each party's Total Score by the sum of all Parties Total Scores. Attachment 1 is an example of this methodology.

2. Remedial Cost Methodology

Remedial cost allocation normally demands a more specific look at the sediment segments that are being remediated to determine:

1. **The nature of the remediation** -- excavation, capping, or natural recovery.

2. **The cost of the remediation –** each segment has a unique cost that can be calculated. In some cases, the costs for excavation and disposal may vary for different segments depending on the severity of the contamination and the disposal location (e.g., open water disposal versus confined disposal unit).

3. **The contaminants driving the remediation –** this may involve breaking down the contaminants into chemical categories and also may involve consideration of whether the remedial drivers are based on health or ecological risks. Within each sediment segment there will be one or more sampling stations evaluated to determine which chemicals exceed target cleanup levels.

4. **Sources of remedy driver contaminants –** This is the heart of the analysis – each sampling station can be allocated for each contaminant category exceeding target cleanup levels. This requires an analysis of proximate properties that may have released contaminants and the likelihood that they impacted a particular sampling station, and then dividing the share according to the relative contributions of the properties.

Attachment 2 is an example of how this methodology can be implemented.

Ultimately, it might be determined that a formula simply cannot be applied to the vast array of facts and allocation factors without producing anomalous and inequitable results. In such a case, the allocator will have to combine all factors into inter-parcel and intra-parcel shares that are explained through an extensive narrative exposition. For example, each parcel is described in detail and an allocation percentage is based on the allocator's best judgment.

VI. CONCLUSION

As can be seen, allocation in a sediment case can involve detailed analysis of both technical facts and legal issues. Because of the complicated nature of these types of cases, and the significant investigation and remedial costs, it is difficult to secure agreements from the parties unless they have confidence that the fact investigation has been reasonably comprehensive and that the technical information has been credibly distilled. In the Fields Brook case, for example, the fact that all parties became increasingly and equally well-informed as a result of their participation in the arbitration process may have been as important in securing a settlement as their willingness to accept an arbitrator's final recommendation.

INVESTIGATION COST SPREADSHEET
WATERWAY

PRP	Area #	Water-way Area #	Years	PRP Status	Potential Activity Causing Contamination	COCs Associated with PRP	Severity of Chemicals (Compared to Remedial Objectives)	Pathway to Waterway	Notable Discharge Volume Information	Release Magnitude (RM) Score	COC (Remedial Objective) Score	Total Score	Allocation Percent	Comments
Party 1	62	I	**10**	Owner Operator (19__-19__)	Waste Oil Storage and Truck Washing	PCBs PAHs	Unknown	stormwater outfall and stormwater pumped off site	Modest stormwater	**8**	**6**	**480**	**6.49%**	
Party 2	1	M	**12**	Operator (19__-19__)	Ship repairs, including sandblasting, painting operations, and anti-fouling paint applications	metals PAHs	above regulatory levels/exceeded permit	untreated process discharge from pressure washing stormwater outfall, catch basins	Appreciable 140,000 gallons per year in hydroblasting discharge	**20**	**10**	**2400**	**32.47%**	
Party 3	61a	I	**20**	Owner of area # (19__-19__) Owner of XXX Construction	Various Tenants	PAHs, metals	above regulatory levels above ROs	No frontage on Waterway	Minimal	**2**	**8**	**320**	**4.33%**	
Party 4	22a	I	**50**	Owner (19__-19__)	Steam Plant Logyard	PAHs phenols			Minimal	**2**	**6**	**600**	**8.12%**	Owner of portion of site.
Party 5	14	I	**16**	Owner Operator (19__-19__)	Vehicle Washing	PCBs metals PAHs	above ROs below ROs 3.2 ppm total PAHs	catch basin sediments storm sewer manhole sediments --Vehicle Washing - runoff to Unrelated Stream -- some to Waterway	Minimal process flow -- mostly drains to Unrelated Stream, some portion to Waterway	**5**	**11**	**880**	**11.90%**	Reflects Partial Attribution of PCBs
Party 6	22, 22a, 22b, 24	I	**22**	Fill (19__-19__) XX Yard	Disposal	metals	above regulatory levels	surface water runoff/soil/groundwater	Modest 29,000 tons of slag 20,000 gal/day runoff. Arsenic loading estimated 511 lbs. per year.	**15**	**5**	**1650**	**22.32%**	
Party 6	28, 70	H	**16**	Fill (19__-19__) ZZZ Yard	Disposal	metals	above regulatory levels	soils/ditch -- surface water runoff. No surface frontage	Modest 28,000 gal/day Arsenic loadings estimated 117 lbs. per day	**8**	**5**	**640**	**8.66%**	
Party 7	76	H	**3**	Dumping (Transporter)	Disposal	PAHs metals	elevated levels	ditch sediments	Modest	**8**	**10**	**240**	**3.25%**	
Party 8	52	I	**13**	Owner (19__-19__)	Boat repairs	metals PAHs phthalates phenols			Minimal	**2**	**7**	**182**	**2.46%**	
									Total Score			**7392**	**100.00%**	

Attachment 2 -- Example
Remediation Cost Spreadsheet

			CATEGORY SHARES (RAW)					CATEGORY SHARES (WEIGHTED - 50% PCBS)						
			PCBs	PAHs	Metals	Organics	Phthal.	PCBs	PAHs	Metals	Organics	Phthal.	Share for Sampling Station	
Sediment Area	Sampl. Station	Party	%	%	%	%	%	%	%	%	%	%	%	Party
	A	AA				70.00%		0.00%	0.00%	0.00%	70.00%	0.00%	**70.00%**	AA
		BB				30.00%		0.00%	0.00%	0.00%	30.00%	0.00%	**30.00%**	BB
		CC			20.00%					20.00%			**20.00%**	CC
	B	AA			0.00%					0.00%			**0.00%**	AA
		BB			0.00%					0.00%			**0.00%**	BB
		DD			10.00%					10.00%			**10.00%**	DD
		EE			10.00%					10.00%			**10.00%**	EE
		FF			10.00%					10.00%			**10.00%**	FF
		GG			40.00%					40.00%			**40.00%**	GG
		HH			10.00%					10.00%			**10.00%**	HH
	C	CC		5.00%	20.00%		13.68%		1.67%	6.67%		4.56%	**12.89%**	CC
		AA		0.00%	0.00%		0.00%		0.00%	0.00%		0.00%	**0.00%**	AA
		BB		0.00%	0.00%		0.00%		0.00%	0.00%		0.00%	**0.00%**	BB
		DD		10.00%	10.00%		12.37%		3.33%	3.33%		4.12%	**10.79%**	DD
		EE		5.00%	10.00%		9.47%		1.67%	3.33%		3.16%	**8.16%**	EE
		FF		15.00%	10.00%		11.18%		5.00%	3.33%		3.73%	**12.06%**	FF
1		GG		50.00%	40.00%		37.50%		16.67%	13.33%		12.50%	**42.50%**	GG
		HH		15.00%	10.00%		15.79%		5.00%	3.33%		5.26%	**13.60%**	HH
	D	CC		5.00%	20.00%		13.68%		1.67%	6.67%		4.56%	**12.89%**	CC
		AA		0.00%	0.00%		0.00%		0.00%	0.00%		0.00%	**0.00%**	AA
		BB		0.00%	0.00%		0.00%		0.00%	0.00%		0.00%	**0.00%**	BB
		DD		10.00%	10.00%		12.37%		3.33%	3.33%		4.12%	**10.79%**	DD
		EE		5.00%	10.00%		9.47%		1.67%	3.33%		3.16%	**8.16%**	EE
		FF		15.00%	10.00%		11.18%		5.00%	3.33%		3.73%	**12.06%**	FF
		GG		50.00%	40.00%		37.50%		16.67%	13.33%		12.50%	**42.50%**	GG
		HH		15.00%	10.00%		15.79%		5.00%	3.33%		5.26%	**13.60%**	HH
	E	CC		5.00%	20.00%	0.00%			1.67%	6.67%	0.00%	0.00%	**8.33%**	CC
		AA		0.00%	0.00%	0.00%			0.00%	0.00%	0.00%	0.00%	**0.00%**	AA
		BB		0.00%	0.00%	0.00%			0.00%	0.00%	0.00%	0.00%	**0.00%**	BB
		DD		10.00%	10.00%	0.00%			3.33%	3.33%	0.00%	0.00%	**6.67%**	DD
		EE		5.00%	10.00%	0.00%			1.67%	3.33%	0.00%	0.00%	**5.00%**	EE
		FF		15.00%	10.00%	0.00%			5.00%	3.33%	0.00%	0.00%	**8.33%**	FF
		GG		50.00%	40.00%	100.00%			16.67%	13.33%	33.33%	0.00%	**63.33%**	GG
		HH		15.00%	10.00%	0.00%			5.00%	3.33%	0.00%	0.00%	**8.33%**	HH
		CC				0.00%					0.00%		**0.00%**	CC
	F	AA				70.40%					70.40%		**70.40%**	AA
		BB				29.60%					29.60%		**29.60%**	BB
2		DD				0.00%					0.00%		**0.00%**	DD
		EE				0.00%					0.00%		**0.00%**	EE
		FF				0.00%					0.00%		**0.00%**	FF
		GG				0.00%					0.00%		**0.00%**	GG
		HH				0.00%					0.00%		**0.00%**	HH
		CC		5.00%	20.00%	not	13.68%		1.67%	6.67%		4.56%	**12.89%**	CC
	G	AA		0.00%	0.00%	allocated	0.00%		0.00%	0.00%		0.00%	**0.00%**	AA
		BB		0.00%	0.00%		0.00%		0.00%	0.00%		0.00%	**0.00%**	BB
		DD		10.00%	10.00%		12.37%		3.33%	3.33%		4.12%	**10.79%**	DD
		EE		5.00%	10.00%		9.47%		1.67%	3.33%		3.16%	**8.16%**	EE
		FF		15.00%	10.00%		11.18%		5.00%	3.33%		3.73%	**12.06%**	FF
		GG		50.00%	40.00%		37.50%		16.67%	13.33%		12.50%	**42.50%**	GG
		HH		15.00%	10.00%		15.79%		5.00%	3.33%		5.26%	**13.60%**	HH
	H	CC			20.00%					20.00%			**20.00%**	CC
		AA			0.00%					0.00%			**0.00%**	AA
		BB			0.00%					0.00%			**0.00%**	BB
		DD			10.00%					10.00%			**10.00%**	DD
3		EE			10.00%					10.00%			**10.00%**	EE
		FF			10.00%					10.00%			**10.00%**	FF
		GG			40.00%					40.00%			**40.00%**	GG
		HH			10.00%					10.00%			**10.00%**	HH
		CC		5.00%	20.00%		13.68%		1.67%	6.67%		4.56%	**12.89%**	CC
	I	AA		0.00%	0.00%		0.00%		0.00%	0.00%		0.00%	**0.00%**	AA
		BB		0.00%	0.00%		0.00%		0.00%	0.00%		0.00%	**0.00%**	BB
		DD		10.00%	10.00%		12.37%		3.33%	3.33%		4.12%	**10.79%**	DD
		EE		5.00%	10.00%		9.47%		1.67%	3.33%		3.16%	**8.16%**	EE
		FF		15.00%	10.00%		11.18%		5.00%	3.33%		3.73%	**12.06%**	FF
		GG		50.00%	40.00%		37.50%		16.67%	13.33%		12.50%	**42.50%**	GG
		HH		15.00%	10.00%		15.79%		5.00%	3.33%		5.26%	**13.60%**	HH

Attachment 2 -- Example
Waterway
Weighted Allocation Shares by Sediment Area

Sediment Area	Sampl. Station	Party	Share for Sampling Station	Percent of Dredging	No of Stations in SMA	Weighted Sediment Area Share
1	A	AA	70.00%	50.00%	5	7.00%
1	A	BB	30.00%	50.00%	5	3.00%
1	B	CC	20.00%	50.00%	5	2.00%
1	B	AA	0.00%	50.00%	5	0.00%
1	B	BB	0.00%	50.00%	5	0.00%
1	B	DD	10.00%	50.00%	5	1.00%
1	B	EE	10.00%	50.00%	5	1.00%
1	B	FF	10.00%	50.00%	5	1.00%
1	B	GG	40.00%	50.00%	5	4.00%
1	B	HH	10.00%	50.00%	5	1.00%
1	C	CC	12.89%	50.00%	5	1.29%
1	C	AA	0.00%	50.00%	5	0.00%
1	C	BB	0.00%	50.00%	5	0.00%
1	C	DD	10.79%	50.00%	5	1.08%
1	C	EE	8.16%	50.00%	5	0.82%
1	C	FF	12.06%	50.00%	5	1.21%
1	C	GG	42.50%	50.00%	5	4.25%
1	C	HH	13.60%	50.00%	5	1.36%
1	D	CC	12.89%	50.00%	5	1.29%
1	D	AA	0.00%	50.00%	5	0.00%
1	D	BB	0.00%	50.00%	5	0.00%
1	D	DD	10.79%	50.00%	5	1.08%
1	D	EE	8.16%	50.00%	5	0.82%
1	D	FF	12.06%	50.00%	5	1.21%
1	D	GG	42.50%	50.00%	5	4.25%
1	D	HH	13.60%	50.00%	5	1.36%
1	E	CC	8.33%	50.00%	5	0.83%
1	E	AA	0.00%	50.00%	5	0.00%
1	E	BB	0.00%	50.00%	5	0.00%
1	E	DD	6.67%	50.00%	5	0.67%
1	E	EE	5.00%	50.00%	5	0.50%
1	E	FF	8.33%	50.00%	5	0.83%
1	E	GG	63.33%	50.00%	5	6.33%
1	E	HH	8.33%	50.00%	5	0.83%
2	F	CC	0.00%	10.00%	1	0.00%
2	F	AA	70.40%	10.00%	1	7.04%
2	F	BB	29.60%	10.00%	1	2.96%
2	F	DD	0.00%	10.00%	1	0.00%
2	F	EE	0.00%	10.00%	1	0.00%
2	F	FF	0.00%	10.00%	1	0.00%
2	F	GG	0.00%	10.00%	1	0.00%
2	F	HH	0.00%	10.00%	1	0.00%
3	G	CC	12.89%	40.00%	3	1.72%
3	G	AA	0.00%	40.00%	3	0.00%
3	G	BB	0.00%	40.00%	3	0.00%
3	G	DD	10.79%	40.00%	3	1.44%
3	G	EE	8.16%	40.00%	3	1.09%
3	G	FF	12.06%	40.00%	3	1.61%
3	G	GG	42.50%	40.00%	3	5.67%
3	G	HH	13.60%	40.00%	3	1.81%
3	H	CC	20.00%	40.00%	3	2.67%
3	H	AA	0.00%	40.00%	3	0.00%
3	H	BB	0.00%	40.00%	3	0.00%
3	H	DD	10.00%	40.00%	3	1.33%
3	H	EE	10.00%	40.00%	3	1.33%
3	H	FF	10.00%	40.00%	3	1.33%
3	H	GG	40.00%	40.00%	3	5.33%
3	H	HH	10.00%	40.00%	3	1.33%
3	I	CC	12.89%	40.00%	3	1.72%
3	I	AA	0.00%	40.00%	3	0.00%
3	I	BB	0.00%	40.00%	3	0.00%
3	I	DD	10.79%	40.00%	3	1.44%
3	I	EE	8.16%	40.00%	3	1.09%
3	I	FF	12.06%	40.00%	3	1.61%
3	I	GG	42.50%	40.00%	3	5.67%
3	I	HH	13.60%	40.00%	3	1.81%