## Calculating Percent Substrate by Size Class

These calculations refer to each of 2 field methods:

- Primary Transects Primary Transect with Substrate and Depth see Data Element 7.00)
- 2) Secondary Transects (on Thalweg Form) Secondary Transect with Substrate and Depth – see Date Element 35.00

Each of these 2 methods populates these variables:

TransectID (e.g. A0, or A5) StationLeftRight (e.g. 00, 01...10) SubstrateTypeCode – see combined codes table for Substrate Size Class

RS	Bedrock (smooth) - larger than a car
RR	Bedrock (rough) - larger than a car
RC	Concrete/Asphalt
XB	Large boulder (1000 to 4000 mm) – meter stick to car
SB	Small boulder (250 to 1000 mm) - basketball to meter stick
СВ	Cobble (64 to 250 mm) – tennis ball to basketball
GC	Course gravel (16 to 64 mm) - marble to tennis ball
GF	Fine gravel (2 to 16 mm) - ladybug to marble
SA	Sand (0.06 to 2 mm) - gritty to ladybug
FN	Silt, clay, muck (non gritty)
HP	Hardpan - hardened soil cemented together
HS	Drop this – use OT when observed
WD	Wood - any size
OT	Other (describe in comments)

1) By combining the methods, conceptually generate a populated table as below, with 209 observations: 19 rows and 11 columns.

	StationLeftRight										
TransectID	00	01	02	02	04	05	06	07	08	09	10
A0											
A5											
B0											
B5											
С0											
C5											

D0						
D5						
EO						
E5						
FO						
F5						
G0						
G5						
HO						
H5						
JO						
J5						
КО						

Of course, in the database, this can be just 1 data columns of 209 observations, as follows:

TransectIDwith StationLeftRightLeftRight	SubstrateTypeCode
A000	
A001	
A002	

2. Count the number of observations in the table – there might be missing data, leaving less than 209. This is NumberOfSubstratesSized

3: Calculate the remaining variables listed below by counting code observations, dividing by (typically) 209 and multiplying by 100.

Variable	Description
PercentBedrockSmooth	% observed particles [normally 209] with SubstrateSizeClass as RS
PercentBedrockRough	% observed particles [normally 209] with SubstrateSizeClass as RR
PercentBedrock	% observed particles [normally 209] with SubstrateSizeClass as RS or RR
PercentPavement	% observed particles [normally 209] with SubstrateSizeClass as RC
PercentBoulderLarge	% observed particles [normally 209] with SubstrateSizeClass as XB
PercentBoulderSmall	% observed particles [normally 209] with SubstrateSizeClass as SB
PercentBoulder	% observed particles [normally 209] with SubstrateSizeClass as SB or XB
PercentCobble	% observed particles [normally 209] with SubstrateSizeClass as CB
PercentGravelCoarse	% observed particles [normally 209] with SubstrateSizeClass as GC
PercentGravelCoarseorAbove	% observed particles [normally 209] with SubstrateSizeClass as GC or CB or SB
Dercent Cravel Fine	01 AB 01 AC 01 AS
PercentGraveiFine	% observed particles [normally 209] with SubstrateSizeClass as GF
PercentGravelFineOrBelow	% observed particles [normally 209] with SubstrateSizeClass as GF or SA or FN
PercentSand	% observed particles [normally 209] with SubstrateSizeClass as SA
PercentFines	% observed particles [normally 209] with SubstrateSizeClass as FN
PercentSandorFines	% observed particles [normally 209] with SubstrateSizeClass as SA or FN
PercentHardpan	% observed particles [normally 209] with SubstrateSizeClass as HP
PercentHardsand	% observed particles [normally 209] with SubstrateSizeClass as HS (drop this)
PercentWood	% observed particles [normally 209] with SubstrateSizeClass as WD
PercentOther	% observed particles [normally 209] with SubstrateSizeClass as OT