

## Procedures for Generating a List of Random Survey Sites

### **Method 1. Random Number Generator in Excel**

An excel spreadsheet can be used to generate a list of random numbers within a range. The example spreadsheet to the right calculates random integers between 1 and 300. The

	A	B	C	D	E
				site	<i>formula used in previous column</i>
1	count	lower	upper	number	
2	1	1	300	194	=RANDBETWEEN(B2,C2)
3	2	1	300	76	=RANDBETWEEN(B2,C2)
4	3	1	300	146	=RANDBETWEEN(B2,C2)

upper and lower bounds (column C and B respectively) can be changed as required for the stream and extent of the survey. The range can also be narrowed in order to select sites within particular reaches in order to satisfy the requirement of one site per reach. This method may generate duplicate site numbers. Therefore, it is recommended to make a few extra rows than are needed and read site numbers from top to bottom discarding duplicates until the required number of survey sites is reached.

### **Method 2. The Random Number Table**

The random digits in Table 1 (see reverse side of this sheet) can be used to identify random site numbers with any number of digits.

*For example, if there are 300 total sites within the extent of the survey and 10 random sites are to be selected, 3 digit site numbers less than or equal to 300 are needed.*

1. Pick a starting point on the random number table. Try to use a different starting point each time the protocol is used. Read digits across the row to get the first site number.

*Example: Start at row 9, column 10. The digit at this position is 0 and the digits to the right along the row are 9 and 7. The first site number is 097.*

2. Working down the column from your starting point identify the next zero, one or two (you need the three digit number to be less than or equal to 300) and read across the row from that first digit to get the second and third digits for site two.

*Continuing the above example, the second site number is 243.*

3. Repeat step 2 eight more times yielding the required additional site numbers. Once the bottom of a column is reached, continue at the top of the column immediately to the right. Skip any site numbers that have already been generated (duplicates).

*Continuing the above example, the remaining site numbers are 253, 052, 120, 020, 224, 209, 208 and 300. Note that the first digit of the last site (site 300) in this example is 3, which is acceptable because there are 300 sites. Also note that the number 224 was generated twice but was passed over on the second occurrence.*

TABLE 1 – 900 RANDOM DIGITS

This table was generated using the formula =RANDBETWEEN(0,9) in each of 900 cells in Microsoft Excel. The 5 x 5 blocking is simply a viewing aid.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
1	9	1	0	3	9	1	4	0	0	2	2	2	4	0	9	8	6	4	6	4	1	8	9	4	3	0	1	7	2	9
2	1	8	8	7	0	9	1	1	4	9	8	8	3	2	0	6	7	6	3	7	2	4	2	6	7	4	0	1	0	3
3	0	6	6	3	6	7	6	8	3	5	5	3	1	2	4	7	5	0	0	5	5	8	1	4	3	9	1	2	8	9
4	8	2	0	4	6	0	4	0	1	8	7	1	3	3	1	2	2	9	5	2	5	0	5	8	4	1	2	9	8	4
5	7	4	6	1	8	9	3	1	9	9	3	7	3	3	7	4	7	9	7	9	9	4	3	8	8	7	3	7	4	0
6	8	7	5	8	8	8	0	7	5	7	7	4	8	2	4	1	5	5	4	2	8	0	5	1	5	9	3	4	7	1
7	1	4	1	2	8	1	4	9	4	7	9	9	2	2	8	5	7	8	8	0	7	6	6	2	0	1	7	8	6	1
8	1	0	5	2	6	5	8	5	7	8	4	0	3	1	7	9	8	7	9	7	2	0	1	5	5	7	8	0	9	7
9	0	4	6	0	1	7	2	7	0	0	9	7	4	0	8	2	5	3	0	7	0	4	9	0	1	9	3	2	2	2
10	6	1	3	6	6	3	3	6	6	6	2	2	4	7	1	5	3	7	2	1	1	1	3	2	1	2	8	6	5	8
11	9	8	7	6	3	0	3	0	2	4	9	2	1	1	2	4	3	0	5	9	8	6	5	5	1	6	2	7	5	6
12	2	4	7	3	4	4	6	9	7	2	4	3	0	5	0	4	8	0	8	5	4	9	5	7	9	6	7	5	6	6
13	9	6	4	3	6	3	0	3	7	5	9	7	2	0	6	2	7	4	6	3	6	8	9	0	6	3	2	8	0	7
14	1	6	4	8	1	6	3	8	9	2	5	3	2	4	3	6	6	0	2	8	0	2	2	9	3	6	7	3	0	3
15	4	5	8	6	8	4	2	4	8	9	8	7	3	4	4	8	7	2	4	1	6	3	1	8	5	2	4	0	3	3
16	9	3	1	5	2	8	8	4	8	7	7	1	4	9	8	4	6	0	3	3	6	6	4	6	5	1	0	8	5	9
17	6	5	0	2	4	7	6	5	6	0	5	2	8	1	1	3	6	7	4	6	7	3	3	4	3	5	7	5	8	3
18	6	8	3	0	5	6	0	9	2	9	3	6	5	2	9	2	5	2	4	1	4	9	8	9	6	3	7	4	8	2
19	4	9	0	2	6	9	3	9	1	9	5	3	4	5	3	6	4	0	5	5	7	0	5	5	3	6	5	0	3	4
20	0	5	0	4	1	3	0	3	3	1	2	0	9	9	2	4	4	0	7	4	0	6	0	8	5	6	3	2	9	1
21	6	5	5	1	0	7	9	2	7	8	3	8	0	5	9	0	9	0	3	7	4	9	2	0	8	7	7	3	0	6
22	8	4	0	7	9	0	9	3	2	3	5	2	2	4	9	4	3	8	7	1	4	1	9	3	0	8	1	5	7	3
23	9	6	4	0	1	5	0	8	2	4	7	0	7	9	8	2	2	5	6	1	3	6	1	6	1	1	7	5	7	6
24	7	2	3	2	0	0	3	0	7	0	2	0	8	4	3	5	4	4	1	9	7	6	6	5	0	7	9	9	1	3
25	5	4	8	0	0	4	1	1	8	8	2	9	2	1	9	7	4	5	1	9	4	0	4	5	8	7	7	2	2	6
26	0	8	1	7	0	4	5	3	2	3	3	0	0	9	8	4	7	5	3	0	0	6	8	0	7	2	0	1	1	6
27	4	0	5	1	1	2	8	8	0	5	2	5	2	0	8	8	0	2	5	4	1	8	3	0	9	6	4	8	7	6
28	9	2	5	6	4	4	3	4	3	4	1	5	6	8	2	5	3	7	1	1	3	6	7	5	0	1	4	2	2	5
29	7	8	3	6	3	7	6	9	0	5	7	5	9	0	7	6	9	0	5	3	4	5	7	5	7	6	3	9	6	1
30	6	9	0	1	3	8	6	9	8	6	7	9	9	6	9	8	3	5	7	7	3	4	6	2	1	2	7	8	7	3