U.S. DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

NRCS–ENG–530A
2–80

BULK SAND DENSITY DETERMINATION AND CALIBRATION OF CONE AND BASE PLATE

Watershed _____ Site _____

Contractor _____ Contract No. _____ Test No. _____

Material source _____ Tested by _____ Date _____

Volume of Jar and Funnel Apparatus	Trials 1	Trials 2	Trials 3
1. Weight of apparatus plus water _____ (g)			
2. Weight of apparatus empty _____ (g)			
3. Weight of water= ① – ② _____ (g)			
4. Temperature of water _____ (specify C. or F.)			
5. Volume of water per gram (corrected for temperature) _____ (ml/g)			
6. Volume of apparatus= ③ x ⑤ _____ (ml)			
7. Volume of apparatus (average 3 trials) _____ ml			

Bulk Density of Sand	Trials 1	Trials 2	Trials 3
8. Weight of apparatus plus sand _____ (g)			
9. Weight of apparatus empty _____ (g)			
10. Weight of sand in apparatus= ⑧ – ⑨ _____ (g)			
11. Bulk density of sand= (62.427x ⑩)/ ⑦ _____ (lb/ft^3)			
12. Bulk density of sand (average of 3 trials) _____ lb/ft^3			

Weight of Sand to Fill Funnel and Base Plate	Trials 1	Trials 2	Trials 3
13. Weight of sand plus apparatus before test _____ (lb)			
14. Weight of sand plus apparatus after test _____ (lb)			
15. Weight of sand in funnel and base plate= ⑬ – ⑭ _____ (lb)			
16. Apparatus clibration factor (average 3 trials) _____ lb			

Conversion table–volume of water per gram, based on temperature

Degrees C.	Degrees F.	Volume of Water (ml/g)	Degrees C.	Degrees F.	Volume of Water (ml/g)
12	53.6	1.00048	24	75.2	1.00268
14	57.2	1.00073	26	78.8	1.00320
16	60.8	1.00103	28	82.4	1.00375
18	64.4	1.00138	30	86.0	1.00435
20	68.0	1.00177	32	89.6	1.00497
22	71.6	1.00221			

Note: 453g= 1lb; 1g@4° C(39.2° F)=1ml