Appendix D: Benthic Ecology Sample Washdown Procedures

(A) *Handling of the Samples*: sediments are collected using a van-Veen grab sampler. The buckets on the grab sampler are emptied into plastic tubs and carried to the benthic washdown sieve station area. The tubs are emptied into the washdown sieves and filtered (i.e., through a sand filter on board) site seawater is used to rinse the sediments off the organisms contained in the sediment. This process results in large volumes of site seawater and sediment, typically funneled off one side of the vessel back into the water. A snapshot from the benthic rinse step in the SOP is included below.

> 3. Process the grab for benthic community analyses. The whole grab, not an aliquot of the sampler is processed. Sediments to be sieved are placed in increments into a 1.0 mm (0.5mm or stacked 1.0 and 0.5 mm may also be used) mesh sieve at a rate to prevent the sieve from clogging and overflowing. The sieve will also be placed on a table, and a gentle flow of water washed over the sample. Extreme care must be taken to assure that no sample is lost over the side of the sieve while agitating or washing the sample. Water used for sieving is filtered seawater supplied at a rate to process the sediment without damage to the infaunal organisms.

(B) *Volume Estimates*: Typical setup for a 24-hour operation includes two washdown stations with two sieve boxes each, for a total of four sieve boxes. The washdown from four hoses (approx. 2-3-in/each in diameter) generates approximately 150 gallons per minute of site seawater runoff. The estimated total water volume for conducting the benthic ecology rinsing during a 7-day cruise is 1,134,000 Gallons. Additionally, sediment fines from the rejected sediment would be intermixed in the rinse water. Assumptions for total water calculation:

- Total site seawater flow rate: up to 150 gallons/minute
- Number of hours per day that sieving occurs: 18 hours
- Number of days for Phase III/IV activities: 7 days each

(C) *Runoff Location and Frequency*: The location(s) of the runoff will be determined by the layout of the vessel deck for sampling and processing. Generally, the runoff would be funneled to one side (e.g., port) and into scuppers and off the vessel. The frequency is generally around the clock during 24-hour operations, on average for approximately 18 hours during a 24-hour shift.

(D) *Duration on Site*: The Phase III and Phase IV sampling program will take approximately 7 days each (weather dependent) to complete at a single drill site. Phase III does not require benthic ecology monitoring (i.e., post-drill, only Phase IV monitoring includes the benthic ecology component), however, sediment sampling and tissue sampling for chemical analysis will still require washdown stations. For an individual station, the vessel is typically "on-station" for a few hours to complete all equipment deployments and retrievals. The sieving actively occurs while the vessel is on station and while the vessel is transiting between stations.

(E) *Status of Vessel During Washdown*: The sieving actively occurs while the vessel is on station and while the vessel is transiting between stations.