**Supplementary Table 1:** Virus mock community composition and characteristics

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| --- | --- | --- | --- |
| Phage | Taxonomy | GC (%) | Genome Size (kb) |
| *Pseudoalteromonas* phage HM1 | *Myoviridae* | 35.7 | 129.4 |
| *Pseudoalteromonas* phage HP1 | *Podoviridae* | 44.7 | 45.0 |
| *Pseudoalteromonas* phage HS2 | *Siphoviridae* | 40.2 | 38.2 |