

**ATTACHMENT B**

**BACKUP VOLUME CALCULATIONS**





Fire Island Inlet to Moriches Inlet, New York  
Emergency Stabilization Project  
Erosion Volume Summary Table

| Profile Line | Reach             | Village                      | Distance (ft) | Erosion Rate (ft/yr) | Erosion Rate (c.y./yr/ft) | Erosion Rate (c.y./yr) | Erosion Rate by Reach (c.y./yr) |
|--------------|-------------------|------------------------------|---------------|----------------------|---------------------------|------------------------|---------------------------------|
| Taper        |                   | Taper                        | 414           |                      |                           |                        |                                 |
| F4           | GSB-1A            | Robert Moses State Park      | 2,449         |                      |                           | -16,551                | -105,870                        |
| F5           |                   | Robert Moses State Park      | 2,698         |                      |                           | -18,235                |                                 |
| F6           |                   | Robert Moses State Park      | 2,589         |                      |                           | -17,501                |                                 |
| F7           |                   | Robert Moses State Park      | 2,660         |                      |                           | -17,982                |                                 |
| F8           |                   | Robert Moses State Park      | 2,735         |                      |                           | -18,484                |                                 |
| F9           |                   | Robert Moses State Park      | 2,532         |                      |                           | -17,117                |                                 |
| F10          | GSB-1B            | Fire Island Lighthouse Tract | 2,330         |                      |                           | -15,748                | -44,895                         |
| F11          |                   | Fire Island Lighthouse Tract | 2,471         |                      |                           | -16,702                |                                 |
| F12          |                   | Fire Island Lighthouse Tract | 1,425         |                      |                           | -9,632                 |                                 |
| KISA         |                   | Fire Island Lighthouse Tract | 416           |                      |                           | -2,813                 |                                 |
| SFD1         | GSB-2A            | Kismet                       | 461           |                      |                           | -3,116                 | -56,925                         |
| F13          |                   | National Park Service        | 278           |                      |                           | -1,877                 |                                 |
| SFD2         |                   | Kismet                       | 364           |                      |                           | -2,459                 |                                 |
| SFD3         |                   | Saltaire                     | 484           |                      |                           | -3,273                 |                                 |
| SFD4         |                   | Saltaire                     | 322           |                      |                           | -2,177                 |                                 |
| F14          |                   | Saltaire                     | 181           |                      |                           | -1,225                 |                                 |
| SFD5         |                   | Saltaire                     | 287           |                      |                           | -1,938                 |                                 |
| SFD6         |                   | Saltaire                     | 372           |                      |                           | -2,515                 |                                 |
| SFD7         |                   | Saltaire                     | 340           |                      |                           | -2,300                 |                                 |
| F15          |                   | Saltaire                     | 375           |                      |                           | -2,536                 |                                 |
| SFD9         |                   | Saltaire                     | 398           |                      |                           | -2,690                 |                                 |
| SFD10        |                   | Saltaire                     | 371           |                      |                           | -2,505                 |                                 |
| SFD11        |                   | Saltaire                     | 322           |                      |                           | -2,174                 |                                 |
| F16          |                   | Saltaire                     | 235           |                      |                           | -1,586                 |                                 |
| SFD13        |                   | Fair Harbor                  | 274           |                      |                           | -1,852                 |                                 |
| SFD14        |                   | Fair Harbor                  | 448           |                      |                           | -3,026                 |                                 |
| SFD15        |                   | Fair Harbor                  | 347           |                      |                           | -2,344                 |                                 |
| F17          |                   | Fair Harbor                  | 274           |                      |                           | -1,851                 |                                 |
| SFD16        |                   | Fair Harbor                  | 459           |                      |                           | -3,104                 |                                 |
| SFD17        |                   | Dunewood                     | 417           |                      |                           | -2,821                 |                                 |
| F18          | Dunewood          | 375                          |               |                      | -2,535                    |                        |                                 |
| SFD19        | Lonelyville       | 459                          |               |                      | -3,103                    |                        |                                 |
| SFD20        | Lonelyville       | 300                          |               |                      | -2,031                    |                        |                                 |
| F19          | Lonelyville       | 279                          |               |                      | -1,887                    |                        |                                 |
| SFD21        | Atlantique Park   | 472                          |               |                      | -3,188                    | -30,745                |                                 |
| SFD21+500    | Atlantique Park   | 507                          |               |                      | -3,430                    |                        |                                 |
| F20          | Atlantique        | 478                          | -5.0          | -6.8                 | -3,229                    |                        |                                 |
| I-C+450      | Atlantique        | 314                          |               |                      | -2,119                    |                        |                                 |
| I-C+700      | Atlantique        | 252                          |               |                      | -1,702                    |                        |                                 |
| F21          | GSB-2B            | National Park Service        | 405           |                      |                           | -2,735                 |                                 |
| F21+500      |                   | National Park Service        | 498           |                      |                           | -3,367                 |                                 |
| CF11_F22     |                   | Robins Rest                  | 345           |                      |                           | -2,330                 |                                 |
| CF11+195     |                   | National Park Service        | 345           |                      |                           | -2,330                 |                                 |
| CF12         |                   | Corneille Estates            | 490           |                      |                           | -3,313                 |                                 |
| CF13_F23     |                   | Corneille Estates            | 444           |                      |                           | -3,002                 |                                 |
| CF14         |                   | Summer Club                  | 394           |                      |                           | -2,663                 |                                 |
| CF15         |                   | Ocean Beach                  | 344           |                      |                           | -2,324                 |                                 |
| CF16         |                   | Ocean Beach                  | 353           |                      |                           | -2,385                 |                                 |
| F24          |                   | Ocean Beach                  | 266           |                      |                           | -1,799                 |                                 |
| CF17         | GSB-2C            | Ocean Beach                  | 316           |                      |                           | -2,133                 | -27,384                         |
| CF18         |                   | Ocean Beach                  | 452           |                      |                           | -3,052                 |                                 |
| CF19         |                   | Seaview Islip                | 372           |                      |                           | -2,518                 |                                 |
| CF110_F25    |                   | Seaview Islip                | 362           |                      |                           | -2,446                 |                                 |
| CF111        |                   | Seaview Islip                | 415           |                      |                           | -2,805                 |                                 |
| CF112        |                   | Seaview Islip                | 397           |                      |                           | -2,682                 |                                 |
| CF113_F26    |                   | Seaview Brookhaven           | 381           |                      |                           | -2,578                 |                                 |
| CF114        |                   | Seaview Brookhaven           | 411           |                      |                           | -2,780                 |                                 |
| CF115        |                   | Seaview Brookhaven           | 405           |                      |                           | -2,736                 |                                 |
| CF116_F27    |                   | Ocean Bay Park               | 458           |                      |                           | -3,098                 |                                 |
| CF117        | Ocean Bay Park    | 477                          |               |                      | -3,222                    |                        |                                 |
| CF118        | Ocean Bay Park    | 440                          |               |                      | -2,972                    |                        |                                 |
| CF119_F28    | Ocean Bay Park    | 467                          |               |                      | -3,155                    |                        |                                 |
| CF120        | Ocean Bay Park    | 402                          |               |                      | -2,719                    |                        |                                 |
| CF121        | GSB-2D            | Point O' Woods               | 158           |                      |                           | -1,066                 | -48,155                         |
| F29          |                   | Point O' Woods               | 96            |                      |                           | -646                   |                                 |
| CF121+190    |                   | Point O' Woods               | 353           |                      |                           | -2,385                 |                                 |
| F125         |                   | Point O' Woods               | 511           |                      |                           | -3,457                 |                                 |
| F125.5       |                   | Point O' Woods               | 560           |                      |                           | -3,788                 |                                 |
| F30          |                   | Point O' Woods               | 534           |                      |                           | -3,613                 |                                 |
| F126.5       |                   | Point O' Woods               | 499           |                      |                           | -3,373                 |                                 |
| F127         |                   | Point O' Woods               | 523           |                      |                           | -3,537                 |                                 |
| F31          |                   | Point O' Woods               | 519           |                      |                           | -3,510                 |                                 |
| CF126        |                   | Point O' Woods               | 311           |                      |                           | -2,101                 |                                 |
| Taper        |                   | Taper                        | 853           |                      |                           |                        |                                 |
| F33          |                   | No Fill                      | -             | -                    | -                         | -                      |                                 |
| F34          |                   | No Fill                      | -             | -                    | -                         | -                      |                                 |
| Taper        |                   | Taper                        | 861           |                      |                           |                        |                                 |
| F36          | GSB-3A            | Cherry Grove                 | 2,950         | -2.0                 | -2.7                      | -7,976                 | -7,976                          |
| Taper        |                   | Taper                        | 709           |                      |                           |                        |                                 |
| Taper        |                   | Taper                        | 505           |                      |                           |                        |                                 |
| FIP2         | GSB-3C            | Fire Island Pines            | 463           |                      |                           | -6,264                 | -87,307                         |
| FIP3         |                   | Fire Island Pines            | 541           |                      |                           | -7,314                 |                                 |
| FIP4_F39     |                   | Fire Island Pines            | 558           |                      |                           | -7,539                 |                                 |
| FIP5         |                   | Fire Island Pines            | 568           |                      |                           | -7,679                 |                                 |
| FIP6_F40     |                   | Fire Island Pines            | 550           |                      |                           | -7,435                 |                                 |
| FIP7         |                   | Fire Island Pines            | 498           |                      |                           | -6,736                 |                                 |
| FIP8         |                   | Fire Island Pines            | 456           |                      |                           | -6,162                 |                                 |
| FIP9_F41     |                   | Fire Island Pines            | 507           | -10                  | -13.5                     | -6,854                 |                                 |
| FIP10        |                   | Fire Island Pines            | 510           |                      |                           | -6,892                 |                                 |
| FIP11        |                   | Fire Island Pines            | 345           |                      |                           | -4,664                 |                                 |
| F42          |                   | Fire Island Pines            | 296           |                      |                           | -4,000                 |                                 |
| FIP12        |                   | Fire Island Pines            | 440           |                      |                           | -5,946                 |                                 |
| FIP13        |                   | Fire Island Pines            | 483           |                      |                           | -6,530                 |                                 |
| FIP13+435    | Fire Island Pines | 244                          |               |                      | -3,292                    |                        |                                 |
| Taper        |                   | Taper                        | 843           |                      |                           |                        |                                 |
| F45          |                   | No Fill                      | -             | -                    | -                         | -                      |                                 |
| F46          |                   | No Fill                      | -             | -                    | -                         | -                      |                                 |
| F47          |                   | No Fill                      | -             | -                    | -                         | -                      |                                 |
| Taper        |                   | Taper                        | 851           |                      |                           |                        |                                 |
| W12          | GSB-3E            | Water Island                 | 352           | -2                   | -2.7                      | -951                   | -3,233                          |
| W13          |                   | Water Island                 | 844           |                      |                           | -2,282                 |                                 |
| Taper        |                   | Taper                        | 857           |                      |                           |                        |                                 |
| F51          |                   | No Fill                      | -             | -                    | -                         | -                      |                                 |
| F52          |                   | No Fill                      | -             | -                    | -                         | -                      |                                 |
| Taper        |                   | Taper                        | 855           |                      |                           |                        |                                 |
| DP2          | GSB-3G            | Davis Park                   | 618           |                      |                           | -10,019                | -67,596                         |
| DP3          |                   | Davis Park                   | 459           |                      |                           | -7,449                 |                                 |
| DP4          |                   | Davis Park                   | 456           |                      |                           | -7,396                 |                                 |
| DP5_F55      |                   | Davis Park                   | 472           |                      |                           | -7,663                 |                                 |
| DP6          |                   | Davis Park                   | 492           |                      |                           | -7,981                 |                                 |
| DP7          |                   | Davis Park                   | 487           | -12                  | -16.2                     | -7,905                 |                                 |
| DP8_F56      |                   | Davis Park                   | 424           |                      |                           | -6,879                 |                                 |
| DP9          |                   | Davis Park                   | 365           |                      |                           | -5,925                 |                                 |
| DP10         |                   | Davis Park                   | 275           |                      |                           | -4,460                 |                                 |
| DP10+184     |                   | Davis Park                   | 118           |                      |                           | -1,919                 |                                 |
| F58          |                   | Taper                        | 869           |                      |                           |                        |                                 |
| F59          |                   | No Fill                      | -             | -                    | -                         | -                      |                                 |
| F60          |                   | No Fill                      | -             | -                    | -                         | -                      |                                 |
| F61          |                   | No Fill                      | -             | -                    | -                         | -                      |                                 |
| F62          |                   | No Fill                      | -             | -                    | -                         | -                      |                                 |
| F63          |                   | No Fill                      | -             | -                    | -                         | -                      |                                 |
| F64          |                   | No Fill                      | -             | -                    | -                         | -                      |                                 |
| F65          |                   | No Fill                      | -             | -                    | -                         | -                      |                                 |
| F66          |                   | No Fill                      | -             | -                    | -                         | -                      |                                 |
| F67          |                   | No Fill                      | -             | -                    | -                         | -                      |                                 |
| F68          |                   | No Fill                      | -             | -                    | -                         | -                      |                                 |
| F69          |                   | No Fill                      | -             | -                    | -                         | -                      |                                 |
| F70          |                   | No Fill                      | -             | -                    | -                         | -                      |                                 |
| Taper        |                   | Taper                        | 1,585         |                      |                           |                        |                                 |
| F71          | MB-1A             | Smith Point County Park      | 2,565         | -1                   | -1.35                     | -3,468                 | -7,703                          |
| F72          |                   | Smith Point County Park      | 3,133         |                      |                           | -4,235                 |                                 |
| F73          | MB-1B             | Smith Point County Park      | 1,603         |                      |                           | -14,082                | -131,659                        |
| F74          |                   | Smith Point County Park      | 1,676         |                      |                           | -14,729                |                                 |
| F75          |                   | Smith Point County Park      | 1,745         |                      |                           | -15,336                |                                 |
| F76          |                   | Smith Point County Park      | 3,012         |                      |                           | -26,462                |                                 |
| F77          |                   | Smith Point County Park      | 3,763         |                      |                           | -33,069                |                                 |
| F78          |                   | Smith Point County Park      | 3,184         |                      |                           | -27,981                |                                 |
| F79          | MB-2A             | Smith Point County Park      | 3,217         |                      |                           |                        |                                 |
| Taper        |                   | Taper                        | 862           |                      |                           |                        |                                 |
| <b>TOTAL</b> |                   |                              | <b>95,185</b> |                      |                           | <b>-619,449</b>        |                                 |

Note: No credit adjustment for reserve volume is present in this table.



**Fire Island Inlet to Moriches Inlet, New York  
Emergency Stabilization Project  
Adjusted Volumetric Change Rate Calculation - Kismet to Davis Park**

| Profile Line | Reach  | Village               | Distance (ft) | -25.9 ft NAVD (c.y.)<br>-27.0 ft NGVD (c.y.) | Nourishment Fill Volume |                  | Adjusted for Nourishments (c.y./yr) |
|--------------|--------|-----------------------|---------------|--|-------------------------|------------------|-------------------------------------|
|              |        |                       |               |  | 2004 (c.y.)             | 2009 (c.y.)      |                                     |
| SFD1         |        | Kismet                | 460           | 9,831  |                         |                  | 666                                 |
| F13          |        | National Park Service | 279           | 12,189                                       |                         |                  | 826                                 |
| SFD2         |        | Kismet                | 361           | 5,442  |                         |                  | 369                                 |
| SFD3         |        | Saltaire              | 481           | 11,026                                       | 19,921                  | 14,038           | -1,553                              |
| SFD4         |        | Saltaire              | 417           | 37,205                                       | 44,709                  | 31,617           | -2,650                              |
| SFD5         |        | Saltaire              | 373           | 29,243                                       | 39,923                  | 38,093           | -3,303                              |
| SFD6         |        | Saltaire              | 372           | 25,611                                       | 48,726                  | 33,909           | -3,862                              |
| SFD7         |        | Saltaire              | 340           | 17,190                                       | 41,447                  | 27,729           | -3,521                              |
| F15          |        | Saltaire              | 375           | 37,526                                       | 39,460                  | 19,994           | -1,485                              |
| SFD9         |        | Saltaire              | 397           | 14,236                                       | 24,154                  | 11,609           | -1,458                              |
| SFD10        |        | Saltaire              | 370           | 15,159                                       | 24,801                  | 15,143           | -1,679                              |
| SFD11        | GSB-2A | Saltaire              | 321           | 22,840                                       | 30,435                  | 16,154           | -1,609                              |
| F16          |        | Saltaire              | 234           | 23,159                                       | 23,467                  | 7,627            | -537                                |
| SFD13        |        | Fair Harbor           | 273           | 8,252  | 21,769                  | 7,584            | -1,429                              |
| SFD14        |        | Fair Harbor           | 447           | -5,091                                       | 39,588                  | 19,191           | -4,326                              |
| SFD15        |        | Fair Harbor           | 346           | -5,252                                       | 37,787                  | 22,610           | -4,446                              |
| F17          |        | Fair Harbor           | 274           | -14,834                                      | 24,374                  | 20,062           | -4,014                              |
| SFD16        |        | Fair Harbor           | 460           | 19,136                                       | 33,959                  | 37,784           | -3,563                              |
| SFD17        |        | Dunewood              | 418           | 17,482                                       | 50,841                  | 39,546           | -4,938                              |
| F18          |        | Dunewood              | 374           | 46,549                                       | 59,766                  | 38,617           | -3,511                              |
| SFD19        |        | Lonelyville           | 457           | 22,311                                       | 48,607                  | 54,756           | -5,490                              |
| SFD20        |        | Lonelyville           | 301           | 10,182                                       | 28,073                  | 24,989           | -2,904                              |
| F19          |        | Lonelyville           | 279           | -10,091                                      | 13,832                  | 16,980           | -2,770                              |
| SFD21        |        | Atlantique Park       | 730           | 8,807  | 10,174                  | 22,711           | -1,631                              |
| F20          |        | Atlantique            | 979           | 54,441                                       | 11,917                  |                  | 2,880                               |
| F21          | GSB-2B | National Park Service | 966           | 49,311                                       |                         |                  | 3,340                               |
| F22          |        | Robins Rest           | 1,078         | 29,048                                       |                         |                  | 1,967                               |
| CFI3_F23     |        | Corneille Estates     | 1,322         | 131,197                                      |                         | 93,821           | 2,531                               |
| F24          |        | Ocean Club            | 1,424         | 70,380                                       |                         | 108,218          | -2,563                              |
| F25          | GSB-2C | Seaview Islip         | 1,276         | 19,105                                       |                         | 110,215          | -6,171                              |
| F26          |        | Seaview Brookhaven    | 1,201         | 58,560                                       |                         | 89,510           | -2,096                              |
| F27          |        | Ocean Bay Park        | 1,307         | 20,150                                       |                         | 92,891           | -4,927                              |
| F28          |        | Ocean Bay Park        | 1,100         | 60,881                                       |                         | 77,180           | -1,104                              |
| CFI21        | GSB-2D | Point O' Woods        | 403           | 26,524                                       |                         | 22,563           | 268                                 |
| F29          |        | Point O' Woods        | 913           | 78,918                                       |                         |                  | 5,345                               |
| F30          |        | Point O' Woods        | 1,664         | 137,633                                      |                         |                  | 9,322                               |
| F31          |        | Point O' Woods        | 1,297         | 139,156                                      |                         |                  | 9,425                               |
| F32          |        | No Fill               | 2,024         | 33,121                                       |                         |                  | 2,243                               |
| F33          |        | No Fill               | 2,567         | -329,435                                     |                         |                  | -22,313                             |
| F34          |        | No Fill               | 2,145         | 14,345                                       |                         |                  | 972                                 |
| F35          |        | No Fill               | 2,000         | -38,115                                      |                         |                  | -2,582                              |
| F36          | GSB-3A | Cherry Grove          | 1,604         | -9,539                                       |                         |                  | -646                                |
| F37          |        | No Fill               | 1,215         | -55,076                                      |                         |                  | -3,730                              |
| F38          |        | No Fill               | 784           | -11,951                                      | 9,455                   |                  | -1,450                              |
| FIP2         |        | Fire Island Pines     | 494           | -284   | 32,968                  | 42,334           | -5,119                              |
| FIP3         |        | Fire Island Pines     | 540           | -3,723                                       | 69,681                  | 64,933           | -9,370                              |
| F39          |        | Fire Island Pines     | 556           | 7,091  | 74,385                  | 74,400           | -9,597                              |
| FIP5         |        | Fire Island Pines     | 567           | -6,375                                       | 64,714                  | 64,787           | -9,203                              |
| F40          |        | Fire Island Pines     | 550           | 31,881                                       | 57,531                  | 31,751           | -3,888                              |
| FIP7         |        | Fire Island Pines     | 498           | -17,284                                      | 28,447                  | 25,659           | -4,835                              |
| FIP8         | GSB-3C | Fire Island Pines     | 455           | -29,936                                      | 36,157                  | 24,211           | -6,116                              |
| F41          |        | Fire Island Pines     | 507           | 13,779                                       | 46,003                  | 22,585           | -3,712                              |
| FIP10        |        | Fire Island Pines     | 511           | -33,139                                      | 31,331                  | 32,865           | -6,593                              |
| FIP11        |        | Fire Island Pines     | 344           | -29,652                                      | 23,209                  | 29,665           | -5,590                              |
| F42          |        | Fire Island Pines     | 294           | -12,240                                      | 19,642                  | 24,281           | -3,804                              |
| FIP12        |        | Fire Island Pines     | 441           | -47,435                                      | 28,887                  | 34,737           | -7,522                              |
| FIP13        |        | Fire Island Pines     | 532           | -28,651                                      | 30,336                  | 19,540           | -5,319                              |
| F43          |        | No Fill               | 677           | -58,301                                      | 8,095                   |                  | -4,497                              |
| F44          |        | No Fill               | 1,195         | 10,772                                       |                         |                  | 730                                 |
| F45          |        | No Fill               | 1,540         | 94,091                                       |                         |                  | 6,373                               |
| F46          |        | No Fill               | 1,336         | -1,738                                       |                         |                  | -118                                |
| F47          |        | No Fill               | 1,374         | 41,412                                       |                         |                  | 2,805                               |
| F48          |        | No Fill               | 1,623         | 153,241                                      |                         |                  | 10,379                              |
| F49          |        | No Fill               | 1,192         | -108,940                                     |                         |                  | -7,379                              |
| F50          |        | No Fill               | 1,128         | -17,748                                      |                         |                  | -1,202                              |
| F51          |        | No Fill               | 1,282         | 47,748                                       |                         |                  | 3,234                               |
| F52          |        | No Fill               | 952           | 18,922                                       |                         |                  | 1,282                               |
| F53          |        | No Fill               | 988           | -117,417                                     |                         |                  | -7,953                              |
| F54          | GSB-3G | Davis Park            | 1,465         | -186,825                                     |                         | 77,178           | -17,881                             |
| F55          |        | Davis Park            | 1,640         | 152,619                                      |                         | 145,492          | 483                                 |
| F56          |        | Davis Park            | 1,271         | 27,888                                       |                         | 65,548           | -2,551                              |
| F57          |        | Davis Park            | 543           | -38,673                                      |                         | 3,134            | -2,832                              |
| <b>TOTAL</b> |        |                       | <b>60,903</b> | <b>697,845</b>                               | <b>1,278,572</b>        | <b>1,898,241</b> | <b>-167,902</b>                     |

| Reach  | -27.0 ft NGVD (c.y.) | Adjusted for Nourishments (c.y./yr) |
|--------|----------------------|-------------------------------------|
| GSB-2A | 349,301              | -57,190                             |
| GSB-2B | 272,804              | 9,088                               |
| GSB-2C | 148,045              | -10,830                             |
| GSB-2D | 463,262              | 18,330                              |
| GSB-3A | -9,539               | -646                                |
| GSB-3C | -155,968             | -80,668                             |
| GSB-3G | -44,991              | -22,781                             |

Fire Island Inlet to Mariches Inlet, New York  
Emergency Stabilization Project  
Total Volume Summary Table revised:9/10/13

| Reach  | Profile Lines   | Reach Length (ft) | Design Fill Volume (c.y.) | Reserve Volume (c.y.) | Advance Fill Volume (c.y.) | 10% Overfill Factor (c.y.) | Subtotal (c.y.)  | 15% Contingency (c.y.) | Total Fill (c.y.) |
|--------|---|-------------------|---------------------------|-----------------------|----------------------------|----------------------------|------------------|------------------------|-------------------|
| GSB-1A | F4 to F9<br>Robert Moses State Park                       | 16,562            | 458,164                   | 785,601               | 110,942                    | 56,911                     | 635,238          | 95,286                 | 730,524           |
| GSB-1B | F10 to KISA<br>Fire Island Lighthouse Tract               | 5,461             | 253,025                   | 217,266               | 98,301                     | 35,133                     | 386,459          | 57,969                 | 444,428           |
| GSB-2A | SFD1 to F19<br>Kismet to Lonelyville                      | 8,918             | 200,098                   | 284,793               | 109,770                    | 30,987                     | 340,855          | 51,128                 | 391,983           |
| GSB-2B | SFD21 to CFI3_F23<br>Atlantique Park to Cornielle Estates | 4,529             | 313,822                   | 59,815                | 92,548                     | 40,637                     | 447,008          | 67,051                 | 514,059           |
| GSB-2C | CFI4 to CFI13_F26<br>Summer Club to Seaview Brookhaven    | 3,752             | 147,569                   | 31,034                | 75,401                     | 22,297                     | 245,267          | 36,790                 | 282,057           |
| GSB-2D | CFI14 to CFI26<br>Seaview Brookhaven to Point O' Woods    | 7,228             | 250,258                   | 470,795               | 97,956                     | 34,821                     | 384,077          | 57,612                 | 441,689           |
| GSB-3A | F36<br>Cherry Grove                                       | 2,950             | 10,278                    | 78,164                | 0                          | 1,028                      | 14,041           | 2,106                  | 16,147            |
| GSB-3C | FIP2 to FIE13+435<br>Fire Island Pines                    | 6,457             | 549,255                   | 3,069                 | 346,159                    | 89,541                     | 1,029,435        | 154,415                | 1,183,850         |
| GSB-3E | WI2 to WI3<br>Water Island                                | 1,196             | 30,676                    | 11,845                | 9,127                      | 3,980                      | 59,670           | 8,951                  | 68,621            |
| GSB-3G | DP2 to DP10+184<br>Davis Park                             | 4,167             | 305,013                   | 72,650                | 215,297                    | 52,031                     | 639,880          | 95,982                 | 735,862           |
| MB-1A  | F71 to F72<br>Smith Point County Park                     | 6,342             | 265,725                   | 254,738               | 13,872                     | 27,960                     | 373,830          | 56,075                 | 429,905           |
| MB-1B  | F73 to F78<br>Smith Point County Park                     | 13,095            | 681,702                   | 575,098               | 96,696                     | 77,840                     | 856,239          | 128,436                | 984,675           |
| MB-2A  | F79<br>Smith Point County Park                            | 4,461             | 525,019                   | 0                     | 43,725                     | 56,874                     | 668,126          | 100,219                | 768,345           |
|        | <b>Total</b>  | <b>85,118</b>     | <b>3,990,604</b>          | <b>2,844,867</b>      | <b>1,309,794</b>           | <b>530,041</b>             | <b>6,080,125</b> | <b>912,019</b>         | <b>6,992,144</b>  |

Note: Taper distances were not included in the reach lengths in this table.

Taper volumes were included in the subtotal and total fill calculations.

Fire Island Inlet to Moriches Inlet, New York  
Emergency Stabilization Project  
Detailed Design Template Volume Breakdown  
Robert Moses State Park to Smith Point County Park

| REACH  | REACH LENGTH (FT) | DUNE VOLUME BY REACH (CY) | BERM VOLUME BY REACH (CY) | VOLUME BY REACH (CY) |   |
|--------|-------------------|---------------------------|---------------------------|----------------------|---|
| GSB-1A | 16,976            | 6,404                     | 460,981                   | 467,385              |   |
| GSB-1B | 5,461             | 26,703                    | 226,323                   | 253,025              |   |
| GSB-2A | 8,918             | 53,774                    | 146,323                   | 200,098              |   |
| GSB-2B | 4,529             | 44,389                    | 269,433                   | 313,822              |   |
| GSB-2C | 3,752             | 21,857                    | 125,712                   | 147,569              |   |
| GSB-2D | 8,081             | 37,913                    | 213,386                   | 251,299              |   |
| GSB-3A | 4,520             | -                         | 13,013                    | 13,013               |   |
| GSB-3C | 7,805             | 35,687                    | 558,048                   | 593,735              | Total Design Dune Volume (CY) 350,058       |
| GSB-3E | 2,903             | 1,269                     | 45,294                    | 46,563               |   |
| GSB-3G | 5,891             | 31,868                    | 340,684                   | 372,553              | Total Design Berm Volume (CY) 3,890,231     |
| MB-1A  | 7,927             | 3,560                     | 328,438                   | 331,998              |   |
| MB-1B  | 13,095            | 63,987                    | 617,716                   | 681,702              | Total Design Template Volume (CY) 4,240,289 |
| MB-2A  | 5,323             | 22,647                    | 544,880                   | 567,526              |   |

| REACH    | MONUMENT  | EFFECTIVE DISTANCE (FT) | DUNE DENSITY Above +9.5 ft. (CY/FT) | DUNE VOLUME Above +9.5 ft. (CY) | BERM DENSITY Below +9.5 ft. (CY/FT) | BERM VOLUME Below +9.5 ft. (CY) |
|----------|-----------|-------------------------|-------------------------------------|---------------------------------|-------------------------------------|---------------------------------|
| GSB-1A   | taper     | 414                     |                                     |                                 |                                     | 9,220                           |
|          | F4        | 2,449                   | -                                   | -                               | 44.5                                | 109,068                         |
|          | F5        | 2,698                   | -                                   | -                               | 22.8                                | 61,453                          |
|          | F6        | 2,589                   | -                                   | -                               | 32.2                                | 83,328                          |
|          | F7        | 2,660                   | -                                   | -                               | 20.2                                | 53,615                          |
|          | F8        | 2,735                   | -                                   | -                               | 12.1                                | 32,980                          |
| GSB-1B   | F9        | 2,532                   | -                                   | -                               | 17.1                                | 43,231                          |
|          | F10       | 2,330                   | 5.5                                 | 12,807                          | 58.4                                | 136,158                         |
|          | F11       | 2,471                   | 5.5                                 | 13,635                          | 57.3                                | 141,507                         |
|          | F12       | 1,425                   | 4.5                                 | 6,362                           | 10.6                                | 15,115                          |
|          | KISA      | 416                     | 2.3                                 | 940                             | 12.1                                | 5,047                           |
| GSB-2A   | SFD1      | 461                     | 7.9                                 | 3,628                           | 14.7                                | 6,773                           |
|          | F13       | 278                     | 10.0                                | 2,779                           | 15.7                                | 4,352                           |
|          | SFD2      | 364                     | 9.5                                 | 3,454                           | 5.1                                 | 1,866                           |
|          | SFD3      | 484                     | 7.2                                 | 3,466                           | 27.7                                | 13,413                          |
|          | SFD4      | 322                     | 4.3                                 | 1,397                           | 33.5                                | 10,778                          |
|          | F14       | 181                     | 3.5                                 | 633                             | 9.1                                 | 1,655                           |
|          | SFD5      | 287                     | 3.6                                 | 1,027                           | 41.5                                | 11,903                          |
|          | SFD6      | 372                     | 3.1                                 | 1,139                           | 8.6                                 | 3,203                           |
|          | SFD7      | 340                     | 6.7                                 | 2,287                           | 16.4                                | 5,567                           |
|          | SFD8_F15  | 375                     | 0.5                                 | 182                             | 9.1                                 | 3,404                           |
|          | SFD9      | 398                     | 0.0                                 | 7                               | 7.1                                 | 2,829                           |
|          | SFD10     | 371                     | 0.8                                 | 304                             | 7.4                                 | 2,735                           |
|          | SFD11     | 322                     | 2.6                                 | 840                             | 7.9                                 | 2,556                           |
|          | SFD12_F16 | 235                     | 5.0                                 | 1,172                           | 26.2                                | 6,151                           |
|          | SFD13     | 274                     | 5.1                                 | 1,406                           | 28.4                                | 7,795                           |
|          | SFD14     | 448                     | 7.6                                 | 3,416                           | 23.4                                | 10,459                          |
|          | SFD15     | 347                     | 9.6                                 | 3,326                           | 16.3                                | 5,642                           |
|          | F17       | 274                     | 9.3                                 | 2,553                           | 16.9                                | 4,636                           |
|          | SDF16     | 459                     | 10.1                                | 4,641                           | 17.8                                | 8,171                           |
|          | SFD17     | 417                     | 8.3                                 | 3,469                           | 14.6                                | 6,101                           |
|          | SFD18_F18 | 375                     | 8.7                                 | 3,250                           | 14.9                                | 5,586                           |
| SFD19    | 459       | 9.1                     | 4,160                               | 14.7                            | 6,747                               |                                 |
| SFD20    | 301       | 5.4                     | 1,614                               | 12.9                            | 3,864                               |                                 |
| F19      | 279       | 4.6                     | 1,291                               | 12.6                            | 3,507                               |                                 |
| GSB-2B   | SFD21     | 472                     | 7.9                                 | 3,723                           | 14.9                                | 7,038                           |
|          | SFD21+500 | 507                     | 8.0                                 | 4,053                           | 14.9                                | 7,584                           |
|          | F20       | 478                     | 10.0                                | 4,759                           | 19.3                                | 9,219                           |
|          | I-C+450   | 314                     | 8.3                                 | 2,602                           | 36.1                                | 11,308                          |
|          | I-C+700   | 252                     | 10.2                                | 2,564                           | 40.3                                | 10,161                          |
|          | F21       | 405                     | 10.3                                | 4,163                           | 24.9                                | 10,062                          |
|          | F21+500   | 498                     | 10.7                                | 5,324                           | 70.3                                | 35,005                          |
|          | CF11_F22  | 345                     | 9.2                                 | 3,160                           | 65.6                                | 22,634                          |
|          | CF11+195  | 345                     | 10.7                                | 3,692                           | 79.7                                | 27,483                          |
|          | CF12      | 490                     | 10.7                                | 5,245                           | 105.4                               | 51,650                          |
| CF13_F23 | 444       | 10.7                    | 4,750                               | 139.4                           | 61,928                              |                                 |
| GSB-2C   | CF14      | 394                     | 10.5                                | 4,148                           | 95.2                                | 37,509                          |
|          | CF15      | 344                     | 10.1                                | 3,473                           | 61.9                                | 21,297                          |
|          | CF16      | 353                     | 10.0                                | 3,515                           | 59.3                                | 20,916                          |
|          | F24       | 266                     | 6.4                                 | 1,697                           | 37.2                                | 9,903                           |
|          | CF17      | 316                     | 6.6                                 | 2,094                           | 12.7                                | 4,012                           |
|          | CF18      | 452                     | 4.7                                 | 2,121                           | 13.7                                | 6,196                           |
|          | CF19      | 373                     | 2.6                                 | 980                             | 12.7                                | 4,716                           |
|          | CF110_F25 | 362                     | 2.5                                 | 910                             | 9.7                                 | 3,514                           |
|          | CF111     | 415                     | 1.9                                 | 781                             | 12.1                                | 5,034                           |
|          | CF112     | 397                     | 7.2                                 | 2,870                           | 51.3                                | 20,362                          |
|          | CF113_F26 | 381                     | 4.8                                 | 1,816                           | 39.0                                | 14,881                          |

| REACH        | MONUMENT     | EFFECTIVE DISTANCE (FT) | DUNE DENSITY Above +9.5 ft. (CY/FT) | DUNE VOLUME Above +9.5 ft. (CY) | BERM DENSITY Below +9.5 ft. (CY/FT) | BERM VOLUME Below +9.5 ft. (CY) |        |
|--------------|--------------|-------------------------|-------------------------------------|---------------------------------|-------------------------------------|---------------------------------|--------|
| GSB-2D       | CFI14        | 411                     | 3.4                                 | 1,410                           | 81.2                                | 33,389                          |        |
|              | CFI15        | 405                     | 8.5                                 | 3,421                           | 61.2                                | 24,758                          |        |
|              | CFI16_F27    | 458                     | 5.1                                 | 2,339                           | 57.1                                | 26,194                          |        |
|              | CFI17        | 477                     | 6.4                                 | 3,035                           | 57.7                                | 27,505                          |        |
|              | CFI18        | 440                     | 6.7                                 | 2,929                           | 47.0                                | 20,651                          |        |
|              | CFI19_F28    | 467                     | 10.1                                | 4,730                           | 56.1                                | 26,202                          |        |
|              | CFI20        | 402                     | 0.6                                 | 247                             | 9.8                                 | 3,922                           |        |
|              | CFI21        | 158                     | 9.5                                 | 1,496                           | 16.7                                | 2,632                           |        |
|              | F29          | 96                      | 9.5                                 | 907                             | 21.5                                | 2,058                           |        |
|              | CFI21+190    | 353                     | 7.3                                 | 2,564                           | 16.6                                | 5,866                           |        |
|              | F125         | 512                     | 10.7                                | 5,479                           | 25.3                                | 12,946                          |        |
|              | F125.5       | 560                     | 10.6                                | 5,968                           | 20.6                                | 11,554                          |        |
|              | F30          | 535                     | 3.7                                 | 2,003                           | 7.9                                 | 4,205                           |        |
|              | F126.5       | 499                     | 1.4                                 | 674                             | 5.1                                 | 2,566                           |        |
|              | F127         | 523                     | -                                   | -                               | 3.3                                 | 1,708                           |        |
|              | F31          | 519                     | -                                   | -                               | 2.6                                 | 1,372                           |        |
|              | CFI26        | 311                     | 0.7                                 | 219                             | 2.4                                 | 759                             |        |
|              | <b>taper</b> |                         | 853                                 |                                 |                                     |                                 | 1,042  |
|              | No Fill      | F33                     |                                     |                                 |                                     |                                 |        |
|              |              | F34                     |                                     |                                 |                                     |                                 |        |
| GSB-3A       | <b>taper</b> | 861                     |                                     |                                 |                                     | 1,500                           |        |
|              | F36          | 2,950                   | -                                   | -                               | 3.5                                 | 10,278                          |        |
|              | <b>taper</b> | 709                     |                                     |                                 |                                     | 1,235                           |        |
| GSB-3C       | <b>taper</b> | 505                     |                                     |                                 |                                     | 3,097                           |        |
|              | FIP2         | 463                     | -                                   | -                               | 12.3                                | 5,684                           |        |
|              | FIP3         | 541                     | 0.1                                 | 78                              | 57.1                                | 30,868                          |        |
|              | FIP4_F39     | 558                     | 3.1                                 | 1,732                           | 78.3                                | 43,681                          |        |
|              | FIP5         | 568                     | 9.5                                 | 5,395                           | 74.1                                | 42,114                          |        |
|              | FIP6_F40     | 550                     | 6.4                                 | 3,499                           | 92.7                                | 51,007                          |        |
|              | FIP7         | 498                     | 6.8                                 | 3,372                           | 97.3                                | 48,473                          |        |
|              | FIP8         | 456                     | 6.7                                 | 3,042                           | 77.4                                | 35,273                          |        |
|              | FIP9_F41     | 507                     | 7.4                                 | 3,748                           | 72.2                                | 36,580                          |        |
|              | FIP10        | 510                     | 5.4                                 | 2,765                           | 93.3                                | 47,545                          |        |
|              | FIP11        | 345                     | 6.1                                 | 2,109                           | 112.7                               | 38,885                          |        |
|              | F42          | 296                     | 6.2                                 | 1,833                           | 97.8                                | 28,946                          |        |
|              | FIP12        | 440                     | 7.3                                 | 3,204                           | 158.8                               | 69,874                          |        |
|              | FIP13        | 483                     | 5.6                                 | 2,717                           | 22.2                                | 10,730                          |        |
|              | FIP13+435    | 244                     | 9.0                                 | 2,193                           | 98.2                                | 23,907                          |        |
|              | <b>taper</b> |                         | 843                                 |                                 |                                     |                                 | 41,382 |
| No Fill      | F45          |                         |                                     |                                 |                                     |                                 |        |
|              | F46          |                         |                                     |                                 |                                     |                                 |        |
|              | F47          |                         |                                     |                                 |                                     |                                 |        |
| GSB-3E       | <b>taper</b> | 851                     |                                     |                                 |                                     | 1,646                           |        |
|              | W12          | 352                     | 0.3                                 | 118                             | 3.9                                 | 1,362                           |        |
|              | W13          | 844                     | 1.4                                 | 1,151                           | 33.2                                | 28,045                          |        |
|              | <b>taper</b> | 857                     |                                     |                                 |                                     | 14,240                          |        |
| No Fill      | F51          |                         |                                     |                                 |                                     |                                 |        |
|              | F52          |                         |                                     |                                 |                                     |                                 |        |
| GSB-3G       | <b>taper</b> | 855                     |                                     |                                 |                                     | 58,768                          |        |
|              | DP2          | 618                     | 10.7                                | 6,588                           | 137.5                               | 84,901                          |        |
|              | DP3          | 459                     | 9.3                                 | 4,279                           | 186.1                               | 85,434                          |        |
|              | DP4          | 456                     | 9.1                                 | 4,148                           | 90.1                                | 41,097                          |        |
|              | DP5_F55      | 472                     | 8.3                                 | 3,907                           | 21.7                                | 10,238                          |        |
|              | DP6          | 492                     | 6.4                                 | 3,163                           | 19.8                                | 9,740                           |        |
|              | DP7          | 487                     | 5.8                                 | 2,802                           | 21.2                                | 10,332                          |        |
|              | DP8_F56      | 424                     | 3.6                                 | 1,529                           | 24.5                                | 10,367                          |        |
|              | DP9          | 365                     | 4.7                                 | 1,712                           | 27.7                                | 10,120                          |        |
|              | DP10         | 275                     | 10.2                                | 2,793                           | 31.0                                | 8,528                           |        |
|              | DP10+184     | 118                     | 8.0                                 | 947                             | 20.2                                | 2,388                           |        |
| <b>taper</b> |              | 869                     |                                     |                                 |                                     | 8,772                           |        |
| No Fill      | F59          |                         |                                     |                                 |                                     |                                 |        |
|              | F60          |                         |                                     |                                 |                                     |                                 |        |
|              | F61          |                         |                                     |                                 |                                     |                                 |        |
|              | F62          |                         |                                     |                                 |                                     |                                 |        |
|              | F63          |                         |                                     |                                 |                                     |                                 |        |
|              | F64          |                         |                                     |                                 |                                     |                                 |        |
|              | F65          |                         |                                     |                                 |                                     |                                 |        |
|              | F66          |                         |                                     |                                 |                                     |                                 |        |
|              | F67          |                         |                                     |                                 |                                     |                                 |        |
|              | F68          |                         |                                     |                                 |                                     |                                 |        |
| F69          |              |                         |                                     |                                 |                                     |                                 |        |
| F70          |              |                         |                                     |                                 |                                     |                                 |        |
| MB-1A        | <b>taper</b> | 1,585                   |                                     |                                 |                                     | 66,273                          |        |
|              | F71          | 2,565                   | -                                   | -                               | 83.6                                | 214,532                         |        |
|              | F72          | 3,133                   | -                                   | -                               | 11.1                                | 34,756                          |        |
| MB-1B        | F73          | 1,603                   | 5.5                                 | 8,859                           | 20.0                                | 32,046                          |        |
|              | F74          | 1,676                   | 0.6                                 | 1,036                           | 15.8                                | 26,435                          |        |
|              | F75          | 1,745                   | 5.5                                 | 9,615                           | 30.3                                | 52,890                          |        |
|              | F76          | 3,012                   | 5.5                                 | 16,587                          | 39.8                                | 119,963                         |        |
|              | F77          | 3,763                   | 5.5                                 | 20,770                          | 29.4                                | 110,591                         |        |
|              | F78          | 3,184                   | 5.5                                 | 17,526                          | 148.8                               | 473,744                         |        |
| MB-2A        | F79          | 3,217                   | 4.9                                 | 15,800                          | 98.6                                | 317,296                         |        |
|              | <b>taper</b> | 862                     |                                     |                                 |                                     | 42,507                          |        |