Appendix C
Plan Formulation
Environmental Section

The performance measures that were assigned to the environmental business line were subdivided into three ecoregions (lakes, river, and estuary/harbor) of the project area. Each of the performance measures were examined and each alternative was given a percentage change from the NAA value.

Environmental Raw Data							
Metric	**NAA**	**Alt1**	**Alt2**	**Alt3**	**Alt4**	**Alt5**	**Alt6**
Inability to maintain stable lake levels during lake spawning periods	1. Augusta: 15% 2. Wayneboro 11% 3. Clyo 2% 4 .Shoals 8% 5. Russell 11% 6. Thurmond 11% 7. Millhaven 8% 8. Keowee 0% 9. Thurmond Dam 0% 10. Jocassee 7% 11. Hartwell 8%	1. Augusta:18 % 2. Wayneboro 13% 3. Clyo 2% 4. Shoals 9% 5. Russell 15% 6. Thurmond 13% 7. Millhaven 11% 8 .Keowee 0% 9. Thurmond Dam 0% 10. Jocassee 8% 11. Hartwell 9%	1. Augusta:16% 2. Wayneboro 12% 3. Clyo 2% 4. Shoals 9% 5. Russell 10% 6. Thurmond 11% 7. Millhaven 10% 8.Keowee 0% 9. Thurmond Dam 0% 10. Jocassee 5% 11 Hartwell 8%	1. Augusta: 11% 2. Wayneboro 8% 3. Clyo 1% 4. Shoals 6% 5. Russell 16% 6. Thurmond 36% 7. Millhaven 7% 8.Keowee 3% 9. Thurmond Dam 0% 10. Jocassee 16% 11.Hartwell 8%	1. Augusta: 17% 2. Wayneboro 12% 3. Clyo 2% 4. Shoals 9% 5. Russell 5% 6. Thurmond 13% 7. Millhaven 10% 8.Keowee 0% 9. Thurmond Dam 0% 10. Jocassee 4% 11.Hartwell 8%	1. Augusta: 12% 2. Wayneboro 9% 3. Clyo 2% 4. Shoals 7% 5. Russell 13% 6. Thurmond 8% 7. Millhaven 8% 8.Keowee 0% 9. Thurmond Dam 0% 10. Jocassee 5% 11.Hartwell 12%	1. Augusta: 10% 2. Wayneboro 7% 3. Clyo 1% 4. Shoals 4% 5. Russell 4% 6. Thurmond 18% 7. Millhaven 5% 8.Keowee 9% 9. Thurmond Dam 0% 10. Jocassee 17% 11.Hartwell 17%
Number of days when flows in the shoals are less than recommended; (FERC Agreement)	0 days	0 days	0 days	0 days	0 days	0 days	0 days
Effect on the DO in the River	90% Exceedence: 6.85 Minimum Dissolved Oxygen Concentrations: 5.72	90% Exceedence: 6.83 Minimum Dissolved Oxygen Concentrations: 5.68	90% Exceedence: 6.85 3Minimum Dissolved Oxygen Concentrations: 5.72	90% Exceedence: 6.78 3Minimum Dissolved Oxygen Concentrations: 5.72	90% Exceedence: 6.87 3Minimum Dissolved Oxygen Concentrations: 5.70	90% Exceedence: 6.85 3Minimum Dissolved Oxygen Concentrations: 5.80	90% Exceedence: 6.88 Minimum Dissolved Oxygen Concentrations: 5.83

Environmental Raw Data							
Metric	**NAA**	**Alt1**	**Alt2**	**Alt3**	**Alt4**	**Alt5**	**Alt6**
Effect on water temperature in the River	10% exceedence value: 25.7 minimum water temperature: 29.4	10% exceedence value: 25.7 minimum water temperature: 29.4	10% exceedence value: 25.666 minimum water temperature: 29.4	10% exceedence value: 25.8 minimum water temperature: 29.4	10% exceedence value: 25.7 minimum water temperature: 29.4	10% exceedence value: 25.65 minimum water temperature: 29.3	10% exceedence value: 25.583 minimum water temperature: 29.2
Number of days DO standards are not met in river	774	708	771	745	747	790	827
Impacts to fish spawning/habitat in shoals	no change	no change	no change	no change	no change	no change	no change
Number of days DO standards are not met in river (per node)	1. Thurmond Dam: 1541 2. Kiokee Creek: 1196 3. River Mile 207.5: 875 4. Highway 28: 651 5. Jones Creek: 331 6. Stevens Creek Dam: 52	1. Thurmond Dam: 1541 2. Kiokee Creek: 1135 3. River Mile 207.5: 752 4. Highway 28: 519 5. Jones Creek: 254 6. Stevens Creek Dam: 47	1. Thurmond Dam: 1541 2. Kiokee Creek: 1194 3. River Mile 207.5: 872 4. Highway 28: 643 5. Jones Creek: 326 6. Stevens Creek Dam: 51	1. Thurmond Dam: 1541 2. Kiokee Creek: 1165 3. River Mile 207.5: 822 4. Highway 28: 608 5. Jones Creek: 283 6. Stevens Creek Dam: 53	1. Thurmond Dam: 1541 2. Kiokee Creek: 1171 3. River Mile 207.5: 829 4. Highway 28: 596 5. Jones Creek: 298 6. Stevens Creek Dam: 47	1. Thurmond Dam: 1541 2. Kiokee Creek: 1213 3. River Mile 207.5: 925 4. Highway 28: 634 5. Jones Creek: 368 6. Stevens Creek Dam: 56	1. Thurmond Dam: 1541 2. Kiokee Creek: 1232 3. River Mile 207.5: 970 4. Highway 28: 711 5. Jones Creek: 449 6. Stevens Creek Dam: 64

Environmental Raw Data							
Metric	**NAA**	**Alt1**	**Alt2**	**Alt3**	**Alt4**	**Alt5**	**Alt6**
Number of days less than the No Action Alterative 7Q10: 1. Shoals Node 2. Augusta Node 3. Millhaven Node 4. Clyo Node	3451.75	2641.25	3331.5	3200.5	3276.5	3451.25	3415.25
Effect on the downstream fish spawning downstream of the New Savannah Bluff Lock and Dam (find DO for the river and temperature for April and May--- Stripped bass spawning window)	April/May Average DO:8.95 April/May Average Water Temperature:20.31	April/May Average DO:8.98 April/May Average Water Temperature:20.25	April/May Average DO:8.95 April/May Average Water Temperature:20.32	April/May Average DO:8.98 April/May Average Water Temperature:20.25	April/May Average DO:8.95 April/May Average Water Temperature:20.32	April/May Average DO:8.96 April/May Average Water Temperature:20.32	April/May Average DO:8.98 April/May Average Water Temperature:20.28
Effect on the DO in the Harbor	6.2829	6.2763	6.3625	6.3450	6.3488	6.3863	6.4275
Effect on temperature in the Harbor	20.8	20.875	20.8625	20.8625	20.8625	20.8	20.725

Environmental Raw Data							
Metric	**NAA**	**Alt1**	**Alt2**	**Alt3**	**Alt4**	**Alt5**	**Alt6**
Effect on salinity in the Harbor	5.0875	5.2625	5.075	5.1125	5.1375	5.05	4.8875
Effect on the downstream fish spawning in the Harbor	125%	135%	130%	140%	137%	132%	136%
Effect on the downstream fish populations in the Harbor	6.2829	6.27625	6.3625	6.345	6.34875	6.38625	6.4275
Salinity levels in river near Savannah National Wildlife Refuge freshwater intakes find the node that is closest for this information	Average annual salinity: 0.3 90 Percentile annual Salinity: 0.6	Average annual salinity: 0.4 90 Percentile annual Salinity: 1	Average annual salinity: 0.4 90 Percentile annual Salinity: 0.7	Average annual salinity: 0.4 90 Percentile annual Salinity: 0.7	Average annual salinity: 0.4 90 Percentile annual Salinity: 0.9	Average annual salinity: 0.3 90 Percentile annual Salinity: 0.7	Average annual salinity: 0.3 90 Percentile annual Salinity: 0.6
Number of days DO standards are not met in estuary	41331	41667	38868	39996	39235	38043	36670

Environmental Raw Data							
Metric	**NAA**	**Alt1**	**Alt2**	**Alt3**	**Alt4**	**Alt5**	**Alt6**
Number of days DO standards are not met in estuary (per zone) (5mg/l)	1. LBR1: 45 2. LBR2: 486 3. MR4: 885 4. MR5: 47 5. FR2:2632 6. FR3: 2814 7. FR 4: 2827 8. FR5: 2834	1. LBR1: 44 2. LBR2: 504 3. MR4:936 4. MR5:63 5. FR2: 2623 6. FR3:2827 7. FR 4:2847 8. FR5: 2845	1. LBR1: 33 2. LBR2: 349 3. MR4:591 4. MR5:41 5. FR2: 2554 6. FR3:2744 7. FR 4:2765 8. FR5: 2767	1. LBR1: 115 2. LBR2: 497 3. MR4:751 4. MR5:164 5. FR2: 2541 6. FR3:2739 7. FR 4: 2770 8. FR5: 2756	1. LBR1: 48 2. LBR2: 374 3. MR4:612 4. MR5:69 5. FR2: 2564 6. FR3:2759 7. FR 4:2780 8. FR5: 2773	1. LBR1: 15 2. LBR2: 280 3. MR4:519 4. MR5:20 5. FR2: 2547 6. FR3:2748 7. FR 4:2766 8. FR5: 2765	1. LBR1: 9 2. LBR2: 207 3. MR4:391 4. MR5:18 5. FR2: 2529 6. FR3:2727 7. FR 4:2747 8. FR5: 2744
Number of days DO standards are not met in estuary (per zone) (5mg/l) during 3 summer months (May, June, July, August)	1. LBR1: 45 2. LBR2: 466 3. MR4: 761 4. MR5: 27 5. FR2: 1699 6. FR3: 1760 7. FR 4: 1763 8. FR5: 1764	1. LBR1: 42 2. LBR2: 435 3. MR4: 689 4. MR5: 54 5. FR2: 1691 6. FR3: 1768 7. FR 4: 1770 8. FR5: 1767	1. LBR1: 33 2. LBR2: 338 3. MR4: 535 4. MR5: 41 5. FR2: 1679 6. FR3: 1758 7. FR 4: 1765 8. FR5: 1766	1. LBR1: 115 2. LBR2: 474 3. MR4: 641 4. MR5: 164 5. FR2: 1676 6. FR3: 1760 7. FR 4: 1171 8. FR5: 1754	1. LBR1: 48 2. LBR2: 358 3. MR4: 526 4. MR5: 69 5. FR2: 1682 6. FR3: 1756 7. FR 4: 1763 8. FR5: 1760	1. LBR1: 15 2. LBR2: 280 3. MR4: 499 4. MR5: 20 5. FR2: 1677 6. FR3: 1768 7. FR 4: 1768 8. FR5: 1768	1. LBR1: 9 2. LBR2: 207 3. MR4: 386 4. MR5: 18 5. FR2: 1690 6. FR3: 1785 7. FR 4: 1789 8. FR5: 1789