

## Water Supply Budgets and Allocations Strategy Worksheet: RB-S3

<p><b>Strategy:</b> Develop an integrated water budget system (ground and surface water, graded from subwatershed to regional aquifers) that accurately defines available supplies for human and ecological uses and identifies stressed areas based on current and future needs. Allocate water yields within sustainable levels as determined by water budgets for each geographic unit.</p> <p><b>NSSM-S2B2:</b> Have all municipalities adopt regulations so that all new developments in the WMA shall achieve no net detrimental changes in natural surface runoff and infiltration.</p> <p><b>LRLU-S1A1.</b> Characterize and assess the existing quality and quantity status and establish water budgets for aquifers in the Lower Raritan WMA.</p> <p><b>LRLU-S1B1.</b> Characterize and assess: the existing status of ground water quality and quantity; the safe yield; ground water budgets; desired future conditions of ground water supplies in the Lower Raritan WMA</p> <p><b>LRLU-S2A1.</b> Characterize and assess surface water quantity by determining surface water budgets for each subwatershed. Determine a desired future condition.</p> <p><b>LRLU-S4B1.</b> Implement and enforce water supply capacity limits for suppliers based on the water budgets developed for the WMA so that entities within the WMA will not be permitted to exceed their water supply capacity limits.</p> <p><b>MWS-S1A1:</b> Integrated water budget system (ground and surface water, from subwatershed and local aquifer to Raritan River Basin and major aquifer) by 2005 that includes updated definition (including modifications based on provisions to reduce the need for drought declarations through a more conservative estimate of safe and dependable yields) and estimates of safe and dependable yields (both from within the target area and available through inter-watershed transfers), current water uses and water allocations, adopted through either Statewide Water Supply Plan (advisory document) or Water Quality Management Plans (regulatory)</p> <p><b>MWS-S1A2:</b> Determine reasonable potential water supply needs of future land uses, availability relative to current water budgets, and appropriate allocation relative to category of water user, using water supplies of quality and dependability that correspond to the legitimate needs of the user (i.e., highest quality and dependability for sensitive ecosystems and potable water supply), and adopt through either Statewide Water Supply Plan (advisory document) or Water Quality Management Plans (regulatory)</p> <p><b>MWS-S1A3:</b> Develop and implement actions to bring into balance water use demands in specific subwatersheds, watersheds, local aquifers and regional aquifers where the water budget indicates that within watershed demands exceed available safe and dependable supplies (both from within the target area and available through inter-watershed transfers)</p> <p><b>MWS-S1A4:</b> NJDEP adopts regulations mandating that no stream or aquifer may be degraded or impaired by regulated withdrawals or NJDEP approval of new land uses, using water budget</p> <p><b>MWS-S1A5:</b> NJDEP adopts regulations requiring that all water allocations be consistent with the water budgets</p> <p><b>MWS-S1A6:</b> Municipalities adopt ordinances requiring that new or modified land uses be assessed against water budgets</p> <p><b>MWS-S1A7:</b> Modify the Water Supply Management Act or other laws (e.g., Municipal Land Use Law) to ensure that water demands are not in excess of safe and dependable supplies, including supplies for ecological uses</p>	<p>Strategy Priority: <b>H</b> (H/M/L)</p>
<p><b>Objectives Addressed by Strategy:</b></p> <p><b>NSSM-O2B:</b> By 2005, no net loss of baseflow in any location of the WMA.</p> <p><b>LRLU-O1A.</b> By 2012, there shall be no additional degradation or depletion of aquifers from new development or redevelopment. 30% of municipalities in the Lower Raritan will adopt such requirements by 2008; 100% of municipalities will adopt such requirements by 2014.</p> <p><b>LRLU-O1B.</b> By 2012, new development and redevelopment will not diminish the quality and quantity of ground water.</p> <p><b>LRLU-O2A.</b> By 2012, new development and redevelopment will not diminish the quality and quantity of surface water. 30% of municipalities in the Lower Raritan will adopt such requirements by 2008; 100% of municipalities will adopt such requirements</p>	<p>Strategy Schedule: 2003-2005 (Begin/End)</p>

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<p>by 2014.</p> <p><b>LRLU-04B.</b> By 2012, development will be limited to the sustainable capacity of the water supply and its infrastructure. The water supply infrastructure shall be managed to maintain, protect and improve water resources.</p> <p><b>MWS-01A:</b> By 2006, allocation of all waters by watershed, subwatershed and regional aquifer so that ecological resources are fully sustained, and reasonable human needs for residential, agricultural, industrial, commercial, recreational and water supply are met and limited to safe and dependable supplies of surface and ground waters</p>	
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**Narrative Description of Strategy:** Much new development in the Raritan Basin occurs in areas supplied by ground water for both potable and nonpotable (e.g., industrial, agricultural, landscape) uses. These land use changes place stresses on ground water supplies both by increasing water use and decreasing ground water recharge – nearly every subwatershed in the Basin shows a loss of recharge between 1986 and 1995, some up to 20 percent. These impacts, in turn, can harm stream flows during dry periods and stress aquatic ecosystems. Agricultural trends are also toward higher water uses for irrigation, and reduced recharge from increased use of temporary and permanent greenhouses and other impervious surfaces used for intensive cultivation. However, New Jersey lacks accurate tools for determining where and when stresses are excessive. This strategy will result in water budgets for each subwatershed (HUC-14 areas), building on an existing NJDEP initiative to develop water budgets for full watersheds. NJDEP cannot develop subwatershed budgets due to a lack of local information on water supply and sewer service areas, unregulated water uses, etc. that can be provided through local initiative. The emphasis for Raritan Basin work will be primarily on subwatersheds affected by ground water uses from surficial aquifers; deep “confined” aquifers have little impact on stream flows, and NJDEP will sufficiently assess the developed areas served by surface water supplies through the upcoming revision to the New Jersey Statewide Water Supply Plan. Integration of the results will provide a complete picture.

The strategy relies on accurate location and quantification of both NJDEP-regulated and non-regulated water uses, providing the human use side of the water budget. NJDEP is working with USGS to develop methods for estimating the needs of surface water ecosystems for sufficient flows during dry periods, for the ecological use side of the water budget. Water data based on precipitation, runoff, recharge and baseflow provide the supply side of the water budget. The budgets themselves must be scientifically defensible and should be peer reviewed to ensure this. Based on supply and demand estimates, an assessment of watersheds and subwatersheds will identify those areas that are currently exceeding their budgets, and those that are projected to exceed their budgets due to future land uses. NJDEP has the authority and mandate to modify water allocation permits where such uses exceed water budgets. Municipalities can modify local ordinances (zoning, subdivision and site plan) to keep future uses within water budgets, and can take similar actions plus remedial steps to restore balanced water budgets regarding to non-regulated water uses. In cases of local action, cooperation within subwatershed and watershed boundaries will be necessary because the resource is shared. Finally, a change to the Municipal Land Use Law is proposed to more directly link current water supply requirements to water budget information.

Municipalities that wish to implement changes to their ordinances prior to 2004-2005, when the NJDEP water budget project should be complete, can develop approaches using available water use information and interim measures of needed surface water flows for ecological purposes (e.g., 7Q10, 7Q2, 90% flow duration, percentage of drought baseflow). This type of approach should be used in actively developing areas where there is evidence of water budget problems.

**Areawide WQM Plan Consistency Determination Issues:** NA

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Action Plan (Steps or Tasks)	Responsible Parties for Planning, Design & Implementation	Responsible Parties for Oversight	Resource Needs (L,M,H,VH)	Committed or Recommended Resources	Major Challenges and Opportunities	Evaluation Method & Indicators	Schedule and Milestones for Implementation
1. Develop a Water Tracking Data Base identifying and quantifying all consumptive and depletive permitted water withdrawals and tracking movement of that water to discharge points.	C: NJDEP R:	C: NJDEP R:	M	C: NJDEP existing resources R:	Completeness of withdrawal data, resolution and accuracy of water supply and sewer service areas ♦ Only allocation permit data readily available	Completeness of data base and accuracy of data	2004 completion statewide – use Raritan Basin data as soon as available
2. Develop estimates of water supply for each watershed (HUC-11) and sub-watershed (HUC-14), including surface waters and surficial aquifers	C: NJDEP R:	C: NJDEP R:	M	C: NJDEP existing resources R:	Measures other than long-term mean flows are needed for comparison to ecological needs	Accepted by some form of peer review	2004 completion statewide – use Raritan Basin estimates as soon as available
3. Develop estimates of consumptive water uses for withdrawals that are not regulated by NJDEP, both existing and at build-out.	C: R: Counties, municipalities, WMA Committees	C: R: Raritan Basin TAC	M	C: R: NJDEP Water Supply Bond Act funds, foundation grants, existing resources	Domestic wells relatively easy. Public non-community wells from NJDEP data. Ag users difficult	Useable estimates for all HUC-14 areas supplied by ground water from surficial aquifers	2004
4. Develop and apply methods to assess surface water flows needed for ecological purposes.	C: USGS, NJDEP R:	C: USGS, NJDEP R:	H	C: USGS, NJDEP existing resources R:	Methods will vary by stream type and region	Complete set of methods for Raritan Basin stream types	2004

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5. Develop estimates of future agricultural demands within Agricultural Development Areas and other major farm areas due to forecast shifts in farm production practices.	C: R: Raritan Basin Agricultural Committee, Rutgers Cooperative Extension	C: R: Raritan Basin TAC	L	C: R: NJDEP Water Supply Bond Act funds, foundation grants, existing resources	Predicting farm use shifts will be difficult on a HUC-14 area basis	Estimates with ranges of possible trend lines	2004
6. Develop detailed maps of water supply and sewer service areas that are actually serviced by existing lines.	C: R: Counties, municipalities, water and sewer utilities	C: R: NJDEP, Raritan Basin TAC	L per service area M overall	C: R: NJDEP Water Supply Bond Act funds, foundation grants, existing resources	Some water and wastewater infrastructure and service areas are poorly mapped	Complete coverage in service areas	2004
7. Compile water supply budgets for each HUC-14 area using the results of Steps 1-6.	C: NJDEP (State project) R: Raritan Basin TAC (refinement for Raritan Basin)	C: NJDEP (State project) R: Raritan Basin Council (refinement for Raritan Basin)	L	C: NJDEP existing resources (State project) R: NJDEP Water Supply Bond Act funds, foundation grants	Accuracy at HUC-14 level depends on data and assessment methods	Complete budgets with current levels and projected ranges of water use	2004-05
8. Determine which HUC-14 areas have exceeded their available budget for human and ecosystem use or may exceed such levels at or prior to full build-out	C: NJDEP (State project) R: Raritan Basin TAC (refinement for Raritan Basin)	C: NJDEP (State project) R: Raritan Basin Council	L	C: NJDEP existing resources (State project) R: NJDEP Water Supply Bond Act funds, foundation grants	Accuracy at HUC-14 level depends on data and assessment methods	Complete deficit analyses for each HUC-14 area	2005

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9. Where a HUC-14 area has exceeded or may exceed its sustainable water budget due to water uses regulated by NJDEP, require withdrawal reductions (through Critical Areas program), increase water conservation and increase recharge to ensure that the water budget is not exceeded	C: NJDEP R: Municipalities	C: NJDEP R: Raritan TAC, WMA Committees	L	C: NJDEP Water Allocation program staff, water users  R: Existing resources, foundation grants	Providing alternate water sources or achieving sufficient recharge, conservation or reuse	Correction of all HUC-14 areas with deficits due to water uses regulated by NJDEP	2005+
10. Where a HUC-14 area is within its sustainable water budget but may exceed it at or prior to build-out due to water uses not regulated by NJDEP, modify ordinances to increase recharge potential and reduce non-essential water use to ensure that the water budget is not exceeded	C: R: Municipalities	C: R: Raritan Basin Council and TAC, WMA Committees	L per HUC-14 area M overall	C: R: Local resources, NJDEP Water Supply Bond Act funds, foundation grants, developer application fees	Enforcement of ordinances	Correction of all HUC-14 areas with projected deficits due to water uses not regulated by NJDEP	2005+

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11. Where a HUC-14 area exceeds its water budget due to water uses not regulated by NJDEP, reduce consumptive and depletive uses from existing land uses, increase ground water recharge, and modify ordinances to prohibit any net increase of depletive or consumptive uses	C: R: Municipalities	C: R: Raritan Basin Council and TAC, WMA Committees	L per HUC-14 area M overall	C: R: Local resources, NJDEP Water Supply Bond Act funds, foundation grants	Providing alternate water sources or achieving sufficient recharge, conservation or reuse ◆Municipal cooperation within HUC-14 areas	Correction of all HUC-14 areas with existing deficits due to water uses not regulated by NJDEP	2005+
12. Based on analyses, determine and establish needed sites for new stream flow and ground water level gauges to track progress of aligning supplies with demands by HUC-14	C: R: NJDEP, USGS	C: R: Raritan Basin TAC	L	C: R: State and Federal funds	Funding for monitoring has generally declined over time as urgency drops	Monitoring network plan completed and accepted by NJDEP and USGS	2005

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<p>13. Develop draft legislation allowing NJDEP to certify municipal or county water supply plans, on a watershed or subwatershed basis, that assess supplies and demands and ensure (in concert with NJDEP regulation of larger water uses) that future land uses will not exceed water budget thresholds set by NJDEP. The certification would be used as an affirmative defense that the municipality has met Municipal Land Use Law requirements to assure sufficient water supply under the Master Plan and subdivision provisions.</p>	<p>C:  R: NJDEP, League of Municipalities, Association of County Planners, NJ Planning Officials, Watershed Institute, NJWSA, etc.</p>	<p>C:  R:</p>	<p>L</p>	<p>C:  R: Existing resources, foundation grant</p>	<p>Modifying the MLUL for a major provision could take years  Another option is to use Wastewater Management Plans or Areawide WQM Plan amendments to provide the NJDEP approval, but legislative change is needed to provide the legal defense</p>	<p>Workable addition to law</p>	<p>2004+</p>