

**Lower Raritan Watershed Management Area
Land Use, Wastewater & Water Supply Subcommittee
Strategy Worksheet LRLU-S1B1**

<p>Strategy Name: Ground Water Budgets & Desired Future Condition LRLU-S1B1. Characterize and assess:</p> <ul style="list-style-type: none"> • the existing status of ground water quantity • the safe yield • ground water budgets • desired future conditions <p>of ground water supplies in the Lower Raritan WMA. See also: RB-S3: 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>Strategy Priority: H (H/M/L)</p>
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<p>Objectives Addressed by Strategy: LRLU-O1B. By 2012, new development and redevelopment will not diminish the quality and quantity of ground water. 30% of municipalities in the Lower Raritan will adopt such requirements by 2008; 100% of municipalities will adopt such requirements by 2014. LRLM-O1A. Land use and management practices will maintain ground water at a level that sustains year round stream base flows while providing for both human needs and basic ecosystem functions in the Lower Raritan WMA.</p>	<p>Strategy Schedule: (Begin/End)</p>
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Narrative Description of Strategy: Water budget is a term for the quantification of precipitation, runoff, recharge, evaporation, transpiration and human uses of water within a watershed. Long term average or general water budgets were developed as part of the Raritan Project Phase I to assist in understanding how water moves through and within the Basin and how human activities (depletive and consumptive uses, recharge loss, vegetation changes, runoff increases, impoundments and 'temporal displacements') affect the natural flow. A generalized spreadsheet model was developed, using estimates of precipitation, infiltration and runoff based on readily available information.

The annual average water budget for the Lower Raritan WMA:

	Percentage	Million Gallons per Day (MGD)
Infiltration/Recharge	15.31	108.43
Runoff	29.98	212.29
Evapotranspiration	54.70	387.28

The term dependable yield or sustainable yield is used for ground water supplies in the current regulations. It is believed that the dependable yield is probably being exceeded, as evidenced by the decline of water levels and related effects such as saltwater intrusion and reductions in stream flow. The most recent NJ Statewide Water Supply Master Plan indicated the following dependable yields:
Raritan River Basin (except South River): 110 MGD
South River Watershed: 25 MGD (Total 135 MGD)

The Raritan Basin Project report "Water Budget in the Raritan River Basin", however, estimated the dependable yield to be only 86 MGD. Based on the Statewide Water Supply Master Plan calculations, the Raritan Basin currently has a water supply availability (surface and ground water) of 360 MGD. 1990 demand estimates were 255 MGD, and predicted to increase to approximately 350 MGD by the year 2040.¹

The 1982 WSMP identified two areas where overuse was threatening the long-term reliability of ground water supplies; Water Supply Critical Area #1 is partially within the Lower Raritan WMA. WSCA #1 covers Monmouth County and portions of Middlesex and Ocean Counties. It includes four depleted aquifers. Water allocation permittees were required to reduce their use of ground water from the depleted aquifers and develop an alternative supply; the withdrawal reductions

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went into place in 1990. Raritan Basin surface water supplies were used as the replacement. USGS has documented significant increases in the water levels in the depleted aquifers since the reductions went into place.²

This strategy is linked to RB-S3: Water Supply Budgets. That strategy will result in the development of water supply budgets for each subwatershed, and will build on an existing NJDEP initiative to develop water budgets for full watersheds. The local initiative will provide information at the local level, such as information on water supply and sewer service areas, unregulated water uses, etc. that NJDEP will not have available to them for their project. In addition, this strategy will develop the desired future conditions for ground water supplies in the Lower Raritan WMA.

Areawide WQM Plan Consistency Determination Issues: None

Action Plan (Steps or Tasks)	Responsible Parties for Planning, Design & Implementation ³	Responsible Parties for Oversight	Resource Needs ⁴	Committed or Recommended Resources	Major Challenges and Opportunities	Evaluation Method & Indicators	Schedule and Milestones for Implementation
For action steps in the determination of the ground water budget, see RB-S3: Water Supply Budgets							
1. Identify the desired future condition for ground water in the Lower Raritan WMA.	C: R: LRLU, (if active) ⁵ , USGS, NJDEP, water purveyors, municipal water purveyors	C: R: LRMC-WRA LRWMG LRWMAC ⁶	L	C: R:	Challenge: Consensus on desired conditions	Identification of desired future conditions	

¹ Raritan Basin Watershed Management Project. Final Report 2000. Water Budget of the Raritan River Basin.

<http://www.raritanbasin.org/Reports/WaterBudgetReport.pdf>

Raritan Basin Watershed Management Project. Final Report 2000. Water Supply Availability in the Raritan River Basin.

<http://www.raritanbasin.org/Reports/WaterAvailabilityReport.pdf>

² NJDEP Water Supply Critical Areas. [http://www.state.nj.us/dep/watersupply/wateresc.htm#Water Supply Critical Areas](http://www.state.nj.us/dep/watersupply/wateresc.htm#Water%20Supply%20Critical%20Areas)

³ C = Committed, R = Recommended

⁴ General Estimates: Low = \$5,000 - \$50,000; Moderate = \$50,000 - \$250,000; High = \$250,000 - \$1 million; Very High = over \$1 million

⁵ All qualifiers in #1 (e.g. if active) for subcommittees apply throughout the action plan.

LRLU = Lower Raritan Land Use, Wastewater & Water Supply Subcommittee

NJDEP = New Jersey Department of Environmental Protection

WSMP = Statewide Water Supply Master Plan

⁶ LRMC-WRA = Lower Raritan-Middlesex County Water Resources Association

LRWMAC = Lower Raritan Watershed Management Area Committee or equivalent

USGS = United States Geological Survey

LRWMG = Lower Raritan Watershed Management Group