



**NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION  
OFFICE OF NATURAL RESOURCE RESTORATION  
SAMPLE GROUND WATER INJURY CALCULATION**

The following describes the calculations used to derive a dollar value (damages) for injuries to ground water resources of the State. The resulting dollar value will provide the scope of a restoration project. The necessary elements for the calculation include:

Ground water calculation input descriptions:

<b>Planning Area &amp; Projected Status</b>	The Planning Area and Projected Status is determined from the <i>New Jersey Statewide Water Supply Plan 1996</i>
<b>Annual Ground Water Recharge</b>	This is the value in feet (ft.) for the Planning Area and is determined from <i>New Jersey Statewide Water Supply Plan 1996</i>
<b>Water Rate</b>	This is the current value in (\$/1000 gallons) for the Planning Area derived from NJ Board of Public Utilities Data
<b>Aerial extent of contaminant plume</b>	This information is case specific and includes the aerial extent in square feet (sq. ft.) of a contaminant plume determined in a remedial investigation pursuant to the <i>Technical Requirement for Site Remediation N.J.A.C 7:26E</i> This is the entire plume regardless of being “on or off site”.
<b>Duration</b>	Duration is in years and is the time prospective from when the remedial decision is made until the NJ <a href="#">Ground Water Quality Standards</a> have been met or 30 year maximum, whichever comes first.
<b>Constants</b>	(7.48 gallons / cubic feet) and (1 acre = 43,560 square feet) are constants that are used in the calculation.

This injury calculation method is for settlement purposes.



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Inputs for an example surrogate ground water injury calculation:

<b>Planning Area &amp; Projected Status</b>	17 (Deficit)
<b>Annual Ground Water Recharge</b>	1.33 feet
<b>Water Rate</b>	\$3.96 (7/1/2002 BPU rate)
<b>Aerial extent of contaminant plume</b>	217,800 square feet (5 acres)
<b>Duration</b>	15 years
<b>Conversion Factors</b>	(7.48 gallons / cubic feet) and (1 acre = 43,560 square feet) are constants that are used in the calculation.

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**EXAMPLE CALCULATION:**

<b>STEP 1</b>	217,800 sq. ft. X 1.33 ft. = 289,674 cubic ft.	The aerial extent of the plume is multiplied by the annual recharge to derive a volume measure...
<b>STEP 2</b>	289,674 cubic ft. X (7.48 gallons/cubic ft.) = 2,166,761 gallons	Volume of ground water is converted by the constant (7.48 gallons/cubic ft.) to derive total gallons injured in one year...
<b>STEP 3</b>	2,166,761 gallons X (15 years) X (\$3.96/1000 gallons) = <b>\$ 128,705.00</b>	The total gallons are multiplied by the duration and the water rate to determine the damages which are used for determining the scope of a restoration project.

For this example, \$ 128,705.00 was determined to be the ground water injury value for settlement purposes. The settlement monies are used for restoration projects such as acquisition of land for aquifer recharge and watershed protection.

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