Water Resource Protection Act

Senate Bill 163
Summary of the Act

• Survey of large water users

• Registration program

• Final Report

• Report to the Joint Legislative Oversight Commission on progress and problems that may be encountered
DEP’s Initial Tasks

• Begin identifying and gathering reasonably available data
  – Work with agencies
  – Work with academic institutions
  – Work with survey participants

• Develop time frame for survey

• Develop survey form and web interface
Final Report Information

- Users > 750,000 Gallons/month
- Conservation Efforts
- Interfering Withdrawals
- Potential Growth Areas
- Potential Groundwater Well Network
- Surface/Groundwater location & quantity
- Consumptive and Non-Consumptive Withdrawals
- Historical Drought & Flood Areas
- Conditions/Uses to Exacerbate Low Flow Conditions
The Survey

- DEP examined surveys and registration forms from other states to avoid “reinventing the wheel”.
- DEP’s Internet Design Group was consulted regarding development of a web based survey.
- Meetings have been held with various groups and agencies to obtain needed information.
Stakeholder Meetings
Held to Date

- West Virginia Chamber of Commerce
- Manufacturers’ Association
- Farm Bureau
- WV-American Water
- Rural Water Association
- Coal Association
Survey Partners

• Contract has been executed with USGS.
• USGS will provide a list of companies that may be large quantity users based on published data.
• WVGES will provide technical assistance for survey design and data validation.
• AEP and Arch Coal have volunteered to be beta testers for the survey.
# 2005 WATER USE SURVEY

## 1. General Information

<table>
<thead>
<tr>
<th>a. Facility Name:</th>
<th>i. Mailing Address:</th>
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<tbody>
<tr>
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<thead>
<tr>
<th>b. Facility Address:</th>
<th>j. Owner's Name:</th>
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<tr>
<th>c. County:</th>
<th>d. Phone: (   )</th>
<th>k. Owner's Address:</th>
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<tr>
<th>e. Contact Name:</th>
<th>l. Owner's Phone: (     )</th>
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<tr>
<th>f. Contact Email:</th>
<th>m. Owner's Email:</th>
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<tr>
<th>g. Facility Email:</th>
<th>n. NPDES Number:</th>
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<table>
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<tr>
<th>h. SIC Code:</th>
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</table>

## 2. Brief description of process requiring water withdrawals. (Ex. cooling water, electric generation, etc…) 

(§22-25-3(j)(3))

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

## 3. Type of Water Use: (§22-25-3(j)(3))(drop box)

<table>
<thead>
<tr>
<th>Industrial</th>
</tr>
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<tbody>
<tr>
<td>Commercial</td>
</tr>
<tr>
<td>Irrigation</td>
</tr>
<tr>
<td>Mining</td>
</tr>
<tr>
<td>Public Water</td>
</tr>
<tr>
<td>Power Generator</td>
</tr>
<tr>
<td>Recreation</td>
</tr>
<tr>
<td>Mineral Extraction</td>
</tr>
</tbody>
</table>
### 4. Surface Water Intake Information (§22-25-3(j)(3)):

| County | Source Name | Monthly Withdrawal (gallons/month) | Year  | (Drop Box for 2003 & 2004 options) | Water Source (drop box): | How did you determine withdrawal information? Metered/Calculated |
|--------|-------------|-----------------------------------|-------|-----------------------------------|--------------------------|----------------------------------------------------------------
|        |             |                                   |       |                                   |                          | If calculated, describe in detail how the calculation was made. |
|        |             |                                   |       |                                   |                          |                                                                  |
|        |             |                                   |       |                                   |                          |                                                                  |
|        |             |                                   |       |                                   |                          |                                                                  |

### 5. Groundwater Intake Information (§22-25-3(j)(3)):

<table>
<thead>
<tr>
<th>County</th>
<th>Source Name</th>
<th>Aquifer Source (drop box)</th>
<th>Type of Rock (drop box)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Alluvial Aquifer</td>
<td>Sand</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Upper Pennsylvanian &amp; Permian</td>
<td>Sandstone (SS)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Lower Pennsylvanian</td>
<td>Sand &amp; Gravel</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Mississippian Bedrock</td>
<td>Limestone/Dolomite (LS)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Devonian &amp; Silurian</td>
<td>Shale (Sh)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ordovician &amp; Cambrian</td>
<td>Interbedded SS,LS, Sh</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Unknown</td>
<td>Underground Mine</td>
</tr>
</tbody>
</table>

| County | Source Name | Monthly Withdrawal (gallons/month) | Year  | (Drop Box for 2003 & 2004 options) | Water Source (drop box): | How did you determine withdrawal information? Metered/Calculated |
|--------|-------------|-----------------------------------|-------|-----------------------------------|                          |----------------------------------------------------------------
<p>|        |             |                                   |       |                                   |                          | If calculated, describe in detail how the calculation was made. |
|        |             |                                   |       |                                   |                          |                                                                  |
|        |             |                                   |       |                                   |                          |                                                                  |
|        |             |                                   |       |                                   |                          |                                                                  |</p>
<table>
<thead>
<tr>
<th>Water Source (drop box):</th>
<th>Spring</th>
<th>Lake/Impoundment</th>
<th>Stream</th>
</tr>
</thead>
<tbody>
<tr>
<td>How did you determine withdrawal information? Metered/Calculated</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>If calculated, describe in detail how the calculation was made.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

6. Do you have any water purchased from a water utility? (§22-25-3(j)(3)) Yes/No
a. If yes, provide utility name.______________________________

7. What is your daily maximum potential to consume? (§22-25-3(g)) ________________________ (gallons/day)

8. What is your monthly maximum potential to consume? (§22-25-3(g)) ________________________ (gallons/month)

9. If you are a seasonal industry, provide your maximum monthly seasonal use (gallons/month) and number of months. (§22-25-3(g))

10. Within the next five years, what is your maximum monthly potential to consume? (§22-25-3(g)) _________________(gallons/month)

11. For coal fired electric generators, what is the facility's nominal design capacity per calendar day? (§22-25-3(g))

12. Where do you discharge? (§22-25-3(j)(3)) (drop box)
POTW Stream Underground Injection Well/Septic System Private Reservoir Lake Other
## Survey (Continued)

<table>
<thead>
<tr>
<th>POTW drop Name</th>
<th>Stream drop Name</th>
<th>UIW/SS drop Lat &amp; Long</th>
<th>Private Reservoir (drop) Lat &amp; Long</th>
<th>Lake (drop) Lat &amp; Long</th>
<th>Other (drop) Text Box</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monthly Discharge (gallons)</td>
<td>Lat &amp; Long</td>
<td>UIC Code</td>
<td>NPDES Number</td>
<td>NPDES Number</td>
<td>Monthly Discharge (gallons)</td>
</tr>
<tr>
<td>Monthly discharge (gallons)</td>
<td>UIC Permit Number</td>
<td>Monthly Discharge (gallons)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

13. For public water suppliers, list the zip codes for the areas you serve. (§22-25-3(j)(3) (Drop down box))

14. Describe stream flow conditions that impact withdrawal rates. §-22-25-3(f)

15. Describe seasonal conditions that impact withdrawals. §-22-25-3(f)

16. If you have work planned to conserve water use, describe the project and give an estimated project cost. §-22-25-3(j)(9)
Final Report Information

- Conservation Efforts
- Interfering Withdrawals
- Potential Growth Areas
- Potential Groundwater Well Network
- Users > 750,000 Gallons/month
- Surface/Groundwater location & quantity
- Consumptive and Non-Consumptive Withdrawals
- Historical Drought & Flood Areas
- Conditions/Uses to Exacerbate Low Flow Conditions
Surface/Groundwater Location and Quantity: Data Elements

Surface Water
- Geographic Maps
- Stream flow rates, estimation of amount of impounded water

Groundwater
- Location of groundwater wells
- Volume produced, depth, formation, total estimated volumes
Final Report Information

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Consumptive/Nonconsumptive Withdrawals: Data Elements

**Intake Amounts**
- Survey, estimates from USGS for industrial users, public water-well data, private water well withdrawal estimates

**Discharge Amounts**
- Survey, NPDES Reports, USGS estimates for industrial users, public water supply well data, private water-well estimates

**Consumptive Use**
- Calculated
Consumptive/Nonconsumptive Withdrawals: Data Sources

- Public Water Supply Intake reports
- POTW’s
- Intake and consumptive use based on SIC codes and other data
- Reported Discharges
- Domestic intake and discharge estimates
- Thermoelectric intake and discharge estimates
- Irrigation and other farm related use estimates
- Mining intake and discharge estimates
Users > 750,000 Gallons/month

Conservation Efforts

Interfering Withdrawals

Potential Growth Areas

Potential Groundwater Well Network

Surface/Groundwater location & quantity

Consumptive and Non-Consumptive Withdrawals

Historical Drought & Flood Areas

Conditions/Uses to Exacerbate Low Flow Conditions
Historical Drought and Flood Areas: Data Elements

**Low Flow**
- Stream flow data from actual gauging stations
- Historic groundwater data

**Drought**
- Rainfall – historic trends
- Socio-economic impacts

**Floods**
- Rainfall – historic trends
- Socio-economic impacts
Users > 750,000 Gallons/month

Conservation Efforts

Interfering Withdrawals

Potential Growth Areas

Potential Groundwater Well Network

Surface/Groundwater location & quantity

Consumptive and Non-Consumptive Withdrawals

Historical Drought & Flood Areas

Conditions/Uses to Exacerbate Low Flow Conditions
Conditions that Exacerbate Low Flows: Data Elements

Current and projected water uses

- Survey data
- Maps and other information delineating flood, drought, and economic/population increase or decline
Potential Groundwater Well Network: Data Elements

Information generated from final report elements

- Groundwater locations and quantity (Element 1)
- Consumptive/nonconsumptive uses (Element 2)
- Survey information (Element 3)

Structure, lithologic and isopach maps
Users > 750,000 Gallons/month

Conservation Efforts

Interfering Withdrawals

Potential Growth Areas

Potential Groundwater Well Network

Final Report Information

Surface/Groundwater location & quantity

Consumptive and Non-Consumptive Withdrawals

Historical Drought & Flood Areas

Conditions/Uses to Exacerbate Low Flow Conditions
Potential Growth Areas –
Competition for Resources: 
Data Elements

Population data
• Census

Areas of projected industrial growth
• Economic Development Office
• Information generated from final report elements
  – Location/quantity of surface water, groundwater (Element 1)
  – Consumptive/nonconsumptive uses (Element 2)
  – Survey information (Element 3)
Final Report Information

- Users > 750,000 Gallons/month
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Interfering Withdrawals: Data Elements

GIS map coverage

- Survey data overlay with groundwater and surface water maps and data (Output from final report elements)
  - Groundwater and surface water location and quantity (Element 1)
  - Consumptive/nonconsumptive uses (Element 2)
  - Survey information (Element 3)
  - Historic drought and flood conditions (Element 4)
  - Low flow conditions (Element 5)
  - Potential growth areas – competition (Element 7)
Conservation Efforts: Data Elements

Response to Survey Question

Information from Academic Institutions

• Current and projected conservation technologies
Participating State Agencies

- Health
- Agriculture
- DNR
- PSC
- OES
- Academic Institutions
WVU and Marshall

- DEP, WVU and Marshall have worked together to prioritize research projects for final report (3 high-priority and 10 lower priority projects)

- WVU and Marshall, with DEP’s assistance, will target federal funds as quickly as possible

- WVU has committed to spending $80,000 of existing state funds to start high-priority projects quickly

- Marshall has committed to search for available funds to assist with starting high-priority projects
WVU/Marshall
High-Priority Projects

• WVU/Marshall will provide cost estimates for the following final report elements:

  ➢ Identify areas of concern regarding historical or current conditions that indicate low flow condition or where a drought or flood has occurred or is likely to occur that threatens the beneficial use of the surface water and ground water (Element 4)

  ➢ Identify potential growth areas where competition for water resources may be expected (Element 7)

  ➢ Practices or methods persons have implemented to reduce water withdrawals (Element 9)
WVU and Marshall Schedule

• Proposals for priority research projects – September 2004

• Priority research project implementation - October 2004

• Complete test project – December 2004

• Complete priority research projects - December 2005

➤ DEP will compile a list of available information sources to support the research projects

➤ Availability of funding will be critical to meeting time frames and the number of projects that can be initiated
Challenges

• Agricultural data will be difficult to divide between watersheds and surface/groundwater withdrawals
• Industry doesn’t measure withdrawals. Survey data will be estimates
• Survey information for users below 750,000 gallons/month is not available
• General accuracy of the data
• Measuring consumptive use
Challenges (continued)

• Double counting water use
• Funding for research projects
• Timeframe for completion of research projects
Schedule of Major Tasks

• Finalize agreements with WVGES and WVU/Marshall – 4\textsuperscript{th} Quarter 2004
• Annual report to legislature – December 2004
• 1\textsuperscript{st} Survey distribution – 1\textsuperscript{st} Quarter 2005
• Annual report to legislature – December 2005
• 2\textsuperscript{nd} Survey distribution – 1\textsuperscript{st} Quarter 2006
• Final Report – December 2006
Questions???
Summary of the Act

• The Survey
  • A survey of consumptive and non-consumptive water resource use
  • Will cover years 2003, 2004, and 2005
  • Will include use of both surface and ground water resources
  • WVDEP to make good faith effort to obtain survey and registration information from persons who are withdrawing WV water but are outside state borders
  • WVDEP to determine form and format of survey
  • WVDEP shall, to the extent reliable information is reasonably available from sources other than persons required to participate in the survey, utilize that data to fulfill the requirements of this section.
The Registration Program

WVDEP shall establish a statewide registration program for monitoring of large quantity water users.

WVDEP shall, to the extent reliable information is reasonably available from sources other than persons required to participate in the registration, utilize that data to fulfill the requirements of this section.

If necessary data is not otherwise reasonably available to the WVDEP, the registration participants must provide the data.

Registered persons that report on withdrawals annually for at least three consecutive years are not required to register further withdrawals unless the amount withdrawn varies more than 10% from the three-year average.

Participation in the registration program is mandatory.
The Final Report shall include:

(1) To the extent information is available, the location and quantity of all surface and groundwater resources in the State.
(2) Discussion of the consumptive and non-consumptive withdrawals of surface water and ground waters.
(3) A listing of each person whose water withdrawal during any single month exceeds 750,000 gallons:
   - Amount of water used
   - Location of the water resource
   - Location of each intake (latitude, longitude)
   - Location of each discharge point (latitude, longitude)
   - Nature of the use
   - Watershed
   - If more than one watershed or basin, watersheds or basins involved and amount transferred
The Final Report shall include:

(4) Discussion of (a) any area within State of concern based on historical or current conditions that would indicate low flow, or (b) where drought or flood has occurred, or (c) where drought or flood is likely to occur, where such condition threatens the beneficial use of the surface or ground waters in the area.

(5) **Current** in-stream or off-stream uses that contribute to or are likely to exacerbate natural low flow conditions to the detriment of the water resource, and **potential** in-stream or off-stream uses that contribute to or are likely to exacerbate natural low flow conditions to the detriment of the water resource.

(6) Discussion of a potential groundwater well network to provide indicators of groundwater levels in areas where groundwater levels are declining or are expected to decline.
The Final Report shall include:

(7) Potential areas of growth in the State where competition for water resources may be expected.

(8) Any occurrence of two or more withdrawals that are interfering with one another or may reasonably be expected to do so.

(9) Discussion of the practices and methods persons have implemented to reduce water withdrawals.

(10) Any other information that may be beneficial in:

- Adequately assessing water availability
- Adequately assessing water withdrawals
- Determining the need for water resource plans
- Preparing for water resource plans
Other Elements:

- WVDEP must also make recommendations to the Joint Legislative Oversight Commission relating to the need to implement a **water management strategy** for the State or regions (watersheds) of the State where:
  - Water resources currently stressed due to beneficial or other uses, ecological conditions or other factors
  - Water resources likely in future to be stressed due to beneficial or other uses, ecological conditions or other factors
  - The report must include a **cost / benefit analysis** regarding the persons likely impacted by the implementation of a water resource management strategy