

STATE LAND LEASING PROGRAM

At the end of 2002 the Division managed 84 leases covering 58,894 acres of State land, a decrease of 3,077 acres from 2001. The decrease resulted from expiration of several large leases that failed to enter the production phase.

There were 115 productive oil and gas wells on 41 State leases and an additional 78 wells unitized with State leases. The State earned royalties on these wells from 2.4 bcf of natural gas and 326 barrels of oil.

Oil and gas leasing of State land involves consultation at many levels. Drilling and operation plans are adjusted to protect the environment and public safety and accommodate the State's surface management goals for the parcel.

In 2002 leasing revenues from State land totaled \$249,685:

- **Royalties** - The State collected \$96,633 in royalties from 41 leases. This was a decrease of 43% from the previous year's total of \$168,524 and resulted from much lower gas prices. Natural gas prices averaged \$3.03 per mcf for the year and oil prices averaged \$24.79 per barrel.
- **Delay Rentals** - Operators submitted a total of \$79,435 in delay rentals from 29 leases, down 27% from the previous year's total of \$108,920.
- **Storage Leases** - Fourteen storage leases added \$73,617, down 27% from 2001's total of \$102,402.
- **Lease Sales** - There were no lease sales held in 2002.

While the royalties the State collects fluctuate with gas price and well production volumes, the main variable affecting State leasing revenues from year to year is whether or not a lease sale was held and bonus bids collected. Table 7 shows that the 1999 lease sale generated substantially higher income than years when sales were not held.

Table 6 - Leased State Land Acreage By County, 2002

County	Leased Acreage
Allegany	11,627
Broome	345
Cattaraugus	9,472
Cayuga	62
Chautauqua	16,923
Chemung	609
Erie	835
Madison	53
Ontario	55
Schuyler	11,574
Seneca	17
Steuben	4,201
Yates	3,098

Table 7 - Total Leasing Revenues, 1995 - 2002

1995	\$143,668
1996	\$143,592
1997	\$168,029
1998	\$279,523
1999	\$3,206,406
2000	\$181,876
2001	\$379,845
2002	\$249,685

ABANDONED WELLS



The Division estimates that over 75,000 oil and gas wells have been drilled in New York State since the 1820s. Most of the wells were drilled before New York established a regulatory program and many were never plugged. Every year the Division of Mineral Resources deals with a “new” group of problem abandoned wells in a wide variety of settings. Here is a selection of abandoned wells from 2002.

Residential Area - Pipeline company employees detected natural gas emanating from two residential lawns in the Village of Rushville, Ontario and Yates County. Explosive gas levels were also found inside a garage. Division staff uncovered two natural gas wells in the vicinity. Gas in the soil declined when the wells were vented under DEC direction. Roughly 24 gas wells were drilled in the village in the 1900's and need to be plugged when funds are available. The backhoe is excavating a leaking well next to a building.



School - During construction of a new bus garage at the Bolivar-Richburg High School in Allegany County, several buried abandoned wells were uncovered. Since no well records were available, the school had to bring in a small service rig (red equipment in foreground) to check the condition of the wells. All the wells had to be plugged before construction could resume. This is not the first school well incident that the Division has handled. For example, in nearby Wyoming County DEC plugged a gas well that was leaking brine in the parking lot of Wyoming County Central School in 1991.



Zoar Well Plugging Site. The construction of the access road and well site was designed to minimize disturbance to the surrounding area.

Public Lands - Using State Environmental Audit funds, the Department plugged seven problem abandoned wells on a wide range of public lands. DEC plugged three abandoned gas wells on the Three Rivers Wildlife Management Area in Onondaga County. One well had been flowing natural gas and another was discharging brine. In addition, DEC plugged four abandoned wells in Cattaraugus County, three on Cattaraugus Reforestation Area #22 in the Town of Allegany and one on the Zoar Multiple Use Area in the Town of Persia.

In a separate incident, another abandoned well was discovered on property that The Nature Conservancy purchased for possible addition to the Deer Creek Wildlife Management Area in Oswego County.

Seneca Lake - Through field and office work, Division staff discovered seven abandoned salt wells at the US Salt facility in the Town of Reading, Schuyler County. The wells had been abandoned for decades.

All the wells were less than 50 feet from the shore and adjacent to a steep grade which raised concerns about potential impacts to the lake. Rig access was very difficult, but the responsible party successfully plugged all the wells.



Ongoing Problems - Many abandoned well issues take several years to resolve as the Division pursues legal action against those responsible. The Moore Lease in Allegany County is a good example with more than 200 abandoned wells involved in legal actions. The Moore wells occur in a variety of settings (residential areas, roadside, woodland, field etc) and many are leaking oil.

Abandoned wells can leak oil, gas and/or brine. They can contaminate groundwater and surface water, kill vegetation and cause safety and health problems. Underground leaks may go undetected for years before their damage is discovered.

Priority Plugging List

Historically, abandoned wells have been discovered at playgrounds and parking lots, inside buildings, in wetlands, underwater in creeks and ponds, in wooded and brushy areas and in residential yards. Every year DEC staff discover additional abandoned wells during scheduled inspections or while investigating complaints. DEC staff evaluate the environmental and public safety threats posed by each well and place the most serious cases on the Priority Plugging List to be plugged whenever funds become available.

Currently, there are 634 wells in 18 counties on the Priority Plugging List. Allegany and Cattaraugus County have a considerable number of abandoned old oilfield wells on the Priority Plugging List, but problem oil and gas wells of all ages are on the list.

To date, only a small percentage of Priority Plugging List wells have ever been removed from the list. Wells removed from the list were plugged and abandoned with monies from the Oil and Gas Account and Environmental Audit Funds.

Environmental Audit Process

The Environmental Audit Program requires that each State Agency annually report any environmental problems associated with the lands and facilities they manage. Many agencies such as DEC, Parks, Urban Development, DOT and Mental Health have recently plugged leaking or abandoned wells identified in the Environmental Audit (see page 23 for DEC plugging on State lands). However, many abandoned wells located on State lands are still not being reported, such as those found on DOT right-of-ways.

In February Division staff made a presentation at a State Agency Environmental Audit Workshop. Division staff explained the need to report abandoned wells and showed the workshop attendees examples of abandoned wells and the wide variety of settings where they can be found.



This Priority Plugging List well in the City of Rome, Oneida County was discharging brine at a rate of five gallons per minute into a wetland adjacent to Brandy Brook and had already killed over an acre of vegetation in 1998.



The mostly wooden structure is an older style of drilling rig known as a cable tool rig. It is being used to plug a well in a DOT right-of-way next to a stream.

Plugging Permits

The Division issued 177 Well Plugging Permits in 2002. All wells must be plugged and abandoned at the end of their productive life. The Division ensures that the proposed plugging procedures will protect ground and surface water and the site will be properly reclaimed and revegetated.

COMPUTERIZED SERVICES

Web Site Statistics

Public use of the Division's website increased dramatically from the previous year. The average number of user sessions rose 39% from 2001 to 278 sessions per day in 2002. The length of the average user session increased from 11 minutes in 2001 to 16 minutes in 2002 for an increase of 46%. In addition, the number of page views rose by 10% and unique visitors rose by 17% compared to 2001.

As one of the Division's primary tools for distributing information, the website includes extensive information on both the Oil and Gas and the Mined Land Reclamation Programs.



The Division has further improvements planned for the website to increase its usefulness to the public, industry and local governments.

Electronic Reporting and Annual Reports

Approximately 14,500 wells need to be reported annually and the reports are due on March 31 for the preceding calendar year. The steadily increasing menu of electronic reporting options continues to make the process easier. In 2002 operators submitted electronic reports covering 4,650 wells and 11.5 BCF of gas, or 31% of the State's total of 36.8 BCF of natural gas.

In January the Division mailed 950 well owners a preprinted form showing all of their registered wells. For the past three years, well owners have also been able to file their reports using popular

spreadsheet formats and software files. In 2002 XML filings were added as a new electronic option. Computer filing is easier for many well owners and also reduces the chance of data entry errors.

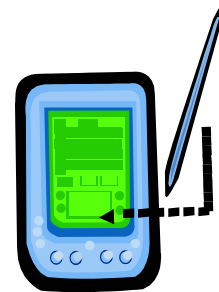
The Division intends to further expand the electronic reporting system so it is available to more operators.

Electronic Field Inspection Module

In the summer of 2002 Mined Land Reclamation staff began testing a new PDA-based electronic field-inspection technique. Prior to going out in the field, staff loaded a PDA with existing data on regional mines and a program that facilitates recording inspection information (site conditions, permit compliance status, etc.). After returning to the office, staff then electronically uploaded the information to the Division's database. As of the end of 2002, this project continued in the beta testing phase with Mined Land staff putting it through field trials and Central Office Staff making additional enhancements to the program.

When the new system is fully implemented, it will significantly reduce the amount of time staff must spend recording inspection data and transferring it to the Division's database. It will also reduce the chance of data entry errors and improve access to inspection data.

Eventually the electronic inspection module will be used routinely by both the Mined Land Reclamation and Oil and Gas Programs during every field inspection.



<http://www.dec.state.ny.us/website/dmn>

UNDERGROUND GAS STORAGE

Twenty-three natural gas and three liquefied petroleum gas underground storage facilities operated in ten counties in the western and central parts of New York during 2002.

Natural Gas Storage

Table 8 summarizes the 2002 year-end status of underground natural gas storage in New York and Table 9 details activity during the year at each storage field. Storage operators injected 65.8 billion cubic feet of natural gas into storage during 2002 and delivered 67.4 billion cubic feet. New York's storage reservoirs were 78% full at the end of the reporting year and year-end working gas in storage represented 57% of working capacity. More than 900 storage field wells were used during the year for injection, withdrawal or monitoring.

Central New York Oil and Gas (CNYOG) commenced natural gas storage operations at Stagecoach Field in Tioga County in January 2002. The addition of Stagecoach Field increased maximum daily deliverability of natural gas from storage by 500 million cubic feet, or 35%, to 1.927 billion cubic feet per day.

Twenty-two of New York's underground natural gas storage facilities are in depleted reservoirs and one is in a solution-mined cavern. More gas is stored in the Oriskany sandstone formation than in any other rock unit in New York. Used for storage at 10 fields including Stagecoach, the Oriskany accounted for 65% of total statewide capacity, 65% of working storage capacity and 61% of total maximum daily deliverability. The largest single storage field with respect to capacity, Dominion Transmission's Woodhull Field in Steuben County, can hold up to 35.9 billion cubic feet of gas in the Oriskany formation.

Permit Applications – In December Wyckoff Storage Corporation submitted an application to develop a new underground natural gas storage field in a depleted gas production field in Steu-

ben County. Earlier in the year, staff continued review of an application previously submitted by Seneca Lake Storage Inc. for a proposed salt cavern storage project in Schuyler County. Staff also reviewed a proposal by National Fuel Gas Supply Company to extend the boundary of its Beech Hill natural gas storage field in Allegany County. All three proposals remained under active review at the end of 2002.

Liquefied Petroleum Gas Storage

New York's three liquefied petroleum gas (LPG) underground storage facilities are in Cortland, Steuben and Schuyler Counties. The facilities store propane, butane and other liquid hydrocarbons for delivery to market as needed. Operators reported that at year-end 2002, 30,632,000 gallons of LPG were in storage. The volume stored at year-end represents 21 percent of total storage capacity.

Liquefied petroleum gas is stored in caverns excavated in the shales of the Genesee Group or solution mined out of the Salina Group salt formations, which are the same formations used by New York's five solution mining facilities.



A well at the Woodhull Storage Field in Steuben County. The reservoir has the largest storage capacity in New York.

**Table 8 - 2002 Summary and Year-End Status
Underground Natural Gas Storage**

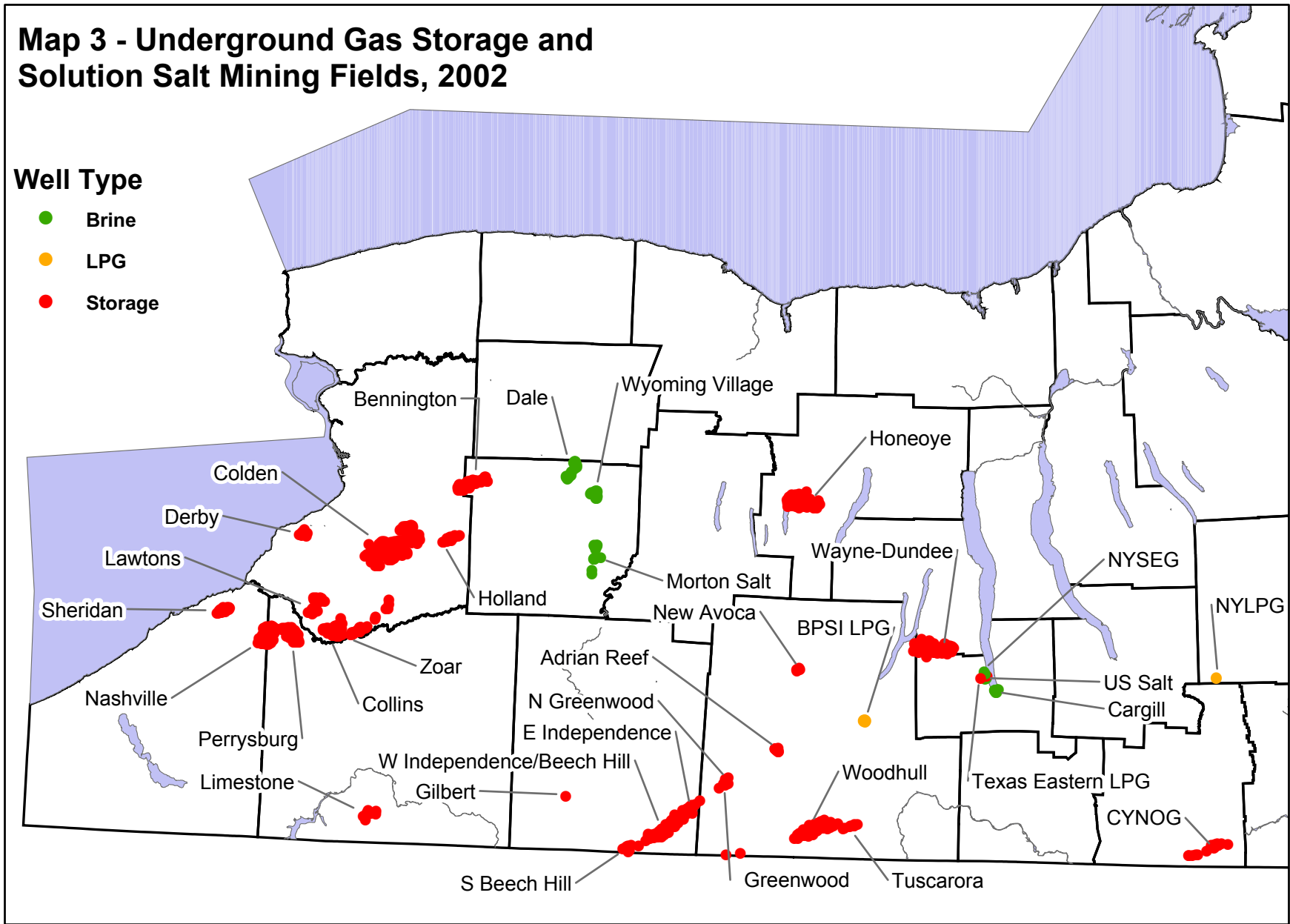
	Onondaga	Oriskany	Medina	Salt Cavern	Total
Number					
Fields	2	10	10	1	23
Wells	50	327	525	3	905
Acreage					
Reservoir	2,473	30,841	42,630	4	75,948
Total	7,112	62,051	102,946	4	172,113
Total Storage Gas					
Capacity (bcf)	10.700	134.754	59.280	2.340	207.074
Year-End (bcf)	8.287	107.423	44.990	1.399	162.099
Working Gas					
Capacity (bcf)	6.863	68.627	27.973	1.450	104.913
Year-End (bcf)	4.450	41.296	13.683	0.509	59.938
Max Daily Deliverability (mmcf/day)	100	1,171	511	145	1,927



Stagecoach Gas Field, which started operation in 2002, is the easternmost underground natural gas storage field in the US. The field uses innovative horizontal wells to increase gas flow. Well CNYOG W-4 is in the foreground and well W-8 and an equipment building are in the background.

Table 9 - Summary Storage Field Activity, 2002

	Total Number Wells	Total Storage Capacity (bcf)	Gas to Storage (bcf)	Gas from Storage (bcf)	Designed Max. Deliverability (mmcf/day)
Dominion Transmission, Inc.					
Woodhull Field	51	35.904	11.648	13.489	357
Central NY Oil and Gas					
Stagecoach Field	18	13.750	13.239	1.796	500
Columbia Gas Trans. Corp.					
Dundee Field	134	11.000	3.104	3.789	77
Greenwood Field	7	3.600	0.056	0.031	5
N. Greenwood Field	2	3.200	0.339	0.433	9
Honeoye Storage Corp.					
Honeoye Field	39	10.780	3.242	3.877	55
National Fuel Gas Supply					
Beech Hill Field	51	23.000	4.541	5.114	66
Bennington Field	64	5.000	1.930	2.283	75
Colden Field	166	16.220	6.894	9.688	110
Collins Field	47	5.880	1.395	1.964	50
Derby Field	14	0.250	0.168	0.135	5
E. Independence Field	11	6.400	1.848	2.352	15
Holland Field	26	2.600	0.571	0.861	25
Lawtons Field	32	2.470	0.560	0.981	21
Limestone Field	14	19.800	0.957	0.001	37
Nashville Field	71	8.530	1.887	2.898	110
Perrysburg Field	40	3.850	0.574	1.173	35
Sheridan Field	26	3.700	0.799	0.912	25
Tuscarora Field	8	6.300	3.012	3.972	57
W. Independence Field	31	11.800	3.201	3.683	49
Zoar Field	38	2.200	1.193	1.102	40
NYS Electric & Gas					
Seneca Lake Field	3	2.340	0.757	1.348	145
Steuben Gas Storage Co.					
Adrian Reef Field	12	8.500	3.867	5.501	60
Totals	905	207.074	65.781	67.384	1,927



TRENTON-BLACK RIVER PRODUCTION AND FIELD SPACING

Development History

2002 Trenton-Black River drilling resulted in discovery of three new fields. All such discoveries require hearings unless the field is 100% leased or controlled by the operator.

Early developers of the Trenton-Black River natural gas resource in New York included Pennsylvania General Energy (PGE), Fairman Drilling Company (Fairman), East Resources and Columbia Natural Resources (CNR).

During 2002 PGE conducted the first three-dimensional seismic survey in New York specifically designed to delineate Trenton-Black River reservoirs. The survey was conducted in the vicinity of Wilson Hollow, Quackenbush Hill and Cutler Creek fields.

Starting in late 2002, Fortuna Energy (Fortuna) acquired assets from Fairman, East Resources, PGE and CNR to become New York's top Trenton-Black River producer. Fortuna presently operates every field discussed on this page except for the Pine Hill and Glodes Corners fields operated by CNR.

2002 Spacing and Integration Orders

Commissioner Erin Crotty signed four Trenton-Black River Orders during 2002 (see Table 10 on page 32). The Orders established field-wide spacing rules and integrated interests within ten spacing units in three fields in Steuben and Chemung Counties. The Orders for Quackenbush Hill field cover five spacing units; Pine Hill field includes four units and Cutler Creek field includes a single unit. The Orders govern royalty interest distribution within the established units. Except for Pine Hill field, the Orders also establish procedures for permitting future wells and integrating future units in the affected fields. Procedures for future permitting and integration were not required for Pine Hill field because the operator demonstrated that the field

has been fully developed. If Pine Hill field is extended by future drilling, further proceedings will be required to establish and integrate units for the extension wells.

The Commissioner's Orders discussed above were issued after the Department held public hearings as required by law. Prior to each hearing, Department staff and the field's operator agreed upon field-specific proposed spacing and integration rules. These proposals were memorialized in executed stipulations for each field. Additional stipulations were executed during 2002 for Terry Hill South, Sugar Hill and County Line fields. Terry Hill South field is comprised of eight proposed units in Chemung and Schuyler Counties. One proposed unit entirely within Schuyler County makes up Sugar Hill field. County Line field acreage includes five proposed units in Chemung, Schuyler and Steuben Counties.

After a Commissioner's Order is issued, extension units where compulsory integration is necessary are established by Order of the Director of the Division of Mineral Resources. One such Order, for a 638-acre unit added to Wilson Hollow field (the Parker Unit), was issued during 2002. Final Commissioner's Orders which established the procedures for extending Wilson Hollow field had been issued during 2001.

Cumulative Production

Through year-end 2002, New York's Trenton-Black River wells produced a total of 50,193 mmcf of gas. Table 11 on page 32 shows the Glodes Corner Road field as having the greatest number of months in production. This table also shows that wells in Quackenbush field had the largest average production per month, followed by Sugar Hill field. Table 12 gives detailed information on each well's cumulative gas production. This table is organized by highest total field production with Wilson Hollow listed first and Quackenbush Hill field second.

Map 4 - Trenton Black-River Fields, Central NY

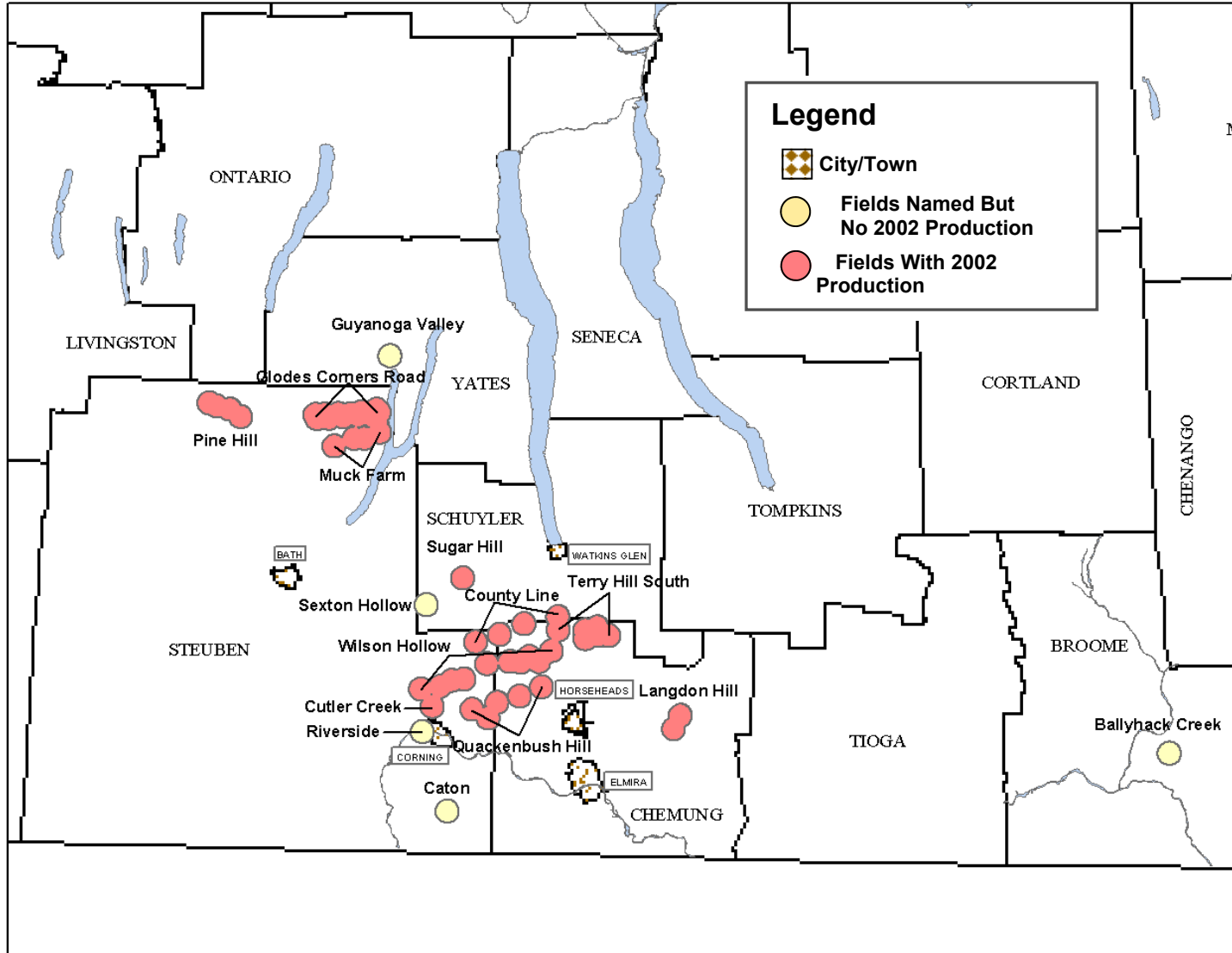


Table 10 - Spacing Orders Finalized or Proposed in 2002, Trenton-Black River

Field Name	Effective Date	Unit Sizes For Wells Drilled Before Order	Allowable Unit Sizes Future Wells	Minimum Spacing Future Wells
Quackenbush Hill (1)	1/23/02	631 - 636 acres	560 - 640 acres	9,000 feet apart
Pine Hill	9/30/02	382 - 433 acres	not addressed	not addressed
Cutler Creek	10/1/02	636 acres	560 - 640 acres	9,000 feet apart
Quackenbush Hill (2)	12/30/02	638 acres	560 - 640 acres	9,000 feet apart
Terry Hill South	proposed	323 - 640 acres	323 - 640 acres	9,000 feet apart
Sugar Hill	proposed	634 acres	not addressed	not addressed
County Line	proposed	499 - 636 acres	320 - 640 acres	9,000 feet apart

Table 11 - Summary Cumulative Production to Year-End 2002, Trenton-Black River

Field Name	Longest Months Production for a Well in Field	Number of Wells*	Average MMCF Per Month Per Well**	Total MMCF Through 2002
Glodes Corner Road	72	12	15	8,174
Wilson Hollow	38	10	94	16,525
Muck Farm	28	4	48	5,401
Pine Hill	26	3	4	319
Quackenbush Hill	25	5	146	12,402
Terry Hill South	22	5	53	4,429
Langdon Hill	19	2	26	607
Cutler Creek	18	1	94	1,685
County Line	15	3	14	419
Sugar Hill	2	1	116	232
Total All Trenton-Black River Fields to Year-End 2002				50,193
** Excludes Shut-in Wells				
*** Total field production divided by total months of production for all wells				


Table 12 - Detailed Cumulative Production to Year-End 2002, Trenton-Black River

Field and Wells	API Number	Months In Production	Total Production MMCF
Wilson Hollow Field			
Howe	31101228140100	30	4,066
Jimerson	31101227710000	38	2,986
VanVleet	31101228520000	22	1,333
Fratercangelo	31101228840100	15	1,908
Rice	31101228250000	27	438
Parker	31015228910000	11	2,870
Hardy	31015229190100	11	983
Chemung SRA #1	31015229600000	7	863
Root	31015229750000	3	629
Lederer	31015229020100	11	449
Field Total			16,525
Quackenbush Hill Field			
Lovell	31015228310000	25	8,386
Rhodes	31015228530000	19	2,277
Hartman	31101228920100	16	1,062
Henkel	31101228710100	18	164
Gregory	31015229180100	7	513
Field Total			12,402
Glodes Corner Rd. Field			
Levandowski	31101216880000	50	994
Covert 1	31010216890100	50	993
Smith	31101217050000	48	905
Gray	31101215920000	72	828
Fox	31101217060000	49	840
Pizura	31101216920000	50	744
Bergstresser	31101217100000	40	828
Covert 2	31101227680000	24	715
Radigan	31101217030100	34	492
Ballam-Carter	31101227690000	24	605
Evangelos	31101194970000	59	175
Kozak	31101217120000	38	55
Egresi	31101227720000	0	shut-in
Field Total			8,174

Field and Wells	API Number	Months In Production	Total Production MMCF
Muck Farm Field			
Snyder	31101227550000	28	2,084
McAllister	31101227480000	28	1,904
Smith	31101227470000	28	877
Faber	31101227450000	28	536
		Field Total	5,401
Terry Hill South Field			
Kimball	31015228570000	17	1,450
Lant 1	31015228620000	22	1,233
Broz	31015228260000	17	654
Clauss	31015228890100	15	463
Kienzle	31015228800100	13	629
Gublo	31015229100000	0	shut-in
		Field Total	4,429
Cutler Creek Field			
Corning Game Club	31101228850000	18	1,685
		Field Total	1,685
Langdon Hill Field			
Monahan	31015228380000	19	589
Usack	31015229330000	4	18
		Field Total	607
County Line Field			
Whiteman	31015228390000	15	170
Purvis	31097228930000	6	155
Roy	31015229010000	10	94
Youmans	31101229760000	0	shut-in
		Field Total	419
Pine Hill Field			
Wolcott	31101227600100	26	155
Peck	31101227660000	26	122
S&D Farms 1	31101227580100	26	42
S&D Farms 1B	31101227590200	0	shut-in
		Field Total	319

Field and Wells	API Number	Months In Production	Total Production MMCF
Sugar Hill Field			
SRA 2	31097228410000	2	232
			Field Total 232
Riverside Field			
Pace	31101229580000	0	shut-in
			Field Total 0
Guyanoga Valley Field			
Walters	31123227750100	0	shut-in
			Field Total 0
Sexton Hollow Field			
Grand Prix 1	31097228300000	0	shut-in
			Field Total 0
Ballyhack Creek Field			
Beagell 2 A	31007229950100	0	shut-in*
			Field Total 0
Total All Trenton-Black River Fields to Year-End 2002			50,193

* Field began producing in 2003



Landowners typically receive royalties of 1/8 or 12.5% of the value of production from a well draining their land. Some landowners in the Trenton-Black River trend are collecting royalties of \$100,000 or more per year.

SOLUTION MINING

Five solution mining facilities in New York (see Map 3 on page 29) produced 2.17 billion gallons of saturated brine, or about 2.5 million metric tons of salt, in 2002. Operators of these five facilities injected 2.23 billion gallons of fresh and recycled plant process water into bedded salt zones of the Upper Silurian Salina Group to recover the brine. Brine withdrawals for 2002 represent a slight decrease compared to 2001's figure of 2.20 billion gallons. The value of New York's 2002 solution salt mining production is estimated at \$100 million.

The 147 operating wells reported in 2002 include injection wells, withdrawal wells, wells equipped for both injection and withdrawal, and standby wells. Table 13 gives the number of operating and plugged wells at each facility.

U.S. Salt, Cargill, and Morton produced brine to supply on-site evaporation plants which manu-

facture and package table salt, water conditioning salt, and salt for other uses. Texas Brine and Occidental Chemical supplied chemical manufacturing plants in Niagara Falls via 60-mile-long brine pipelines.

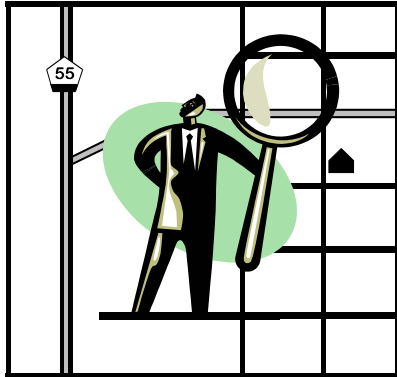
During 2002 the Department reviewed and approved Morton Salt's proposal to add 514 acres to its solution mining field in Wyoming County. Department staff also required Akzo Nobel to plug seven abandoned wells originally drilled in the early 1900s on the shores of Seneca Lake in Schuyler County.

In 2002 solution mining facilities accounted for approximately 50% of New York's total mined salt production, with the remainder extracted by conventional underground mining. According to U.S. Geological Survey statistics, New York typically ranks third among the states in total annual salt production volume.

Table 13

Status of Solution Salt Mining in New York, 2002

Operator	County	Town	Year Started	Operating Wells	Plugged Wells
U.S. Salt	Schuyler	Reading	1893	11	61
Cargill	Schuyler	Dix	1898	17	13
Morton	Wyoming	Castile & Gainesville	1884	21	24
Texas Brine	Wyoming	Middlebury (Dale Field)	1970	53	90
Texas Brine	Wyoming	Middlebury (Wyo. Vil. Field)	1984	45	23
Total				147	211



To find out more details about wells in your area, see the Appendices starting on page 55:

- **Drilling Permits Issued 2002**
- **Wells Completed in 2002**
- **Gas & Oil Production by Town, Field and Formation**