Tompkins County Water Resources Council

121 East Court Street, Ithaca, N.Y. 14850
Telephone (607) 274-5560 Fax: (607) 274-5578
www.tompkins-co.org/planning/committees.html

December 21, 2009

Mr. Jack Dahl, Director
Bureau of Oil and Gas Regulation
NYSDEC Division of Mineral Resources
625 Broadway, Third Floor
Albany, NY 12233-6500

Subject: COMMENTS ON THE DRAFT SGEIS FOR GAS DRILLING

Dear Mr. Dahl:

Thank you for the opportunity to provide comments on the Draft Supplemental Generic Environmental Impact Statement (dSGEIS) on the Oil, Gas, and Solution Mining Regulatory Program. The Tompkins County Water Resources Council (WRC) appreciates the tremendous effort required for the New York State Department of Environmental Conservation (NYSDEC) to prepare the dSGEIS document. We support many of the critical measures proposed in the dSGEIS to limit the environmental impact of shale-gas development in New York State. However, as detailed in our comments below, and in keeping with our body's role as protector of current and future water resources in Tompkins County, there are numerous areas where additional measures are warranted. *Action items are underlined and italicized*.

Key concerns include discharges to Publicly Owned Treatment Works (POTWs) – which should be prohibited; the use of centralized surface impoundments – which should be prohibited; Naturally Occurring Radioactive Materials (NORM); the need to address the combined and cumulative impacts on ground water and surface water statewide using protocols such as those used by the Susquehanna River Basin Commission (SRBC); and the need for a program to monitor and protect drinking water aquifers.

GENERAL COMMENTS

1. **Section 8.1.1.1.- SEQR Review.** *In order to ensure individual site constraints are adequately addressed, the NYSDEC should permit aspects of the drilling operation related to water resources on a site-specific basis.* Topography, site access, nearby (within 1000 feet) public and private water supply locations, surface water, wetlands, and environmentally sensitive areas should be addressed through individual permits. Because of the variability of these resources and their sensitivity to the impacts of gas drilling activities, a Generic Environmental Impact Statement will not adequately protect the public.

2. **Section 8.3.1 and Appendix 10 - Reconsideration.** *Every three years, the NYSDEC should revise permit conditions to reflect technological advances that may be available to limit the environmental impacts of natural gas drilling rather than relying on the technology proposed at this time.* Data are not currently available in many areas that the dSGEIS addresses

(flowback composition, flowback changes over time and from well to well, source water withdrawals, naturally occurring radioactive materials (NORM), treatment/disposal options and impact). A three-year review also allows new information to be reviewed and permit conditions to be changed as needed to address new technologies and mitigate the cumulative effect of horizontally drilled gas wells on the environmental health, public health, and community quality of life in Tompkins County and New York State. *Public input should be part of the permit revision process.*

3. **Section 8 - Regulatory Coordination.** *The dSGEIS does not clearly define regulatory controls and procedures in an effective manner to the public or to the partnering/involved agencies.* One example is in Section 3.2.2.4 where evidence will be required "*of diligent efforts by the well operator to determine the existence of public or private water wells and domestic supply springs within half a mile (2,640') of any proposed drilling location.*" The use of the term "diligent efforts" is vague. Two other examples are in Sections 8.1.1.4 and 8.1.1.5 where the phrase "*The Department strongly encourages operators...*" The non-specificity of "strongly encourages" is a concern. It is difficult to ascertain what are specific permit requirements and what is "encouraged". *The dSGEIS should be revised to clarify requirements and minimize dependence on the good will or intentions of the permit applicant*. Additionally, the term "well operator" is used throughout the document but needs to be defined or changed.

4. **Sections 7.1.4.1 and Section 8 - Regulatory Coordination.** *The NYSDEC as the permitting agency should be responsible for records management pertaining to all aspects of the gas drilling permit process.*

5. **Section 5.4.** *NYSDEC should ban all BTEX additives from use in the hydrofracturing fluids.* These are known carcinogens and are difficult, costly, or impossible to effectively remediate from water sources.

FLOWBACK WATER TREATMENT

6. **Section 7.1.8.1 - Municipal Publicly Owned Treatment Works (POTWs).** *POTWs are not designed to treat constituents in flowback water and should not be used for treatment or disposal.* Flowback waters are an industrial waste, and separate industrial wastewater treatment facilities should be constructed to specifically treat them. Moreover, page 7-102 states "NORM contained in the discharge of hydro-fracing fluids or production brine may be subject to discharge limitations specified in Part 380." Even with pretreatment, many of the constituents of flowback and formation water, including NORM, will flow through POTWs to the receiving waters or be entrained in the solids for disposal. The potential for NORM in the flowback water must preclude POTWs from accepting flowback water. While dilution of flowback/formation water constituents will greatly reduce their concentrations per unit disposal, this does not mitigate the increased loading of these constituents to receiving waters or the land surface of New York State. The cumulative effect of the potentially large number of discharges to the same water body will likely increase the overall cumulative loading to the water body. *Treatment or pretreatment standards should be established for all parameters that include both concentration-based and mass loading effluent limitations, including NORM.*

7. **Appendix 22 – NYSDEC – Division of Water Hydrofracturing Chemicals (HFC) Evaluation Requirements for POTWs** allows "*For proposed discharges, testing results from similar wells drilled in the same formation using the same HFCs are acceptable for purposes of analysis.*" Using testing results from similar wells will not provide the data needed to evaluate pre-treatment requirements. *Verification testing of each individual well should be required using*

flowback waters generated from the permitted gas well. Page 6-18, Section 6.1.3.3. - Flowback Water states "*The quality and composition of flowback from a single well can also change within a few days after the well is fractured,*" and Section 5.11.3.1-Temporal Trends in Flowback Water Composition states "*Limited time-series field data from Marcellus Shale flowback water taken at different times indicate that: the concentrations of total dissolved solids, chloride and barium increase, the levels of radioactivity increase…*". Therefore, *testing should also be required at specified intervals during fracking to assess the adequacy of treatment* and SPDES permit requirements with the variation in flowback characteristics over time.

8. **Sec. 7.1.7, Pg. 7-51.** NYSDEC requires a fluid disposal plan if "*probability exists that brine, salt water or other polluting fluids will be produced or obtained during drilling operations in sufficient quantities to be deleterious to the surrounding environment.*" Additionally, "*Department approval of headworks analysis, and the modification of the POTW's SPDES permit, if necessary, must be received prior to the acceptance of flowback water or produced brine from wells pursuant to this Supplement.*" (pg. 7-58) *Procedures should be established for confirming that the proposed treatment is acceptable. Disposal plans should be re-evaluated and approved by the NYSDEC when site-specific data on flowback water are available. These plans and documents should be readily available to the public.*

9. **Section 7.1.8.1.** *A thorough analysis of the cumulative impact on the receiving water should be conducted if multiple wastewater treatment plants will be used to dispose of wastewater into the same surface water body*.

SURFACE IMPOUNDMENTS AND PITS

10. **Section 7.1.7 - Centralized flowback water surface impoundments.** *The* dSGEIS states: *"Many of the above practices address impacts that would be most effectively mitigated by use of covered tanks instead of open surface impoundments for centralized flowback water facilities."* Given this statement and considering that the flowback water from hydraulic fracturing of Marcellus Shale wells has been shown to contain elevated dissolved solids, chlorides, barium and other heavy metals, and radioisotopes, *covered tanks rather than surface impoundments should be* ***required*** in order to most effectively mitigate impacts.

11. **Section 7.4.2 Page 7-79- Centralized flowback water surface impoundments.** We do not recommend use of impoundments, but *if centralized flowback impoundments are allowed, the siting requirements should be the same as Part 360-6*, prohibiting their location on agricultural lands or in areas that would have an adverse impact on threatened or endangered species.

12. **Section 7.4.2 Page 7-79- Centralized flowback water surface impoundments.** The leak detection and groundwater monitoring systems for centralized flowback impoundments are not specified. *If centralized flowback impoundments are allowed, the centralized flowback impoundments should be required to have 3 monitoring wells, as in the Part 360-6 requirements for liquid storage. Monitoring of groundwater should be conducted around all centralized flowback water facilities for the entire life of the impoundment*.

13. **Section 5.12.2.1 - Centralized flowback water surface impoundments.** There is no mention of the process for approval or need for land owner permission for surface impoundments separate from the drilling permission. *We recommend that the land owner grant permission for surface impoundments separate from the drilling permission if surface impoundments are not prohibited.*

14. **Section 7.1.7 and 7.1.3.2 – On-Site Pits Fluid Storage Pits.** Similar to the requirements for *onsite sewage treatment facilities (see NYS 10NYCRR 75 and NYS Appendix 75-A), fluid and waste storage pits should not be allowed on sites where the original land topography has slopes greater than 15%.*

15. Section 7.1.3.2 – On-Site Fluid Storage Pits. Specific measures for monitoring the freeboard after significant rainfall or snowfall should be required, including *visual or audible alarms in the pits to alert regulatory and drilling personnel when the freeboard is one foot or less*.

WATER WITHDRAWALS

16. **Section 7.1.** The dSGEIS should address the combined impacts and the cumulative impact on groundwater and surface water. *Safeguards should be included to ensure that the millions of gallons required for the drilling operations will not leave local residents without adequate drinking water*. It is suggested that these safeguards, at a minimum, be similar to the Susquehanna River Basin Commission/Delaware River Basin Commission's regulations, to permit, monitor, and regulate water withdrawals from flowing and standing water bodies as well as aquifers (large or small). It is suggested that the NYSDEC needs a method of accounting for water withdrawals (total volume per day) whether it is over or under a threshold, that not only accounts for all withdrawal sites (for site-specific and cumulative impact assessments) but to also monitor and account for inter-basin transfer of water. It is suggested that NYSDEC Division of Water have additional staff to do this.

17. Section 7.1. *Water withdrawals should be limited/prohibited during low-flow and drought conditions*. In order to define 7Q10 (Seven-day, consecutive low flow with a ten year return frequency) low flow conditions, we recommend that the NYSDEC should fund a low-flow regression analysis by the USGS to provide low-flow statistics through the "StreamStats" program, which would provide statistically valid low-flow estimates for any point on any stream in the State.

Surface Water Withdrawals

18. **Section 7.1.** The WRC is concerned about the potential impact from water withdrawals in Tompkins County. Most of Tompkins County is outside the Susquehanna River Basin and within the Great Lakes Basin. The cumulative impact of multiple withdrawals along a stream course is not addressed, nor how these withdrawals will be monitored, reported, and regulated. Assuming 3-16 wells/mi^2, Tompkins County could have 2,800 -7,600 wells over 10 years. Estimating 280 – 760 wells each year, each using ~5 million gallons/well for fracturing, and then including ~5 million gallons/well for re-fracturing in 5 years to be conservative, the result is a potential consumptive loss of 2,500 – 7,600 million gallons of water/year, or 3.4 – 21 mgd in Tompkins County. This exceeds the combined total amount of water withdrawn by the three largest public water supplies in Tompkins County, which withdrew 2,540 million gallons of water in 2008. *We suggest that the NYSDEC use the same methods as used by the Susquehanna River Basin Commission (SRBC) to regulate withdrawals in the areas not covered by SRBC for consistency and protection of the source of water*. This would be consistent with the approach for groundwater withdrawals in Section 7.1.1.1 - NYSDEC Jurisdictions – Aquifer Depletion that states that SRBC aquifer testing protocol will be used outside the SRBC to evaluate aquifer depletion.

19. **Section 7.1.1 p-7-22.** *"The application of the Natural Flow Regime Method to all surface water withdrawals to support the subject hydrologic fracturing operations is an option to comprehensively address cumulative impacts on stream flows. Adverse cumulative impacts could be addressed by the Natural Flow regime Method described above if each operator of a permitted surface water withdrawal estimated or reported the maximum withdrawal rate and measured the actual passby flow for any period of withdrawal." If, as in the procedures proposed in the dSGEIS, the operators will be monitoring the withdrawals, NYSDEC oversight of this program should be addressed in the dSGEIS and is critical to effective regulation of surface water withdrawals in the Great Lakes Basin.*

20. **Section 7.1.1.** There are only 3 or 4 USGS gauging stations in Tompkins County. *NYSDEC should provide funds to the USGS to establish and maintain stream gauges in any stream that will be used for water withdrawal* and to establish and maintain the database for possible mitigation of cumulative effect, as well as for review at time of permit procedure update.

Groundwater Withdrawals

21. **Section 7.1.1.1 - NYSDEC Jurisdictions - Degradation of Water Use.** NYSDEC says they will use the SRBC aquifer testing protocol and their "Pump Test Procedures" to "evaluate" proposed water withdrawals. However, it is not clear that cumulative impacts from multiple high volume withdrawals will be regulated. Under Title 33, water withdrawals of over 100,000 gpd only have to be reported annually, there is no permitting required. New York State currently regulates public drinking water-supply, ground and surface water withdrawals, through the public water-supply permit program. These limited water supply permit programs help to protect and conserve available water supplies. The NYSDEC should clarify the aquifer-testing procedures to be used to evaluate impacts of groundwater withdrawals for frack-water supply in areas outside the Susquehanna and Delaware River Basins. *An adequate volume of groundwater for current and reasonable future drinking water supply must be protected before groundwater is allowed to be withdrawn for hydro-fracing*.

GROUNDWATER MONITORING

The WRC concurs that groundwater monitoring should be conducted near Marcellus Shale gas wells; however, the program proposed by the NYSDEC is inadequate to detect and remediate contamination of drinking water aquifers.

22. **Section 7.1.4.** *Water quality monitoring programs should focus on monitoring the groundwater resource, not just existing drinking water wells*. Water-supply wells should not be the sole means of determining if groundwater contamination has occurred near a Marcellus Shale gas well due to the unknown or varying construction, operation, and availability of these wells, and the possibility that there may be no private wells or springs within 2,000 feet of the proposed well pad. Natural groundwater quality in the aquifers overlying the Marcellus and Utica play areas is highly variable. Concentrations of parameters such as chlorides and radioisotopes vary by two orders of magnitude in water sampled from water wells. With such natural variability, documentation of water-quality impacts from gas drilling and hydraulic fracturing would be extremely difficult if baseline data do not exist. As in environmental regulations relating to landfills (360-2.11), the permit should require the applicant to install and monitor groundwater wells to detect groundwater contamination before it reaches individual or public supply wells. *At least three monitoring wells should be installed around each well pad (two downgradient and one upgradient) and these wells should be used to determine the*

direction of groundwater flow in the vicinity of the well pad and sampled and analyzed at the same frequency as the private water supply wells.

23. **Section 7.1.4.** The water quality monitoring program should **not** be complaint-based. ***NYSDEC should establish a groundwater monitoring and reporting procedure*** that requires the applicant to submit the analytical results to the NYSDEC and local health department within a specified time period and requires the applicant to determine if there have been any significant increases in chemical or physical concentrations. As the permit-issuing agency, the NYSDEC should coordinate with the local health department on all complaint investigations involving private and public water supplies. The groundwater monitoring program should establish procedures for follow-up testing if results indicate there may be contamination in the monitoring wells. If the program is complaint-based, the burden of proving there is a problem will fall on the property owner, and he or she may have to pay for further tests to confirm the contamination. The burden for determining if there has been contamination of groundwater and any follow up actions required should be on the applicant, not the property owner.

24. **Section 7.1.4.1, Pg. 7-38.** *"...the results of each test must be provided to the property owner and the county health department prior to commencing drilling operations."* Results should also be provided to the NYSDEC, and the NYSDEC or the NYSDOH should be the official data repository. *The data collected should be entered into a state-wide database that is available to the public.*

25. **Section 7.1.4.** Review of the water-well testing results by local health departments as proposed in the draft SGEIS cannot be accomplished without additional resources. *Funds for implementing this program should be provided to local health departments through gas well permitting fees.* Fees cannot be raised directly by the local health departments since the NYSDEC has sole regulatory authority over gas wells.

26. **Section 7.1.4.** *Enforcement and mitigation procedures for non-compliance with well-testing requirements and parameters should be in place before drilling permits are issued by NYSDEC.* The well testing procedures outlined in the dSGEIS leave a large disconnect; the local health departments are the agencies where water testing results are supposed to be submitted, yet they are not notified by the NYSDEC of well permits being issued. Since the local health department is not notified when a well permit is issued, they would have no way of tracking compliance with well testing requirements because they would not know whether or not well-testing results should be submitted to them.

27. **Section 7.1.4.1, Page 7-38** states that "*If no contamination is detected a year after the last hydraulic fracturing event on the pad, then further routine monitoring should not be necessary.*" To detect longer-term cumulative impacts to the groundwater resources such as a gradual regional increase of chlorides and methane in the groundwater, *the permit should require that sampling continue at a minimum number of selected wells at least annually until the gas well is decommissioned.*

28. **Section 7.1.4.1., Pg 7-38.** *The requirement for the permit applicant to be responsible for paying for and performing this sampling and analysis should be specified in the regulation.*

29. **Section 7.1.4.1, Pg-41.** *"Analysis of changes in static water levels should carefully consider the well's construction, maintenance and operational history, recent precipitation and use patterns, the season and the effects of nearby pumping wells."* - How is the analysis to be

conducted when much of this information is not available for private wells (e.g. static water levels, well construction)?

30. **Section 7,1.12.1, Pg 7-67.** The proposed EAF Addendum in Appendix 6 requires the applicant to provide *"Evidence of diligent efforts by the well operator to determine the existence of public or private water wells and domestic-supply springs within half a mile of any proposed drilling location or centralized flowback water impoundment if proposed"* - and - a *"List of property owners and tenants contacted for water well information."* *In order to determine the location of all private wells in the vicinity of a proposed gas well, a well survey must be performed for all parcels within 1 mile of the site*. The records of private wells in the State are incomplete and DEC's water well information search wizard only contains a small fraction of the private wells. Applicants should be required to identify properties within one mile by tax map number, owner, parcel/tenant address, and owner address. NYSDEC should ascertain that this information is correct and complete as part of the permit review process. The permit applicant should be required to share the results of the well survey with the NYSDEC, the local health department, and local municipalities. *The permit applicant should be required to publicize the list and give local residents two weeks to come forward if they know of a well that is not on the list*.

31. **Section 7,1.12.1, Pg 7-43.** The draft SGEIS indicates that local health departments will share all data *"relative to the subject water well including pre-existing conditions and any available information about the well's history or use and maintenance."* This gives the mistaken impression that this information is generally available. Most local health departments do not have information on individual water wells (except for specific cases/complaints). *The dSGEIS should be revised to more accurately reflect data availability and to address the potential impact of the likelihood of data not being readily available.*

32. **Section 7,1.12.1, Pg 7-43.** The NYSDEC has the most complete information available on individual water-supply wells and should be the primary source of information on these wells. *The DEC Water Well Information search wizard must be updated to provide information on all well completion records received by the NYSDEC, or the NYSDEC Division of Water should be identified as a primary contact for operators to obtain water well information.*

33. **Section 7.1.4.1, Pg. 7- 38.** The first paragraph states that testing and analysis must be done by an ELAP-certified lab but fails to state that *samples must be collected by a third party, i.e., not by gas company or landowner*. The distance for sampling private wells should be extended to cover the length of the horizontal part of the well hole. This would include all drinking water wells within one mile of the well pad.

34. **Section 8.1.1.3.** *Local health departments and municipalities should be notified when a permit application is filed, when a permit is approved, two weeks prior to drilling, and one week prior to fracking due to potential inquiries from the public.* We suggest that as part of the permit application, the applicant should certify that these entities have been notified. P. 6-35 notes that turbidity may occur in local wells with any aquifer penetration. *Residents and public water supplies using water wells in the area should also be notified two weeks prior to drilling.*

35. **Sec 5.16.7, Pg 5-130** notes that samples were collected in 2008/09 from vertical wells in the Marcellus Shale. *"The data indicate the need to collect additional samples of production brine to assess the need for mitigation and to require appropriate handling and treatment options, including possible radioactive materials licensing."* Who is collecting and reviewing this data? *The requirement to collect samples should be part of the permit conditions, and permit conditions should be reviewed after this data is available*.

PRIVATE WATER WELL TESTING PARAMETERS

36. **Section 7.1.4.1, p. 7-39**. Pg 7-41 states *"Of the above parameters, barium, TDS and pH are identified as those which could initially suggest contamination as a result of fracing operations". These parameters should be included in Table 7-3.* Yet, Table 7-3 does include several parameters that are irrelevant to detecting potential contamination from gas wells - Coliform bacteria, lead, nitrate and nitrite. Their irrelevance is indicated by the data provided in SGEIS Table 6.2, p. 6-31, *"Typical Concentrations of Flowback Constituents Based on Limited Samples from PA and WV."* Thus, Coliform bacteria, nitrate and nitrite are absent from Table 6.2, and lead was detected at a frequency of two samples out of 29 samples analyzed. Therefore, these four parameters should be eliminated. (Note: Table 7-3 is erroneously cited in the text as Table 7-1.)

37. **Section 7.1.4.1, Pg. 7-41.** The list of additional parameters identified on Pg 7-41 also lacks some parameters which were detected at high frequencies and high *concentrations in* flowback water from *Marcellus Shale wells in PA and WV (see Table 6.2):. 4-Nitroquinoline-1-oxide, ammonia, biochemical oxygen demand, chemical oxygen demand, total K*jeldahl nitrogen and total organic carbon. *These parameters should be added to the list of potential test parameters.* However, the list also includes several parameters that are not useful as indicators of contamination; "static water level," because it is difficult to measure, and "carbonates" and "bicarbonates," because no NYSDOH-ELAP-certified tests exist for these two specific parameters.

38. **Section 7.1.4.1.** Section 8.2.1.2 discusses flowback water chemistry commenting that *"to date Department staff has not seen any flowback water analyses that tested for all of the chemicals and compounds that could be present."* Also, it appears that flowback constituents may change over time as hydraulic fracturing of a well proceeds. Instead of the list of parameters not aimed at gas well contamination in Table 7.3 and the incomplete list on p. 7-41 (incomplete because it omits several parameters identified in flowback water in Table 6.2), *the dSGEIS should provide a comprehensive list of parameters that are designed to detect a "chemical signature" of contamination from a gas well and that gas companies are required to pay for.* Examples of such lists are available on the Community Science Institute website, *www.communityscience.org/gaswells.html and* in Penn State Cooperative Extension Water Facts #28.

SURFACE WATER MONITORING

39. **Section 7.1.3.** In addition to private water wells, *baseline water quality testing (sampled by a third party and analyzed by an ELAP-certified laboratory) should also be performed on streams, ponds and lakes within approximately 1,000 feet of a multi-well pad or flowback surface impoundment.* Proper monitoring and assessment strategies need to be established to protect the State's water and wildlife resources.

40. **Section 7.1.3.3, Page 7-32/33.** Item #2 *Best Management Practices "...including, but not limited to, a combination of some or all of the following or equally protective practices..."* is completely unacceptable as it lacks specific detail on permit requirements. *The NYSDEC needs to establish and document clear procedures and reporting requirements for all aspect of additive containers, mixing, and pumping including each parameter listed in item # 2 items a-p.*

SET BACKS

41. **Section 7.1.12, Pg. 7-64 - Setbacks based on analogies.** *The setbacks required for all aspects of the process are too small and do not offer adequate protection from accidental contamination* (e.g. 100 feet to wetlands, 100 feet to residences). Proposed setbacks for 5-acre pads with six to eight horizontal gas wells and for centralized surface impoundments for flowback water are based on analogies with other kinds of activities covered by regulations, such as "fertilizer and/or pesticide mixing and/or clean up areas" covered under existing regulations. The analogy is inappropriate with respect to scale. Mixing of fertilizers and pesticides is typically a small-scale operation carried out by an individual farmer in or near a farm building. A gas well pad covers several acres, contains hundreds of vehicles and equipment items as well as dozens of workers. The workers mix millions of gallons of fracking fluid and inject it into gas wells under high pressure. Such analogies fail to account for the sheer physical scale of the new gas well technology, where the activity at each well pad is at least one to two orders of magnitude greater than any of the activities covered by current regulations, and where well pads may be present at a density of one or more per square mile.

A centralized impoundment will be approximately 5 acres in size and up to 6 feet deep, or 30 acre-feet (~10 million gallons of contaminated water). This is an enormous volume of water. If only a small fraction leaked due to a surface spill or a pit liner failure, the impact on a groundwater aquifer could be catastrophic. A larger setback buys more time to respond to accidental leaks and spills. Therefore, *the analogies on which gas well setbacks are based are inadequate as a basis for protecting water resources from risk of contamination.*

42. **Section 7.1.12.2, Pg. 7-69 - Setbacks from surface water resources.** Proposed setbacks for well pads are 300 feet from a reservoir and 150 feet from a watercourse, lake or pond, and for centralized flowback surface water impoundments they are 500 feet from a watercourse lake or pond and 1,000 feet from a reservoir. *These setbacks are inadequate to protect surface water resources from accidental spills and leaks*. The factors said by the dSGEIS to mitigate the risk of surface water contamination are speculative. The dSGEIS provides no evidence that any of these factors does, in fact, mitigate risk of surface water contamination by nearby gas well activities. The 2009 NYS Open Space Conservation Plan addresses stream buffers and states, *"One hundred feet should be considered an absolute minimum width for streams regardless of site-specific characteristics. Whenever possible buffers greater than 100 ft, and preferably 300 ft or more, should be used for the protection of stream function, as well as fish and wildlife resources."* In order to be consistent with the State's Open Space Plan, the setback distances from a well pad to a watercourse, lake or pond downstream of the well pad should be 300 feet. *The set back distance from a well pad to a reservoir should be 300 feet if the reservoir is upstream of the well pad or 1,000 feet if the reservoir is downstream of the well pad*, as this is a public water supply and the setback distance should be the same as for a water-supply well.

Given the large volume of contaminated water in a centralized surface impoundment, *the set back distance to watercourse, lake or pond that is downstream of a surface water impoundment should be at least twice the length of the side of the impoundment, or 1,000 feet, whichever is greater*. For a 5-acre impoundment with sides that are 466 feet by 466 feet, the setback to watercourses, ponds and lakes should be 1,000 feet. *The set back distance between a surface water impoundment and a watercourse, lake or pond upstream of the impoundment should be 500 feet.* We agree with the 1,000 feet setback distance between a reservoir and a surface water impoundment.

43. **Appendix 10.** *A site-specific SEQR review should be required for any development (not just the well pad), whether driveway access, vegetation removal, or other disturbance, within the 300 foot buffer for a watercourse, lake or pond or 1,000 feet from a reservoir. A site-specific SEQR review should also be required for any surface water impoundment if these impoundments are not prohibited.*.

44. **Section 7.1.12.1. Pg. 7-67 - Setback for water-supply wells.** *The 1,000 feet setback from gas well pads for public water-supply wells should also apply to community and non-community water supply systems, and individual private wells without exception*. Smaller, more rural public and private water systems should not be treated differently than larger municipal systems, as a matter of fairness. *For centralized flowback water surface impoundments, the setback distance for all water wells, municipal, community, non-community and private water-supply wells should be 1,000 feet* given the volume of contaminated water stored in the impoundment and potential for leaks, spills or catastrophic failure of the impoundment.

45. **Section 7.1.3.1, Pg. 7-26 - Drilling Rig Fuel Tank and Tank Refilling Activities.** – *"1) The EAF Addendum will require information regarding the capacity and planned well pad location of rig fuel tanks and distance to any primary or principal aquifer, public or private water well, domestic-supply spring, reservoir, reservoir stem, controlled lake, watercourse, perennial or intermittent stream, storm drain, wetland, lake or pond within 500 feet of the planned tank location. To the extent practical, the Department will encourage operators to position the tank more than 500 feet from these water resources."* – This separation distance does not take into account placement of the tank(s) if upgradient of the watercourse or water source.

46. **Section 7.1.3.3 , Pg. 7-32 - Hydraulic Fracturing Additives.** – *"b. Location of additive containers and transport, mixing and pumping equipment as follows: i. -within secondary containment, ii. away from high traffic areas, iii. as far as is practical from surface waters,…"* - As far as practical is an unenforceable measurement.

GAS WELL CONSTRUCTION & WELL PLUGGING

47. **Appendix 8.** The dGEIS indicates that surface casing should not extend into zones known to contain measurable quantities of shallow gas. Shallow saltwater and (or) gas has been penetrated in the upper Devonian bedrock in some areas. It is not clear from the draft SGEIS how casing and cementing requirements will be modified to deal with these conditions.

48. **Appendix 8.** *The permit should require that cement-bond logs for each casing string be submitted to the NYSDEC to verify that the cementing specifications have been met*. Freshwater has been reported at depths of 1,000 feet in gas-exploration wells that targeted the Oriskany. Thus, an assumed freshwater aquifer depth of 850 feet as proposed in the dSGEIS would not be sufficient in these areas. Also, significant flows of saltwater are reported in many Oriskany gas wells. Utica Shale gas wells that penetrate the Silurian-Devonian carbonate aquifer merit special attention during drilling and casing installation and cementing due to the possible presence of karst, deep freshwater, and saltwater and gas zones.

49. **Appendix 10.** The *dSGEIS should require well completion forms that require recording of water quality and quantity with depth for most gas-exploration wells to add to the understanding and protection of the State's groundwater resources*. These forms could require field measurement of specific conductance of drilling discharge water, which would provide a quantitative evaluation of salinity with depth.

50. **Section 7.1.9.** Onsite burial of drill cuttings at shale-gas development sites, which is allowable under the dSGEIS if oil-based drilling mud is not used, should be re-considered. Pyrite may be abundant in the high-TOC basal intervals of the Marcellus Shale. Oxidation and leaching of pyritic shale produces an acidic, metals-rich discharge commonly referred to as AMD (Acid Mine Discharge). A multi-horizontal well site will generate 100 to 500 times the volume of AMD-producing pyritic shale cuttings than that generated at a single-vertical well site. If these pyritic-shale drill cuttings are left onsite, the potential for future surface-water and groundwater contamination is significant. *All cuttings should be required to be removed from the site and disposed of at an approved landfill.*

51. **Section 5.17, Pg. 5-144.** *NYSDEC should require written notification, to each municipality of the location of each well-plugging permit application, including tax map parcel number.*

NORM

52. **Section 7.8.2, Pg 7-102. - Naturally Occurring Radioactive Material.** NORM is not adequately addressed. The third paragraph on this page states: "*Analytical results from initial sampling of production brine from vertical gas production wells in the Marcellus formation have been reviewed and suggest that the potential for NORM scale buildup and other NORM waste may require licensing. The results also indicate that the production water may be subject to discharge limitations established in Part 380.*" *In order to mitigate the potential impacts of NORM in both cuttings and flowback water, all cuttings and flowback water must be analyzed for NORM in order to determine appropriate disposal alternatives.*

53. **Section 7.1.9, Pg. 7-61.** *Cuttings must be sampled and analyzed for NORM to determine acceptable methods of disposal.*

FOODPLAINS AND WETLANDS

54. **Section 7.2 - Floodplains.** Well pads are permitted in floodplains only after a floodplain development permit is issued by the local government. Many communities implement their floodplain regulations through their zoning or planning ordinances, thus requiring the issuance of a zoning or site plan permit. This may not be possible in some communities due to potential conflicts with the zoning ordinance. The Zoning Administrator does not have the authority to issue a permit for anything that is inconsistent with the Zoning Ordinance.

55. **Section 7.2 - Floodplains.** Most FEMA Flood Insurance Rate Maps have not been updated since basic maps were produced in the 1970's – 80's. *Well pads should not be permitted near floodplains until the maps are updated with relevant flood elevations.*

56. **Section 7.3 - Wetlands.** Although not directly stated, the DGEIS implies that the only wetlands that will be considered are DEC-regulated wetlands. Others can be as, if not more, important to the region's hydrology depending on location, surrounding topography, nearby surface water features and potential hydraulic connection with the local groundwater system.

FLUID RETURN

57. **Section 5.11 Pg. 5-98/99.** *NYSDEC should require a DAILY onsite flowback water volume log that will be reviewed and stored in a public database established by the permitting agency.* NYSDEC, as the permitting agency, should use flowback volume data for possible mitigation of cumulative effect, as well as for review at the time of permit procedure update.

58. **Section 5.11 Pg. 5-98/99.** *NYSDEC should require a quarterly onsite flowback water-quality-testing parameter log* that is also submitted for annual review by NYSDEC for possible mitigation of detrimental cumulative effects, as well as for review at the time of permit procedure update.

STORMWATER PROTECTION

59. **Section 7.1.2.2, Pg. 7-24.** *The Multi-Sector General Permit (MGSP) approach for the Stormwater Pollution Prevention Plan (SWPPP) is unsustainable due to the number of gas drilling sites and lack of available regulatory staff.* If the MGSP approach is taken by NYSDEC, NYSDEC should provide a list of Regional Site Inspectors with emergency contact numbers to each involved municipality for coordination of complaint investigations and emergency response issues.

Local storm water laws should apply if they are more stringent than state laws.

PERMIT PROCESS

60. **Table 8.1 - Agency roles.** *This table is quite simplified and does not seem to truly address the potential roles of the given agencies.* Also, funding streams are not identified. Possible public input is identified fairly specifically. However, the burden of local health departments undertaking the *"initial investigation of water well complaints"* (Section 8.1.1.7) is unreasonable, given the financial constraints on local health departments. *The local health departments need the resources to perform this function adequately and protect public health.*

61. **Section 8.2.1 - Permit Conditions.** The permitting program should encourage alternative processes to be evaluated. *Permit conditions should be reviewed periodically to incorporate new technical processes and other developments that minimize impacts.*

62. **Section 8.1.1.3 - Local Governments.** *The permitting agency (NYSDEC) should include each municipality and county as an INVOLVED AGENCY on each individual permit application wherever gas drilling permits are issued.* In addition, the permitting agency or permit applicant should provide written notification to landowners, the local health department, and all relevant local municipal governments of all rules, specifications, and reporting requirements regarding the drilling activities listed below:

Pit rules
Reclamation and waste disposal
Water well testing
Water withdrawal and use
Hydrofracturing fluid use, storage and mixing reporting requirements
Hydraulic fracturing operations
Brine fluid use and storage reporting requirements
Materials Handling and Transport, including required permits for open cut, lateral cut, and overweight transport permits for local road access
NORM monitoring requirements and reporting
S.W.P.P.P. (Stormwater Pollution Prevention Plans)

In addition, a list of contact persons and emergency phone numbers for each involved agency should be provided each municipality for the purpose of coordinating local spill and emergency response teams.

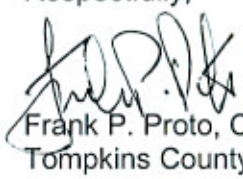
SEISMIC ACTIVITY

63. **Section 6.14.2.** This section states *"Monitoring [seismic] beyond that which is typical for hydraulic fracturing does not appear to be warranted, based on the negligible risk posed by the process and the very low seismic magnitude. The existing and well established seismic network in New York is sufficient to document the locations of larger scale seismic events and will continue to provide additional data to monitor and evaluate the likely sources of seismic events that are felt."* However, recent evidence of seismic activity in Texas that might be linked to horizontal drilling indicates that seismic activity related to hydraulic fracturing is a continuing concern. *Methods and standards for collecting seismic data in New York must be established to ensure adequate data is collected to evaluate impacts, if any, from hydraulic fracturing*.

CONCLUSION

We appreciate the opportunity to provide comments to the NYSDEC on this important issue to our County and to the State. The overriding concern of the Tompkins County Water Resources Council is that the importance of retrieving this natural resource (shale gas) for the benefit of the State and Nation should not overshadow or relegate other State resources to a lesser status. Protecting the State's water resources is one of the mandates of the NYSDEC. Section 7.1, Page 7-2, notes - *"In addition to its specific authority to regulate well operations to protect the environment, the Department also has broad authority to "[p]romote and coordinate management of water . . . resources to assure their protection, enhancement, provision, allocation and balanced utilization . . . and take into account the cumulative impact upon all of such resources in making any determination in connection with any . . . permit . . ."* With such a broad responsibility, how does the NYSDEC propose to accomplish its mandate with its limited staff and resources? Regulations that cannot be enforced are not in anyone's best interests. Without effective management and oversight, gas drilling procedures and technologies could fail to perform as designed, and efforts to protect the public health, the environmental health, and the quality of life within the community will be compromised. Effective management of all gas-drilling operations is key to ensuring that a responsible and consistent level of public health protection, environmental health protection, and overall quality-of-life protection for any community is achieved.

Respectfully,



Frank P. Proto, Chairman
Tompkins County Water Resources Council

Hard copies to:
Governor Paterson
NYS Senators Skelos, Malcolm Smith, Winner, Seward, and Nozzolio
Speaker Silver
Assemblywoman Lifton
Chair of Senate Committee on Environmental Conservation (via Antoine Thompson)
Chair of Senate Committee on Local Governments (via Andrea Stewart-Cousins)
Chair of Senate Committee on Health (via Thomas Duane)
Chair of Assembly Committee on Environmental Conservation Sweeney

Chair of Assembly Committee on Health (via Robert Gottfriend)
Chair of Assembly Committee on Local Government (via Sam Hoyt)
Chair of Assembly Committee on NYSDEC Oversight (via Adam Bradley)
Chair of Assembly Committee on Science and Technololgy (via Francine DelMonte)
Chair of Assembly Committee on Toxic Substances and Hazardous Waste (via Mike Spano)
Chair of Assembly Committee on Water Resources Needs of NYS and Long Island
Attorney General Cuomo
U.S. Senators Schumer and Gillibrand
Representatives Salazar and Arcuri
FRAC Act Sponsors in the House and Senate – Diane DeGette, Maurice Hinchey, Jarid Polis, Bob Casey, Chuck Schumer
NYSDEC Commissioner Pete Grannis
New York State Association of Counties
New York State Association of State County Health Officials (NYASCHO)
Tompkins County Board of Health
Town Supervisors and Clerks
Tompkins County Legislature
Town of Ithaca Conservation Board
City of Ithaca Mayor Peterson
City of Ithaca Conservation Advisory Council
City of Ithaca NAC
City of Ithaca Water Department
Cayuga Heights Department of Public Works
Cornell University Water Treatment Plant

Electronic copies to:
Tompkins County Planning
Tompkins County Health Department
Tompkins County Environmental Management Council (EMC)
Tompkins County Council of Governments (TCCOG)
Tompkins County Soil and Water Conservation District (TCSWCD)
Southern Cayuga Lake Intermunicipal Water Commission (SCLIWC - Bolton Point)
Ithaca Journal
Ithaca Times