

Minutes of the Comprehensive Planning Committee
Tuesday, May 11, 2010 7:30 pm
Copake Town Hall

Members Present: Bill Kiernan, Frank Peteroy, Rus Davis, Charles Dodson, Jeanne Mettler, Roberta Roll, George Beneke

Members Absent: Marcia Becker, Dan Haas

Guests: Steven Winkley of the New York Rural Water Association

Mr. Dodson introduced Mr. Winkley as a water protection specialist, knowledgeable geologist, and preparer of Groundwater Study for this area. Mr. Winkley said the NY Rural Water Assoc. is 30 years old and has funding from both federal and state grants (mostly fed.). The NYRWA does work for membership organizations (e.g. Taconic Shores), towns and villages. They did the groundwater study for Copake with a matching 50% grant from Greenway. NYRWA lost funding for a while, but now is fully funded again. They have done water studies for Austerlitz, which has a completed comp. plan, and for Stuyvesant, which is reviewing their comp. plan. In every town in CC groundwater is an issue. The goals of his work are 1. to present groundwater studies so that they can be used in planning, 2. to facilitate the development and use of groundwater, 3. to help sustain long term well yields and conserve surface water. He gave us some facts about groundwater. It is everywhere beneath the surface, and the source is precipitation and snowmelt - this is known as recharge. Groundwater supplies 40-50% of stream flow. Groundwater acts as a storage reservoir. 90% of land is recharge area, 10% is discharge area - where the groundwater moves up to the surface. In Copake, we have unconsolidated aquifers (sand and gravel), and shallow, point wells which tend to be near streams. He spoke about the geology of confined and unconfined aquifers and the different layers of soil - sand and gravel, clay, bedrock, till (hardpan). 90% of wells in Copake are in fractured bedrock. Dug wells are not allowed anymore (they were dug in till).

Since 2000, NYS has had water well regs. Well drillers need to be licensed and regulated by NYS, and all wells are supposed to be dug by well-drillers. Domestic wells are less regulated than commercial wells. All wells drilled since 2000 are documented. In the 1950's wells were recorded, but there is a gap in the latter part of the 20th century. He obtained some information on geology of the area from DOT, e.g. when they build bridges, they have reports on the geology of the sites. He showed a map of the surficial geology of Copake. This is not the soil, but the materials that give rise to the soils. It helps identify the unconfined aquifers, sites for development, and the potential for contamination and migration. He showed another map indicating the areas of potential high-yield water supplies, as well as existing wells both in sand and gravel and in bedrock. Wells are from 100-1,000 ft. deep., and the yields are dependent on the amount of fracturing and the type of bedrock. He said screen wells in unconsolidated deposits get high yield.

Mr. Winkley then discussed the geology of Columbia County, which he said is quite complex. The main types of surficial soil are Wallomsac, Stockbridge-Wappinger and Everett. The Stockbridge-Wappinger is a carbonate rock, which dissolves over time,

thus causing fractures in the rock, as well as “karst features” - caves or voids in the rock. Wells in this type of rock can have very high yields, but they are sensitive and prone to contamination. The median yield (in our area) is 10 gallons per minute, which is a good flow rate. The Wallomsac is a shale/slate, a tight rock with small, thin fractures, so not as much water can get through. The median yield (in our area) is 6 gallons a minutes, but there are many which are lower. It is harder to find and sustain water in Wallomsac. Mr. Dodson asked if we should be interacting with Hillsdale and Ancram in regard to development, since the geology is similar. Mr. Winkley said it would not make much difference. He also said that Hillsdale is using his data very literally for their planning. He said his report should be used as a guideline, but not necessarily dictate planning. Mr. Davis commented that, given the description of the water sources and rock types, we should probably be looking at development along the Rt. 22 corridor. Mr. Winkley said that is possible, but it is a sensitive area, meaning the water sources are more prone to contamination. It would be ideal to find a confined aquifer. He then went on to discuss the third rock type, Everett, which is a green schist, metamorphic rock, not a carbonate. It is higher producing than Walloomsac. Dr. Benenke asked if it could be a source of water for the town. Mr. Winkley replied that it would not produce enough for that. Dr. Beneke asked about development in the hamlet of Copake. Mr. Winkley said it is important to make sure we have a protected source of water, away from agriculture (with its manure and fertilizer) and septics. We would want to look at sand and gravel, instead of carbonate. Mr. Kiernan commented that slate tends to grind up the pumps. Dr. Beneke asked about the thin seam of Walloomsac that runs down through the Stockbridge-Wappinger (on the map). Mr. Winkley said that is a small ridge in the land.

He then showed a map of public water supply wells which indicated community water system wells and non-community wells. The non-community water systems serve 25 or more people and include restaurants and campgrounds. This counts as a public water supply. The community system supplies residences and other services. Also on this map, the potential high risk land uses are circled. Eighteen businesses are transient non-community - not the same people being served all the time. For planning purposes, if you have many non-transient community systems and a high potential for contamination, that is what drives the need for a municipal water system.

This is the situation in Copake.

Next was a map of potential development impacts. He reminded us that areas of highly permeable soils, karst bedrock and shallow fractured bedrock, are prone to contamination. He showed us the areas where this exists in Copake, based on the geology and topography. The next map concerned surface water impact on wells. Over time, pumping decreases the amount of water coming out of storage, thus taking more out of streams and surface water. This could reduce the stream flow. Also, if wells are too close to streams, they can become contaminated by bacteria. He then showed some data to help figure out what level of development can occur in Copake without impacting the drought baseflow. This is when ground water gets so depleted that streams become depleted. Baseflow is needed for aquatic life and wastewater discharge.

The next topic was optimum housing density, meaning houses per acre. He explained the term 7Q10 flow, which is the lowest 7-day average flow that occurs every 10 years. He showed us a map of potentially sensitive areas which might exceed baseflow with today's density - these were areas around Copake Lake, Copake Falls and Catamount. In these areas, there are limited surficial materials.

The next map showed water quality impact. He had mapped some wells with reduced yield and poor quality, saying there may be other areas, and that each site should be evaluated individually by drilling test wells. For any development plan, residential or otherwise, water potential should be evaluated early in the process. In his report, he suggested that the town propose a local law requiring proof of water yield and quality. Mr. Weber asked what is the effect of having many septic tanks and many point wells. Mr. Winkley said it was very bad. He also noted that Taconic Shores has a separate well in coarse sand and gravel with a lot of recharge, which is very good. Ms. Mettler asked if he is talking about well density rather than household density. Mr. Winkley said that with development, there need to be sufficiently sized lots, and accurate knowledge of groundwater flow in order to appropriately place the wells and septic systems. If the well and septic is in the same layer of bedrock, that is not good. He talked about Copake's level of nitrates - 5-10 parts per million, which is very high and comes from septic, manure and fertilizer. Mr. Weber commented on the flooding of cemeteries in the 1800's which released arsenic. Mr. Winkley said there was a study of cemeteries done in the U.K. which found high levels of arsenic and formaldehyde leaching into the groundwater. As far as lot size goes, he said it needs to be big enough so the groundwater recharge will dilute the contaminants. He then showed us a map indicating recharge rates for the area. Copake Lake and Robinson Pond have high nitrate loading. He then showed another map indicating that in certain areas, current zoning is higher than recommended in order to maintain nitrate balance as well as drought baseflow conservation.

He then discussed some strategies for sustainability. These included adjusting lot sizes, restricting land uses in high risk areas, developing protection standards for high risk areas, overlay protection zones around public water sources (e.g. Taconic Shores), standards for impervious cover requirements since paving over land affects the recharge rate and increases flooding -(the trend now is to keep the ground permeable and recharge water onsite), requiring more testing for quantity and quality of water. Dr. Beneke asked about geothermal. Mr. Winkley said that some systems work well, especially the closed loop systems. We might want to develop standards for this; if there are other water supplies nearby, it could pose a problem. He said CC has no water quality information; neither does it have a sanitary code. The town could require quality regulations. We might want to survey people to obtain quality information. Other sustainability measures would be to identify sources for high density areas- e.g. TH school, to inventory and prioritize open space for water recharge and baseflow, and educate the public on water issues.

In response to a question from Mr. Dodson, Mr. Winkley spoke about two types of water protection plans. One is the well-head protection plan, which protects the source or recharge area for a well area. The other is a source protection plan, which protects any source of drinking water, e.g. lake, restaurant or household well. Mr. Weber asked if

there has been an aquifer study in northern CC. Mr. Winkley said only parts of Kinderhook and Stuyvesant have been studied. The U.S. Geological Survey charges a considerable fee. Mr. Dodson said the use rate of water in CC seems to be very high - 174 gallons a day. He asked if it was high specifically in Copake. Mr. Winkley said, from the U.S. G. S. numbers, yes. There are two reasons; 1. everyone is on groundwater in CC, except for Hudson 2. Ag. involves heavy water use - 60-70% is groundwater, industry uses 100% groundwater. Water is extremely important in CC. Mr. Weber asked how well jet aerobic septic systems work. Mr. Winkley replied that he is not a "septic person," but the problem is operation and maintenance. According to state law, a district can be created to manage it. The weakness is that it is an engineered system. Regarding water use, Mr. Dodson commented that the replenishment rate could balance the use rate, and asked what the accuracy of the recharge rates is. Mr. Winkley responded that recharge is how much snow and rain get into the water table. Here, it is 3-18/20 inches per year, roughly 50% of yearly net precipitation. (+ or - 2" is accuracy rate). Elements affecting recharge rate are 1. There is more rainfall to the east than to the west due to elevation and air masses 2. the surficial materials - sand and gravel take in water more easily, whereas clay and till cause it to run off more. Dr. Beneke commented on the drought belt, which runs southeast, in CC and includes Copake. Mr. Winkley said he could send us the precipitation and runoff data; the highest rates are by the Taconics. There, the recharge rate is 3-4" per year (based on data from 1951 to 1980).

Mr. Dodson then asked if there was anything that is a hot topic of concern for 10-20 years from now. Mr. Winkley replied that pharmaceuticals are a big concern; they are in virtually all drinking water. He thought that in 10-20 years we will be testing for antibiotics and hormones, both animal and human. The Croton Reservoir is a sensitive area. We may see testing of private wells for bacteria - for quality as well as yield. He commented that CC is "behind the times" as far as testing and planning for water quality.

Mr. Winkley was thanked and the business portion of the meeting commenced. There was a discussion of location for the next townwide meeting - park building or the school cafeteria. Dates were also discussed - the possible date of July 10 conflicts with the Farmers Market, but July 31, which is the next available date, pushes our schedule back. Ms. Mettler said she would call Ms. Irwin about it. When the date is settled, she will publicize it. We then discussed the vision statement. Ms. Irwin sent a draft, Ms. Mettler edited it and then sent it to Ms. Roll who edited it further; it was then circulated to the group. We will work on it more at our next meeting on May 20.

Ms. Mettler made a motion to adjourn, Ms. Roll seconded, and the meeting was adjourned at 9:50pm.

Respectfully submitted,

Roberta Roll