City of Shelton Conservation Commission

Meeting Minutes for March 6, 2024

The meeting was held virtually via Zoom. A recording is available here: https://www.youtube.com/watch?v=oGmxMsBHwQ4

Members Present: Tom Harbinson (Chair), Jim Tate, Ed McCreery, Tom Wilson, Sheri Dutkanicz, Bill Dyer **Absent:** Janet Wheeler

Also present: Teresa Gallagher, Natural Resource Manager; and Lisa Adriani, potential new member.

The meeting was called to order at 7:02 pm by Chairman Tom Harbinson.

Meeting Minutes: **Bill Dyer made a motion to approve the February 7, 2024 meeting minutes. Seconded by Sheri Dutkanicz. All were in favor.**

Election of Chairman: Jim Tate nominated Tom Harbinson to continue serving as chairman. Seconded by Sheri Dutkanicz. All were in favor.

Natural Resource Manager Report (Teresa Gallagher):

- **Trails:** Teresa Gallagher prepared a Powerpoint presentation for her upcoming Suburban Hiking 101 workshops and worked on drainage and mud issues at the Eversource trail crossings.
- **Litter Committee:** The Derby-Shelton Rotary Club has adopted Todd Road for litter cleanup, and Kindred Spirits and Wine has adopted Long Hill Cross Road. The Litter Committee is holding a work party to clean up Shelton Avenue and nearby trails on March 16 to kick start Clean Sweep.
- **Community Gardens:** Garden registrations are underway.
- **NVCOG Open Space Mapping:** The Naugatuck Valley Council of Governments completed their open space research for Shelton and are moving on to other towns.
- **Open Space:** A hazardous open well was verified at Boehm Pond and referred to the Mayor's office.

Derby Dam Hydroelectric Permit Application: A final permit application was submitted to the Federal Energy Regulatory Commission (FERC) and posted online. Teresa Gallagher said that she had not had time to fully reviewed the final application but hadn't noted any issues that she felt Conservation needed to comment on. Chairman Harbinson asked her to read over the application for the next meeting. Ed McCreery spoke about fish ladders and ensuring proper design so that they are actually effective for fish passage. Teresa Gallagher said that this issue is something that the dam owner and regulatory agencies had been looking into over the previous years with professionals. Tom Harbinson said that the fish passageway is something that Conservation could encourage other agencies to value and expedite.

Trails Committee Report: Bill Dyer reported that they had a very successful work party replacing fencing at Silent Waters and will be holding the annual Marshmallow March this Saturday at Nicholdale Farm with a bonfire and marshmallows. They will be launching the 2024 Shelton Trails Marathon Challenge soon with two levels of difficulty. Bill Dyer and Teresa Gallagher met with Eversource representatives onsite to look at serious mud issues created by the removal of the temporary timber matts from wet areas.

Shelton Canal & Locks: Ed McCreery reported there were no updates.

Developments and Proposals:

- **PZC #22-16: Open Space Dedication for "Gamble Place."** Tom Harbinson said he checked the City Clerk records and the open space had not been deeded to the City yet. He asked Teresa Gallagher to look into the status. She replied that she previously asked Corporate Counsel Fran Teodosio about the status, who said he had prepared the paperwork and it was waiting on the Mayor's signature.
- **PZC #23-15 740 River Road PDD** 8.5 acres for 51 condos. Tom Harbinson reported that this application was denied and asked Teresa Gallagher to look into the status of the open space dedication for the original approval. She responded that it was a conservation easement, not city open space, and it had been shown on the original application but then possibly omitted on later versions. She had previously been in contact with P&Z staff who said they were subsequently able to find the documents showing the conservation area.
- **PZC #23-28 118 Armstrong Road**, PDD for 41 units on 2.1 acre. Tom Harbinson said that there are several issues here. First, this is another high-density PDD in a residential zone. The existence of the abutting Eversource property is being used to justify the PDD, with the applicant claiming the PDD provides a transitional use between the Eversource property and low density house. Some of the proposed homes are located five feet from the property line next to existing homes. There is no open space component.

Second, the property drains to Cranberry Pond and Bog, located on the town line. The Town of Stratford should have been alerted to the application. Teresa Gallagher reached out to Stratford's Conservation Director Kelly Kerrigan by email looking for information about the wetlands and did not hear back. However, Tom Harbinson was sent a copy of a Yale study that was done when the original Cranberry Hill proposal was submitted in 2003, which he shared via Conservation's Google Group. What the applicant is calling a "swamp" is definitely a bog. Teresa Gallagher said she had been skeptical that the wetland was a real bog, but the report verifies that it is in fact a true floating sphagnum moss bog. That type of wetland is common to the north in places like Maine or Canada, but extremely rare in southern Connecticut. Tom Harbinson said the 2003 Cranberry Estates proposal was denied, and the denial upheld in court. Ed McCreery asked to make note to P&Z that bogs can take 10,000 years to form.

Tom Harbinson made a motion to send a letter to the Planning and Zoning Commission referencing zoning and wetland bog issues as well as the precedent set by the previous denial of Cranberry Hill. Seconded by Bill Dyer. All were in favor.

Open Space Trust Account (OSTA): Tom Harbinson asked Teresa Gallagher to ask the Finance Department for a statement of the OSTA.

Public Comments: Rebecca Douglas addressed the Commission. She had become interested in how the land-use decision-making process works when the zone change for the Ivy Brook area was proposed. She is still learning how the Planning and Zoning Commission and other agencies work and feels most residents are pretty ignorant about the developments in town. A lot of people don't know what to do. A lot of people have never used Zoom, especially a lot of older people, and they're upset that they cannot attend meetings in person. Maybe Conservation could have some Zoom tutorials. Tom Harbinson said they had found Zoom to be a very efficient way to meet, allowing them to quickly look up and share documents pertaining to proposed developments. Learning Zoom will come fast.

Comments by Members: Lisa Adriani said that Plumb Library holds computer classes and could be asked to add Zoom to their sessions.

Ed McCreery said that people don't realize that the commissions are all volunteers, and their time is valuable. When he attended in-person meetings, it would be a 20 minute drive to City Hall, sometimes directly from work with no dinner, a wait for the meeting to start, then another 20 minute drive home. The meetings are much easier via Zoom.

Bill Dyer said he was disappointed that Conservation wasn't doing in-person meetings. He enjoyed seeing people in person. Sheri Dutkanicz agreed. Tom Harbinson suggested holding their May meeting at the Trails Barn.

Teresa Gallagher said that City Hall employees observed a mangy coyote walking down the street in front of City Hall in the middle of the day earlier in the week. It was probably sick and starving.

The meeting was adjourned at 8:12 pm.

Meeting minutes were prepared by Teresa Gallagher and should be considered in draft form until adopted at the next meeting.

Yale University *New Haven, Connecticut 06520*

SCHOOL OF FORESTRY AND
ENVIRONMENTAL STUDIES

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29 August 2003

Dr. Steve Danzer
Wetlands Officer
Town of Stratford CT

Dear Dr. Danzer:

At your request, I have prepared the following analysis of possible impacts of the Cranberry Hill Estates (Primrose Development, LLC) housing development on Cranberry Pond and its associated wetland on the Stratford-Shelton town line. This assessment is based upon the following:

a. Site visits on 7/25/03 and 8/22/03.

b. Information, reports, and maps provided by Spath-Bjorklund Associates, contained in the application file. This includes revisions dated 8/12/03.

c. The Ansonia CT U.S.G.S. Topographic Quadrangle map and various kinds of spatially distributed information contained in the database Environmental GIS Data for Connecticut 2003 Edition, CT Department of Environmental Protection, DEP Bulletin 37.

d. Water quality analyses of samples collected from three sites on 22 August 03: (a) the outlet weir of Cranberry Pond (N41°15'56.4", W73°07'12.3"), (b) the pond in the vicinity of the sphagnum bog (N41°15'54.1", W73°07'05.7"), and (3) the bog itself (N41°15'55.1", W73°07'05.2")

General Description

Cranberry Pond Bog is a wetland with an area of 30.9 acres and is connected on the west to a shallow pond with an area of 5.4 acres. Of this total, about 70% is located in the town of Stratford, Connecticut, with the remainder in Shelton. The wetland supports mixed vegetative communities, but the section adjacent to the pond is a floating sphagnum bog, rare in Connecticut. (See report of wetland biologist Penny Sharp for further information.) At the pond's outlet is a weir, the flow from which serves as the source of Cemetery Pond Brook. The weir has provision for batter boards, and this plus the wetland's name strongly suggest that it was once used to grow cranberries.

Hydrogeology and Land Use/Cover

The total area of the wetland's watershed is only 112 acres, excluding the area of the pond and wetland themselves. There are no surface streams entering the wetland or pond. Historically, the wetland was supplied entirely by groundwater seepage and direct precipitation, though there are now a number of storm drains that contribute storm runoff. Flow is generally from the south (and to a lesser extent, the east and north) through the wetland and then into the pond. Approximately 67 acres, or 60% of the watershed, is currently medium density residential development, only a portion of which is sewered. The undeveloped portion of the watershed is mainly deciduous forest, with small pockets of coniferous forest.

The proposed development (Cranberry Hill Estates) is located partly (7 acres) in the existing watershed of Cranberry Pond. The remainder of the development site (16 acres) drains to Black Brook or to Cemetery Pond Brook downstream from the weir of Cranberry Pond. As originally configured, storm runoff from the entirety of 11 building lots and portions of others would have flowed to a settling basin and thence to Cranberry Pond. According to revisions dated 12 August 03, the overflow from the basin will be redirected downstream from the Cranberry Pond weir.

While the proposed housing development is not large, neither is the remaining undeveloped portion of the watershed of Cranberry Pond wetland. Thus, the 7 acres in question represent about 16% of the remaining undeveloped land in the wetland's watershed. Virtually the entire development site is currently wooded, the best land cover from the perspective of protecting aquatic resources. The Cranberry Hills Estates development thus represents a significant negative shift in land use of the wetland's watershed from the standpoint of environmental quality.

Bedrock in the watershed includes areas of (a) the Straits Schist, (b) a schist and granulite member of the Trap Falls Formation, and (c) the Pumpkin Ground member of the Harrison Gneiss. This latter rock underlays 70% of the watershed, including the entirety of the proposed housing development. This rock type is of special concern, since it can contain relatively reactive sulfide minerals whose weathering can release very high acidity and heavy metals. Weathering is accelerated when bedrock is exposed or disturbed during construction. This has occurred in other nearby locations as a consequence of road building activity. Pyrite, a typical sulfide mineral found in these rocks, is weathered by exposure to oxygen according to the following reaction:

$$FeS_2 + 15/4\ O_2 + 7/2\ H_2O = Fe(OH)_3(s) + 2\ SO_4^{2-} + 4\ H^+$$

For every pyrite molecule oxidized, four hydrogen ions are released. This is the same reaction that causes the well-known problem of acid mine drainage. In addition to the acid, a number of heavy metals can be present as pure sulfides or as inclusions in minerals like pyrite. The high acidity promotes solubility and transport of these toxic metals, and the combination of acidity and metal causes serious damage to aquatic ecosystems.

A simple calculation suggests that the water residence time in Cranberry Pond averages about three weeks. While this is surprisingly long for such a small and shallow pond, it is consistent with the slight but significant differences in water chemistry observed between the weir and a distant part of the pond. The slow water movement through the pond and its shallow depth (everywhere that we tested less than 1 m) mean that the pond should act as an efficient sediment trap. Lacking surface stream inflows, natural sediment inputs to

the wetland should be small. It is important then to keep added sediment out of the pond. This can be a special problem during construction phase activities, when ground disturbance is extensive.

Water Quality

Water from the eastern margin of Cranberry Pond had characteristic similar to those of water collected at the weir (see attached table). For both locations, pH was low (ca. 5.7) and acid neutralizing capacity (also called alkalinity) was near zero. This means that the pond is especially vulnerable to acidification or other alterations in acid-base status. Very low pH (near 4) was also measured in water ponded on the surface of the sphagnum bog at two locations. These low pH values are normal for a wetland complex of this sort, and reflect the ecosystems unique character. Dissolved organic matter (DOM) is high in all samples taken, giving the water a characteristic yellow-brown color. High DOM is also normal for this system, and is derived from decomposition processes in soils and wetland peats. In all of these samples, dissolved solids are so low, and DOM so high, that acid-base chemistry is significantly influenced by the weak organic acids that comprise DOM.

The pond and weir water samples had very low dissolved solids, which is consistent with relatively uncontaminated waters and weathering of aluminosilicate rocks and the soils derived from them. The bog waters had extremely low dissolved solids, quite similar to pure rain water, with the addition of DOM, which is the dominant dissolved substance in the bog waters. At all sites, the main anion is chloride (neglecting ionized organic acids). In the pond, much of this undoubtedly comes from road salt, though some is also derived from precipitation, which has slightly elevated chloride levels from sea salt. In the bog itself, most of the chloride is probably from rain.

Nitrate was undetectable except in one bog water sample, where it is near the detection limit. Bogs generally receive the majority of their nitrogen from a combination of nitrogen fixation and atmospheric deposition. In this region, nitrate from acid deposition of HNO_3 already plays an important role in the nitrogen budget of the bog. Bogs use nitrogen very efficiently, and the delicate balance of these ecosystems can be disturbed by large inputs from the watershed.

Cranberry Pond is classified in category A by the Connecticut State Department of Environmental Protection. This category supports all uses up to and including potential drinking water supply. It is the highest category other than waters actively used for drinking supplies, a category which is nearly identical. Since Cemetery Pond Brook flows from this class A source, it too is class A, though this classification is presumptive rather than being based on water quality measurements. Cemetery Pond Brook flows into Pumpkin Ground Brook and thence into the Housatonic River. All of Pumpkin Ground Brook is class A, so it is important to protect the quality of water in Cemetery Pond Brook, an important tributary.

In summary, water quality in Cranberry Pond and its wetland is excellent. This is remarkable in a region where land use is widespread and intensive. Cranberry Pond already shows indications of low-level contamination by nonpoint source pollution, and further contamination should be avoided. Little undeveloped land remains in its watershed. Further development in the small watershed should be carefully monitored and managed to avoid degrading this valuable and unusual aquatic resource.

Recommendations

(1) Permanently divert flow from areas of the Cranberry Hills Estates development that fall within the wetland's watershed, redirecting this water to below the Cranberry Pond weir and directly into Cemetery Pond Brook. Based on an agreement reached at the 14 August public hearing, the developer intends to follow this recommendation. This diversion will avoid nonpoint source pollution impacts on Cranberry Pond and bog that otherwise would result.

Note that this diversion will not protect water quality in Cemetery Pond Brook, which is a Class A stream. It therefore remains important to use all reasonable environmental Best Management Practices at Cranberry Hill estates to protect downstream water quality.

(2) Use extraordinary care in designing and implementing erosion and sedimentation control measures during the construction phase. The intensive character of the proposed development (requiring large areas of disturbed soil and substantial cut-and-fill) and the steep slopes at the site pose a serious risk of substantial erosion and consequent sedimentation impacts to the pond and bog. Construction should be staged so that detention ponds 3 and 4 and their interconnection (Spath-Bjorklund sheet S-1: Alternate Cranberry Hill Estates Site Plan, dated 10 June 03) are built and operating properly before any upslope land clearance begins. Failure of erosion and sedimentation control structures are commonplace at construction sites, so redundancy of these measures (silt fences, hay bale fences, etc.) should be required. Key to successful control of erosion and sedimentation is careful monitoring, especially during wet weather. It would be best if an independent agent were contracted to carry out this responsibility.

(3) Conduct test borings and analyze bedrock material at several locations on the site to determine the amount and kind of sulfide minerals present in the Pumpkin Ground gneiss. If results indicate significant quantities of oxidizable sulfides are present as accessory minerals, structural measures should be designed into the sites drainage system to neutralize sulfuric acid that will be generated by weathering. This can include limestone reaction systems like those used on some acid mine drainage sites. Runoff water quality should be monitored for pH and ANC during construction and thereafter until values return to levels close to regional norms.

Two other recommendations do not apply directly to the Cranberry Hills Estates development:

(4) To protect the bog, use of nitrogen lawn fertilizers should be discouraged in the watershed.

(5) Likewise, homes that are not sewered (as occurs around most of the perimeter of the wetland) should be encouraged to have frequent service of their septic systems.

Sincerely,

Gaboury Benoit
Professor of
Environmental Chemistry

Attachment: water quality data