



CITY OF MELROSE

CONSERVATION COMMISSION

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Melrose Conservation Commission Minutes for February 21, 2013

Present: Susan Murphy, Richard Doucette, Kate Hickey, Erin Heacock, and Aaron Weieneth

Absent: Kevin Anderson

Ms. Murphy, Chair, called the meeting to order at 7:30 PM.

Continued Public Hearing

Mr. Doucette took over as Acting Chair for the Continued Public Hearing

77 & 79 Messenger Court (217-0187)

Mr. Doucette stated that the last time the Commission met for this project was on December 20, 2012, there was discussion about using some of Mr. Gryglik's photo's in surveying the high water point for the Mother's Day storm, which was in May 2006. Mr. Doucette met with Mr. Marchionda, Mr. Gryglik, Mr. Collins from Wakefield and Jim Lucian, from Wakefield ConCom. A number of those photos were chosen and scanned and there was a site visit out in the field with Mr. Weieneth, Ms. Heacock, Ms. Morgan, Mr. Gryglik and Mr. Marchionda and his surveyor.

Mr. Marchionda said that, at the December meeting, it was decided to use the 2006 photos that established the flooding and subsequent to that meeting he was contacted by Mr. Collins to talk about other options. Mr. Collins made him aware that he was going to have a consultant conduct drainage studies for the town of Wakefield. There was a site visit in January to review the photos out in the field and there are two photos that really zeroed in on the high flood mark. The one that he feels most representative of the flooding was the one with the water mark in it, but Mr. Gryglik felt the picture near the window of the Steele building was more representative. Mr. Marchionda said that the Steele Building elevation was actually 2 ½" lower than his survey of the high water mark on Mr. Gryglik's house. (Mr. Marchionda passed around the pictures used for the elevations.) Mr. Marchionda said if you look at the pictures, there is a water mark that goes across and hits the top of the freeze board on Mr. Gryglik's house, right where the wood meets the concrete; it's very definitive. Mr. Marchionda surveyed that elevation; that elevation was 71.69, which is identical to the elevation surveyed on the other side of the Steele Building, some time ago. Mr. Marchionda was showing the water mark as 71.7. Just by way of reference for Mr. Gryglik's request, this was the survey Mr. Marchionda did on the elevation of the window, and that's 2 ½" lower; so the flood elevation for the 2006 storm is 71.7.

Mr. Marchionda said that in the past 12 years, there have been three significant rainfall events: March of 2001, the Mother's Day storm of 2006, and March of 2010. Mr. Marchionda submitted some Hydrographs that he got off the internet from a site called Weather Source Data. He said the data is based on the Reading station. He showed the hydrograph for the 2001 March storm, and the tick marks that mark one day, 24 hour events. A typical hydrograph, from where it ends, there was no precipitation prior so the ground could absorb a lot of water before it began to runoff. Then the storm goes underground and saturates it. That 2001 storm was one of the small storms. Next storm, March 2010, lasted over 3 days. This storm had a little bit of precipitation going into it, not too bad. The 2006 storm was different. The typical hydrograph goes up and then comes back down again. There was quite a bit of rain going into it, as the storm peaked, it started to peak again, a second time, so there was a double storm, back to back storms, and it was over a period of 7 days.

Mr. Marchionda made an overlay to show how the 2006 hydrographs and the 2010 compare. He said it is hard to say how flooding in this storm compares to a statistical 100 year storm. A statistical 100 year storm is one that begins at hour zero and ends at hour 24. In between at some point, during the rain, it's going to peak, but it's much more condensed; it's only over a 24 hour period. He took the 2006 hydrograph and plotted it on a one day, 100 year storm. He showed the amount in the 2006 storm that went over the 100 year storm peak. Mr. Marchionda said he is very confident in saying that the 2006 storm resulted in flooding that, at least met if not exceeded, a 100 year storm event. Mr. Marchionda said that Mr. Collins is having a drainage study done, but 1) there are a lot of variables when you are having a drainage study done; 2) this study is very complex. He noted there is a network of pipes that are draining this area, Ell Pond, etc., so it's not a simple matter of going through there.

Mr. Marchionda really feels the 70.9 elevation documented in the FEMA LOMA is probably a pretty accurate representation of a 100 year storm event.

However, there is historical data in the area that shows that there has been flooding even above that level, ie., the 2006 storm. Mr. Marchionda said they are willing to look at this project based on the 71.7 elevation, which is .8' higher than their original data. He doesn't know what Mr. Collin's study is going to come up with, a higher number, lower number? They may have to modify their project working with the 71.7 elevation, it will probably change a little bit to meet that standard. Mr. Marchionda thinks this elevation more than satisfies the standard. He would like a consensus from the Commission to go forward with that elevation. Mr. Marchionda said those elevations do tie into the latest USGS data.

Mr. Doucette asked if anyone from the Commission that was out on the site visit, would like to say anything about it. Mr. Weieneth said they had copies of the photos in the field. One of the residents was present with us as Mr. Marchionda surveyed the locations. He included a specific location on the Steele House facility down at the lower point which indicated the lower elevation and the freeze board on Mr. Gryglik's house, which we agreed was a pretty firm location and made sure the elevation was lining up with the previous survey; so Mr. Weieneth had no problem with the results that they are reporting, he thinks they are accurate. Mr. Marchionda did a good job of finding the

locations and as mentioned it is showing .8' increase of what the low mark indicated so it does show merit to looking at this event. There has been historic evidence of a higher elevation than what was reported in the LOMA, so Mr. Weieneth thinks it was a good exercise. Mr. Marchionda wanted to point out that he is not saying the LOMA was wrong. He said the LOMA may be accurate, but we had a bigger storm event that was possibly over and above the statistical 100 year storm. Very rare that you have a statistical storm that meets the standard of 0 to 100 in 24 hours, it's very rare. Mr. Gryglik summarized that the pictures were before and at the end of the storm, but not at the height of the storm. He would guess that at the height the water was probably an 1" or an 1 ½ " higher than the elevations we're talking about. Mr. Doucette said he didn't think that would be possible because the water mark would be the high water mark. Mr. Gryglik believes that when water settles, in his opinion, it settles fast, then it starts to level off where anything it carries will show a mark, that's his feeling. He thinks there were some elevation points that might have been missed in the pictures, particularly on the Messenger property, where one of the highest points would have been observed during the storm because that's one of the highest points in the land in that area. Jeff Ashburner, 10 Ashburton Place, asked what the elevation was at his lattice work. Mr. Marchionda said it was lower than the 71.7 elevation.

Mr. Doucette asked Mr. Collins to speak on the Wakefield Drainage Study, what's happening with that, what the results might be, when some results might be available? Mr. Collins talked with Mr. Beshara, City Engineer of Melrose, about the May 2006 storm, who said that based on the storms he has observed over the years in Melrose that that storm was a 50 yr. storm. Mr. Collins said that his consultant is preparing the model for the analysis and they found that at some locations, they need to get some further field survey of elevations and the linkage of the piping to allow them to construct an accurate hydrologic/hydraulic model. The snow is slowing them down and as soon as it's gone, they'll finish getting information in the field, that should be another 3 – 4 weeks after the Town of Wakefield should get the results of the analysis. Mr. Collins passed around information from the National Weather Service on the participation that happened during the Mother's Day storm. He took a look at two sides of Melrose. Mr. Collins said that the Mother's Day storm was pretty much ribbons of rain, coming from South to North, it wasn't a widespread rain that equally dropped over the entire area. He said that in Wakefield, towards Reading, they had 10 inches of rain and then down toward Melrose it was somewhere around 6 – 8" depth over a 3-4 day period. Mr. Collins referred to the first sheet in the packet he handed out and said it was the rain gauge in Beverly and up there, the first couple of days of the storm, they had, back on the 8th & the 9th, about an 1 ½ inches almost on both days. On the 13th & 14th, towards the end, the most they got was almost 4 ½ & 5.2 inches. Then he referred to the second page, for the same month, and said for Bedford, MA, the maximum rainfall they had on the 13th & 14th was about 2.9 inches and 2.1 inches of rainfall. This storm, Mr. Collins said, if you talk to anyone that analyzes rainfall, had a maximum hour intensity of about ½" per hour for maximum rainfall. When Mr. Collins and Mr. Marchionda met there was a question about how much rainfall you would get during different periods. He then referred to the graphs on the back, of the country that are taken from TP-40 the documentation that MassDEP is still recognizing for statistical storms and is a much small precipitation than recent Cornell Studies and others, if you take a look at any one of the days during the storm,

which range between a little bit over 2 – 5 inches, you probably had one of the days during the storm, a 24 hour period, where maybe you got somewhere near 4 inches. Mr. Collins said if you take a look at the TP-40 graph for the 10 year storm you'll notice that we're between 4 and 5 inches for a 10 year storm in one day for 24 hours and that just about what the maximum rainfall was that occurred during the storm that Mother's Day. The Melrose City Engineer told Mr. Collins that drainage in this area, which he gave him graphs and pictures of, is a 30 inch corrugated metal pipe that runs down quite a difference in elevation to the Fells Way and Ell Pond and between the inlet near Messenger Ct. and then Ashburton, which has another catch basin onto the drain, there's a lot of these arch pipes that never back up into the system. Any long intense rainfall for even this long a duration can cause flooding down Ell Pond and the Fells Way has a much lower elevation than this area and there's no influence. Mr. Beshara, City Engineer of Melrose said you can take any storm of any duration and you can take the pipe that drains this area and just keep it free flowing and draining out down these areas down below. So when he looks at the Mother's Day storm, he believes after talking with Mr. Beshara and other engineers in the field, that it would be considered a 50 year event for a maximum condition.

Mr. Collins said that when you say the 100 flood, is that the maximum flood that occurs at this particular location every 100 years. This 24 hour standard, that you have a storm that lasts for 24 hours, but this watershed that runs down to your area Messenger Ct. and Ashburton Place only goes back about a mile, up Springs St. in Wakefield to the Stoneham line. There's an elevation difference of over 80 feet, a climb, mostly ledge, in very steep areas, collects in the brook and crosses under Greenwood St. So you'll find that this entire watershed down to this area at Messenger Ct. & Ashburton Place, that it probably takes a raindrop at the farthest point on the watershed, 2 – 3 hours to get down to the pool of water. So if you want to look at what you really have for a maximum flood every 100 years, you wouldn't look at a long duration, lot of volume storm, you would look at a storm that would probably take 4-6 hours every 100 years and has its year maximum pool. In the review of the Mother's Day storm, which we know is much plus the 100 year, you're already finding 8 feet above the LOMA. When they do a LOMA they don't do any analysis, they take a look at the area, the elevations, the wetland and they add some elevation to it and call it the 100 year flood. And when it happens time after again, you give them further information and they go back and analyze it. Mr. Collins recommended that time be allowed for the Town of Wakefield's consultant to complete their drainage analysis and put it in front of Mr. Marchionda, this Conservation, himself and really establish the 100 year elevation that occurs. He said one thing to note is that the Steele House is downstream in the drainage system from the wetland area off Greenwood St. just above Messenger Ct. and as we've agreed and Mr. Marchionda has shown in his site plan, that the water that floods up around Linden St., Greenwood St., in Wakefield had to flow through a fairly constricted area on Messenger Ct. to drop down below towards where the Steele House is, so you have a grade in the 100 year flood that has to be accounted for too. If you take a look at the side of his development where they are doing filling and they're calling the floodplain there also 70.9, based on the LOMA, we know there is a gradient and whatever you establish for the flood down below, which we already know is over 71.69 is only going to be higher as you get all of the houses in Wakefield that have a runoff down in back. Mr. Collins said he believes there is a lot of

evidence that tells you that 71.69 is probably going to be well below what the real 100 flood is now in this area.

Mr. Doucette asked when the study would be ready. Mr. Collins said when the snow is gone and they can find the rest of the structures, the survey should take another two or three weeks in parallel they're putting together the watershed, the runoff characteristics, so three or four weeks to run the model, which could be for their review. He could have Mr. Marchionda look at it, he will forward it to Melrose ConCom, they will look at it Wakefield and then you'll know what the real 100 year flood should be. Mr. Doucette said, it sounds like two months. Mr. Collins said somewhere in that ballpark. Mr. Marchionda said, there's no telling when the snow will be gone. Mr. Collins said they are under a lot of pressure to get this done. He isn't telling them to slow down. He said there is no intent or bias. Mr. Collins said, it's Wright Pierce in Andover. You can call them and talk to Paul Brinkman, who is the Senior Project Manager for this project. Mr. Collins said he is doing everything he can. He's jumping in and getting involved with the record drainage and putting it all together.

Mr. Marchionda said the data should have been put together earlier because it's known that it snows in January and February and he doesn't really appreciate the delay in time. Mr. Marchionda said he didn't do the LOMA so he doesn't know how it was done, but he feels that it's unfair to say that no analysis was done. Mr. Marchionda said that statistically, storms are based on a 24 hour duration of storm. Starts at ground zero and ends at hour 24, comes up to a peak of so many inches, a 50 year storm is 5 inches, 100 year storm is 7 inches, whatever it is, you need something to go by. That is the statistical, college, textbook way of looking at it, in real life there was a lot of rain. The site is basically a bowl and fills up with water. There is a little drain in the parking lot of the Steele House and once that gets overtaxed, basically water is not draining out of there. Mr. Marchionda said he is very comfortable in saying 71.7 number is very conservative. Mr. Marchionda said what other flooding impacts the storm, not did it meet the statistical data of the 100 year storm, did it have impacts of a 100 year flood, he says it exceeded it. Mr. Marchionda did agree that it makes sense to look at it. If they can design to meet that number fine, but it's not fair to make his client, who has spent a lot of money on this project, to wait another two months for a study to come out and then another month for him to go through it. Mr. Marchionda said, if it gets appealed to DEP, so be it. He said he needs to know if the Commission is comfortable with him going forward.

Mrs. Murphy asked if the 100 year storm was being determined and the flooding resulting from that or is the 100 year flood and the extent of flooding that occurs every 100 years that not defined in terms of what you guys can agree. Mrs. Murphy said it's not hooked to 100 year storm. Mr. Marchionda said that DEP says when you do a project, look at the FEMA map and take the mapped elevation and use that data. If that elevation doesn't exist, which in this case it doesn't exist on the map, you can use other data; in this case the LOMA for the adjacent property. However, in addition to that you can use an engineering study to determine what the flood elevation will be or you can use evidence of flooding that's taken place, we have evidence of flooding taking place that's a storm is equivalent or in excessive of a 100 year storm. This exercise we are doing here is trying to find out what is the level of flooding that is likely to occur during the "100 year storm". Mr. Marchionda said in a 100 year statistical storm, at hour 0 you

went to hour 24 and you peaked at 7 inches, this is all done to scale. Mrs. Murphy said she doesn't remember if they specifically talk about the extent of flooding being linked to the 24 hour storm. Mr. Marchionda said they talk about doing an engineering study, they talk about knowing the elevation, and knowing the historical data. Mr. Marchionda said that since 2006, there were improvements made to the Ell Pond drainage system, they have a second outlet, it's much more efficient. He doesn't want to say what the number would be. Mr. Marchionda said that if the same storm of 2006 were to happen today, the flooding elevation wouldn't be as high because of a more efficient drainage system taking the flooding away downstream. Mr. Marchionda said this water system is very complex and in doing the study they are going to be using plans of record that might not be accurate, there are a lot of variables.

Mr. Weieneth said this 2006 storm is a much more duration volume event rather than a peak intensity event, and asked if there was another way, other than looking at TP-40, to determine the recurrence interval of this storm, that Mr. Marchionda thinks more accurately portrays it rather than looking at the rainfall or that event that against TP- 40; is there another method to fit that storm to make it a reasonable number. Mr. Marchionda said he is not aware of any way of converting the data into a statistical event. He said a statistical event is something that very rarely happens. Mr. Marchionda said that TP40 is not based on actual events.

Mrs. Murphy said that the Commission could asked the applicant to do a study. The fact that they can wait for Wakefield to complete the study is actually a benefit to the applicant and not a hardship. Mr. Antonelli (project proponent) said that if the Commission had asked him to do the study in the beginning, it would already be done. Mr. Marchionda said he has very good data and this is a very complex drainage network. Mr. Marchionda feels that the drainage study, when it comes in, is going to be a source of contention. He said Mr. Collins' engineers may be using plans and data from 1919 & 1945 and piecing it all together, and who knows if it's even right. Mr. Marchionda would like the consensus of the Commission to go forward with his number as presented. He said he has done a lot of surveying, researching, and calculating to get to this point. He said he didn't just pull a number out of thin air.

Barbara Greenburg, 146 Greenwood St., Wakefield – asked how the water is getting to Ell Pond from Wakefield. Mr. Marchionda said there is a culvert at the Melrose/Wakefield line and their project is below that, they are not contributing to that.

Mr. Gryglik, 14 Ashburton Place, Melrose – the area where the lowest grading is between Messenger Ct. and Ashburton Pl. and when that area gets full it's working its way back to Wakefield. Mr. Gryglik said Mr. Marchionda is presenting everything on how he's going to protect his project, but nothing how he's going to prevent or not exacerbate what the rest of the residents of both Wakefield and Melrose have to live with. They have already seen a development in Wakefield, (Germano), that took away an area where some of the drainage used to stay, and that's when the significance of the storms started to increase in frequency.

Ms. Murphy explained that there won't be any additional water generated from paving on this site, that is the standard that they are being held to. In terms of it being a floodplain,

what they need to do if they fill a low area is they have to designate somewhere else for the water to go so it won't get worse off the property. That is the limit that the Commission has to hold them to.

Donna Murphy, 154 Greenwood St., Wakefield, said on the Wakefield side, the littlest storm, we flood and would like the applicant to wait for the Wakefield consultant's report.

Ralph Greenberg, Wakefield – said, 52 – 53 years ago he managed to get the Town of Wakefield to run a drag line down Messenger Ct. down to Linden St. He said there is no pitch, no drainage. He said 15 years ago they got FEMA money and re-channeled the stream, but it needs to be continually cleaned. He said he has a letter from the Town Engineer, previous to Mike Collins, saying that the resource area can't handle any more water because it's over saturated.

Mr. Collins passed out a reduced site plan of the project to the Commission. He explained that the 100 year flood is an elevation that occurs on the average or is exceeded every 100 years. Mr. Collins said you really have to take a look at the watershed, and this watershed is a one to two hour time of concentration watershed and it's really going to lead to the point that once every 100 years you can choose the appropriate storm with the configuration of your watershed to identify every 100 years what that maximum flood is going to be. The reason the study is taking so long now, is that he has the engineer popping covers, doing surveys, checking paper plans because he doesn't want something coming through his office that isn't correct. Mr. Collins said if you add this 70.9 to all the elevations where the 100 year flood's been surveyed, already the Mother's Day storm maximum water level was 71.7, already closing in on elevation 72. If you take a look at the Wakefield side of the development, he outlined in yellow the 100 year 76.9.

If you say the 100 year flood goes to 72, take a look at where the 72 contour is in terms of that end of the proposed development on the Wakefield side, on the north, you'll see that the footprint of the site has quite a bit a variance that falls between 70.9 and 72. Mr. Collins said that the Town of Wakefield has used the Mosquito Control District for channel maintenance of the brook referenced by Mr. Greenburg. The District has dragged that brook so much that it's so flat that they can't go back in, it's right at the invert at the pipe going out. It's right at the elevation of the pipe, it's flat. If they do any more digging, it's either going to be at or in standing water or it's going to have a ribboning effect and really contribute to mosquito complications.

There is no more dragging or lowering of the stream that they can do. All they can do now until sediment builds up in the future, is go in and do hand work and pull out some trees within the brook. Mr. Collins said that the entire hydrology of the area is ruled by the 30" corrugated metal pipe that goes into Melrose and unless that drops Wakefield can't drop the water. In terms of the Melrose piping system, and if it's clogged and full of debris, taking a look both at the inlet of the culvert, he went down to the Ashburton Place and lifted the cover on the catch basin and looked into the pipes inside, you can tell that when the water builds up there's such a water velocity force going through conduit that it is so scoured and clean. He doesn't think you'd find that the flooding is caused by debris or things built up in the drain system. He feels it really has to do the size of that pipe, the

size and configuration of the watershed and how flat the wetland area is down there. Mr. Collins feels that there is a large footprint of 100 year flood plain that encroaches onto the proponent's site. Under their proposed development all that pond is being filled and taken away and not being compensated for.

Mr. Collins referred to the last page of his handout given out at this meeting, this watershed is probably, about a mile long, with the water runoff, it probably averages about 2' per second out of that watershed, you're probably close to a 1 – 2 hour duration for the entire outer reach of the watershed to reach your area. The Mother's Day storm, back in 2006, the maximum hour, hour after hour, was about .5 inches during the highest part of the intensity of the storm. If you take a look at TP- 40, which is old underestimated data, in one hour instead of .5 inches, we'd be somewhere around 2 1/2 " of rainfall that would fall, five times the amount of rainfall that fell during any period of the Mother's Day storm back in '06. Mr. Collins said looking at the plan, the 71.69 or 71.7 clearly takes the entire center of the site to get to 72, so all that area is probably floodplain and they are not showing it as floodplain. He said it's not their fault. It's by the LOMA that was done. When the LOMA was done, Wakefield was never approached, so they got none of their drainage system information, none of their mapping, nothing to work with to do an analysis.

Mr. Marchionda said that after the meeting he was planning on going over the plan again based on the 71.9 and provide the required compensation. Mr. Marchionda realizes that if it's agreed to go forward with the 71.7 it would be their obligation to provide flood storage based on the 71.7 and he knows that it takes up most of the site, and he isn't even sure they can do that. Mr. Collins said the ground water didn't come up to the spring high average until the end of the storm, so you may not have had a full saturated runoff. Mr. Marchionda said the ground water doesn't have to come to the surface for the water to start running off. The pores in the soil get saturated; they can't take any more water.

Mr. Doucette said the Commission needs to decide whether to stay with the direction they gave the applicant a month or so or ago, to find the flood elevation for the Mother's Day storm and design around it or to wait two months, approximately, for the drainage study results.

Ms. Murphy said that around Ell Pond, for which there is a FEMA elevation, that the Mother's Day storm did not reach what FEMA says is the elevation of the 100 year storm, if that has any bearing on how they view the Mother's Day storm. Mr. Marchionda said that is probably right, but he couldn't get any data from the city yard workers.

Mr. Doucette said on one hand he feels the Commission gave the proponent directions and the Commission should stick with that, but they didn't know about the study being done then. Ms. Murphy asked, knowing a study is out there being done, should we wait. On the other hand, she feels this is a good number and if the study comes up with another number it doesn't mean it's going to be a better number. Mr. Weieneth would suggest that the Commission wait for the study even though he feels Mr. Marchionda has given good data. Ms. Hickey said it would be irresponsible to ignore the study, but she is on

the fence, but would like to wait. Ms. Heacock said she feels bad there is a delay but might be better off waiting.

Ms. Murphy moved to continue the Public Hearing to March 21, 2013, seconded by Ms. Heacock, and voted unanimously in favor.

Minutes

Mr. Doucette moved to accept the minutes of 11/15/12 as revised. Mr. Weieneth seconded the motion, and it was voted unanimously in favor.

1 Patriot Way

Members discussed whether to consider a Certificate of Compliance for the work on the property under the As-built plan that was submitted prior to a geothermal unit being installed on the site. The work for the geothermal was out of the 100' buffer. Members decided to consider the Certificate of Compliance at the March 21, 2013, meeting with the as-built submitted.

7 Cedarwood Lane

A revised as-built was received after the restoration of the 15' no disturb. A Certificate of Compliance will be considered in the spring.

Aquatic Control Report

A report was received from Aquatic Control and reviewed amongst members. Ms. Murphy commented on the amount of Alum reported in Ell Pond and will look into it. When the contract is up for renewal, it will be reviewed.

New Correspondence:

BioMap 2

Adjourn

Mr. Doucette moved to adjourn at 9:40 pm, seconded by Ms. Heacock, and voted unanimously in favor.