Traffic

William B. Allen
DPW Superintendent (retired)
Town of Greenfield

Department of Public Works

Town of GREENFIELD, MASSACHUSETTS

Town Hall, 14 Court Square, Greenfield, MA 01301 Phone: 413-772-1528 Fax: 413-773-9593

To: Mayor Martin
From: Sandra Shields
Xc: Lee Fiske
Date: 9/28/09
Re: Traffic issues associated with the Pioneer Renewable Energy biomass project

On 8/25/09 you and I met with Bill Allen to discuss his review of the traffic issues relating to the Pioneer biomass project. While he had no significant disagreements with the traffic study done by MDM Transportation Consultants for the project he did make the following comments:

1. In addition to the improvements, signage and clearing of vegetation at the intersection of Butternut St and Adams Rd, recommended in the report, Mr. Allen recommended that a two directional (north and south) flashing yellow signal be installed on Adams Rd at the Butternut St intersection.
2. Concurred with the report's recommendation that the throat of Butternut St be widened.
3. Pointed out that the timing lights at the intersection of Rt 2 and Adams Rd will need to be evaluated and may need to be retimed in order to properly accommodate the truck traffic.
4. Concurred with DPW's recommendation that after the pipeline is completed on Adams Rd, Pioneer be required to grind and repave Adams Rd from the intersection to Butternut St.
5. Pointed out that the condition of Butternut St at the time the project is constructed be elevated and if in need of repaving Pioneer be responsible for repaving Butternut St.
6. Recommended that the hours of truck delivery be limited to 7am to 5 pm.

Fuel Supply

Leon Fiske
Forrest Products

BIOMAS - CONCEPT

The forest -

People in this country, especially New England, have been blessed with an abundance of trees growing in the wild found when the Pilgrims first arrived. During the period of the industrial revolution when wool was king approximately 80% of the land area was cleared to grow grass for raising sheep When the industry changed the open area soon reverted to forest again. Currently New England is essentially 80% forested Thanks to our climate with its normally generous rainfall the return to forest happened with virtually no input from man. Those areas with professional forest management are far more productive. The growth has been aimed at the better stems of the more desirable species. Chapter 61 is a program under which forest land owners receive a tax reduction in exchange for their exercising good forest management. This program has been only moderately successful because intensive management entails investment generally greater than that which is available.

The advent of wood burning systems has created a viable market for the low value wood. Now the landowner can get the management in a package with the timber sale and some money to boot. The value of the harvest reflects how much money. Generally in this region there is a return even on sites with little commercial timber value.

The harvests which I have seen in this area have been done in a very professional manner leaving trees either because they are good choices for future timber or in some cases only for seed for the next crop. Having done cleaning and harvesting on my own land. I can relate to the challenge.The biomas burning program is all "plus" for the taxpaying forest land owner Many thousands of acres to be harvested will not otherwise receive good management. The continued need for biomas can and will insure forest management in the future.This increase in the production of good quality timber will reduce the amount of importation from foreign sources thus keeping more of our money at home. The added employment value is treated in that segment of this report.

Processing -

The state of the science of converting the biomas to power has reached levels of efficiency not even dreamed of just a few years ago.We not only have very stringent regulations related to burning, but we have technology which allows burning virtually free of nitrous oxides and particulate. The "smoke" stack should be renamed. Visible smoke is unburned carbon. Carbon is fuel. Now it is consumed in the combustion chamber with a miniscule amount passing into the atmosphere. The stack is now only used as a means of returning moisture and CO2 to the atmosphere.

A Note on Power Distribution -

The transport of electricity is most efficient at extremely high voltages. The equipment for accomplishing this has its own set of challenges Basically speaking, the most practical method of getting electricity to the consumer is to generate it at his door. In a manner of speaking this is what will be happening. This facility will provide power to a much smaller

area than, for example, would happen with the construction of another nuclear plant. Distribution losses will be less because it wont have as far to go.

In summary the concept of this project is sound from as many aspects as we can comprehend. The fear of creating a monster of adversities is only fear itself. All of the technologies have been proven by experience and all of the features which require surveillance will have surveillance. We are fortunate not only to have a favorable site, but also that we have Mr. Wolfe willing to build it.

Lee Foxe, MF

Town of Westminster, MA

Letter from Town Coordinator

TOWN OF WESTMINSTER

TOWN COORDINATOR

11 SOUTH STREET
WESTMINSTER, MASSACHUSETTS 01473
Phone (978) 874-7400•Fax (978) 874-7462
(email: kmurphy@westminster-ma.gov)

August 25, 2009

Mayor William Martin
Town Hall
14 Court Square
Greenfield MA 01301

Re: Westminster's Biomass Plant

Dear Mayor Martin:

I am happy to provide the following response to your inquiry regarding Westminster's experience with the biomass plant located in our community. The 17 megawatt plant is operated by Pinetree Power and overall has proven to be an asset to the town for the past 20 years. In addition to the obvious benefit of a significant taxable operation, the plant has also provided a means for the town to dispose of its old records. This past winter Westminster was hit hard with the ice storm. Having the biomass plant available for the disposal of the wood chips was a big convenience and cost saver. DEP has been diligent in its efforts to monitor emissions at the plant and any concerns in this regard have always been addressed quickly.

On the down side, the facility by its very nature is prone to fires. There was a five-alarm fire at the plant in 2004 and there have been a number of other fires over the years. Extreme care should be given to implementing adequate safety measures in this regard, including proper communication with the local fire department.

Please feel free to contact me if I can be of any further assistance in providing information on this matter.

Sincerely,

Karen M. Murphy

Karen M. Murphy
Town Coordinator

DEP 9/2/09

FOR T - 9/2/09

Water and Wastewater Issues

Sandra Shields, DPW Director
Town of Greenfield

Department of Public Works

Town of GREENFIELD, MASSACHUSETTS
Town Hall, 14 Court Square, Greenfield, MA 01301 Phone: 413-772-1528 Fax: 413-773-9593

To: Mayor Martin
From: Sandra Shields, DPW Director
Xc: Lee Fiske
Date: Revised 10/6/09 based on revised water consumption figures from Pioneer after decision to provide on site treatment of effluent.
Re: Water & Wastewater issues associated with the Pioneer Renewable Energy biomass project

Section 1 – Potable Water

Potable water – Town water supply:

- Safe Yield 3,300,000 gpd (gallons per day) – annual average
- Peak output is 5,400,000 MGD – daily maximum
- Current annual average water consumption -- 1,850,000 gpd
- Registered water withdrawal (DEM) - 2,120,000 gpd – annual average

For practical purposes these numbers mean that our water resources can physically supply an annual average of 3,300,000 gallons of water per day with a peak daily flow of 5,400,000 gallons of water on any given day. It should be noted however, that the Dept of Environmental Management (DEM) currently restricts Greenfield withdrawal from the Deerfield River basin to 2,210,000 gpd. This 2,210,000 number is referred to as the "Registered Withdrawal" amount and is a "paper" number. It is based on historical usage and it can be increased if town has the water (we do) and there is a legitimate need for more water use in Town (i.e. a new industry comes to town).

Currently, the Town's average water consumption is 1,850,000 per day and an annual peak day usage is about 3,300,000 (highest one day usage in a calendar year). Water consumption in Greenfield has been decreasing in recent years due to conservation efforts and the loss of wet manufacturing industry. (see attachments A&B)

Potable water usage by Pioneer Renewal Energy:

In the ENF Pioneer stated the following potable water needs:

- Domestic use 1,450 gpd (gallons per day)

As can be seen from above, supplying the required 1450 gpd will not be a problem. In initial discussions with Pioneer there was extensive discussion about the potential need to, on a limited

number of days per year (2-25) when the wastewater effluent total suspended solids (TSS) and biochemical oxygen demand (BOD) levels were elevated, dilute the treated wastewater with potable water in order to decrease the concentration of TSS and BOD to levels that Pioneer requires for its process water and to meet its Reclaimed Water Permit. Even assuming the absolute worse case scenario of Pioneer needing 100% of their max demand (900,000 gpd) for 25 days this would only increase the Town's average annual daily usage from 1,850,000 to 1,912,000 gpd, well within our supply and registered water withdrawal limits. However, with Pioneer's recent decision to install a large scale $1,500,000 water treatment plant at the facility to further treat the effluent prior to use the **potential need for potable water for dilution is greatly diminished from initial discussions with Pioneer**, further reducing the potential need for potable water above the 1,450 gpd needed for domestic. At this time it appears the only time Pioneer would be using more than the estimated 1,450 gpd is if there was a serious malfunction in the pumping of effluent to Pioneer or in Pioneer's water treatment plant.

Section 2 – Wastewater

Volumes:

Currently Pioneer's projected usage of treated effluent pumped from the WPC Plant will be on average 690,000 gpd with a maximum demand of 900,000 gpd. The anticipated number of days Pioneer will operate per year is 336. Of the 690,000 gpd day withdrawn from the WPC Plant prior to discharge to the river, Pioneer now estimates that approximately 188,000 gallons of spent wastewater will be returned to the sewer system. This means that there would be a net decrease of 500,000 – 712,000 gpd of water being discharged from the Town's wastewater treatment plant to the river. This would bring our discharge rate down to an average of 3,100,000 to 2,888,000 gpd which is beneficial to the Town from a regulatory point of view.

The water discharged back to the sewer from Pioneer will be treated prior to discharge to the sewer system. This will include treatment such as pH adjustment if necessary. In addition the water will carry the coagulant used to settle solids after Pioneer's rotating biological unit. This coagulant will likely prove beneficial to the treatment process at the Town's WPC Plant by enhancing settling in the primary clarifiers.

Section 3: Potential Impacts on Town Systems:

Potential Positive Impacts to water/wastewater systems:

- Pioneer will not negatively impact the Town's potable water system. As discussed above, Pioneer will use on approximately 1450 gallons of potable water per day. As discussed above, one of the initial concerns about the Pioneer using significant volumes of potable water for dilution is now negated by their decision to install a complete water treatment plant on site to treat the effluent. At current rates, water and sewer fees on 1450 gpd will annually generate $1835 in water use fees and $2816 in sewer use fees.
- The current water agreement with Pioneer sets the fee rate for the sale of effluent and other charges which will yield, in the first year of operation, approximately $450,000. There are price adjustments for each year thereafter which range from 4-6% based on standard indexes (see attachment C which presents estimated of revenue projections over 20 yr life of contract). Assuming the minimum annual increase of 4% at the end of the twenty end contract $950,600 would be generated from the sale of the wastewater. This represents significant revenue to the Town.

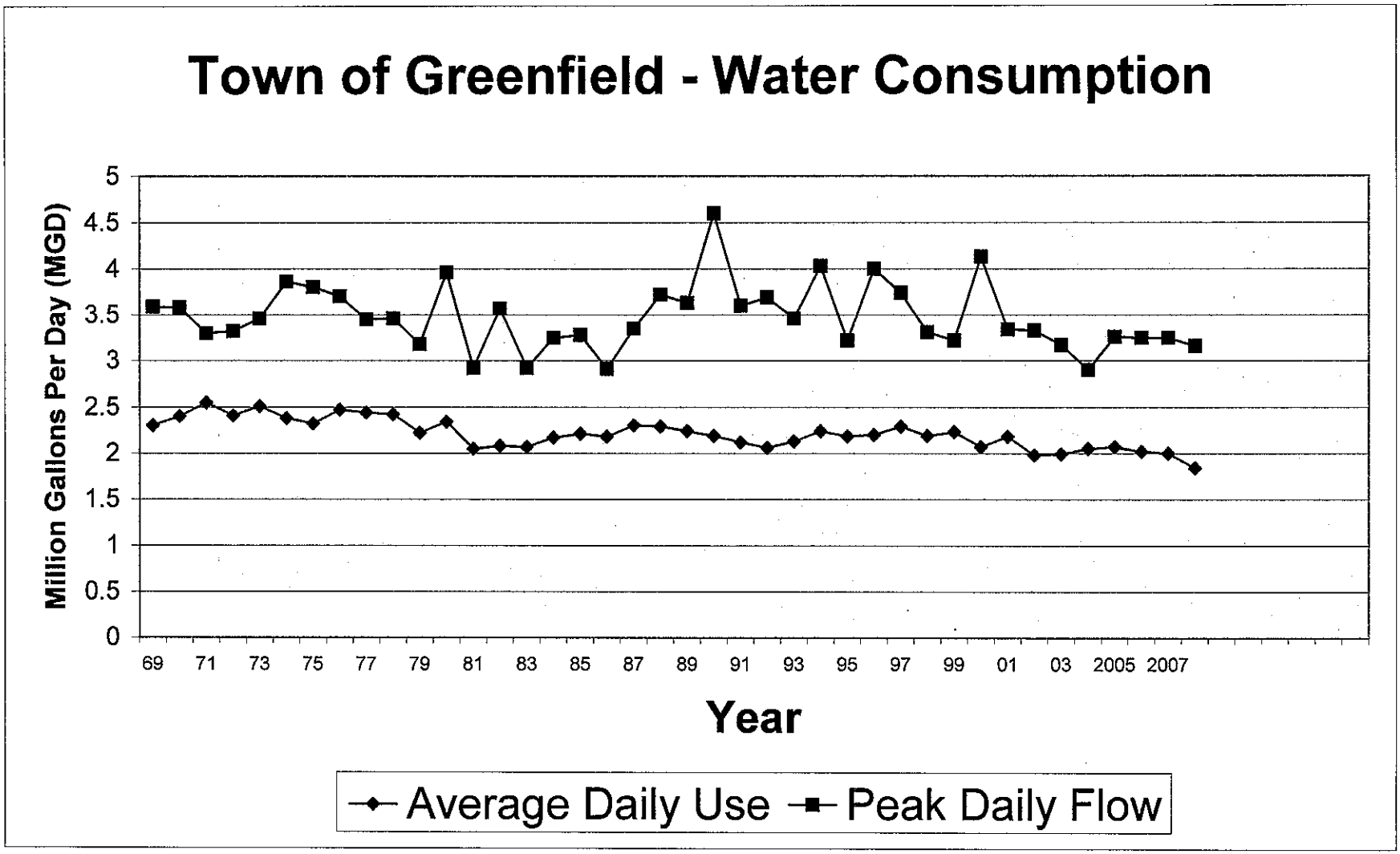
- The net decrease in flow from the Plant to the Deerfield River actually puts the Town in a more favorable regulatory position with DEP.
- Although not related to water, Pioneer will provide Greenfield with a no cost means to dispose of street trees, branches, storm damaged trees etc.

Potential Negative Impacts to water/wastewater systems:

- The most significant concern I have about the project is the return flow from Pioneer to the sewer system and its potential impact on the WPC Plant, specifically, the WPC Plant's ability to settle the fine solids present in the return flow. The recent decision by Pioneer to install a full scale water treatment system and use a coagulant to settle solids coming off the biological rotating unit lessens my concern about this issue, but does not fully negate it. However, the Town's Sewer Use Regulations are unequivocally clear (Article IV Sections 4 & 5) that industrial discharges that negatively impact the WPC Plant are prohibited. If Pioneer fails to address this problem the Sewer Use Regulations give the Town the right to terminate service (Article V Section 13), court action (Article V section 13 & Article IX), and penalties (Article IX Section 2). One may be concerned that the Town would not have the political will to take such action given Pioneer's financial contribution to Town revenues. It should be noted that the Town's WPC Plant operates under an NPDES permit issued by EPA and the State. The Town has to submit monthly reports to those agencies and immediately report significant violations of the permit to DEP. DEP and EPA will simply not allow the Town to ignore a discharge from an industrial user which negatively impacts the WPC Plant and consequently the discharge to the Deerfield River. The fines those agencies would levy against the Town would far surpass the revenues generated by Pioneer, hence the Town would be in no position other than to immediately enforce the Sewer Use Regulation that require Pioneer to correct any potential problems its discharge was causing.

Town of Greenfield - Water consumption by Year

Year	Average Daily Usage MGD
1957	2.24
1958	2.11
1959	2.25
1960	2.26
1961	2.40
1962	2.35
1963	2.38
1964	2.43
1965	2.34
1966	2.49
1967	2.41
1968	2.39
1969	2.30
1970	2.40
1971	2.55
1972	2.41
1973	2.51
1974	2.38
1975	2.32
1976	2.47
1977	2.44
1978	2.42
1979	2.21
1980	2.34
1981	2.05
1982	2.08
1983	2.07
1984	2.17
1985	2.21
1986	2.18
1987	2.30
1988	2.29
1989	2.24
1990	2.19
1991	2.12
1992	2.06
1993	2.13
1994	2.17
1995	2.18
1996	2.19
1997	2.29
1998	2.19
1999	2.23
2000	2.07
2001	2.18
2002	1.99
2003	1.97
2004	2.05
2005	2.07
2006	2.02
2007	2.00
2008	1.85


Town of Greenfield - Water Consumption
Million Gallons Per Day (MGD)
0
0.5
1
1.5
2
2.5
3
3.5
4
4.5
5
69
71
73
75
77
79
81
83
85
87
89
91
93
95
97
99
01
03
2005
2007
Year
Average Daily Use
Peak Daily Flow

Projected 20 year revenue from sale of effluent to Pioneer Renewable Energy & water and sewer fees

Year	4% increase					
	Effluent sale	Lease	O&M fee	Potable Water fees*	Sewer use fees*	Total water related annual revenue
1	$431,220	$10,000	$10,000	$1,835	$2,816	$455,871
2	$448,469	$10,400	$10,400	$1,863	$2,858	$473,990
3	$466,408	$10,816	$10,816	$1,890	$2,901	$492,831
4	$485,064	$11,249	$11,249	$1,919	$2,945	$512,425
5	$504,466	$11,699	$11,699	$1,948	$2,989	$532,800
6	$524,645	$12,167	$12,167	$1,977	$3,034	$553,989
7	$545,631	$12,653	$12,653	$2,006	$3,079	$576,023
8	$567,456	$13,159	$13,159	$2,037	$3,125	$598,937
9	$590,154	$13,686	$13,686	$2,067	$3,172	$622,765
10	$613,761	$14,233	$14,233	$2,098	$3,220	$647,545
11	$638,311	$14,802	$14,802	$2,130	$3,268	$673,314
12	$663,843	$15,395	$15,395	$2,162	$3,317	$700,111
13	$690,397	$16,010	$16,010	$2,194	$3,367	$727,979
14	$718,013	$16,651	$16,651	$2,227	$3,417	$756,959
15	$746,734	$17,317	$17,317	$2,260	$3,469	$787,096
16	$776,603	$18,009	$18,009	$2,294	$3,521	$818,437
17	$807,667	$18,730	$18,730	$2,329	$3,573	$851,029
18	$839,974	$19,479	$19,479	$2,364	$3,627	$884,922
19	$873,573	$20,258	$20,258	$2,399	$3,681	$920,169
20	$908,516	$21,068	$21,068	$2,435	$3,737	$956,824

Year	6% increase					
	Effluent sale	Lease	O&M fee	Potable Water fees*	Sewer use fees*	Total water related annual revenue
1	$431,220	$10,000	$10,000	$1,835	$2,816	$455,871
2	$457,093	$10,600	$10,600	$1,863	$2,858	$483,014
3	$484,519	$11,236	$11,236	$1,890	$2,901	$511,782
4	$513,590	$11,910	$11,910	$1,919	$2,945	$542,274
5	$544,405	$12,625	$12,625	$1,948	$2,989	$574,591
6	$577,070	$13,382	$13,382	$1,977	$3,034	$608,845
7	$611,694	$14,185	$14,185	$2,006	$3,079	$645,150
8	$648,395	$15,036	$15,036	$2,037	$3,125	$683,630
9	$687,299	$15,938	$15,938	$2,067	$3,172	$724,415
10	$728,537	$16,895	$16,895	$2,098	$3,220	$767,645
11	$772,249	$17,908	$17,908	$2,130	$3,268	$813,464
12	$818,584	$18,983	$18,983	$2,162	$3,317	$862,029
13	$867,699	$20,122	$20,122	$2,194	$3,367	$913,504
14	$919,761	$21,329	$21,329	$2,227	$3,417	$968,064
15	$974,947	$22,609	$22,609	$2,260	$3,469	$1,025,894
16	$1,033,444	$23,966	$23,966	$2,294	$3,521	$1,087,190
17	$1,095,450	$25,404	$25,404	$2,329	$3,573	$1,152,160
18	$1,161,177	$26,928	$26,928	$2,364	$3,627	$1,221,024
19	$1,230,848	$28,543	$28,543	$2,399	$3,681	$1,294,015
20	$1,304,699	$30,256	$30,256	$2,435	$3,737	$1,371,383

1.5% increase per year

Independent Review of Air Quality and Sound Impact Analyses

Mitchell Wurmbrand, CCM
Associate Principal
GZA GeoEnvironmental Inc
Bloomfield, CT

Economic Impacts

(email summary)

Henry Hardy

Sandra Shields

From: Henry Hardy [henryh@logisticare.com]
Sent: Tuesday, October 06, 2009 9:38 AM
To: Sandra Shields; Sandra Shields
Subject: biomass

Sandy:

I'm down in Atlanta for a week. I write proposals for a living, and I am in the middle of a big project that will have me busy for another week.

I have not heard back from Dave Damery on the issue I wrote you earlier about related to some figures in the state biomass economic impact study. I will keep bugging Dave about it.

I certainly expect to send the Mayor something to review within the next two weeks.

Bottom line: I believe Matt Wolfe's projections about the economic upside of the project are probably reasonable, and maybe even conservative, but I will back this up with my report.

Please let me know if the Mayor needs something other than this from me.

Best wishes:

Henry Hardy

Senior Director Business Development

LogistiCare Solutions LLC
413-773-3210 (MA)
678-642-2039 (cell)

Site Analysis

Mark Leonard

Mark Lenard Report
10/6/09

Site Analysis for Mayor William Martin of the Mackin Gravel facility.

Choosing the site of a power plant or any plant is an activity of prioritizing the requirements of production, distribution, and location. Industrial parks or adjoining other existing plants with the capacity of co-generation is universally the guiding star of this phase. Greenfield's geographic location at the junction of two interstate highways has long made us a desirable locale with regard to distribution of produced goods. Rail access and its corresponding intersection augment this desirability and allow diversification of supply streams to insure dependability and control costs. These convergences combined with our proximity to a navigable waterway have influenced Greenfield's historical growth and will continue to do so. Truck traffic to this site with wood chip can access these highways thereby avoiding impact on local traffic.

Distribution of electricity is conveniently achieved through the wisdom of our town fathers' choice in siting the industrial park under the existing power grid. This site is unique only in the convergence of enough of these assets at reasonable cost to make this location most desirable out of several. This is not an assertion this is the only location which can fit the bill, just the only one from which Greenfield can financially benefit.

This frames the question very differently than recent comments. This plant will be built, the only question is location.

Power generation has expanded in its choice of fuel sources while remaining consistent in the method by which a generator makes electricity. Fuel is burned to heat water past its boiling point to make steam which turns a turbine producing electricity. Waste steam is expelled, either into the atmosphere, or condensed back into hot water, which is either a resource or a

burden to be disposed. Cogeneration uses the hot water for area heating, the reason to collocate with a plant with large heating needs. Not using this resource of excess heat invites environmental encroachment, such as releasing warm or hot water into local waterways. The opportunity to capitalize on this heat source is akin to living next to a hot spring minus the obnoxious sulphur smell, conveniently forgotten in discourse regarding thermal recapture, the activity of recycling excess heat to other more humanly useful purposes. With this enormous recycling potential a mere two miles away from large end users including Stop & Shop, the hospital, middle school and future development on French King Highway it begs the question of ; is there a better location for Greenfield than this?

The gravel pit at the end of Butternut Drive has several advantages not least of which is the enormous void produced through excavation. Reuse of this type of industrial degradation is a unique event. Consideration of reuse when this site is played out and abandoned should be a factor for Greenfield residents as this event will adversely affect the tax base.

The depth of this excavation is sufficient to house the smoke stack with a height of 250 feet the top of which will be 50 feet shorter than the existing cell tower located to the north of the proposed site. The breadth of the excavation is such that the entire operation will be hidden from view from all sides with the exception of within the industrial park itself. This is an important facet in site evaluation and should be a priority, particularly since the materials which prevent viewing also perform as sound attenuation. While the production of power, turning turbines and making steam are not unusually noisy industrial activities, grinding logs into wood chips is. Locating this operation within earthen berms will reliably control noise pollution to easily acceptable levels.

Downhill from the proposed site is presently a hay field of around 15 acres, the Giknis property. This is also an area with cogeneration potential with heat available for year round greenhouses similar to Montgomery Rose located in Hadley, which heats and generates power from wood chips.

Property Values

William T. Finn
Real Estate Appraiser

WILLIAM T. FINN

REAL ESTATE APPRAISALS

Office. 252 Federal Street | Telephone 774-6925 | Fax: 773-7441
Greenfield, Massachusetts
01301

RETIRED MEMBER OF:
American Institute of Real Estate Appraisers

Mass. Certification 541

August 26, 2009

Mr. William Martin
Town of Greenfield
14 Court Square
Greenfield, MA 01301

Dear Mayor Martin:

I have reviewed the report by Pioneer Renewable Energy and have visited the site proposed for the biomass power plant in Greenfield.

If the information in the Pioneer Renewable Energy report is fair and the state controls the emissions as stated then I see no loss in value to the real estate in the area.

Like all new enterprises local owners feel that change in traffic, quality of life, noise, pollution, and so forth will affect them to the point of loss in value. I do not see that this will happen once the plant is online.

Respectfully,

William T. Finn