TOWN OF MILLBURY
BOARD OF SELECTMEN MINUTES
SELECTMEN MEETING ROOM

May 23, 2017 **7:00 pm**

Selectmen Present: Chairman Francis B. King, Sandra Cristo, Mary Krumsiek, Scott Despres, and Jon Adams, Town Manager David Marciello.
Steve Balistreri-*Millbury Sutton Chronicle*

Chairman King asked for a Moment of Silence for the victims of a bombing in Manchester England at an Ariana Grande concert.

Meeting turned over to Town Manager; Mr. Marciello asked for nominations for Chairman
Selectman Adams nominated- Fran King as Chairman, seconded by Selectman Krumsiek.
Unanimous

Chairman King thanked the board for their support; we have filled a few holes, hired a manager and a planner; we have a full plate ahead of us with hiring a DPW director, HR director and the roads. This will end his tenure on the board.

Chairman King asked for nominations for Vice Chairman;
Selectman Adams nominated Sandy Cristo as Vice Chairman; seconded by Selectman Krumsiek.
Unanimous

Chairman King asked for Nominations for Clerk
Selectman Cristo nominated Mary Krumsiek as Clerk, seconded by Selectman Adams
Unanimous

Board of Health Fee Increases
Ron Marlborough for the Board of Health new fee structure: *attached*
Selectman Adams said that it is a fairly significant increase; is in in line with the surrounding towns? Yes, there hasn't been a raise in fees for approximately 15 years, they have had several meetings and in line with the other towns. Chairman King asked how many places we have that would be over 150 seating; Mr. Morin answered there are five, all at the mall. Chairman King asked them to explain the inspection process. Selectman Krumsiek asked if they do bi-annual inspections. Yes, they do. What is a plan review for food establishments? They have to sit down with the inspector and an engineer with a blueprint of what they are doing. The temporary permit, does that effect the Chain of Lights? It will not. She then asked regarding the Rubbish Hauler permit has gone down from $500 to $200? The board did not feel it was fair for the haulers that live in town to only pay that. We are issuing sticker to haulers who bring it to Wheelabrator. Selectman Cristo asked about the temporary hauler permit. They are doing away with that. Selectman Despres asked if they foresee any hardships from these fee increases? Does this require any public input? No, it does not. Chairman King said that some have a pretty good jump, maybe you could phase them in instead of hitting them all at once. Mr. Morin said that the biggest fee jumps were the restaurants at the mall; they expect it because we have been

so low and they are paying high fees in their other towns/cities. They would go into effect on July 1 and some not until December 31st.
Selectman Adams asked why the well permit has stayed at $150.00? That is set by the engineer, Jim Malley.
Mr. Marciello wanted on the record that a town sponsored event the fees are waived. Mr. Morin said that 4 years ago we entered into agreement with the Worcester Alliance with several other towns for services that we pay $41,000; we are looking to get this money back. Selectman Adams asked about the non-profits? That fee is waived as well.
Selectman Depress motioned to accept the fee schedule as written by the Board of Health for July 1, 2017, seconded by Selectman Adams.
Motion carried 4-1 (Selectman Cristo opposed)

Building Inspector/Zoning Enforcement Officer: Robert Frederico
His department has not had a review of fees since 2009; the codes have changed; the inspections have changed and there is a lot more being done. He looked at 12 surrounding towns and he took the average of all the towns to come up with his proposal. *attached*. He would like to make this effective July 1st as the new building code will be rolling out on that date. They have been approved for an online permitting system, they received a grant for a portion of the cost and town meeting approved the other portion of costs. He would like to propose a surcharge for the use of the online system which should cover the yearly license fee and updates.
Selectman Adams asked what per fixture means. That is per sink, toilet, dishwasher, etc…
The inspections are untenable for one man to do, he has asked for an additional inspector which he has not received. He will ask again. Last year we did 1300 permits; that does not count the co-inspections with the Fire and Board of Health. Selectman Despres asked what the projected revenue increase would be? Mr. Frederico is expecting $30-40,000 increase. Selectman Despres asked why the departments waited so long for increases? Mr. Frederico stated that he started here three years ago and he wanted to evaluate what the needs were before making any changes.

Motion to accept the proposed fee schedule change as outlined by the building department made by Selectman Despres, seconded by Selectman Krumsiek.
Motion carried 4-1 (Selectman Cristo opposed)

WRTA- Bob Spain, Town Manager representative and Jonathan Church from the WRTA
Chairman King said that there has been a lot of switching of routes and he would like an update. Mr. Spain said that like you we have budgeting issues; the State is proposing cuts to the WRTA. We cannot operate at a deficient, we have to look at operating costs and revenue. We try to keep our fares on even .25 amounts and haven't had a fee increase in a long time; they have raised them effective July 1st. Ridership is down about 10% due to low gas prices. Fares are 14-15% of our operating budget. A new bus is $1 million. We were the first to use all electric buses. Chairman King asked him to explain how you add and delete routes. Mr. Spain turned that over to Mr. Church as he is the one that does the calculations. Mr. Church said they look at ridership, cost per rider and cost per hour to operate that bus. Route 22 in town was not performing at all.

We have adjusted Route 4 to go to the Shoppes, Walmart and downtown. To add a route we look at services, schools, health related areas that would generate ridership. Selectman Adams said that there was some confusion where people thought Route 22 was just going to be cut on the weekends and it was cut totally. Mr. Spain said that Route had only 2-3 riders per day; the center route has 24-26 riders. Selectman Adams said that it doesn't look good that the RTA built a huge maintenance building on Quinsigamond Ave when they are cutting routes. Thank you for coming in.

Patricia Arp-Interim DPW Director

Mr. Marciello wanted to thank Ms. Arp for her efforts to stop the bleeding at the DPW; she is working very hard and handling it very well.

Ms. Arp started in April and she has been putting some observations together. *see attached* She is proposing that irrigation abatements not be done when there is a mandatory water ban; there are over 300 requests for one billing cycle. She also is proposing a 90% of the water bill flat instead of meter readings. She went on to explain our stormwater permitting process which begins on July 1, 2017; it is a mandate by the federal government. She thinks the selectmen should consider a stormwater compliance fee to cover compliance costs; many towns have set the fee at $40.00 per home; require islands and raingardens in subdivisions; we have a threatened species that we need to protect, she will be incorporating bat boxes into the plans as required. The seasonal help has started on the 15th; she has attended cemetery and sewer meetings; Andrea has been a huge help to her. She has visited all of the parks in town and has put together a list of their needs. Regarding the roads she would like to do the large road of South Main St. and some smaller roads arounds. They had a car counter set up at the Transfer station for two weeks to see if they should modify the schedule; it is very consistent. The hauling truck is having issues so we have to decide if we want to repair that. The energy advisory committee is continuing to meet. The Dam has just had the binder course put down; they should be done in a couple of weeks; they are waiting on a railing. We have two underground storage tanks that need removal by August 1st. The Brierly Pond Dam, we think, is owned by the State, we are waiting on responses if we won the argument. Chairman King asked about the South Main Street Bridge. Our understanding is that the State has completed their process and now the Town has to finish up. Selectman Adams thanked Patricia for her work and seeing that the Manager is so busy with other things, if he could move the roadway projects to Patricia and the Roadway Advisory Committee for them to handle. Mr. Marciello said that this takes about 60% of his day everyday. Selectman Adams asked about the single wall tanks and if they are funded? Yes, they are funded in the pump station repairs from the enterprise fund. We have to replace these tanks or be fined. Selectman Adams asked if it is possible to put a sheet pile wall in. Ms. Arp said in the interest of saving our road, we may want to work with the owner. Selectman Depres would like to see this presentation up on the website and thank you for the communication.

Ms. Arp would like to put a policy together for the cemetery for items left on graves when it's time to clean it out. She would like to put shelving up on the shed for people to come take their items if removed.

Laurie Connors-Director of Planning/Development

Four Corners Revitalization Project- Dean Groves from Weston & Sampson and Stephanie Covino from Ma Audubon Society. *see attached*

They had a series of 5 visioning sessions which they were attended by 70 individuals. Folks were asked to talk about their likes/dislikes about the downtown and how to improve it. We chose this area because it is the heart of the community and there are storefronts that have been unoccupied for quite some time. We had a number of ADA issues in the four corners. We need to make traffic light upgrades as well ask street lights. There are drainage issues that need to be addressed as well because it is so close to the Blackstone River. The bricks have been there for over 30 years and is in dire need of maintenance.

Mr. Groves stated that this is a concept, not developed yet. We are trying to attract people and businesses to this area. There will be sidewalk enhancements, colored concrete, concrete pavers, things that will not dislodge over time. They would like to create a plaza area where people could sit, have a cup of coffee and enjoy the outdoors. They would add a rain garden and move the bus stop outside of 95 Elm.

Stephanie from MA Audubon was part of this grant process. They have used the low impact development plan to encourage other communities to do as well.

We do not lose any parking spaces with this plan; actually, in later phases we will gain parking. We will have green space on each corner to address stormwater and catch the first flush of rainwater. Ms. Connors said that if we make attractive areas people will come. It will not only encourage them to come, it will help them stay. It will cost almost $900,000 to complete; we are eligible to receive grants. She is looking into a Complete Streets Grant in the amount of $400, 000; the application is due in November; there is an ADA grant in the amount of $250,000 which is due at the end of this month. There is a grant in the amount of $150,000 due June 2nd; the green communities grant for $20,000; she is hoping to do decorative street lights with that; the town would have to pitch in approximately $75,000.

Mr. Marciello said that the 319 Non-Point Source Pollution Grant is a grant that doesn't come around often; but because we are working on all of these improvements the money is well spent. He would ask the Selectmen to support this to get this project done. Stephanie said that most towns do not have done what Millbury has, you are in a good place for that 319 Grant.

Selectman Adams asked if there are any hidden things here; does the complete streets make you do projects all over town? No, you can do your policy the way you want, but if you do a whole reconstruction you could put in sidewalks if they are not there; you could add a bike path; etc. Ms. Connors will draft a policy to be approved by the selectmen.

Selectman Krumsiek asked what if we don't get the grants? Then we will have to relook at the project and see what we want to do.

Selectman Adams asked if part of this project would be blacktop and collapsed storm drains? Yes.

Selectman Despres asked if we don't get one of the grants can the project be done? Yes, it is just a concept.

Selectman Krumsiek made a motion to approve the downtown improvement project seconded by Selectman Cristo.

Motion carried unanimously.

Application for Above Ground Storage Tank- MaDot 98 Worcester/Providence Tpk.
This application has been approved by the Fire Chief.
Motion to approve the application made by Selectman Krumsiek, seconded by Selectman Adams.
Motion carried unanimously.

33b Transfer for the Fire Department
This truck came along used for $25,000 instead of a brand new one that is $125,000. We do have money in our salary account to cover this amount. Chairman King said that the truck is in excellent condition. Selectman Krumsiek asked where the money is coming from: Salary and details are down.
Katie McKenna, Finance Director said that at the end of the fiscal year we can move money between lines for unexpected costs. Next year the fire chief would be asking for $125,000 so this will save us $100,000. Selectman Cristo asked what you would do with the old truck. It will be turned over to the selectmen for surplus sale.

Motion made by Selectman Despres to transfer $20,000 from Firefights Salaries account to the Capital Outlay account for the purposes of purchasing the used forestry truck, seconded by Selectman Krumsiek.
Motion carried unanimously.

Motion made by Selectman Despres to transfer $4,000 from the Inspections/Details account to the Capital Outlay account, seconded by Selectman Adams.
Motion carried unanimously.

One Day Liquor License-Special Occasion Servers-June 3, 2017 3pm-9pm-
Asa Waters Mansion.
Motion to approve the one day liquor license made by Selectman Adams, seconded by Selectman Despres.
Motion carried unanimously.

Town Manager Report
Appoint Harvest Lee Dixon to the Cultural Arts Council
Motion to concur with the appointment made by Selectman Adams, seconded by Selectman Krumsiek.
Motion carried unanimously

We have been having issues with the cemetery over the last couple of months and we are dealing with them as they come up. We are working on permanent solutions when the weather cooperates and the water table settles.

Chairman King asked about the double lot policy? Mr. Marciello said that this is cemetery commission policies, the new section was pinned for double lots and they are now allowing triple lots there. Andrea Paquette said that each lot gets its own headstone; there are size requirements. Selectman Adams wanted to make sure that the cemetery commission is aware of these situations; they are very important in this town.
Master Plan: Mr. Marciello is working on getting a class at Bridgewater State to do this as a capstone project. He is hoping to get the roadway bids out soon.
Mr. Marciello would like to create an overlay district for cell towers on town owned property so that the town can collect fees from this.
The Ramshorn Dam is going to look complete in 2-3 weeks but it is not quite done yet. We are waiting for guardrails and the custom-made railings after the cap and sidewalk is done. The road will probably be opened in approximately 12 weeks. We cannot open it until the railings are up. If there is any money left over he can improve the Jacques Park area with solar lights, parking lot and driveway. We are waiting on drawings on the stairs; Mr. Frederico said that he should have the plans by the end of the week. Likewise, for the walls for the HR Director.
Selectman Krumsiek asked if there is money in the budget for this? He is waiting for the parts list to see if there is enough money. Selectman Adams asked where the money is coming from? Mr. Marciello said that it would come from a building maintenance fund.
He, Greg Myers and Jude Cristo will be interviewing three more people this week for the HR Director. He offered the DPW position to someone who accepted a position with a consulting firm at the cost of $82,000 more than we are offering. Selectman Adams asked where we are advertising? The MMA and the APWA; Indeed and Monster picked it up too. Below is a list of grants received recently:

- Grants: Green Communities Grant – Awarded last year- Awaiting approval of a vendor to install the street lights
- IT Grant $20,000 - just awarded
- Master Plan Grant $25,000– just awarded
- Municipal Readiness Grant – Applied for - awaiting award
- 319 MS04 - In the process of applying - due in a few weeks
- ADA – in the process of applying – due in a few weeks
- Complete Streets – on the radar

At the next meeting, Mr. Marciello would like to talk about the 40U policy and start putting a committee together.

Selectman Adams wanted to reiterate that the road plans will be handed over to Patricia Arp and the Roadway Advisory Committee.

Old Business – Legal Counsel
Chairman King asked the board if they have decided as to who they will use for FY18 Legal Counsel.
Motion by Selectman Despres to change to KP Law, seconded by Selectman Cristo.

Motion by Selectman Krumsiek to keep Mirick O'Connell, seconded by Selectman Adams.

Chairman King asked for a roll call vote:
KP Law, Inc:
Selectman Cristo- Yes
Selectman Despres-Yes
Selectman Adams-No
Selectman Krumsiek- No
Chairman King- No

Mirick O'Connell:
Selectman Cristo-No
Selectman Despres -No
Selectman Adams-Yes
Selectman Krumsiek-Yes
Chairman King-Yes
Mirick O'Connell will remain sole legal counsel.

Selectman Despres wanted to discuss the Kennel license on Sycamore St. as the board did not put any stipulations on the license. He would like to know who enforces the conditions set forth by the Planning Board. Mr. Marciello pointed out that the neighbors have the right to quiet enjoyment and they can take this matter to court.
Selectman Despres wants our bylaws followed. If you have more than three dogs you need to apply for a kennel license.

Dates to Remember
Saturday June 3rd from 10 Am to 12 Noon Millbury/Sutton Bark Park's Dog Swim at Marion's Camp
Wednesday June 14th at 7 PM Premier Swing Band at the Asa Waters Gazebo

On a Good Note
Congratulations to the DI team! Good luck in the Globals.

Kudos to Len Mort and his crew on the Food Truck Festival. It was a great hit and a good day for all.

The dedication of Bicentennial Way will be on June 11, 2017.

Selectman Adams wants to thank the employees at town hall who have been stepping up and doing a great job.

Citizen Speak

Linda LaChance-the Town Manager answered her questions about volunteering at Jacques Park. She is still concerned about Davis Road and the potholes on the curve which is washed out. It is a very dangerous situation. She has concerns with the downtown project when the plows go through and pull up the vegetation or salt eroding it. She would like to cut the vines down at the Greenwood St. Park on the fence too.

Gary Haines- 2 Sunset Drive- he has not been updated at all on the Ramshorn Dam project. He is very upset that Mr. Marciello, Ms. Arp and the engineer walked the area with Ms. Haines today. The town will be surveying the property. Mr. Marciello has been extremely accommodating with this couple.

Motion to adjourn by Selectman Krumsiek at 10:46 pm, seconded by Selectman Adams. Motion carried unanimously.

Respectfully submitted,

Tish Hayes, Secretary

Francis B. King

Sandy J. Cristo

Mary Krumsiek

Scott Despres

Jon Adams

MILLBURY BOARD OF HEALTH
FEE SCHEDULE

BOARD OF HEALTH ISSUED PERMITS/FEE'S	PERMITS EXPIRE	FEE CRITERIA	CURRENT FEE	PROPOSED FEE	CONTRACTOR	TOWN
BEAVER PERMIT	10 DAYS after issued	to trapper	N/C	$50.00		
CATERER PERMIT (ONE DAY)	PER EVENT		$25.00	$100.00		
TEMPORARY FOOD PERMIT	PER EVENT	1 TO 14 DAY EVENT		$100.00		
FOOD ESTABLISHMENT PERMIT	JUNE 30th	Retail or 0 Seats	$75.00	$100.00		
	JUNE 30th	1 to 50 SEATING	$75.00	$200.00		
	JUNE 30th	51-100 SEATING	$150.00	$350.00		
	JUNE 30th	101-150 SEATING	$225.00	$400.00		
	JUNE 30th	151-200 SEATING	$300.00	$500.00		
	JUNE 30th	201+ SEATING	$375.00	$750.00		
FOOD RETAIL	JUNE 30th	≥ 8000 square feet		$500.00		
PLAN REVIEW FOR FOOD ESTABLISHMENT			$50.00	$250.00		
MILK/CREAM PERMIT	JUNE 30th		$25.00	$25.00		
MILK PASTEURIZATION PERMIT	JUNE 30th		$25.00	$25.00		
FROZEN DESSERT PERMIT	JUNE 30th		$25.00	$100.00		
DELI PERMIT	JUNE 30th		$75.00	$200.00		
BAKERY PERMIT	JUNE 30th		$75.00	$200.00		
MOBILE PERMIT	JUNE 30th		$75.00	$250.00		
RECREATIONAL CAMP PERMIT	JUNE 30th		$100.00	$100.00		
CLOTHING DONATION BINS	JUNE 30TH	PER BIN	$100.00	$100.00		

FEE SCHEDULE IS SUBJECT TO CHANGE

BOARD OF HEALTH ISSUED PERMITS/FEE'S	PERMITS EXPIRE	FEE CRITERIA	CURRENT FEE	PROPOSED FEE	CONTRACTOR	TOWN
TOBACCO PERMIT	SEPTEMBER 30th		$30.00	$150.00		
RUBBISH HAULER PERMIT	DECEMBER 31st		$500.00	$200.00		
RUBBISH HAULER TRUCK STICKER	DECEMBER 31st	PER TRUCK		$100.00		
TEMPORARY RUBBISH HAULER PERMIT	2 Weeks after issue		$125.00			
SEPTIC HAULER PERMIT	DECEMBER 31st	Per Truck	$125.00	$125.00		
DISPOSAL OF WORKS INSTALLER PERMIT	DECEMBER 31st	Per Installer	$100.00	$125.00		
PUBLIC /SEMI-PUBLIC POOL PERMIT	Last Day of FEB.		$125.00	$250.00		
PUBLIC/SEMI-PUBLIC POOL PLAN REVIEW				$250.00		
BODY ART ESTABLISHMENT PERMIT	MARCH 30th		$200.00	$200.00		
BODY ART PRACTITIONER	MARCH 30th			$100.00		
TANNING ESTABLISHMENT PERMIT	MARCH 30th	1-9 BEDS	$75.00	$100.00		
	MARCH 30th	10-15 BEDS	$150.00	$150.00		
	MARCH 30th	16 + BEDS	$200.00	$200.00		
BURIAL PERMITS			N/C	N/C		
FUNERAL DIRECTOR	APRIL 30th		$50.00	$100.00		

BOARD OF HEALTH ISSUED PERMITS/FEE'S	PERMITS EXPIRE	FEE CRITERIA	CURRENT FEE	PROPOSED FEE	CONTRACTOR	TOWN
SEARCH FEE associated with Copies		10 or more pages	$10.00			
LATE FEE FOR PERMITS		See Applications	$25.00	$100.00		
TITLE 5						
PERCULATION TEST (RESIDENTIAL)	1 Year after issue		$250.00	$325.00	$275.00	$50.00
PERCULATION TEST (COMMERCIAL)	1 Year after issue		$350.00	$425.00	$375.00	$50.00
TITLE 5 PLAN REVIEW	RESIDENTIAL		$175.00	$225.00	$175.00	$50.00
TITLE 5 PLAN REVIEW	COMMERCIAL		$275.00	$350.00	$300.00	$50.00
TITLE 5 PLAN REVIEW 1st REVISION	Residential/ Commercial		N/C	N/C		
TITLE 5 PLAN REVIEW 2nd REVISION	Residential/ Commercial		$100.00	$150.00	$100.00	$50.00
DISPOSAL OF WORKS CONSTRUCT PERMIT (SEPTIC INSPECTIONS)	RESIDENTIAL		$275.00	$325.00	$275.00	$50.00
DISPOSAL OF WORKS CONSTRUCT PERMIT (SEPTIC INSPECTIONS)	COMMERCIAL		$400.00	$450.00	$400.00	$50.00
COMPONENT ONLY CONSTRUCT PERMIT (D BOX/TANK ONLY)			$75.00	$125.00	$75.00	$50.00

BOARD OF HEALTH ISSUED PERMITS/FEE'S	PERMITS EXPIRE	FEE CRITERIA	CURRENT FEE	PROPOSED FEE	CONTRACTOR	TOWN
WELL PERMIT APPLICATION	RESIDENTIAL		$150.00	$150.00	$125.00	$25.00
WELL PERMIT APPLICATION	COMMERCIAL		$250.00	$250.00	$225.00	$25.00

		BUILDING		
SERVICE	INSPECTIONS	CURRENT 2009 MILLBURY	PROPOSED	AVERAGE
1&2 FAMILY RES NEW	± 9	8/1000 50	8/1000 100	7.5/1000 75
BASEMENTS RENO	±4	8/1000 50	8/1000 100	7.5/1000 75
ADDITIONS	±6	8/1000 50	8/1000 100	7.5/1000 75
ROOFTOP SOLAR	2	8/1000 50	8/1000 100	7.6/1000 70
ROOF/SIDING/ WINDOWS	1	8/1000 50	8/1000 100	9/1000 62
DECKS	2	8/1000 50	8/1000 100	8/1000 66
SHED (>120 s.f.)	2	8/1000 50	8/1000 100	7/1000 60
SHED (<120 s.f.)	1	40	50	55
IG POOL	3	75	8/1000 150	MIN 71
AG POOL	1	50	50	56
POOL FENCE	1		50	50
GROUND MOUNT SOLAR	3	8/1000 50	10/1000 250	8/1000 MIN 100
RES GARAGES	5	8/1000 50	8/1000 100	10/1000 82
TEMP. SIGNS	1	40	50	50
PERM. SIGNS	1	75	75	63
CELL TOWER, ETC	2	8/1000 50	10/1000 250	8/1000 MIN 340
COMMERCIAL/ ALL TYPES		10/1000 250	10/1000 250	8.25/1000 MIN 100
SOLID FUEL	1	40	50	46
SHEET METAL	2	8/1000 50	8/1000 100	69
DEMO	2	8/1000 50	100	73
TENTS	1	50	50	44
REINSPECTION		40	50	50
TEMP. TRAILER	1	100	100	75
NO PERMIT		DBL FEE	DBL	DBL OR 165
LOST CARD		0	50	37
ANNUAL INSPEC.	1	40	100	66
OCCUPANCY INSPEC.	1		100	
EXTRA NEEDED INSPECTS			50	

PLUMBING				
SERVICE	INSPECTIONS	CURRENT 2009 MILLBURY	PROPOSED	AVERAGE
1&2 FAMILY	2	60+5/FIXTURE	75+10/FIXTURE	88+10/FIXTURE or 126
ADDITIONS	2	60+5/FIXTURE	75+10/FIXTURE	83+10/FIXTURE or 126
RENOVATIONS	2	60+5/FIXTURE	75+10/FIXTURE	83+10/FIXTURE or 110
REPAIRS	1	40	50	51
BACKFLOW	1	40	50	51
MISC	1	40	50	51
SEWER TIE IN	1	40	50	50
REINSPECT/ADDL		40	50	50
COMM/INDUST	2	100+5/FIXTURE	100+10/FIXTURE	125+9/FIXTURE
NO PERMIT		DOUBLE	DOUBLE	DOUBLE
NEW COMMERCIAL	2		100+10/FIXTURE	127+10/FIXTURE
COMMERCIAL RENO	2		100+10/FIXTURE	115+10/FIXTURE
HEATER/BOILER	1		75	82
TEST	1	40	75	72
GREASE TRAP	1		100	96
		GAS		
1&2 FAMILY	2	40+10/FIXTURE	75+10/FIXTURE	75+10/FIXTURE or 118
ADDITIONS	2	40+10/FIXTURE	75+10/FIXTURE	87+10.5/FIXTURE or 118
RENOVATIONS	2	40	75+10/FIXTURE	62+9.25/FIXTURE or 105
APPLIANCE	1	40	50	56
GAS LOG	1	40	50	56
POOL HEATER	1	40	50	58
GENERATOR	1	40	50	58
MISC	1	40	50	58
REINSPECTION	1	40	50	54
COMM/INDUST	2	75 UP TO 8 FIXTURES PLUS 8/FIXTURE	100+10/FIXTURE	108+11/FIXTURE
NO PERMIT		DOUBLE	DOUBLE	DOUBLE
COMM. NEW SERVICE	1	75 UP TO 8 FIXTURES PLUS 8/FIXTURE	100+10/FIXTURE	93+11/FIXTURE or 133
COMM. HEATER/BOILER	1		100+10/FIXTURE	93+13/FIXTURE or 108
COMM. ADDL INSPECTION	1		50	68
COMM. HOOD INSPECT.	1		50	92

		ELECTRIC		
SERVICE	INSPECTIONS	CURRENT 2009 MILLBURY	PROPOSED	AVERAGE
1&2 FAMILY	3	125	150	150
ADD/ALT	2	80	100	80
GARAGE	2	75	100	75
OVERHEAD NEW SERVICE	1	50	50	65
RES SOLAR	2	50	100	68
ADD METER PER SOCKET	1	50	100	55
TEMP. SERVICE	1	50	100	80
MISC/APPLIANCE	1	40	50	47
IG POOL	2	75	100	82
AG POOL	1	50	50	68
ALARMS	1	50	50	56
SIGNS	1	40	50	57
REINSPECTION	1	40	50	47
NEW COMM/INDUST		100+5/1000	200+5/1000	216
NO PERMIT		DOUBLE	DOUBLE	88+DOUBLE
EXTRA INSPEC			50	46
SHOW	1		100	93
EMERG/AFT HOURS	1		200	220
UNDERGROUND SERVICE	2		100	
EXIST COMM/INDUST			100+5/1000	

TOWN OF MILLBURY

MUNICIPAL OFFICE BUILDING • 127 ELM STREET • MILLBURY, MA 01527-2632 • TEL. 508/865-0438 • FAX. 508/865-0857

Department of
Building & Inspections
Robert Frederico
Inspector of Buildings

TO: David Marciello
FROM: Robert Frederico, Building Inspector, Zoning Enforcement Officer
RE: Permit fee structure
DATE: April 14, 2017

Per your request, I have reviewed the permit pricing structure used for building, wiring, gas, and plumbing projects in Millbury. The current pricing structure was last approved by the Millbury Board of Selectmen in 2009. Since then, several changes have occurred necessitating the need for pricing review including use of technology, changes in methods and materials, and numerous code changes.

I have therefore developed a proposed set of new pricing structures. In an effort to keep prices reasonable, I have done the following:
*Surveyed the following municipalities for their schedule of services and their price structure: Charlton, Auburn, Northbridge, Oxford, Sutton, Worcester, Grafton, Sturbridge, Shrewsbury, Spencer, Leicester, Webster, Westborough (it is important to note that the effective date of the municipalities pricing structures span from 2005 to the present)
*Taken the average price of each service provided and listed them in the 'average' column
*Looked at each service offered for relevance and code compliance, and made additions or deletions to suit Millbury's needs
*Assessed each service to determine how many inspections are required on a per project basis

*The proposed new pricing is based primarily on the number of inspections required, the regional pricing average for these services, and the cost to the Town to provide these services..

The self-imposed goal of the department is to be financially self-supporting.
While the services provided by the building department are a specialized service and should be paid for entirely by the individual requesting the service, there are other departmental services that have no fee. Any overages of income should be used to offset the costs of emergency operations and non-billable products from the department.

Robert J. Frederico
Building Inspector
Zoning Enforcement Officer

CC: Board of Selectmen

Town of Millbury
Department of Public Works

Agenda Items

- Credit for irrigation meters
- Stormwater compliance
- Project Updates

Irrigation Meters

- Current policy: abatement/credit for documented water use not going to sewer
- Eligibility: pools, automated irrigation system, etc
- Issues: pool credit OK. Irrigation meters are the big issue. extensive staff resources when needed for sewer questions. Also, when drought issued should we be allowing a credit for irrigation?
- Propose: eliminate irrigation credit if Aquarion issues a water ban at any time during billing period

Relevant Facts

- Most Massachusetts Cities/Towns do not allow credit based on meter readings. Most use 90% of water bill across the board
- In the last sewer billing cycle there were approximately 325 meter deduction requests for irrigation.
- All require DPW Head Clerk to check the calculation
- several required additional input (call because reading is obviously incorrect)
- 3 required staff to visit the home to take picture of meter
- Credits range from 22 thousand gallons to 391 thousand gallons

Stormwater Permit

- Updated MS04 permit effective 7/1/17
- Permit is issued by EPA
- "Repaving" considered redevelopment and any drainage infrastructure requires meeting stormwater rules to the Maximum Extent Practicable
- Stormwater rules in summary
  1. Long-term Operation and Maintenance plan and a Nutrient Management Plan
  2. discharge requirements based on impervious area and the 2-yr and 10-yr storms,
  3. recharge volume based soil type,
  4. treatments: TSS treatment>80%, nutrient controls if TMDL
  5. Special rules if within Zone II, Interim Wellhead Protection Area, high potential pollutant load zone and other critical areas

Stormwater Permit

"Maximum Extent Practicable" means

1. All efforts have been made
2. A complete evaluation of possible stormwater measures such as Low Impact Development to minimize land disturbance and impervious surfaces
3. Implement the Highest Practicable level of stormwater management

Best Management Practices

- MA Stormwater Handbook is specific about BMPs and their effectiveness
- On-site recharge
- Detention basins
- Veg swales
- Rain gardens tackle N, Ph and TSS at 90%

What does this mean to Millbury?
$$ Money$$

- Weston and Sampson estimate $100,000-$150,000 per year in expenses to comply with our MS04 permit
- Plan for future costs because Millbury has three water bodies with TMDLs
- Plan for ongoing IDDE plan (budgeted last year $20,000, FY2018 $20,000)
- Plan for vendor to clean catch basins (required annual cleaning, we do it every two years). Prior vendor contract $7.50/basin or $50,000
- Plan for new sweeper (O&M plan requires twice per year sweeping). Current sweeper is old.
- Prevent stormwater from reaching pollutants especially in ACEC or wetland or Wellhead Protection Area - - Salt shed roof (needs replacing, better if not metal since near wetland)
- Gas dispensing facility needs cover (potentially high pollutant load)

What does this mean to Millbury? Policy

- Potential Stormwater Utility to assess a fee to cover new compliance costs
- Modify subdivision rules for smaller cul-de-sacs and/or to require islands with stormwater controls
- Plan for consistent and uniform roadways with minimal impervious area. Add vegetative strips on wide roads (Howe Ave) and narrow existing roads to comply with subdivision standards (see list).
- Retrofit existing cul-de-sacs with rain gardens in an island. Maintain cul-de-sac with a 22 foot wide road, construct a 56 foot wide island (examples: Jessica J. Drive and Town of Franklin)
- Northern Long-eared bat habitat. Think of a way to provide, require or encourage bat houses

Status Report

- Started as Interim Director 4/10/17
- Seasonal and grant program help started 5/15/17
- Cemetary

  Attended a cemetary commission meeting. Burials regularly continue, thanks to Andrea and Dee. veteran's granite plaques installed. Return seasonal staff has mowed, weed wacked and removed trash. Perpetual flower list for memorial day to Carl. Need to address repining.

- Parks

  visited every park. Prepared asset report and proposed upgrades. Prepared request for Carpenter's school for work. Immediate work: purchase more "moveable" picnic tables, at least one ADA compliant at each park. Pave East Millbury parking area. Design/Pave Woolie World second lot for Little League final next year and fix merry go round drainage. Install a shade structure at E. Millbury, Dorothy Pond Tot Lot and Greenwood St Parks. DPW to install a walking path at Greenwood St Park. In future, suggest a request small but continued Article at Town Meeting for improvements

- Highway Roads

  proposed rehab list with Town Manager and RAC. Attended one RAC meeting, another RAC meeting this week. Reviewed already completed plans, designs and surveys of prior Director. Proposed crack seal program, approved by MassDOT and will be bid soon. Outreach to Worcester re: Westborough Street. Future paving must consider stormwater and drainage.

- Sewer

  Attended 2 sewer commission meetings. Addressed several incorrect meter readings for abatements. Attended two Weston & Sampson meetings to discuss status and deliverables for three projects: I/I, sewer model and MS04 Year 1.

- Transfer station

  two week vehicle survey completed. hauling truck needs replacement or major repair

- Energy Advisory Committee

  Attended meeting in April. Provided update on streetlights conversion and electric vehicle graphics

- Other projects:

Status Report

- Other projects:
  - ✓ Riverlin Street rebar to be removed (old guard rails)
  - ✓ Library meeting (corbel, sidewalks and stairs)
  - ✓ ASA Waters meeting (trench to garage)
  - ✓ Housing Authority (replace bushes, outreach to Carol)
  - ✓ Windle Field (adjust granite post blocking sidewalk, outreach to Rick)
  - ✓ Bikeway (broken guard rail & landscaping. Outreach to MassDOT, James Robida)
  - ✓ Catch Basins: annual cleaning program started week of May 8th)
  - ✓ Town-wide Veteran's memorials (Mowed in early May)
  - ✓ Ramshorn Pond Dam (about 2 months from completion)
  - ✓ Building Pathways program (four lads)
  - ✓ Jaques Park (pave driveway, pave parking, solar lights)
  - ✓ South Main Street Bridge (ball in our court)
  - ✓ UST compliance (two single wall tanks need pulling by August)

Status Report

Projects with Status Outstanding:

- Brierly Pond Dam

Millbury Main St Instersection - CONCEPTUAL Engineers Opinion of Construction Cost

Millbury, Massachusetts

ITEM	QTY	UNIT	UNIT COST	EXT COST
ROADWAY				
Misc. Site Prep	1	LS	$5,000.00	$5,000
Milling of Existing Bituminous Concrete Road	2450	SY	$5.00	$12,250
Bituminous Concrete Road @ 1.5"d	205	TON	$200.00	$41,000
Line Striping	2210	LF	$2.00	$4,420
Textured Crosswalks	1300	SF	$15.00	$19,500
New Pedestrian Signals	1	LS	$50,000.00	$50,000
			Sub-Total:	**$132,170**
			Mobilization, Overhead & Profit (10%):	$13,217
			Contingency (15%):	$19,826
			TOTAL:	**$165,213**
LOWER COMMON				
Unclassified Excavation	500	CY	$27.50	$13,750
Misc. Site Prep	1	LS	$10,000.00	$10,000
Rough Grading	960	SY	$1.00	$960
Fine Grading and Compacting	825	SY	$2.00	$1,650
Bituminous Concrete Road @ 4"d	75	TON	$200.00	$15,000
Cement Concrete Walk	140	SY	$60.00	$8,400
Gravel Base for Cem Conc Walk @ 6" d	24	CY	$35.00	$840
Colored Concrete Pavement	2660	SF	$15.00	$39,900
Gravel Base for Colored Concrete @ 6"d	50	CY	$35.00	$1,750
Concrete Pavers	590	SF	$15.00	$8,850
Concrete Pad for Concrete Pavers @ 4"d	65	SY	$85.00	$5,525
Gravel Base for Concrete Pavers @ 8"d	15	CY	$35.00	$525
Granite Curb New	100	LF	$35.00	$3,500
Granite Curb Reset	190	LF	$20.00	$3,800
Line Striping	190	LF	$2.00	$380
Segmental Block Retaining Wall	175	FF	$55.00	$9,625
Benches	3	EA	$3,000.00	$9,000
Picnic Tables	4	EA	$2,000.00	$8,000
Kiosk	1	EA	$2,000.00	$2,000
Trees (4"-4.5" cal.)	7	EA	$1,000.00	$7,000
Planting Beds /BMPs	230	SF	$28.00	$6,440
Loam and Seed	110	SY	$10.00	$1,100
Decorative Street Lights- Vehicular	3	EA	$10,000.00	$30,000
Drainage- green infrastructures	1	LS	$100,000.00	$100,000
Misc. Amenities	1	LS	$10,000.00	$10,000
			Sub-Total:	**$297,995**
			Mobilization, Overhead & Profit (10%):	$29,800
			Contingency (15%):	$44,699
			TOTAL:	**$372,494**

LOWER BUS STOP CORNER

Unclassified Excavation	300	CY	$27.50	$8,250
Misc. Site Prep	1	LS	$5,000.00	$5,000
Rough Grading	250	SY	$1.00	$250
Fine Grading and Compacting	195	SY	$2.00	$390
Cement Concrete Walk	150	SY	$60.00	$9,000
Gravel Base for Cem Conc Walk @ 6"d	25	CY	$35.00	$875
Concrete Pavers	420	SF	$15.00	$6,300
Concrete Pad for Concrete Pavers @ 4"d	45	SY	$85.00	$3,825
Gravel Base for Concrete Pavers @ 8"d	10	CY	$35.00	$350
Granite Curb New	25	LF	$35.00	$875
Granite Curb Reset	275	LF	$20.00	$5,500
Trees (4"-4.5" cal.)	3	EA	$1,000.00	$3,000
Planting Beds /BMPs	550	SF	$28.00	$15,400
Decorative Street Lights- Vehicular	3	EA	$10,000.00	$30,000
Relocate Bus Shelter	1	LS	$2,000.00	$2,000
Drainage- green infrastructures	1	LS	$20,000.00	$20,000
Misc. Amenities	1	LS	$5,000.00	$5,000
			Sub-Total:	**$116,015**
			Mobilization, Overhead & Profit (10%):	$11,602
			Contingency (15%):	$17,402
			TOTAL:	**$145,019**

NORTH COMMON CORNER

Unclassified Excavation	200	CY	$27.50	$5,500
Misc. Site Prep	1	LS	$5,000.00	$5,000
Rough Grading	80	SY	$1.00	$80
Fine Grading and Compacting	80	SY	$2.00	$160
Cement Concrete Walk	75	SY	$60.00	$4,500
Gravel Base for Cem Conc Walk @ 6"d	12	CY	$35.00	$420
Concrete Pavers	55	SF	$15.00	$825
Concrete Pad for Concrete Pavers @ 4"d	6	SY	$85.00	$510
Gravel Base for Concrete Pavers @ 8"d	2	CY	$35.00	$70
Granite Curb New	20	LF	$35.00	$700
Granite Curb Reset	40	LF	$20.00	$800
Trees (4"-4.5" cal.)	3	EA	$1,000.00	$3,000
Misc. Amenities	1	LS	$10,000.00	$10,000
			Sub-Total:	**$31,565**
			Mobilization, Overhead & Profit (10%):	$3,157
			Contingency (15%):	$4,735
			TOTAL:	**$39,456**

UPPER BUS STOP CORNER

Unclassified Excavation	200	CY	$27.50	$5,500
Misc. Site Prep	1	LS	$5,000.00	$5,000
Rough Grading	170	SY	$1.00	$170
Fine Grading and Compacting	170	SY	$2.00	$340

Colored Concrete Pavement	1345	SF	$15.00	$20,175
Gravel Base for Colored Concrete @ 6"d	25	CY	$35.00	$875
Concrete Pavers	190	SF	$15.00	$2,850
Concrete Pad for Concrete Pavers @ 4"d	20	SY	$85.00	$1,700
Gravel Base for Concrete Pavers @ 8"d	5	CY	$35.00	$175
Granite Curb New	20	LF	$35.00	$700
Granite Curb Reset	90	LF	$20.00	$1,800
Benches	2	EA	$2,000.00	$4,000
Trees (4"-4.5" cal.)	3	EA	$1,000.00	$3,000
Decorative Street Lights- Vehicular	1	EA	$10,000.00	$10,000
Relocate Bus Shelter	1	LS	$2,000.00	$2,000
Drainage- green infrastructures	1	LS	$20,000.00	$20,000
Misc. Amenities	1	LS	$5,000.00	$5,000
			Sub-Total:	**$83,285**
			Mobilization, Overhead & Profit (10%):	$8,329
			Contingency (15%):	$12,493
			TOTAL:	**$104,106**

Millbury Main St Intersection
Millbury, MA

CONCEPTUAL DESIGN
SUMMARY OF ENGINEER'S OPINION OF CONSTRUCTION COSTS

May-17
DRAFT

			COST
ROADWAY		$	132,170
LOWER COMMON		$	297,995
LOWER BUS STOP CORNER		$	116,015
NORTH COMMON CORNER		$	31,565
UPPER BUS STOP CORNER		$	83,285
	Items Sub-Total[1]:	**$**	**661,030**
SOFT COSTS[2]	12%	$	79,324
MANTENANCE AND PROTECTION OF TRAFFIC[2]	1%	$	6,610
MOBILIZATION & PROJECT CLOSEOUT[2]	5%	$	33,052
CONTINGENCY[2]	10%	$	66,103
	Construction Sub-Total =	**$**	**846,118**
INFLATION[3]	4% per Year	$	33,845
	CONSTRUCTION TOTAL	**$**	**879,963**

[1] Itemized quantities provided on separate sheet
[2] As % of total contract items
[3] As % of construction sub-total

Weston

$ 879,963

EXISTING CONDITIONS

TOWN OF Millbury MASSACHUSETTS

Mass Audubon

Weston & Sampson

PROPOSED PLAN

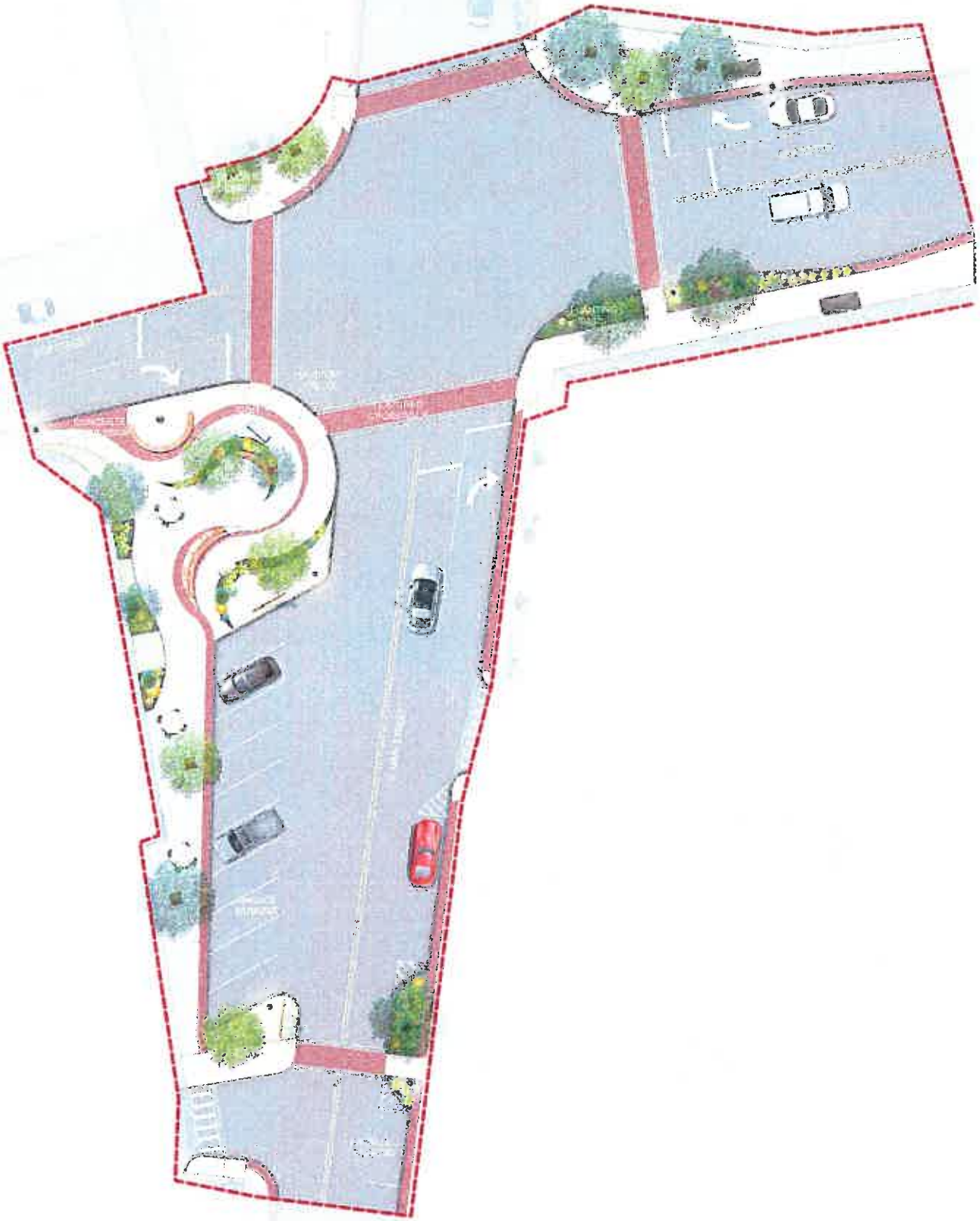
TOWN OF Millbury MASSACHUSETTS

Mass Audubon Weston & Sampson

TOWN OF Millbury MASSACHUSETTS

Mass Audubon Weston & Sampson

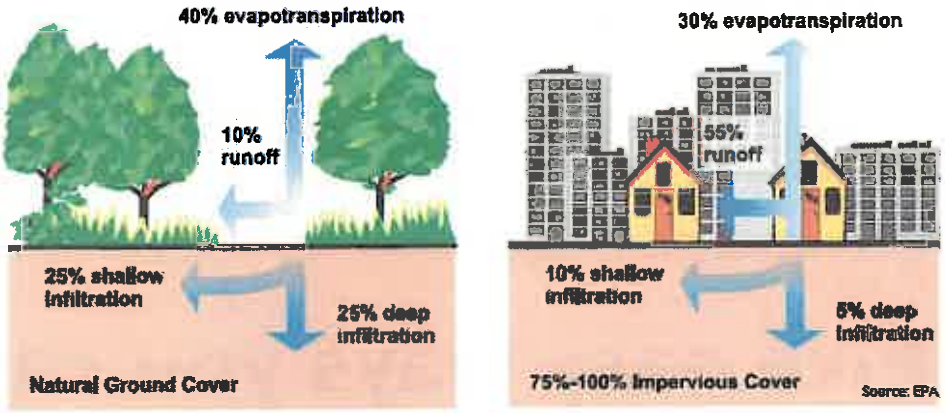
PHASE 1



When it rains...

water runs off *impervious* surfaces (areas where water can't soak into the ground) such as roads, rooftops, and parking lots and picks up pollutants on the way. That **polluted water goes into drains and pipes and into our local waterways**, including our own Broad Meadow Brook.

This hurts local wildlife habitat for our fish and birds as well as the community, who needs clean water for swimming and boating, fishing, and drinking water.



Green spaces such as forests, fields, and wetlands **naturally filter** that stormwater before it gets to our waterways—but only if we protect those spaces.

Incorporating green spaces like **rain gardens** into cities like Worcester and conserving open spaces where we can lets this "green infrastructure" do the work and help communities keep their waterways clean.

Mass Audubon
Protecting the Nature of Massachusetts

SHAPING the Future of YOUR COMMUNITY

LID in Action at Broad Meadow Brook

We're working to reduce our impervious surfaces and make sure the rain that falls at Broad Meadow Brooks gets into the ground on site and is filtered by our green spaces to help keep our local water stay clean!

No-Mow Open Space

Stormwater Capture

Rain Gardens

Permeable Pavers

Rain Barrels

Five easy ways you can help!

1. **Don't litter** trash, oil, or pet waste—it all goes into storm drains and our waterways!
2. **Use fewer chemicals** and fertilizers in your yard
3. **Keep water on site** with a tree, rain garden, or rain barrel to soak it up
4. **Talk with your neighbors** and friends about keeping local waters clean and healthy
5. **Support your local land trust** and conservation organizations so they can protect more land

Learn more at *massaudubon.org/lidcost* or contact Stefanie at *scovino@massaudubon.org*

This project was made possible with support from the Massachusetts Environmental Trust.

Visit your local Registry of Motor Vehicles or order a plate online at www.massrmv.com or log onto www.mass.gov/eea/met where you can learn more about the Trust, the programs it supports, and the specialty license plate offerings.

MASSACHUSETTS ENVIRONMENTAL TRUST

Greening Your Community

Cost-effective LID solutions

Fact Sheet #1:
Preserving Natural Assets—Nature Based Solutions

Competing Priorities & Cost-Effective Solutions

Communities are facing many pressures. More jobs and housing are needed, while the costs of providing essential services rise faster than revenues. Infrastructure maintenance needs for roads, bridges, and water systems are growing. An estimated $40 billion is needed over the next 20 years for water, sewer, and stormwater systems across Massachusetts.[1] There is pressure to increase the local tax base and opposition to "unfunded mandates" such as federal and state water resource management regulations.

In the midst of these challenges, we also need to address persistent water pollution and increased flooding due to more intense storm patterns. How do we do it all?

Luckily, local communities do have primary control over one important factor: land use. Well-planned land use can create housing and reduce municipal costs, while also preserving community character and the capacity of the natural landscape to provide clean air, water, and a host of other "free" services.

We Need to Change Course

Every day in Massachusetts, 13 acres of land are developed.[2] Traditional development uses large lot subdivisions—converting forests and farmlands to roads, driveways, houses, and lawns. This creates more impervious surfaces and generates more stormwater. Managing that stormwater with pipes and engineered treatment (grey infrastructure) can reduce pollution and minimize flooding, but they come at a high price in terms of monitoring and maintenance.

There is another way. Nature-based solutions that use plants and soil to absorb and filter water can be cost-effective and provide many benefits to your community. By developing smarter with GI and LID, conservation and development can occur together.

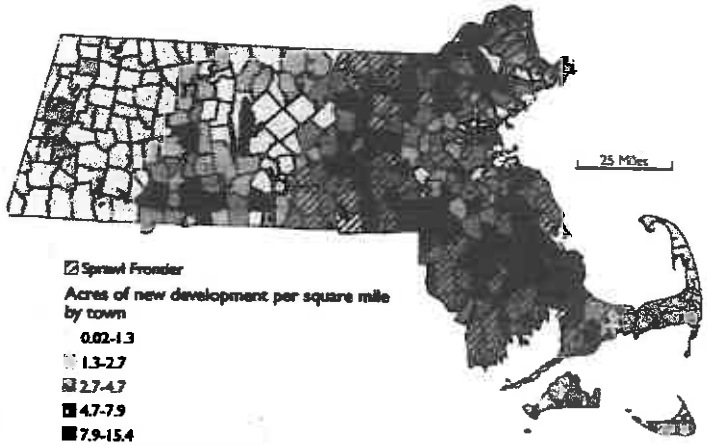
What are Green Infrastructure (GI) and Low Impact Development (LID)?

Green Infrastructure (GI) includes both natural features such as forests and wetlands as well as engineered landscapes that mimic these natural processes like a rain garden.

Low Impact Development (LID) works to preserve the natural landscape and minimize impervious surfaces to keep stormwater close to the source and use it as a resource rather than a waste product.

Together, LID and GI not only manage stormwater and improve groundwater supplies, but also offer many free ecosystem services including clean air and water, flood control, shade and energy savings, recreational opportunities, and enhanced property values and quality of life.

Preserving our existing GI is our first line of defense against current impacts such as increased stormwaters as well as achieving long-term cost savings.



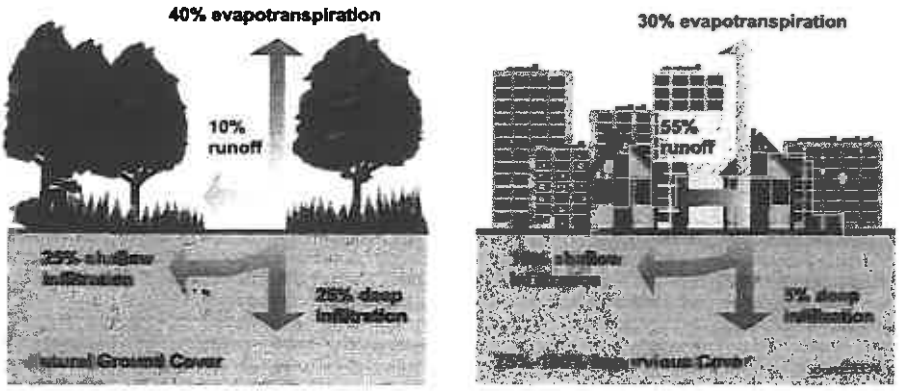
Mass Audubon, Losing Ground: Planning for Resilience

Mass Audubon
Protecting the Nature of Massachusetts

SHAPING the Future of YOUR COMMUNITY

Understanding the Land Use—Water Resources Connections

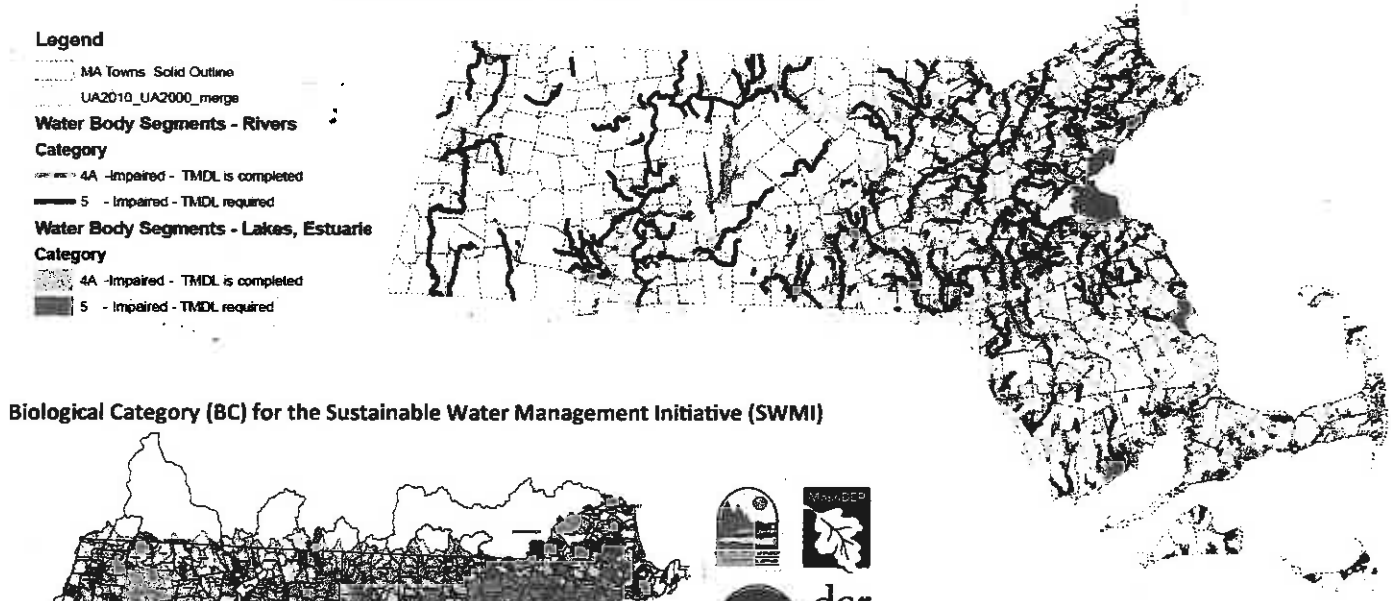
Our land use choices affect the health of our waterways. Massachusetts has abundant water resources, but many waterways are impaired due to pollution and/or reductions in natural flows. Maintaining or restoring the capacity of the land to absorb and filter precipitation would help the health of our rivers and streams.



Left: A Natural landscape has about 10% runoff and 50% infiltration.
Right: A highly developed landscape with high impervious cover has 55% runoff and only 15% infiltration.

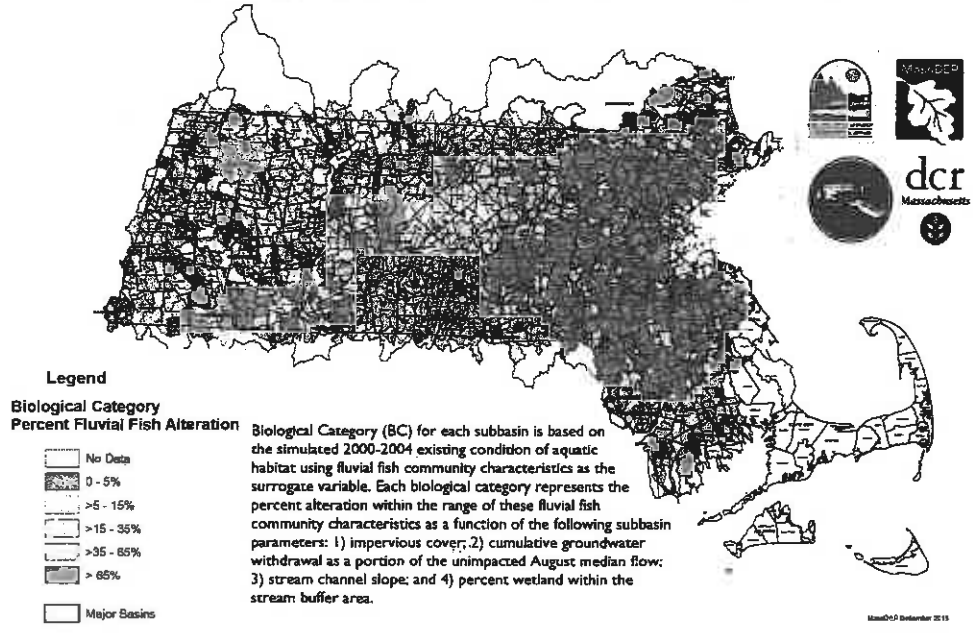
These maps illustrate water management issues across the state. Many communities are facing limits under the state Water Management Act on how much water they can withdraw. Requirements for managing stormwater under the federal Clean Water Act are also being imposed to help clean up stormwater pollution, which contributes to more than half of water quality impairments in the state.

Impaired Waters and MS4 area in Massachusetts



Above: Impaired waters in Massachusetts (those that do not meet state water quality standards) and the MS4 (Municipal Separate Storm Sewer System) permit area regulated under the federal Clean Water Act. About 55% of water quality impairment in the state is due to stormwater runoff.[3] Map source: EPA

Biological Category (BC) for the Sustainable Water Management Initiative (SWMI)



Left: Impervious surfaces and groundwater pumping reduce groundwater levels that provide flow to streams during dry weather. This impacts habitat for flow-dependent fish. Map source: DEP

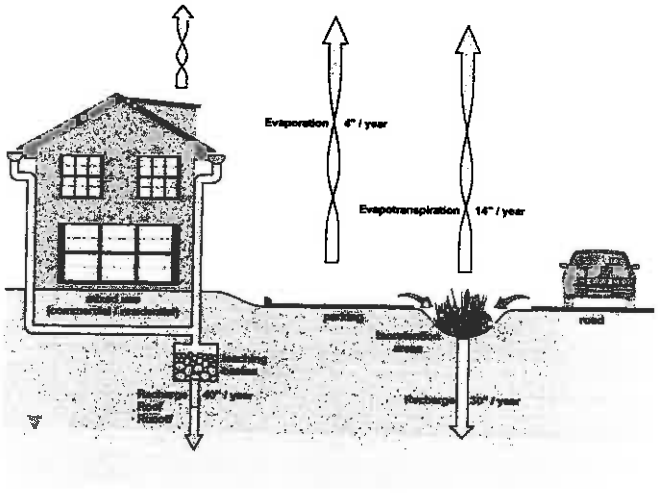
Development + Conservation = Opportunities Everywhere

Our traditional approach to development is not sustainable, but affordable solutions are available. As we develop and redevelop, there are opportunities to reduce water management cost burdens on taxpayers while enhancing the environment and quality of life.

First, the value of the natural landscape – particularly forests and vegetated buffers to wetlands and waterways – needs to be recognized to maintain the free services it provides.

Secondly, where land is altered by development or redevelopment, LID techniques can be used to retain and filter water on the site in order to preserve or restore water quality and infiltration.

LID techniques can maintain pre-development water conditions and groundwater recharge. In some instances development or redevelopment can even increase or restore the capacity of the land to absorb water.



Positive Impact Development, Horsley Witten Group

The Value of Green Infrastructure: Free Ecosystem Services

Reduced Flooding: Green infrastructure acts as a sponge for excess water, providing flood protection and avoiding costly repairs to flood-damaged roadways and culverts. Systems like rain gardens can reduce runoff by up to 90%.[4] A single, mature tree can intercept nearly 2,000 gallons of stormwater per year.[5]

Improved Water Quality: Polluted runoff contributes to more than half of water quality impairments in the state.[3] Natural streamside vegetation filters pollutants and reduces erosion. Vegetated buffers also remove an average of 74% of nitrogen pollution in runoff, depending on buffer width, soil type, and vegetation.[6]

Water Quantity. Vegetation and soils capture and infiltrate water, recharging groundwater that feeds streams. GI systems like rain barrels and cisterns can save the average homeowner 1,300 gallons of water during peak summer months.[7] With good design, a development can rely entirely on natural precipitation for all landscape irrigation.

Recreational Opportunities: Clean, flowing waters support recreation, including boating, fishing, and swimming while open space provides areas for hiking and biking.

Improved Quality of Life: Open space and street trees create a more enjoyable walking environment, benefiting community connection, health, and economic benefit in downtowns and commercial areas.

Improved Public Health: Trees and vegetation reduce the urban heat island effect, reducing smog that contributes to asthma and other respiratory diseases. Managing stormwater through soils and vegetation reduces the need for retention ponds and catch basins, avoiding creation of mosquito habitat. More than $11 million is spent annually on mosquito control in Massachusetts.[8]

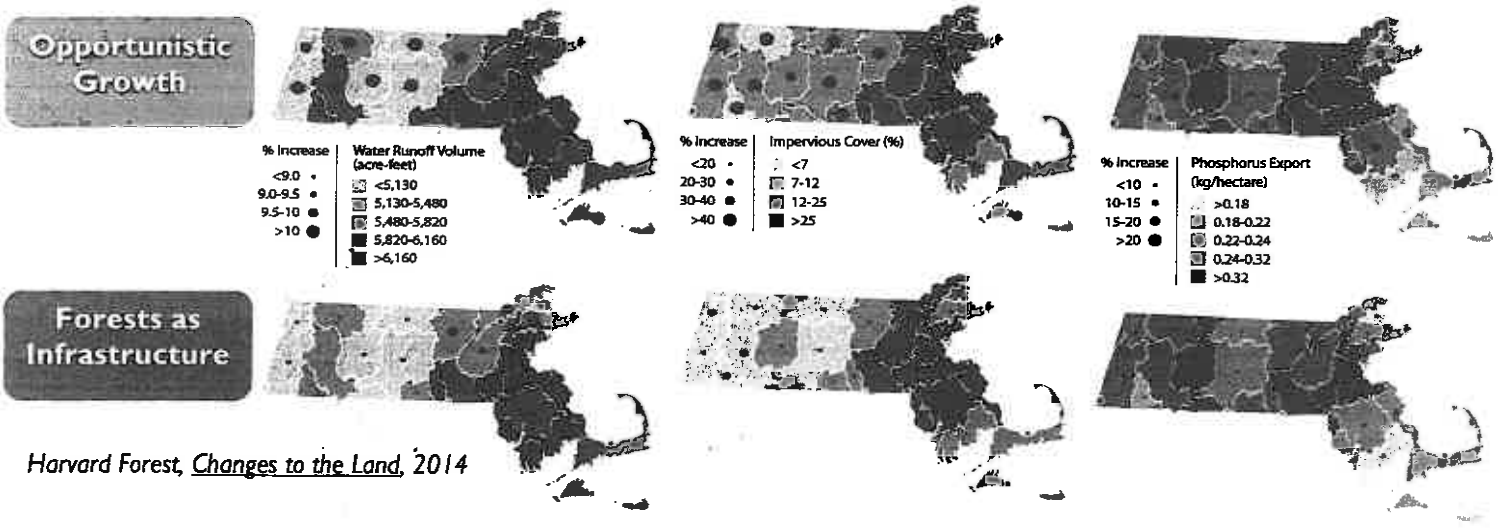
Creation of Habitat: Open space and clean waters create healthy habitat for fish, birds, and other wildlife.

Climate Change Mitigation: Protecting forests allows them to continue absorbing carbon dioxide and acting as a carbon sink, while also reducing flooding from increased storm events. Massachusetts forests store an average of 85 tons of C per acre[9]—14% of the commonwealth's annual gross carbon emissions each year.[10]

Economic Value: Every dollar invested in land conservation provides a $4 payback in benefits.[11]

Developing Smarter

Harvard Forest's study *Changes to the Land* analyzed several scenarios for land use through 2060, including two with nearly the same amount of development, but with different effects on land and water resources. The first scenario retained forests for their natural green infrastructure values and clustered development. The second allowed unregulated, sprawling growth. Retaining forests resulted in reduced runoff, less impervious cover, and less phosphorus pollution. Runoff would increase by less than 10% in every watershed except one. Tree species with high commercial value would increase by 20% and timber harvests would double, while the carbon storage capacity would increase by 35% compared to 2010. Forests would remain intact, with 25% less fragmentation and an additional 750,000 acres conserved— again, all with nearly the same amount of development.[12]



Harvard Forest, Changes to the Land, 2014

Protecting Land, Protecting Water, and Saving Money

Carefully targeting land for water quality protection can offer significant cost savings. Two and a half million people receive their drinking water from the Quabbin and Wachusett Reservoirs. Over the last 20 years, the Massachusetts Water Resources Authority (MWRA) spent $130 million to protect approximately 22,000 acres of watershed lands that naturally filter the water flowing into the reservoir. This saved MWRA ratepayers from building a $250 million filtration plant as well as $4 million each year in operating costs.[13]

By valuing our natural green infrastructure and restoring where it's been lost, communities can enhance their safety, resiliency, community character, and more while simultaneously growing in a sustainable manner. We can set Massachusetts on a new path to reduce our impervious surfaces, increase water infiltration, and reduce runoff, while minimizing nutrient loading into our waterways and protecting water quality. Allowing green infrastructure to do the work of soaking up and filtering water reduces the burden on our costly engineered systems while also improving quality of life, meeting regulations, and saving money.

Learn More

See our website for more information, including guidance, tools, and document references:
www.massaudubon.org/shapingthefuture or www.masaudubon.org/LIDCost

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Greening Your Community

Cost-effective LID solutions

#2

Fact Sheet #2:
Conservation Design

Balancing Growth & Character

As our communities grow, it's important to consider the cultural and aesthetic value of the landscape. Cutting down forests and substituting expansive lawns without any mature trees sacrifices the classic charm of New England. People enjoy foliage in the fall, shade in the summer, and privacy, recreation, and walkable neighborhoods all year long.

Conservation design (CD) can offer all of these benefits along with the valuable free ecosystems services described in Fact Sheet #1 while meeting communities' development needs. Building homes closer together and preserving adjacent land for shared use creates attractive, cohesive communities where neighbors know one another and have recreational and aesthetic benefits right outside their doorstep. CD also improves property values while decreasing building costs and protecting water resources.

What is Conservation Design?

Conservation design looks at the existing characteristics in a landscape and works to protect the most important aspects during development—whether it's a historic rock wall, a scenic overlook, or a critical habitat area. Typically, at least 50% of a subdivision is permanently protected.[1]

This type of development allows communities to grow while also preserving local natural resources and sense of character – at no additional cost to the community.

This fact sheet reviews how to create a conservation design and examples of successes and challenges communities have faced.

What are Green Infrastructure (GI) and Low Impact Development (LID)?

Green Infrastructure (GI) includes both natural features such as forests and wetlands as well as engineered landscapes that mimic these natural processes like a rain garden.

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Together, LID and GI not only manage stormwater and improve groundwater supplies, but also offer many free ecosystem services including cleaner air and water, flood control, shade and energy savings, recreational opportunities, and enhanced property values and quality of life.

Preserving our existing GI is our first line of defense against climate impacts such as increased storm intensities as well as achieving long-term cost savings.

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From Theory to Practice: Conservation Design Works

Cottages on Greene – East Greenwich, RI[3]

Walkable, affordable neighborhoods were sparse in East Greenwich – the community had one of the highest housing values in the state and little developable land was left. However, a group of developers took a creative approach and transformed a derelict .85 acre parcel into 15 mixed affordable and market rate homes less than half a mile from the waterfront.

These 2-bedroom, 1,000 ft^2 "cottages" offer minimal homeowner maintenance. They are organized around a series of courts that incorporate bioswales, rain gardens, and pervious pavement in the parking lot—features that together manage stormwater on site. By incorporating small bridges across retention ponds, developers brought attention to these LID features. By reducing traditional piping and catch basins, developers also saved nearly 17% on their site design (see chart to the right for details).

Bioretention	2,215	sf	$20.00	$44,300
Bioswale	430	lf	$15.00	$6,450
Perforated CPP Underdrain	350	lf	$15.00	$5,250
Pavement Section (typ.)	540	sy	$35.00	$18,900
Permeable Bituminous Section	450	sy	$43.75	$19,688
Drywell	3	each	$5,000.00	$15,000
				$109,588
Conventional Alternative	**Quantity**	**Unit**	**Unit Cost**	**Total Cost**
Catch Basin	5	each	$3,000.00	$15,000
12" CPP	200	lf	$30.00	$6,000
Drain Manhole	4	each	$4,000.00	$16,000
Stormceptor Unit	1	each	$20,000.00	$20,000
Underground Recharge System	1	each	$40,000.00	$40,000
Pavement Section	990	sy	$35.00	$34,650
				$131,650
			Green alternative savings	$22,063
Source: Horsley Witten Group, Inc.				16.8%

Pinehills – Plymouth, MA[4]

The Pinehills is a 3,174 acre New England village style development in Plymouth, MA that preserved over 2,000 acres. The remaining third of the property is peppered with a variety of homes including townhomes, condos, and single family – all of which are densely developed but in a quaint style that retains New England's classic character by preserving the natural landscape and mature trees surrounding the homes.

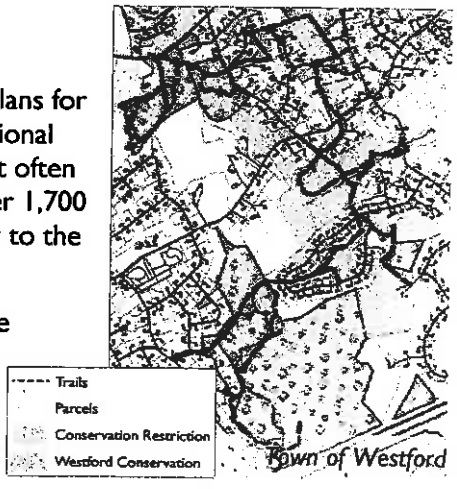
Developers also preserved Old Sandwich Road, the oldest unpaved public way in continuous use in the country, and instead created new, narrow roadways that follow the contour of the existing land. They also incorporated numerous LID and green infrastructure elements into the built areas, including bioswales and rain gardens to handle on-site stormwater management. Additionally, The Pinehills incorporated 10 miles of walking trails that residents use to reach the mixed-use town center.

By working with the land, the developers not only saved money on clearing, grading, and piping, but also created over $1 billion in new assessed property value for the town of Plymouth since 2001 and residents enjoy increased aesthetics, community health, and historic charm.

Westford, MA[2]

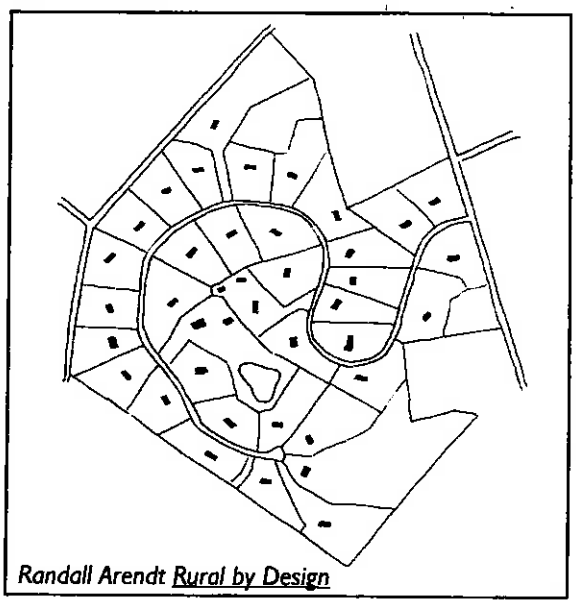
In 1978, the Town of Westford adopted a bylaw requiring developers to submit two plans for any proposed subdivision – one using conservation design and the other using conventional design. The Planning Board is then able to choose their preferred design, which is most often the conservation design. This early innovation has led to 48 developments creating over 1,700 acres of permanently protected land, through either conservation restrictions, transfer to the town, or application of a special overlay zoning district.

Just by adopting this bylaw, Westford has successfully protected both their local wildlife habitat and water resources as well as creating approximately 13 miles of hiking trails for public recreation—all without the town having to purchase the land themselves.



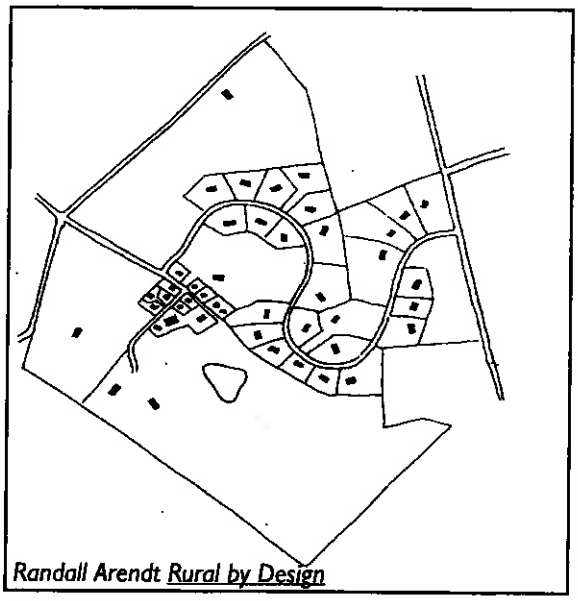
Conservation design follows a 4-part process:[1]

1. Calculate the traditional amount of allowed lots (removing unsuitable building areas, including wetlands).
2. Identify significant natural, cultural, or historic features.
3. Concentrate development away from these features through flexible requirements to achieve a similar amount of lots.
4. Preserve permanently at least half of the land, whether for natural, agricultural, or forest use.



Randall Arendt Rural by Design

Conventional "By-Right" Design
38 units on 3+ acre lots
No open space and no preservation of rural character



Randall Arendt Rural by Design

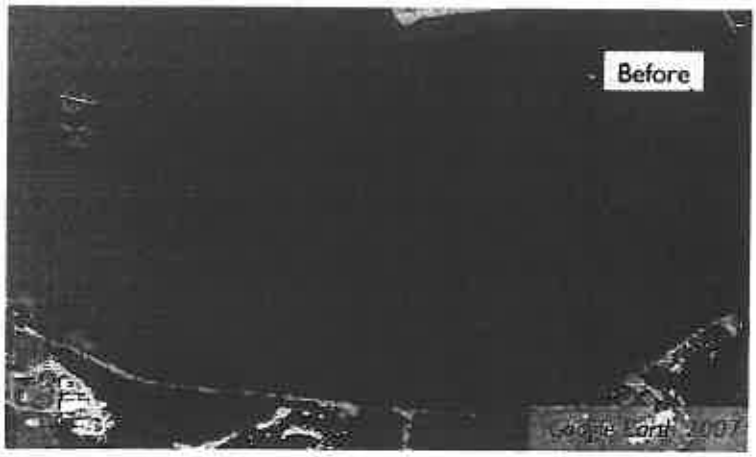
Conservation Design
46 units, varied sizes:
26 one-acre lots, 16-unit village, 4 units on farms
68% open space and rural character preserved

Avoid Fragmentation and Enhance Value

Many communities have already discovered the negative effects of unplanned development and losing many of the benefits from intact green infrastructure—from the classic New England village feel to reduced habitat and increased stormwater management burdens. Between 2005 and 2013, Ayer, MA ranked #1 in the state for total development per square mile at 15 acres/mi^2 and 9 acres/mi^2 of natural land converted to development.[2]

In comparison are three developments in Massachusetts that have successfully implemented conservation design and LID.

Below: An aerial view of Pingry Hill in Ayer before development (left) and after (right). This large lot design fragmented the landscape. Conservation design clusters homes closer together and protects a larger, more contiguous portion of the existing landscape with less roadways and other impervious surfaces.



Benefits

By preserving much of the natural landscape, the remaining open space continues to provide a wide host of free ecosystems services, including reduced flooding, improved public health, improved air and water quality, and more (see Fact Sheet #1).

Reducing sprawling impervious surfaces also reduces the amount of stormwater created and helps municipalities meet water management regulations. A study of a conservation subdivision in Ipswich, MA found that the preservation of open space was the driving factor in reducing peak and total runoff - even more so than installed LID features such as rain gardens and grass pavers.[5]

$2,500/ acre — Savings in clearing and grading costs for conservation design. Not developing the entire parcel means not paying to clear and grade the land.[6] Save land, save money.

47% — Savings on energy bills for residents in CDs. Trees cool homes with shade in the summer and warm homes by blocking wind in the winter.[7]

1/4 acre lots — Increasing development to this density offers significant cost savings for municipalities, especially rural ones. Condensing homes means fewer roadways and reduced construction and maintenance costs.[8]

$250,000/ mile — Savings by narrowing a road from 28' to 20'.[9] When the entire road is shortened for condensed development instead of sprawling, that savings grows to the millions.

30% — Property value increase of CDs over traditional subdivisions due to walkability, beautiful views, accessibility to recreation, and neighborhood feel.[10-11] Added perk: they also sell about 50% faster.[10]

$4,500/ acre — Savings on maintenance each year using native grasses and natural landscaping instead of traditional turf. Installation savings are from $4000-8000/acre.[12] Added perks: increased curb appeal and improved stormwater retention.

Learn More

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Greening Your Community

Cost-effective LID solutions

#3

Fact Sheet #3:
Low Impact Development Best Management Practices

Engineered + Nature Based Systems = Successful Solutions

Preserving the existing capacity of the natural land is the absolute best bang for your buck in terms of reducing stormwater and improving community character. However, it's not always possible to preserve large areas of land, especially in urban settings. When communities need to grow, they can incorporate smart growth techniques and layouts like those discussed in Fact Sheet #2 that ensure engineered systems and nature based solutions work together.

Engineered systems include underground piping, outfalls, and catch basins to intercept and transport stormwater. Nature-based solutions include Low Impact Development (LID) best management practices such as rain gardens and vegetated filter strips. Together, these systems offer a comprehensive approach to managing stormwater in a way that's smart for your budget and your community character.

Minimizing Imperviousness with BMPs

Bioretention strips filter parking lot runoff

Best Management Practices (BMPs) can be installed in both new and redevelopment. Any time land will be disturbed, find ways to minimize impervious surfaces and keep stormwater at its source. Soil and vegetation break down pollutants and infiltrate water—whether by the side of a road or from rooftops. By slowing the rate of runoff, these BMPs also reduce flooding and associated financial and health-related costs.

Trees and other plants also offer additional benefits such as air quality protection, improved aesthetics, reduced energy use, and cost savings.

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5 Tips for A Successful LID Project

1. Preserve the natural vegetation as much as possible and use native species that will need less maintenance
2. Keep slopes gentle to avoid erosion
3. Make sure the subsurface is highly permeable—this may mean installing a constructed subsurface
4. Get the community involved!
5. Visible, simple, and easily understood projects are those that will be loved and successful!

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Low Impact Development Techniques

Green Roof

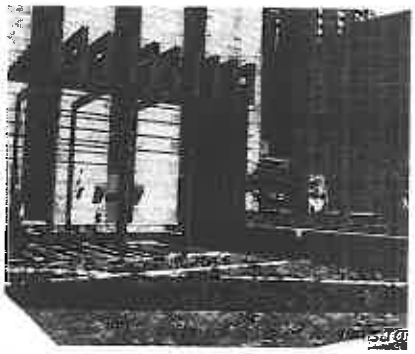
What is it? Planting vegetation on a roof so that rain can be taken up by plants instead of running off. There are many types of green roofs and they can serve as additional recreation space or simply a stormwater storage area.

Cost
- $10-30/ft^2 [1,2]
- Becomes up to 50% cheaper by the square foot as the square footage exceeds 10,000 feet [3]

Runoff Reduces runoff by 30-86% [4]

Additional benefits
- A 5,000 ft^2 green roof sequesters 170 lbs of carbon/yr [2]
- Reduces heating and cooling costs for buildings by $6-8/ft^2 [2,3]
- Can extend life expectancies of roof by more than double [1,2,3]

But what about... **Maintenance** on green roofs entails general weeding and debris removal, but since they're watered by stormwater, which has nutrients, they usually don't need any fertilizer or irrigation.



Boston, MA: John W. McCormack US Post Office and Courthouse. This 9,654 ft^2 green roof sits atop the EPA Region 1 Headquarter on a historic 1933 building.

Rain Barrel & Cistern

What is it? A structure to store rooftop runoff and reuse it for landscaping and other non-potable uses. There are many different styles, including an above ground 50-gallon barrel or a below ground several hundred or thousand gallon cistern.

Cost
- Average 50-gallon rain barrel costs around $100
- Cisterns can be more expensive, depending on the size

Runoff At scale, cisterns can store 100% of rooftop runoff except in extreme storms

Additional benefits
- A 1" rainstorm generates 623 gallons of stormwater per 1,000 square foot of roof that can be collected
- Water can be used to landscape in hot summer months, saving water costs.

But what about... **Installation** is a cinch—simply attach a downspout elbow to divert rainwater from your lawn or driveway into the barrel. When you're ready to harvest the water, just attach a hose and go! Above ground cisterns can be just as easy, though below ground cisterns require more work for citing and installation.

A small, slanted green roof in Craftsbury, VT.

An example of 60-gallon rain barrels. Some communities in MA offer a rain barrel progr that offers significant discounts to residents.

Rain Garden

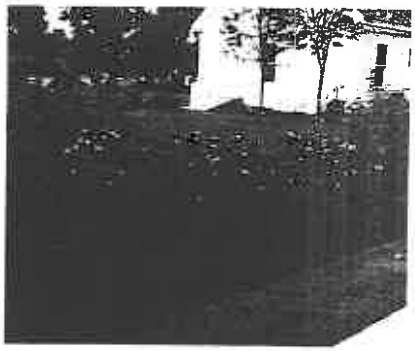
What is it? A depression in the ground to filter stormwater and are filled with highly permeable subsurface and water-loving vegetation. May have an engineered overflow drain system as well.

Cost
- Costs about $2-12/ft.^{2} [5]
- Costs about $200/yr in labor for maintenance [6,7]

Runoff Reduces runoff by 90% [8]

Additional benefits
- Reduces pollutants, including Nitrogen, Phosphorus, metals, and TSS by 65-90% [8]
- Improved aesthetics

But what about... **Ownership and maintenance** can be held by the individual residential property owners, homeowners associations, or by local public works. If outside entities need to be on private property to maintain bioretention such as rain gardens, be sure to include this in deeds so that homeowners understand what is their responsibility and what is the municipality's.



This rain garden in Devens, MA gathers runc from a curb-less road and sidewalk to infiltra stormwater back into the ground while also offering beautiful home landscaping. Rain gardens can be made in any size and shape fit your location.

Permeable Pavement

What is it? Permeable, or porous, pavement or concrete allow water to infiltrate the driving surface to reduce stormwater runoff, eliminate puddles, and increase groundwater recharge.

Cost
- Costs range from $10-12/ft^2 installed[7]

Runoff

Can infiltrate as much as 70-80% of annual rainfall

Additional benefits
- Reduces the amount of land needed for stormwater management
- Reduced flood risk may increase property value by 2-5% [2]
- Massachusetts communities typically spend over $100,000 annually on salting.[9] Areas with permeable pavement can reduce salt use by as much as 75%, leading to enormous cost savings[10] and reduced salt pollution.

But what about...

Winter weather is no trouble for permeable pavement. In fact, a studies at the University of NH Stormwater Center have found that before icing, precipitation melts into the ground and unsalted porous pavement offers a shorter stopping distance than salted traditional pavement. This improves safety and can reduce salting by 75%, saving money as well.

This parking lot in Narragansett, RI shows traditional asphalt on the left, where puddles have formed, and permeable pavement on the right, where it has soaked through.

This insert shows a University of NH parking lot one hour after plowing. The inset photo shows a close up of the permeable pavement section of the lot at the same time.

Stormwater Wetland

What is it? A type of detention basin where runoff is diverted into an engineered, shallow wetland area to temporarily store water. Must be used with another BMP that filters sediment. Smaller, pocket wetlands fed only by stormwater can be used when less space is available.

Cost
- Costs range from $25,000-30,000 per acre of impervious area treated [6,7]
- $1,500-2,000/yr in labor for maintenance and vegetation control [6,7]

Runoff

Can infiltrate 100% of peak flow when built to size

Additional benefits
- Total Suspended Solids (TSS) - 80% with pretreatment [8]
- Reduces pollutants, including Nitrogen (20-55%), Phosphorus (40-60%), metals (up to 85%), and pathogens (up to 75%) [8]

But what about...

Building near natural wetlands is regulated under the Wetlands Protection Act. However, constructed stormwater wetlands are not so strictly regulated and additional permits are not required for ongoing maintenance.

These Devens, MA homes have met the required 20' wide emergency vehicle access in a unique way. They installed 12' of pavement and 8' of permeable grass pavers to the left to minimize pavement without compromising safety.

This stormwater wetland in Leominster uses the land's natural capacity to filter and infiltrate water.

Other Bioretention Systems

Rain gardens and stormwater wetlands are just two types of bioretention systems, which allows the landscape to filter pollutants and infiltrate stormwater into the ground. These systems give excess water a place to go and reduce flooding and infrastructure damage.

Other systems include vegetated parking lot medians, roadside swales or "country drainage," and curb cuts, which direct stormwater from streets and filter it into a roadside rain garden or tree box.

LID Site Design: Less Pavement, More Savings

By reducing the amount of pavement, communities are not only reducing their impervious surface and allowing more space for stormwater infiltration, but it's also a huge cost savings. Traditional paving costs about $6ft^2$. Reducing a just a short two-mile road from 28' wide to 20' equates to a savings of over $500,000. Less pavement also means reduced maintenance costs, including plowing, salting, and sweeping.

Narrower Roads

What is it & benefits

Designing and installing 10' or 12' lanes on neighborhood roads reduces the amount of impervious surface and enhances the land's ability to infiltrate water and pollutants.

But what about...

Safety should always be a top concern, which is why narrow roads are a smart idea. Studies have shown that 10' lanes are as safe as – if not safer than – wider lanes.[11] When roads are narrower, drivers go slower, pay closer attention to the road, and have fewer accidents. Street-lined trees that provide a shaded lane and homes closer to the roadways also enhance these safety benefits.

This narrow road in Devens, MA easily fits two lanes of traffic and offers room for a vegetated buffer, sidewalk, and street trees.

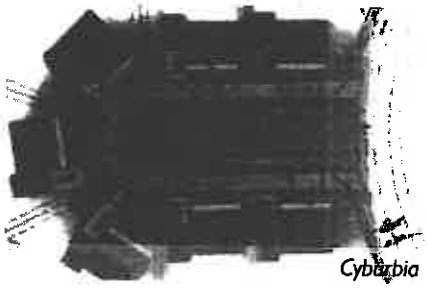
Alternative Cul-de-sacs

What is it & benefits

Instead of having a wide road with a large paved circle at the end, the circle can be vegetated to increase infiltration. Alternatively, the road could make a loop and be enclosed with vegetated area that's perfect for community spaces.

But what about...

Emergency vehicles and plow trucks need space to turn around, which narrower roads and alternative cul-de-sac options still provide. National Fire Protection Association requires a 20' wide passage for fire trucks.[12] However, communities have met this requirement in innovative ways. Some homes in Devens, MA have rear garages on 12' of pavement bordered by 8' of grass pavers on the side. This structure is still heavy weight bearing and the combined 20' roadway was accepted by the local fire department.[13]



An alternative cul-de-sac design that allows for recreational space as well as a place to improve stormwater infiltration.

Shared Driveway

What is it & benefits

Instead of each home having a separate driveway from the street, shared driveways that then split to each home offer access to homeowners while still reducing pervious surfaces and increasing stormwater infiltration.

But what about...

Marketable homes with shared driveways don't deter potential buyers. In fact, homes in Concord and Plymouth with shared driveways and parking still brought high value and sold quickly—including during the 2008 recession.[14, 15]

This shared driveway in the Pinehills in Plymouth, MA provides easy access to garages, plenty of parking, and less impervious surface. Retention of mature trees also offers privacy.

Learn More

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Greening Your Community

Cost-effective LID solutions

#4

Fact Sheet #4:
LID in Local Zoning and Regulations

Making Regulations Reflect Priorities

Local conservation lands and green infrastructure are important assets for communities, including environmental, economic, health, and social benefits.

A shared driveway and mature trees in Plymouth, MA

However, many communities' plans and land-use rules unintentionally encourage sprawling development that comes with many costs. Whether it's an outdated open space plan that doesn't prioritize conservation needs or bylaws that require large lots, wide roads, and big, water intensive lawns, there are lots of opportunities to revise regulations and guide development in a more sustainable direction.

What are Green Infrastructure (GI) and Low Impact Development (LID)?

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Planning Ahead for the Community You Want to Have

Local land-use regulations have the ability to make or break communities' ability to enhance conservation and incorporate LID techniques described in previous fact sheets. You get what you zone for— what will your community look like if fully built out in accordance with the local rules as they currently stand?

It's important to periodically review and update local plans and rules and determine how they work together, and whether they encourage or discourage smart growth. By analyzing and updating local plans and land use rules such as zoning, subdivision rules and regulations, site plan review, and stormwater regulations, communities can ensure that development is consistent with local goals and values. This fact sheet will review how to get started and prioritize.

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Let's Coordinate: Master Plan, Open Space, and Bylaws

Master plans, open space plans, and land use regulations should coordinate with one another to reflect the community's goals. Together, these create local priorities for both development and conservation, and define a municipality's future character and economy. In order to prioritize and encourage sustainable growth, the local regulations must be consistent with one another to achieve the desired goals.

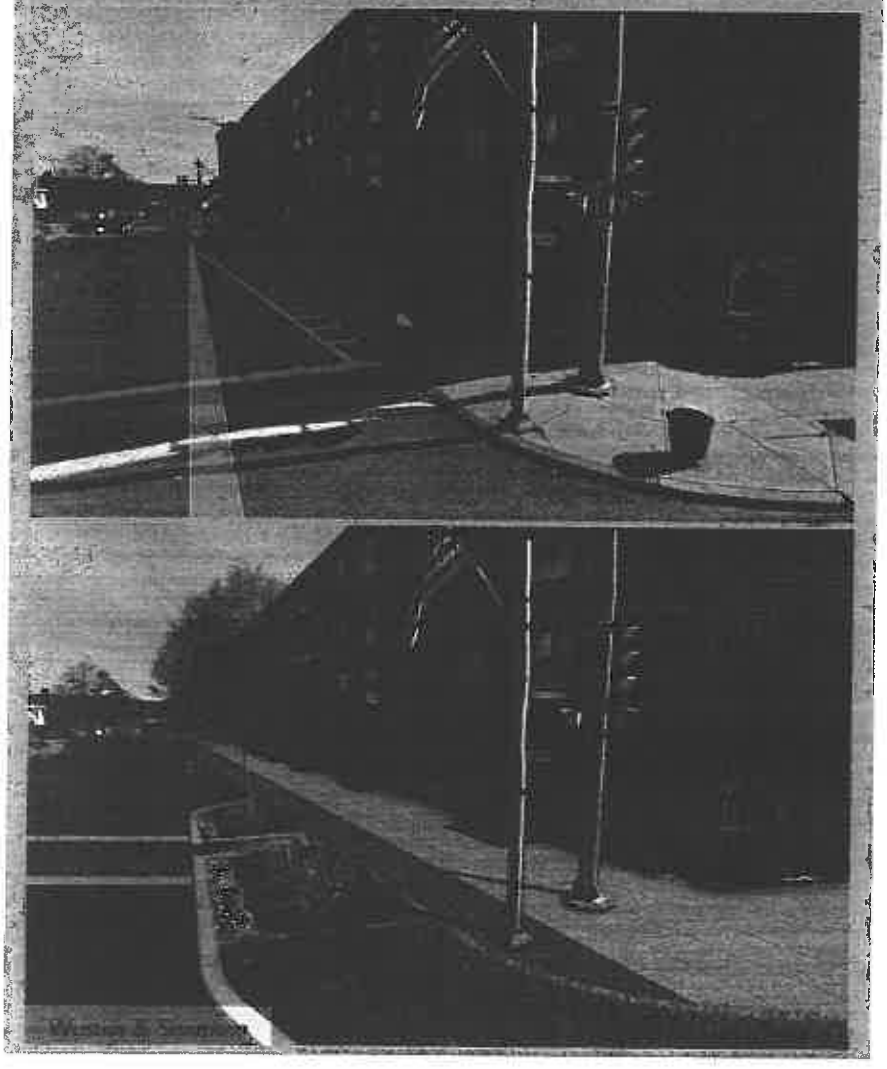
For instance, if a stormwater bylaw requires LID, but zoning requires large lots with strict dimensional standards and the subdivision regulations require wide streets and curbing running along throughout—there isn't much LID that can be done. The rules essentially require a developer to clear and grade all available upland and create extensive impervious surfaces with centralized, piped stormwater drainage. If your community has a modern Master Space plan that identifies sustainable development with LID and land protection as goals, but local regulations don't allow that type of development to happen, the plan will never be achieved.

Can Your Bylaws Do This?

Below is a typical Main Street intersection in a Massachusetts mill town. The top image shows what the street looks like in 2015.

The bottom image is the redesigned Main Street intersection that incorporates bioretention bump-out areas and street trees to capture and filter stormwater and enhance aesthetics. These also improved pedestrian safety by reducing the walking distance and improving sight lines, without altering existing parking or bus stops.

Which version would your local rules support?



What Do Your Regulations and Zoning Encourage?

Low Impact Development techniques are broad in range and design and should be incorporated within a variety of local bylaws and regulations, including: Zoning Bylaw, Subdivision Rules and Regulations, and Site Plan Review in addition to any Stormwater or LID Bylaw.

Check out the chart to the right and compare these best practices to your own local plans and regulations.

Additional Local Options

State laws and regulations provide a minimum framework. Your municipality has the authority to do more. Here are a couple of examples:

Wetlands Bylaw
The state wetlands regulations provide limited review in buffer zones. More than half of all communities have adopted local bylaws to protect buffer zones, set development back away from the edge of wetlands and waterways, or otherwise enhance local protections.

Community Preservation Act
This provides additional funding from a combination of local and state sources for open space protection, historic preservation, and affordable housing.

Planning Document	What does it do?	What should I look for?	How do I change it?
Master Plan (MP)	Comprehensive guiding document that sets **community goals**	• **Current**, reflects changing priorities? • Prioritizes **sustainable development?** • Defines specific measures to retain local **community character** & values?	Planning Board often with assistance of a special Master Planning Committee
Open Space and Recreation Plan (OSRP)	Identifies local **natural** resource and recreation priorities and plans for protection and management	• **Current**, reflects current parcel status, priorities? • Allows variety of OS uses: recreation, conservation? • Considers **land and water** resources? • Consider **local context** of existing OS?	Conservation Commission, often with assistance of a special OS Committee. Must meet state guidelines
Zoning Bylaw/ Ordinance	Determines how parcels may be used and sets **dimensional requirements**	• Focuses development near **existing infrastructure**, away from natural resources? • Allows **flexible dimensional requirements?** • Prioritizes protection of **natural features?** • **Limits clearing/grading,** impervious areas? • Requires **LID** features?	Adoption and revision requires approval through Town Meeting (TM) or City Council
Open Space Residential Design (OSRD)	Type of conservation development that maximizes **protection of natural resources**	• Allowed **by right** (not by special permit)? • Requires ≥ **50% of open space** protection on a parcel? • References **priority areas** from local MP/OSRP? • **Connects OS** within and on adjoining parcels? • Allow **flexible dimensional** requirements? • Requires **LID** features?	Adoption/revision requires approval through TM/City Council
Site Plan Review	Reviews **development design** for consistency with local standards	• **Limits clearing/grading,** impervious areas? • Requires **LID** features? • Allows easy **siting of LID** features, including near roadways and in parking islands?	Adoption requires approval through TM/City Council
Stormwater or LID Bylaw	**Reduces stormwater pollution** and/or specifically encourages LID	• Requires **LID** features? • **Discourages curbing** and limits impervious areas? • Prohibits **topsoil removal?** • **Limits clearing/grading?**	Adoption requires approval through TM/City Council
Subdivision Rules and Regulations	Govern **how a parcel of land is subdivided** in a development	• **Limits clearing/grading,** impervious areas? • Requires protection of **existing landscape?** • **Limits impervious** areas? • Requires **revegetation with native plants?** • Requires **LID?** • Allows **narrow roads**, no curbing?	Planning Board has administrative authority

Working Together is Key

When it comes to allowing low impact and conservation development, coordination among local boards is key. By working together, the community can ensure the permit application and review requirements are clear to developers and bylaws don't conflict with one another when one encourages a practice but another makes it difficult.

Through interdepartmental cooperation, communities can create an efficient system that reduces the burden on local officials, lets developers understand exactly what the community is looking for, and encourages projects that prioritize local character and natural assets.

Clockwise from top left: Narrow roads in Devens, MA; pervious pavers and rain gardens in MetroWest Boston; permeable pavement; clustered homes in Concord Riverwalk. These are all governed by local zoning bylaws and subdivision rules and regulations. What do your bylaws allow?

Analyze & Act

Taking time out of our busy schedules to prioritize long-term planning can be tough. But time is well spent updating outdated plans, bylaws and regulations since these are so vital in determining your community's future.

After identifying potential updates to improve cohesion within regulations and encourage smart development, the next—and critical—step is to determine which changes are most feasible for your community and make a plan of action. What changes have political support? What changes are more easily made administratively and what's the long-term strategy for changes that require Town Meeting approval? Who can be community champions and who are potential partners in making these changes understood and accepted? What resources or outreach tools do you need to help you achieve success?

Your Community's Future Needs You

You can play an active role in shaping the future of your community. One person can make a huge difference, especially at the local level. Most local boards are made up of citizen volunteers. Whether it's joining the conservation commission, planning board, master planning committee, or beautification committee, your community can use your energy and skills!

By joining a board, attending meetings, or otherwise staying involved in the local process, you can directly make a positive difference to create a safe, healthy, and sustainable community for yourself and future generations.

Learn More

See our website for more information, including guidance, tools, and document references:
www.massaudubon.org/shapingthefuture or www.masaudubon.org/LIDCost

Mass Audubon
Protecting the Nature of Massachusetts

CMRPC

Horsley Witten Group

The Blackstone River Coalition

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NARRAGANSETT BAY ESTUARY PROGRAM

NEIWPCC
New England Interstate Water Pollution Control Commission

Greening Your Community

Cost-effective LID solutions

#5

Fact Sheet #5: Urban Water Quality Improvements

Impaired Waters and LID

The majority of Massachusetts' urban waterways are impaired—meaning they don't meet state water quality standards and are not providing ideal habitat for fish and wildlife, and may also be leading to beach closures and other negative economic effects. Pollution from stormwater runoff from impervious surfaces contributes to 55% of the water quality impairments in MA.[1]

This fact sheet will review how LID Best Management Practices (BMPs) are also cost effective in removing nutrients and other pollutants compared to traditional stormwater systems in an urban environment.

Monoosnoc Brook: A Success Story of Urban Water Retrofits

Beginning in 2008, a series of projects were undertaken to address the sediments, nutrients, and bacteria from stormwater flowing into Monoosnoc Brook and the North Nashua River.

The brook stretches 6.1 miles through the city of Leominster and is an important downtown feature and place for outdoor recreation and aquatic habitat. This densely developed area encompasses residential, industrial, and commercial zoning that all contributed to polluted runoff entering the waterway. It was therefore critical to the success of the project to engage a wide variety of stakeholders, including schools, businesses, church groups, and residents throughout the restoration process.

After mapping the location of catch basins and outfalls along the Monoosnoc watershed, the pollutant loading was calculated from the impervious areas draining to the waterbody. This identified areas in which to focus restoration, while mapping soils pinpointed the best locations for stormwater infiltration.

What are Green Infrastructure (GI) and Low Impact Development (LID)?

Green Infrastructure (GI) includes both natural features such as forests and wetlands as well as engineered landscapes that mimic these natural processes like a rain garden.

Low Impact Development (LID) works to preserve the natural landscape and minimize impervious surfaces to keep stormwater close to the source and use it as a resource rather than a waste product.

Together, LID and GI not only manage stormwater and improve groundwater supplies, but also offer many free ecosystem services including cleaner air and water, flood control, shade and energy savings, recreational opportunities, and enhanced property values and quality of life.

Preserving our existing GI is our first line of defense against climate impacts such as increased storm intensities as well as achieving long-term cost savings.

Through community involvement and the installation of BMPs, the pollutant loading into Monoosnoc Brook was significantly reduced to create a healthy and productive waterbody for the ecosystem and the community.

Mass Audubon
Protecting the Nature of Massachusetts

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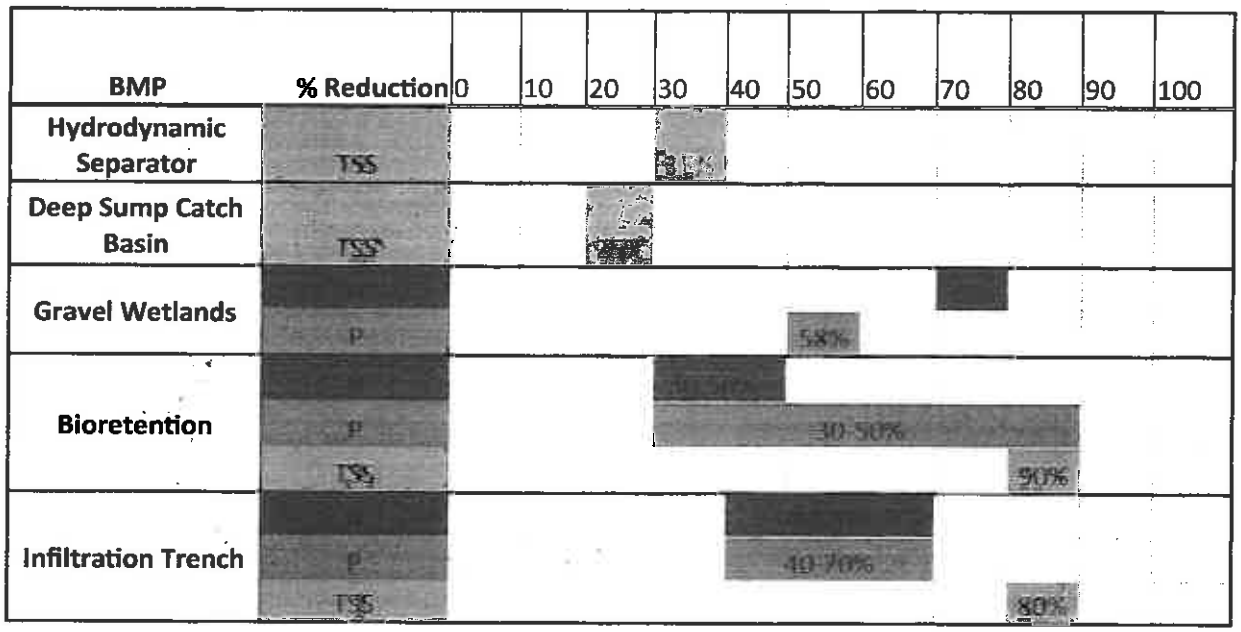
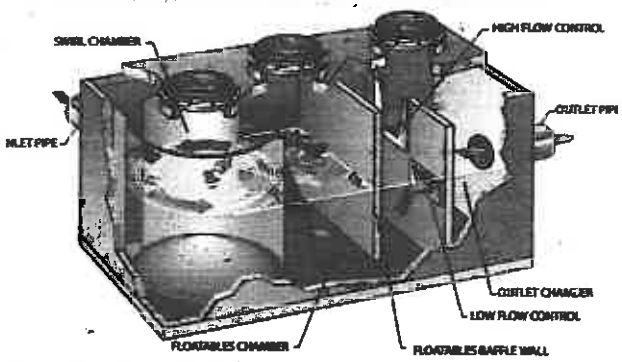
Costs, Benefits, and Effectiveness of BMPs in Leominster

Numerous BMPs were installed to improve water quality by increasing infiltration and reducing the amount of polluted runoff discharged to the brook. These included bioretention areas, gravel wetlands, deep sump catch basins, a hydrodynamic separator, and infiltration trenches and sediment vaults. Below is an overview of their effectiveness in reducing nitrogen (N), phosphorus (P), and total suspended solids (TSS).



Hydrodynamic Separator



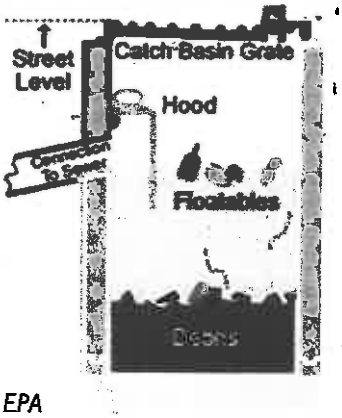
Contech—Vortechs System

Benefits ✓ | Cost effective $ | Solids reduction

TSS is removed before it enters the stormwater drainage system. The separator can fit underground in small areas where available surface land is limited and also works to reduce oil and grease. In Leominster, the system was placed under a parking lot to collect stormwater from residential and industrial areas.

- Total P removal of 10-30% [7]
- Fine particle removal down to 50 microns [8]

Deep Sump Catch Basins



EPA

Benefits ✓ | Cost effective $ | Solids reduction | Flood control

These basins trap sediment (e.g. sand and dirt) before it enters the stormwater treatment systems or waterways. Nine sump catch basins were installed from 2008 to 2014.

- Costs about $5,000-6,000 to install [4,5]
- Costs about $200/yr in labor for sediment removal & disposal [4,5]
- 25%TSS removal credit when used for pretreatment [6]

Gravel Wetland

Benefits	Cost effective	Curb appeal	Habitat creation	Nutrient reduction	Increased awareness	Groundwater recharge	Flood control
✓	$			N P			

Water flows through a series of cells with plants and saturated soils where microbes break down nutrients and other pollutants. The gravel wetland is installed with pretreatment BMPs to capture stormwater sediments.

- Costs about $25,000-30,000 per acre of impervious area treated [4,5]
- Costs about $1,500-2,000/yr in labor for maintenance and vegetation control [4,5]
- 80% TSS removal credit with adequate pretreatment [6]
- Varied % removal of nutrients, metals & pathogens [6]

Bioretention

Benefits	Cost effective	Curb appeal	Habitat creation	Nutrient reduction	Increased awareness	Groundwater recharge	Flood control
✓	$			N P			

Soil and native plants filter and reduce stormwater contaminants – including up to 90% of metals – allowing the purified water to soak into the ground and replenish the groundwater that sustains streamflow during dry times. Examples include tree filters, bioswales, and rain gardens.

Tree Filter

- Costs about $20,000-25,000 [4,5]
- Costs about $200/yr in labor for maintenance [4,5]
- Presumed to remove 80% TSS [6]

Bioswale

- Costs about $20,000/acre impervious area treated
- Costs about $300-500/yr in labor for maintenance (varies by size of swale)[4,5]
- 70% TSS removal credit with adequate pretreatment [6]

Rain Garden

- Costs about $2-12/ft^2 [3]
- Costs about $200/yr in labor for maintenance [4,5]
- Reduces runoff by up to 90% [3]
- Reduces pollutants, including N, P, metals, and TSS by 65-90% [3]

Sediment Vault & Infiltration Structures (Trench or Chamber)

Benefits	Cost effective	Nutrient reduction	Groundwater recharge	Flood control
✓	$	N P		

Stormwater passes through a sediment vault (an oil and grit separator) that allows coarse sediment to settle before flowing to the infiltration trench or chamber. This section is a shallow, excavated area filled with crushed stone and provides underground storage that allows the stormwater to soak into the ground as well as remove up to 90% of pathogens. This method was installed in the Granite Stormwater Park and on Mill St.

- Costs about $15,000-20,000 per acre of impervious area treated [4,5]
- Costs about $400-600/yr for sediment removal & disposal [4,5]
- 80% TSS removal credit with adequate pretreatment [6]
- Varied % removal of nutrients, metals and pathogens [6]

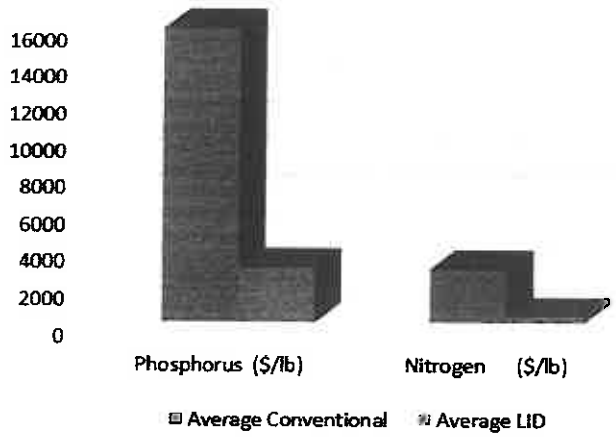
By the Numbers...

The Leominster LID project was significantly less expensive compared to how much it would have cost to remove the amount of N and P by conventional stormwater practices (represented by dry detention basins) in addressing nutrient reduction requirements.

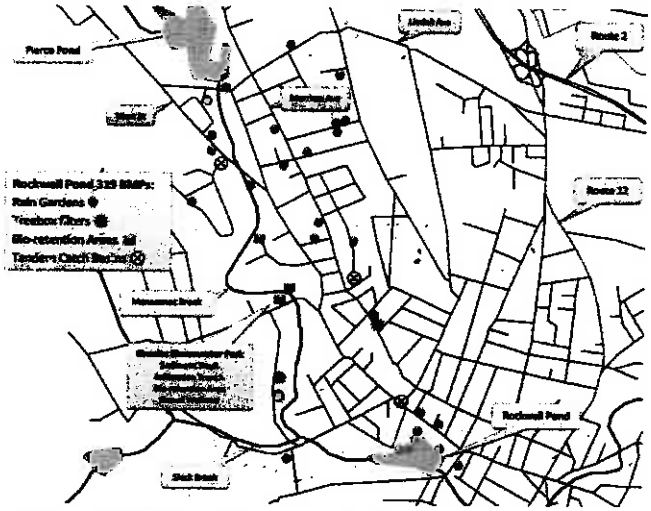
Using Leominster's Rockwell Pond and Lower Monoosnoc projects, the Horsley Witten Group, Inc. calculated a cost comparison of conventional vs. LID methods. The Rockwell Pond represented a cost savings of 79% for P reduction and 85% for N reduction. Similarly, the Lower Monoosnoc project represented a cost savings of 83% for P reduction and 69% for N reduction.

- These cost comparisons are represented in the graph to the right.

Comparison of Present Value Costs in Nitrogen and Phosphorus Reduction: LID vs Conventional Detention Systems



Cost comparison by Scott Horsley, Horsley Witten Group, Inc. based on comparison between a conventional detention basin vs. gravel wetland and bioretention. See supplemental information online for more details on how this was calculated.



Location of BMPs in relation to catch basins and the impervious areas draining into Monoosnoc Brook and Rockwell Pond in Leominster. Map by Massachusetts Watershed Coalition

Conclusion

The BMPs installed in Leominster demonstrate that LID solutions can offer the best of both worlds. They're not only cost-effective solutions to stormwater management, but also address several social and ecological concerns. Urban stream restoration improves local water quality, re-establishes aquatic ecosystems, reduces public health risks such as flooding and infrastructure damage, and renews community enjoyment of local waters.

A special thank you to the city of Leominster and the Massachusetts Watershed Coalition, who received an EPA 319 Grant[9] to accomplish this work and provide the basis for this case study. Thank you also to Sondra Lipshutz, Tufts Urban and Environmental Policy student, who contributed to the drafting of this case study.

Learn More

See our website for more information, including guidance, tools, and document references:
www.massaudubon.org/shapingthefuture or www.masaudubon.org/LIDCost

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NARRAGANSETT BAY ESTUARY PROGRAM

NEIWPCC
New England Interstate Water Pollution Control Commission

Memorandum

To: BOS
From: DJM
Date: 5/19/17
RE: Town Manager's Report

Personnel:

HR Director:

We are actively interviewing applicants

DPW Director

Ms. Arp has slowed the bleeding and I appreciate her enthusiasm and dedication. I am still seeking a full time permanent solution to this problem.

Appointments:

Harvest Lee Dixon – Millbury Cultural Council

Logistics:

- **HR Director's Office:**
  - Carpenter's Training School informs me that they are working with the B/I to get a materials list for me in the upcoming days.
- **Stair Project:**
  - The stair project is slated to begin as soon as we get approved plans. Once we get the plans coordination with our building maintenance and Building Inspector and DPW will drive the schedule. They await professional plans to complete this task.
- **Lighting at Town Hall:**
  - Once I know what my costs are for the above projects, I will be able to ascertain my remaining budget that can be allocated for this project. The costs for various solutions for this project range between $300-$900.
- **Roadway Policy:**
  - Enclosed is a print-out of an excel sheet that is a representation of what I would like to put up on our webpage. It shows what roads are going to be done, when how, etc. Once we have the roads bid-out, we will update the schedule and the cost. Once the road is completed, we will update the list to show actual cost and a before and after picture. (See camera that was purchased)

- Camera is going to be utilized for before and after pictures of projects INCLUDING PATCHING.

- **Ramshorn Dam:**
  - The dam is at full capacity. The cap is slated to be completed in about 2 to three weeks and then the sidewalk will be poured which will take less time than the cap due to the cap's intricacy. The roadway is slated to be binder-coated in the next week or so subsequent and therefore the dam will look almost complete in a month... then we are in a waiting pattern for 6-8 weeks awaiting the custom railing to be fabricated - based on the as-built of the sidewalk and cap.

    The roadway will remain closed until such time as the timber-guardrails and custom railings are installed. Grass will be planted subsequently. It will be over-seeded and reseeded in the fall and again in the spring and following fall depending on warrantee claims. Final asphalt will occur in due course after the binder-coat with the projected completion to be in July or August.

    Ms. Arp and I have been meeting with residents at either sides of the dam to ensure that their concerns are met regarding various issues that have been agreed upon during the design portions of this project. I.e. stairs at one end, fencing and gates at the other, drainage along property lines, etc..

    Jacques Park wetlands / driveway and parking lot are part of this project as a DEP wetland replication. Because of this, I can amend the project to some extent based on if it fits within the auspices of the original application and any available funding. It looks like I might have funding to put in solar street lights along the driveway and the parking lot. (I couldn't put in conduit because that would require a major change order and a new filing with DEP.)

    I may also have funding to upgrade the surface of the driveway and parking lot to a more sustainable and longer lasting surface than was originally proposed in the original DEP filing / Ramshorn plan. Likewise, I may even have funding available to expand the parking lot to some extent.

    All of these proposed potential changes to the original Jacques Park plan are 100% contingent on completing the dam in its entirety. Once the dam is completely finished, I will then go through with whatever I can do at Jacques Park- again pursuant to what is allowable under the auspices of the original filing with DEP.

- **Cell Overlay**
  - Enclosed is a map with corresponding numbered areas that are various Town owned parcels with an attached index describing said parcels. I am seeking a policy from the BOS to create a cell tower overlay district which would be for Town owned parcels where upon cell towers could be built as a matter of right without a special permit – just a building permit.

How:

The ins and outs of the policy will be determined through numerous BOS discussions, open meetings, round table discussions with residents and charrettes, etc... to determine which parcels should be part of the overlay district... (i.e. to determine which parcels are ok and which ones are not) Once we get past this stage, it will require a Town Meeting vote to actually establish the overlay district taking into consideration of all of the input that we received during the drafting stage.

When we are ready to have a cell tower built, we as owners, send out an RFP for a cell tower to be built on Town land in the overlay district. The RFP's specs limit everything that we want to limit. We determine when, where and how etc. the tower is to be built - in a fashion of our choosing. For instance, the RFP could mandate in the specs that the tower must collapse upon itself in the event of a heavy wind, thus ensuring that it only falls within a small footprint. Or we, the owners, can mandate that the tower be tucked in the woods out of sight with a meandering driveway, keeping the tower invisible from the street. Etc, etc, etc.

Benefits of having an overlay District:

Town:

The benefit to the Town in having this overlay district is that the Town will be able to plan for cell tower needs and restrict where they can and cannot be built. Also, as the landlord, we collect the revenues for land and colocation rent. It is recurring revenues generated outside of taxes.

Another benefit is that it takes very little oversight to implement this policy. The main effort is all front-loaded in creating the RFP and then basically walking away. We collect rents with very little effort thereafter, just contract oversight. It is quite lucrative with minimal effort.

Vendor:

The benefit to the tower companies is that it is turn-key, just comply with the RFP specs and get your building permit. There are no hearings, no special permits, no lawsuits.... Thus it is very attractive to prospective tenants, they can hit and run and be onto their next project.

A changing market: now is the time to act:

A driving force for the cell tower expansion is the changing technology. Cell towers are much more than telephone and texting. The next generation is all about wireless-internet, expanded HD video/ audio and data. Thus, the assessment on where towers are needed is different than what it used to be. What once was not a desirable location is now becoming desirable to tower companies. HD video/audio and internet takes a huge amount of bandwidth. Bandwidth requires capacity. Capacity requires numerous locations. Numerous locations means redundancy and extra towers even where there are towers already. Today, tower companies want capacity for data, internet and HD video /audio more and more and cell and text service less and less.

Thus the focus on needing cell service focused on the MOBILE functionality is shifting. Whereas it once was all about being able to talk on your phone on the run, it's now changing to being able to get huge data downloads wherever you are, including from your living room, not just your car.

Cell providers (and through them tower companies) are looking to expand their markets to internet in residences. To do that, they need capacity all over. More now than ever they need capacity in residential areas. (Where before they were most interested in capacity along numbered roads and highly traveled areas) Because data, video and wireless internet is driving the next expansion of cell towers, companies want towers here, there and everywhere to get capacity to allow for the buildout of this next generation of technology. So, now is the time to grant them quick and easy expansion. By creating an overlay district we can plan for where and how the expansion happens. Without this overlay district, the tower companies can usurp our zoning and build pursuant to FCC regulations: Which means in your back yard even in a residential neighborhood.

So, an overlay district is not only a revenue source for the Town, it is a way to regulate and predetermine where, how and when the towers will be built.

Next steps:
Assuming that the BOS agrees that we should move forward with this project, I will next appoint a cell tower advisory committee, then schedule brain-storming sessions, charrettes and open meetings to discuss the nuts and bolts.

- **Handicap Ramps:**
  - Disabilities Cmtee Issues. This is part of the overall Downtown presentation that is going to be presented to the BOS at this meeting. CONTINUING – ONGOING

Grants:

There are various grants in the works and/or were already awarded: CONTINUING - ONGOING

At this meeting the Planner can update the BOS on the following:

- Green Communities Grant – Awarded last year- Awaiting approval of a vendor to install the street lights
- IT Grant $20,000 - just awarded
- Master Plan Grant $25,000– just awarded
- Municipal Readiness Grant – Applied for - awaiting award
- 319 MS04 - In the process of applying - due in a few weeks
- ADA – in the process of applying – due in a few weeks
- Complete Streets – on the radar

All part of the Down Town Project

40U:

- Now that we are past the Town Meeting, we have to establish a policy on how to proceed with 40U. This meeting was jam packed, so I will put it on the next agenda for discussion on what we should do for a policy to implement 40 U i.e. how should the bylaw work.

Budgets / Financial:

- **May-June-July transfers**
  - We have the ability to make lateral transfers between lines during May/June and the first 2 weeks of July. This requires an affirmative vote of both the BOS and Fincom to make these transfers. Katie is looking at deficiencies and excesses to see how we might utilize this tool, if at all.

- **Fee Schedule Discussion**
  - The various departments have completed their assessments and made their recommendations. (attached for your review.) Nonetheless. The BOH and the Building Inspector are likewise coming to the meeting to discuss their findings and recommendations.

Meetings of Note:

- 5/19 CMRPC legislative breakfast update. Selectman Adams and I attended. He can update the BOS on any findings that he made
- 5/31 MHS awards in the evening
- 6/1 Acquarian customer service
- 6-6 through 6-8 MCPPO certification in Boston. I will be out of the office all day. This is the final segment necessary for me to recertify.
- 6/11 Bicentennial Way dedication

On the Radar:

- **MS04 Requirements:**

The Town has to implement its plan. It is a federal requirement that is being directed through the state. Our plan is before you - for your review. It is a very good working model but it is not the be all and end all..... It is fluid, so our consultant can tweak it a little... but it will more than likely be something very similar to this in order to comply with our filings <u>that we already submitted years ago - and that have already been accepted by the feds/state.</u>

This program has been around for many years and as you can see, our preapproved plan is going to be implemented over the course of many years into the future.

Moreover, our plan calls for action items that we must do over the various years. Those action items cost the Town money to implement: Money that is not in any way budgeted. As you can see on the plan, those action items cost hundreds of thousands of dollars each year. This is going to cause a very difficult discussion on funding. We can do one of two options: 1) take it from other departments, or 2) pass it on to the Townspeople in the form of a utility payment.

Basically our situation (and every other town's similar situation) can be looked at this way: It is a federal law that we do these projects. They are mandated. It is also mandated that we pay for implementing these plans with very little federal or state funding. There are some small grants but not very many. We are applying for a 319 grant for our Downtown project to address stormwater in that area of Town. And, we are in a good position to get the grant because the 319 grant is dovetailed in with other initiatives such as ADA and Complete Streets.

It is mandated that the Town must pay for our Stormwater plan and every resident and business shares in that burden equally. Thus, it is acceptable to flow this burden on to each entity in the form of a fee. Thus could create a "Stormwater utility" and pass the cost on to each tax payer equally since Stormwater affects the whole town – residents and businesses alike, equally.

If we adopt this approach, this is what it would look like: In our preapproved plan there are various things that have to be done in a particular year at a cost of an estimated "X" dollars. I.e. year one calls for $150,000 worth of action items. If you divide the $150k by all residences and businesses that would basically equal an approximate $30 fee for that year charged to each of the 5,000 tax bills in Town. If we do not flow this cost on to the residents and businesses the only other option is to take the $150,000 out of some other operational budget.

Organizational And/ Or Operations Restructuring

- **Master Plan Intern**

  I am working with the Planning Director and the Bridgewater State University Masters of Public Administration / Political Science Department to get a Master's level intern to assist in the development and implementation of the Master Plan. I was the BSU MPA Graduate Assistant. This is a huge asset that I am able to operationalize. I anticipate that my contacts and associations will bring a very useful tool to the Town at a significant reduction in costs.

- **Organizational Chart – Org changes:**

  This issue is not yet ripe to be brought to the Board, but it is an ongoing assessment. NO UPDATES