



City of Gardner, Massachusetts
Office of the City Council

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CALENDAR FOR THE MEETING  
of  
MONDAY, NOVEMBER 7, 2016  
COUNCIL CHAMBER  
7:30 P.M.

**ORDER OF BUSINESS**

**I. CALL TO ORDER**

**II. CALL OF THE ROLL OF MEMBERS**

**III. OPENING PRAYER**

**IV. PLEDGE OF ALLEGIANCE**

**V. ANNOUNCEMENT OF OPEN MEETING RECORDINGS**

Any person may make a video or audio recording of an open session of a meeting, or may transmit the meeting through any medium, subject to reasonable requirements of the chair as to the number, placement and operation of equipment used so as not to interfere with the conduct of the meeting. Any person intending to make such recording shall notify the Chair forthwith. All documents and exhibits used or referenced at the meeting must be submitted in duplicate to the City Clerk, as they become part of the Meeting Minutes.

**VI. READING OF MINUTES OF PRIOR MEETING(S)**

Reading and Approval of the Minutes of the October 17, 2016 Public Hearing and Regular Meeting.

**VII. PUBLIC HEARING**

**VIII. COMMUNICATIONS FROM THE MAYOR**

**IX. PETITIONS, APPLICATIONS, ETC.**

**9704** – A Measure to Adopt a Factor for Real Estate and Personal Property Taxation for Fiscal Year 2017 (*Finance Committee*).

**9705** – A Measure to Authorize the City Clerk to Electronically Sign the FY2017 Tax Rate Recapitulation on behalf of the City Council (*Finance Committee*).

**X. REPORTS OF STANDING COMMITTEES**

**PUBLIC SAFETY COMMITTEE**

**9691** – An Ordinance to Amend the Code of the City of Gardner, Chapter 600, Thereof, Entitled “Vehicles and Traffic,” Article V. Parking Meters (*In City Council and Referred to Public Safety 9/19/2016; Amendment substituted and reported favorably, recommitted to Public Safety 10/17/2016* ).

**COMMITTEE OF THE WHOLE**

**9234** – Law Department Charter Review (*Referred to the City Solicitor 10/20/2014; Charter Review Received and Referred to the Committee of the Whole 3/3/2015*).

**COMMITTEE OF THE WHOLE**

**9686** – A Resolution Endorsing the DPW Plan to Upgrade the Dewatering Equipment and Pursuit of a New/Expanded Sludge Landfill *(In City Council and Referred to Committee of the Whole 9/6/2016; Public Hearing held 10/17/2016).*

**XI. UNFINISHED BUSINESS AND MATTERS FOR RECONSIDERATION**

**XII. NEW BUSINESS**

**XIII. CLOSING PRAYER**

**XIV. ADJOURNMENT**

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Items listed on the Council Calendar are those reasonably anticipated by the Council President to be discussed at the meeting. Not all items listed may in fact be discussed and other items not listed may also be brought up for discussion to the extent permitted by law.



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**PUBLIC HEARING OF OCTOBER 17, 2016**

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**ATTENDANCE**

Ten Councillors were present, including President James Walsh and Councillors James Boone, Nathan Boudreau, Ronald Cormier, Scott Graves, Karen Hardern, James Johnson, Marc Morgan, Paul Tassone, and Matthew Vance. Councillor Craig Cormier was absent.

Others in attendance were Mayor Mark Hawke; Robert P. Sims, P.E., CDR|Maguire and OPM for the City's Project; Kevin Olson, Project Designer, Wright-Pierce; Matt LaPointe, Suez Project Manager; Dane Arnold, DPW Director; and, Christopher Coughlin, Assistant City Engineer.

**PUBLIC HEARING****#9686**

President James Walsh opened the Public Hearing at 6:00 p.m. in the City Council Chamber, reading aloud the following Hearing Notice:

Notice is hereby given that the City Council will conduct a Public Hearing on Monday, October 17, 2016 at 6:00 P.M. in the City Council Chamber, Room 219, City Hall, 95 Pleasant Street, Gardner, Massachusetts, to hear testimony concerning the DPW Plan to Upgrade the Dewatering Equipment and Pursuit of a New/Expanded Sludge Landfill (City Council Calendar #9686). Persons interested in this matter are encouraged to attend and to offer testimony.

CITY COUNCIL OF GARDNER  
JAMES M. WALSH  
Council President

President Walsh called for persons wishing to testify.

Robert Sims presented the following Power Point slides:

**Sludge Disposal in the City of Gardner****Background**

- **September 19, 2016 City Council meeting to discuss detailed approach, recent and proposed activities**



## PUBLIC HEARING OF OCTOBER 17, 2016

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**Cost of Options for Dewatering (Table 4-11 & 4-12)**

- **Haul Out-of-Town**

1. **Belt Filter Press - \$13,930,000**
2. **Inclined Screw\* - \$14,330,000**
3. **Fournier Press - \$16,150,000**
4. **Centrifuge - \$12,820,000**
5. **No Dewatering (Liquid) - \$12,470,000**

\* - could require second shift and additional labor not included

**Cost of Options for Centrifuge Dewatering (Table 4-13 & 4-14)**

- **Sludge Landfill - \$7,510,000**
- **Out-of-Town - \$12,850,000**
- **Liquid out-of-town - \$12,470,000**

**Dewatering & Disposal Costs**

| Dewatering Method | Destination     | 20-year Cost |
|-------------------|-----------------|--------------|
| Filter Press      | Out-of-Town     | \$13,930,000 |
| Inclined Screw    | Out-of-Town     | \$14,330,000 |
| Fournier Press    | Out-of-Town     | \$16,150,000 |
| Centrifuge        | Out-of-Town     | \$12,820,000 |
| None (Liquid)     | Out-of-Town     | \$12,470,000 |
| Centrifuge        | Sludge Landfill | \$ 7,510,000 |

PUBLIC HEARING OF OCTOBER 17, 2016

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**Composting**

- New building and infrastructure required
- Siting at sludge landfill
- Odors more likely and costly to control
- New equipment
- Training required
- Disposal concerns
- Additional testing

**Anaerobic Digestion**

- Significant Infrastructure
- Siting at the sludge landfill
- Training needed
- Collection and storage of food waste
- Energy discharged to Electric Grid
- Concerns with Viability
- Disposal of material not eliminated, byproduct created

**Private Hauling**

- Minor infrastructure
- Expensive
- Volatile Pricing
  - - Fuel Costs
  - - Regulation Changes
  - - Disposal Site Availability
  - - Term of Contract

**Sludge Landfill**

- Minor infrastructure
- Entire site already permitted
- New procedures have greatly reduced odors
- No new equipment
- Lifespan beyond 20-years (35-40)

**Customer Base**

PUBLIC HEARING OF OCTOBER 17, 2016

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- City Maintains 5,600 accounts
- Bills quarterly
- Sewer charge directly related to water use
- Average sewer bill is \$107 per quarter

**Cost Impact to Customer**

- Private hauler - \$29 per quarter (27%)
- Landfill - \$17 per quarter (16%)

**Summary**

- Landfilling Saves \$5,300,000 versus next most feasible option
- Equates to 10%-15% in savings for each customer versus other options
- Stabilizes cost for the long run
- Odor concerns reduced
- Use of existing technology (no training)
- Recommend continue the disposal of sludge at the landfill based on cost, pricing volatility and new odor control procedures.

Alan Rousseau, 211 Betty Spring, presented the following testimony:

**Gardner Sludge Landfill Expansion Public Hearing Comments – 10/17/16**

My name is Alan Rousseau and I reside at 211 Betty Spring Road in Gardner. I am also a property abutter of the Sludge Landfill site. I would like to first thank the Gardner City Council for holding tonight's public hearing on this important issue. I have a handout for the Councilors tonight. The handout includes Gardner Sludge Landfill Site One Mile Radius and two Vicinity Maps

While my wife Sue and I live on the east end of Gardner, our camp in West Gardner is our second home. Most of our deceased relatives have graves at both Notre Dame and St. Johns Cemeteries. We have had to undergo many years of odors that have been emitted from both the Sludge Landfill and the former Solid Waste Landfill. We have a well on the property and are concerned about potential landfill liner leakage in the future. We now have grandchildren and do not want them exposed to landfill odors for the next 40 years. This sludge landfill expansion has major long term impact for residents of Gardner and Templeton. A 40+ year landfill will outlive many of us here today and will impact children, that are yet to be born, that will live in this area in the future. **We are very opposed to the Sludge Landfill Expansion!**

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The good news here is: “**we have options**”. Four options including Composting, Anaerobic Digestion, 3 Haul-Away Options, and Landfilling were presented by CDR Maguire to the City Council on September 19. **In my view however, the CDR Maguire presentation was a bit of a one-sided view of the options.** The CDR Maguire presentation included 4 summary pages on each of the four alternatives. For Composting, Anaerobic Digestion, and Haul-Away, nearly all negative aspects were in the presentation. For Landfilling, only the positive aspects were in the presentation. It felt to me like we were receiving a sales pitch on the Landfill expansion. If the non- landfill options were so bad, then why do 80% of Mass communities use these options?

I have reviewed the options and am recommending the Haul-Away option, for at least the next 3-5 years. The following are the advantages of the Haul-Away option based on a cost/benefit view. The **cost difference** between the Haul-Away and Landfilling options is only \$12/quarter per rate payer. This amounts to less than a dollar per week per rate payer.

The **benefits of the Haul-Away option** are the following. What does \$12/week buy us?

1. **Odors** are totally eliminated (rather than reduced) for the future residents & visitors of Gardner & Templeton. Clean air for the future!! As recent as 9/29/16 (only 10 days after our last meeting), strong odors were again experienced west of the existing landfill. It was very strong and I filed a complaint.
2. **Protects Property Values** of area residents. The home represents a major source of wealth & security for most families.
3. **Saves**, from permanent destruction, 8-10 acres of Gardner’s Wildwood Cemetery Forest which abuts the Cummings Otter River Conservation Area. The Wildwood Forest contains a major portion the Gardner Esker which may be one of the only intact eskers left in our area.
4. **Eliminates** potential sludge import from other communities by a future Gardner administration for additional revenue. This question was raised at the 9/19/16 meeting. According to Dave Boyer, MA DEP, in a 10/7/16 email to me: *“I don’t believe that the regulations prohibit receiving outside sludge due to the fact that there are some communities that receive sludge from other communities. Some communities can use this as a revenue stream but need (or should) take into consideration the life expectancy of the landfill and what will happen when capacity is reached. Again I would have to double check this.”*
5. **Provides flexibility** to migrate to another more environmentally friendly or lower cost option in the near future and we will not be locked into a 70-year commitment to a landfill that includes the post closure capping cost and 30 year maintenance / monitoring period.

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6. **Protects Templeton's Zone II Wellhead Protection Area** and the City of Gardner from any future liability resulting from contamination of the Templeton's water supply should a liner breach occur with this landfill in the future. By the current sludge volumes, 46,440 dry tons of sludge will be produced in a 40 year period (1,161 dt/yr x 40 yr). Thirty years ago, when the property was permitted for a Sludge Landfill, this ZONE II Wellhead Protection Area was not established. Contamination of another communities' public water supply is very serious and could expose Gardner to law suits of millions of dollars. Let's not be penny wise and pound foolish! Hubbardston recently stopped a plan to dump contaminated material from Boston in to Gardner's Zone II Wellhead Protection Area. That was a good example of environmental justice. Let's not become another Flint, Michigan type scenario.

To summarize, there are six good reasons to adopt the Haul-Away option. The Haul-Away option at an incremental cost of only \$12/ quarter per rate payer is a small investment for all of these benefits. The Haul-Away option will bring 46,440 dry tons over a 40 year period to a proper incineration facility where 90% of it will be eliminated vs. dumping it in a Zone II Wellhead Protection Area of a public water supply where it will be forever.

It's now time to end sludge dumping in West Gardner. Let's invest in a Haul-Away option starting in 2018. It's up to this City Council to make the right decision. Let's keep Gardner moving forward.

Gregory Dumas, Chairman, Conservation Commission, presented a letter to the City Council, extracted, as follows:

At their meeting of September 12, 2016 the Conservation Commission briefly discussed the matter of a proposed sludge landfill expansion project located adjacent to and abutting the Cummings Otter River Conservation Area. The Commission members expressed several questions concerning this matter and I submit them on their behalf as follows:

- The Cummings Conservation Area was acquired by the City of Gardner in 2012 with state and Federal funds under the Drinking Water Supply Protection and Forest Legacy Programs, respectively, for the purposes of water supply protection and sustainable forest management. The Conservation Area provides public benefits for forest management, watershed protection, open space recreation (including hiking, hunting and fishing), and conservation and education. It was protected and is actively managed for those purposes. Will this potential project in any way prevent this area from providing these public benefits?
- A glacial esker and an associated trail along its winding ridgeline exist within the Cummings Conservation Area which travels into and through a portion of the sludge landfill parcel. Will this esker and the ridgeline trail be impacted by the proposed project?

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- A recent Recreational Trails Grant received by the City of Gardner Conservation Commission will include improvements to the parking area and trails and the installation of signs, maps, and interpretive kiosks within the Cummings Conservation Area. Will the trails and trailheads located within the proposed sludge landfill expansion area still be publicly accessible under the proposed plan?
- Mass DEP regulated Priority Resources (e.g., Protected Open Space Land, Zone II Wellhead Protection Area, Potential Vernal Pool), Mass Fish and Wildlife Natural Heritage and Endangered Species Program designated Bio-map2 Core Habitat of rare species and a Critical Natural Landscape (e.g., Kettlehole Level Bog, Wetland Core Buffer), and several Mass DEP protected Wetland Resource Areas exist both within and nearby proximity of the parcel and proposed project area. Have potential environmental impacts with regard to these resource areas been taken into consideration and will they be affected by this proposed project?

Susan Rousseau, 211 Betty Spring Road, presented Petitions signed by 321 persons, attached.

John Caplis, Chairman of the Templeton Board of Selectmen, expressed concern that a leak or break in the landfill liner would affect Templeton's wells. He suggested that the City consider other options.

Paul Spano, 33 Adams Street, Gardner, stated that walking the Esker Ridge on the Conservation area, the odor from the existing landfill is quite strong and if continues, would render the area useless. He questioned if the entire 37-acre parcel was permitted by DEP.

Robert Sims stated that the Sludge Landfill Permit was issued for the entire 37-acre parcel, but that development plans must be filed with DEP.

Tom Cook, 168 Bridge Street, stated that his property directly abuts the landfill parcel. He said that the Cummings property is a beautiful addition; however, odors emanating from the landfill have negatively impacted the area. He expressed concern for any vertical expansion of the landfill.

Matthew LaPointe, Suez, stated that he has worked in Gardner as the Project Manager for over 9½ years. He said that he has worked diligently to control odors, citing more frequent cover being applied to the landfill. He noted that weather and wind speed affect sludge readings and that Suez has a contingency plan to control odors through the application of certain chemicals, which has yet to be tested.

Ivan Ussach, Millers River Watershed Council, expressed concerns about environmental impact, addressing potential liner failure and potential contamination of the recharge area



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and private wells. He noted that hauling sludge out of the City may be more attractive than the expansion option.

Ronald Davan, Water Superintendent, Templeton Municipal Light and Water, expressed concern that Templeton water wells could be contaminated in the event of a liner breach and that it would be costly to the Town to clean up any contamination.

Dexter Lison, 349 Pleasant Street, Gardner, testified that he is concerned about the cost of the proposed project, citing recent capital projects and the financial impact on Gardner's senior citizens,

Joan Gould, 104 Princeton Street, expressed concern about the watershed area and wells West Street vicinity.

Jim Rousseau, 84 Baptist Common Road, Templeton, expressed concern about the wellhead area near the sludge landfill, as well as odors permeating the cemeteries. He suggested investigating hybrid solutions.

Kirk Dembek, 23 Turner Street, Templeton, supported a hybrid solution.

Tom Rousseau, a former Gardner resident, stated that the landfill is not attractive in Gardner. Gardner should look to bring in business to help with taxes and expenses.

With no other persons presenting themselves, the Hearing was closed at 7:28 P.M. and adjourned.

**Accepted by the City Council:**

10/17/16

To: Gardner City Council  
Mayor Mark Hawke

The attached Petition is being submitted to you relative to the proposed expansion of the Gardner Sludge Landfill and adoption of sludge disposal alternatives.

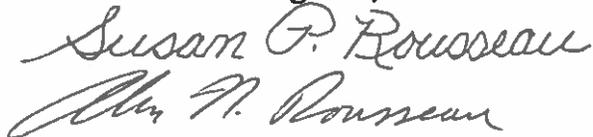
The Petition states:

**We request that Mayor Hawke and City Council Members halt plans to expand the Gardner Sludge Landfill and adopt sludge disposal alternatives.**

The petition contains 321 signatures on 24 pages collected by residents of Gardner and Templeton. The Petition is comprised of signatures collected via two methods (1) 214 hard-copy signatures and (2) 107 on-line signatures (via Change.org). Most of the signatures are of current Gardner & Templeton residents. Some of the signatures are of former residents or family of residents. Please note that the hard-copy signature sheets contain 10 duplicate names that are marked with a "D" and these signatures have been netted from the total count.

Please let us know if you have any questions.

With Our Best Regards,



Alan & Sue Rousseau

211 Betty Spring Road  
Gardner, MA 01440  
(978)-632-0618

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We support Gardner Clean Air

We request that Mayor Hawke and City Council Members halt plans to expand the Gardner Sludge Landfill and adopt sludge disposal alternatives.

| Last Name          | First Name | Email                      | Street Address    | City | State | Zip Code | Signature          |
|--------------------|------------|----------------------------|-------------------|------|-------|----------|--------------------|
| Haned              | Joon       | JG0410104@yahoo.com        | 104 Princeton St  | G    | MA    | 01440    | John McHaned       |
| Dude               | Tom        | TOMDUARCONCAST.NET         | 90 PRINCETON      | G    | MA    | 01440    | Tom DuArc          |
| Debasitis          | Margie     | —                          | 96 Princeton      | G    | MA    | 01440    | Margie Debasitis   |
| Girard             | Andrew     | remember@gmail.com         | 105 Princeton St. | G    | MA    | 01440    | Andrew Girard      |
| Girard             | Thomas     | —                          | 105 Princeton St  | G    | MA    | 01440    | Thomas Girard      |
| Girard             | Maureen    | maureen.girard@cast.net    | 105 Princeton St  | G    | MA    | 01440    | Maureen Girard     |
| GIRARD             | MARK       | LAPTOP.MJG.02EMAIL.COM     | 105 PRINCETON ST. | G    | MA    | 01440    | Mark Girard        |
| Girard             | Corey      | girard.corey@gmail.com     | 105 Princeton St. | G    | MA    | 01440    | Corey Girard       |
| LeBlanc            | David      | —                          | 12 Princeton      | G    | MA    | 01440    | David LeBlanc      |
| Blake              | EMMA       | —                          | 3 Princeton       | G    | MA    | 01440    | Emma Blake         |
| Sanderson          | Kimberly   | kimmiel@le90@yahoo.com     | 3 Princeton       | G    | MA    | 01440    | Kimberly Sanderson |
| Walker             | Myrtle     | <del>Myrtle@cast.net</del> | 246 Central St    | G    | MA    | 01440    | Myrtle Walker      |
| Ross               | David      | —                          | 60 S. Lake St     | G    | MA    | 01440    | David Ross         |
| Loretta Kusinushan | Loretta    | —                          | 315 Union         | G    | MA    | 01440    | Loretta Kusinushan |

Signed petitioners on this list will be inputted on this groups Change.org online petition

We support Gardner Clean Air

We request that Mayor Hawke and City Council Members halt plans to expand the Gardner Sludge Landfill and adopt sludge disposal alternatives.

| Last Name | First Name | Email                 | Street Address       | City    | State | Zip Code | Signature         |
|-----------|------------|-----------------------|----------------------|---------|-------|----------|-------------------|
| Stowell   | Bunnie     | BUNNIEBOB@VERIZON.COM | 47 Lake St, #403     | Gardner | MA    | 01440    | Bunnie Stowell    |
| Leger     | Verma      | —                     | 68 Sunrise Lane      | Gardner | MA    | 01440    | Verma Leger       |
| Girouard  | Theresa    | —                     | 67 Keyes Rd          | Gardner | MA    | 01440    | Theresa Girouard  |
| MARION    | EDWARD     | —                     | 60 Ridgewood LN      | Gardner | MA    | 01440    | Edward Marion     |
| Goguen    | Sandy      | —                     | 387 West St          | Gardner | MA    | 01440    | Sandra Goguen     |
| BURNS     | ANNIE      | —                     | PATRIDGE ST          | Gardner | MA    | 01440    | Annie Burns       |
| POSTER    | MARILYN    | —                     | 125 CONNORS ST       | Gardner | MA    | 01440    | Marilyn Poster    |
| ARES      | EVA        | —                     | 104 Church St        | Gardner | MA    | 01440    | Eva Ares          |
| VOISINE   | KATHERINE  | —                     | 301 Packer St        | Gardner | MA    | 01440    | Katherine Voisine |
| Kimball   | Diana      | —                     | 708 Stone Rd         | Gardner | MA    | 01440    | Diana Kimball     |
| D'Amico   | Marie      | —                     | 194 Central St, #428 | Gardner | MA    | 01440    | Marie D'Amico     |
| Ann       | Bergin     | Bergin                | 61 Lake St           | Gardner | MA    | 01440    | Ann Bergin        |
| JO-ANN    | THIBIDEAU  | —                     | 47 LAKE ST.          | Gardner | MA    | 01440    | Jo-Ann Thibideau  |
| Therese   | MORIN      | —                     | 125 CONNORS ST       | Gardner | MA    | 01440    | Therese Morin     |

Signed petitioners on this list will be inputted on this groups Change.org online petition

JG

We support Gardner Clean Air

We request that Mayor Hawke and City Council Members halt plans to expand the Gardner Sludge Landfill and adopt sludge disposal alternatives.

| Last Name | First Name | Email | Street Address   | City    | State | Zip Code | Signature                |
|-----------|------------|-------|------------------|---------|-------|----------|--------------------------|
| SAUTREAU  | ALBINA H.  | —     | 78 GREENWOOD PI  | GARDNER | MA    | 01440    | <i>Albina Sautreau</i>   |
| Leyere    | Normand    | —     | 344 Leominster   | Gardner | MA    | 01440    | <i>Normand Leyere</i>    |
| Viviane   | Reel       | —     | 301 Parker St    | Gardner | MA    | 01440    | <i>Viviane Reel</i>      |
| Caroly    | Reynolds   | —     | 265 Skinner St   | Gardner | MA    | 01440    | <i>Caroly Reynolds</i>   |
| Theresa   | Pope       | —     | 79 Bayberry Dr   | Gardner | MA    | 01440    | <i>Theresa Pope</i>      |
| Reber     | Isabel     | —     | 101 Lennon Dr    | Gardner | MA    | 01440    | <i>Isabel Reber</i>      |
| Sabrina   | Carol      | —     | 136 Princeton St | Gardner | MA    | 01440    | <i>Carol Sabrina</i>     |
| Laura     | Laura      | —     | 36 Rugby         | Gardner | MA    | 01440    | <i>Laura Laura</i>       |
| Comeau    | Yvette     | —     | 45 Princeton     | Gardner | MA    | 01440    | <i>Yvette Comeau</i>     |
| Correa    | Reinaldo   | —     | 46 Princeton St  | Gardner | MA    | 01440    | <i>Reinaldo Correa</i>   |
| Correa    | Reinaldo   | —     | 46 Princeton St  | Gardner | MA    | 01440    | <i>Reinaldo Correa</i>   |
| Maldonado | Melitta    | —     | 46 Princeton St  | Gardner | MA    | 01440    | <i>Melitta Maldonado</i> |
| WiiTA     | Scott      | —     | 68 Keyes Rd      | Gardner | MA    | 01440    | <i>Scott WiiTA</i>       |
| WiiTA     | Katelyn    | —     | 108 Keyes Rd     | Gardner | MA    | 01440    | <i>Katelyn WiiTA</i>     |

Signed petitioners on this list will be inputted on this groups Change.org online petition

JG

We support Gardner Clean Air

We request that Mayor Hawke and City Council Members halt plans to expand the Gardner Sludge Landfill and adopt sludge disposal alternatives.

| Last Name | First Name | Email                | Street Address | City       | State | Zip Code | Signature          |
|-----------|------------|----------------------|----------------|------------|-------|----------|--------------------|
| Ortolano  | LORENA     | —                    | 57 Keyes Rd    | Gardner MA | MA    | 01440    | <i>[Signature]</i> |
| MAHEW     | THOMAS     | —                    | 57 Keyes Rd    | Gardner MA | MA    | 01440    | <i>[Signature]</i> |
| Burgess   | Doreen     | Burgess44@yahoo.com  | 79 Keyes Rd    | Gardner MA | MA    | 01440    | <i>[Signature]</i> |
| Burgess   | Ronald     | —                    | 79 Keyes Rd    | Gardner MA | MA    | 01440    | <i>[Signature]</i> |
| Clark     | Nancy      | —                    | 90 Keyes Rd    | Gardner MA | MA    | 01440    | <i>[Signature]</i> |
| Clark     | Robert     | —                    | 90 Keyes Rd    | Gardner MA | MA    | 01440    | <i>[Signature]</i> |
| Scarello  | Ricardo    | rscarello@gmail.com  | 110 Edgell Ave | Gardner MA | MA    | 01440    | <i>[Signature]</i> |
| Scarello  | Amanda     | ascarello@gmail.com  | 110 Edgell Ave | Gardner MA | MA    | 01440    | <i>[Signature]</i> |
| MONGEAN   | Wendy      | —                    | 30 Edgell Ave  | Gardner MA | MA    | 01440    | <i>[Signature]</i> |
| BVINLAN   | mike       | miveg850@verizon.net | 48 Keyes Rd.   | Gardner MA | MA    | 01440    | <i>[Signature]</i> |
|           |            |                      |                |            |       |          |                    |
|           |            |                      |                |            |       |          |                    |
|           |            |                      |                |            |       |          |                    |
|           |            |                      |                |            |       |          |                    |

Signed petitioners on this list will be inputted on this groups Change.org online petition

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We support Gardner Clean Air  
 We request that Mayor Hawke and City Council Members halt plans to expand the Gardner Sludge Landfill and adopt sludge disposal alternatives.

| Last Name    | First Name          | Email            | Street Address | City    | State | Zip Code | Signature                             |
|--------------|---------------------|------------------|----------------|---------|-------|----------|---------------------------------------|
| RICHARDSON   | Subith              |                  | 128 RYAN ST.   | GARDNER | MA    | 01440    | <i>Quilto Richardson</i>              |
| Cook         | Jean                | jmcgdc@yahoo.com | 170 Ryan St    | Gardner | Ma    | 01440    | <i>Jean Cook</i>                      |
| Wickman      | horraine            |                  | 165 Ryan St.   |         |       |          | <i>Horraine Wickman</i>               |
| RICHARDSON   | BENJAMIN            |                  | 128 RYAN ST    | GARDNER | MA    | 01440    | <i>Benjamin Richardson</i>            |
| Hermanson    | Susan               |                  | 140 RYAN ST    | GARDNER | MA    | 01440    | <i>Susan Hermanson</i>                |
| Cook         | Dennis              |                  | 170 Ryan St.   | Gardner | Ma    | 01440    | <i>Dennis Cook</i>                    |
| Hermanson    | Michael             |                  | 140 RYAN ST    | GARDNER | MA    | 01440    | <i>Michael Hermanson</i>              |
| Clarkson     | Charles             |                  | 141 Ryan St.   | Gardner | MA    | 01440    | <i>Charles Clarkson</i>               |
| MOORE        | SALLY               |                  | 205 RYAN ST    | GARDNER | MA    | 01440    | <i>Sally Moore</i>                    |
| MOORE        | THOMAS              |                  | 205 RYAN ST    | GARDNER | MA    | 01440    | <i>Thomas Moore</i>                   |
| VAILLAICOURT | Peter               |                  | 227 RYAN ST.   | Gardner | MA    | 01440    | <i>Peter Vaillancourt</i>             |
| Nobrega      | Connie              |                  | 216 RYAN ST    | GARDNER | MA    | 01440    | <i>Connie Nobrega</i>                 |
| Forgues      | Joshua<br>Cassandra |                  | 104 RYAN ST    | Gardner | MA    | 01440    | <i>Joshua &amp; Cassandra Forgues</i> |
| Forgues      |                     |                  | 104 RYAN ST    | Gardner | MA    | 01440    | <i>C. Forgues</i>                     |

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We support Gardner Clean Air

We request that Mayor Hawke and City Council Members halt plans to expand the Gardner Sludge Landfill and adopt sludge disposal alternatives.

| Last Name | First Name | Email                      | Street Address | City    | State | Zip Code | Signature       |
|-----------|------------|----------------------------|----------------|---------|-------|----------|-----------------|
| WHITE     | JOHN       |                            | 92 RYAN ST     | GARDNER | MA    | 01440    | John White      |
| White     | MARCO      | MARSHIE13@GMAIL.COM        | 92 RYAN ST     | GARDNER | MA    | 01440    | Marcia White    |
| OWEN      | RON        | -                          | 91 RYAN        | Gardner | MA    | 01440    | Ron Owen        |
| Guerin    | Ron        |                            | 121 Ryan       | Gardner | MA    | 01440    | Ron Owen        |
| Lajoie    | Sherry     | slajoie48@hotmail.com      | 175 Ryan       | Gardner | MA    | 01440    | Sherry Lajoie   |
| Lajoie    | JANET      | richardlajoie110@gmail.com | 110 RYAN       | Gardner | MA    | 01440    | Janet Lajoie    |
| Blackson  | Pamela     | pmuse04@msn.com            | 141 Ryan St    | Gardner | MA    | 01440    | Pamela Blackson |
| Lajoie    | ROLAND     |                            | 175 RYAN ST    | GARDNER | MA    | 01440    | Roland Lajoie   |
| Indeglia  | David      |                            | 161 RYAN ST    |         |       |          | David Indeglia  |
| Indeglia  | SARA       |                            | 161 RYAN ST    |         |       |          | Sara Indeglia   |
|           |            |                            |                |         |       |          |                 |
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We support Gardner Clean Air

We request that Mayor Hawke and City Council Members halt plans to expand the Gardner Sludge Landfill and adopt sludge disposal alternatives.

| Last Name | First Name | Email                    | Street Address     | City        | State | Zip Code | Signature          |
|-----------|------------|--------------------------|--------------------|-------------|-------|----------|--------------------|
| LANG      | MARY       | mlang@netzplus.com       | 2 WILLOW ST        | TEMP        | MA    | 01468    | Mary M Lang        |
| Burgess   | wildow     | Burgess.wildow@gmail.com | Turner St          | OTTER RIVER | MA    | 01430    | Wilder Burgess     |
| WILDER    | EUSENE     | gwuwtemp@aol.com         | 359 OTTER RIVER RD | TEMPERON    | MA    | 01468    | Eugene Wilder      |
| Wilder    | Virginia   | gwvwtemp@aol.com         | 359 Otter River Rd | Temple      | MA    | 01468    | Virginia Wilder    |
| Meunier   | Deborah    |                          | 472 Otter River Rd | Templeton   | Ma    | 01468    | Deborah Meunier    |
| Meunier   | Kenneth    |                          | 472 Otter River Rd | Templeton   | Ma    | 01468    | Kenneth P. Meunier |
|           |            |                          |                    |             |       |          |                    |
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We support Gardner Clean Air

We request that Mayor Hawke and City Council Members halt plans to expand the Gardner Sludge Landfill and adopt sludge disposal alternatives.

| Last Name | First Name | Email | Street Address       | City         | State | Zip Code | Signature        |
|-----------|------------|-------|----------------------|--------------|-------|----------|------------------|
| MIKIAS    | WALTER     |       | 206 LEAMY            | GARDNER      | MA    | 01440    | Walter Mikias    |
| Salam     | Wayne      |       | 12 CLAIREFUE         | Baldwinville | MA    | 01456    | Wayne Salam      |
| Handy     | WALTER     |       | 31 WATER ST          | ASHBURNHAM   | MA    | 01430    | Walter Handy     |
| ESPOSITO  | THOMAS     |       | 12 LASHUA RD.        | ASHBURNHAM   | MA    | 01430    | Thomas Esposito  |
| Salam     | Kathleen   |       | 12 Claire Ave        | Baldwinville | MA    | 01436    | Kathleen Salam   |
| Salam     | Ronald     |       | 12 Claire Ave        | Baldwinville | MA    | 01436    | Ronald Salam     |
| Salam     | Kyle       |       | 12 CLAIREFUE         | Baldwinville | MA    | 01436    | Kyle Salam       |
| Pelletier | George     |       | 81 Airport Rd        | Gardner      | MA    | 01468    | George Pelletier |
| Jaillet   | Gerard     |       | 176 Summer           | Gardner      | MA    | 01440    | Gerard Jaillet   |
| Jaillet   | Shirley    |       | 176 Summer           | Gardner      | MA    | 01440    | Shirley Jaillet  |
| AHLSTROM  | RONALD     |       | 48 A St              | Gardner      | MA    | 01440    | Ronald Ahlstrom  |
| LANNAN    | JAMES      |       | 111 CHURCH ST RT 11D | GARDNER      | MA    | 01440    | James Lannan     |
| LEBLANC   | ROGER      |       | 66 CONANT ST         | GARDNER      | MA    | 01440    | Roger LeBlanc    |
| LEBLANC   | PATRICIA   |       | 66 CONANT ST         | GARDNER      | MA    | 01440    | Patricia LeBlanc |

Signed petitioners on this list will be inputted on this groups Change.org online petition

We support Gardner Clean Air

We request that Mayor Hawke and City Council Members halt plans to expand the Gardner Sludge Landfill and adopt sludge disposal alternatives.

| Last Name  | First Name | Email | Street Address      | City      | State | Zip Code | Signature       |
|------------|------------|-------|---------------------|-----------|-------|----------|-----------------|
| Blair      | Judy       |       | 116 Church St       | Gardner   | Mass  | 01440    | Judy Blair      |
| Choutier   | Carol      |       | 125 Conners St.     | Gardner   | MA    | 01440    | Carol Choutier  |
| Manca      | Lorraine   |       | 110 Temple St       | Gardner   | MA    | 01440    | Lorraine Manca  |
| Burpee     | Brian      |       | 109 Edgell St       | Gardner   | MA    | 01440    | Brian K. Burpee |
| Mikas      | Helen      |       | 206 Leamy St.       | Gardner   | MA    | 01440    | Helen Mikas     |
| WILDER     | EUGENE     |       | 359 OTTER RIVER RD  | TEMPLETON | MA    | 01468    | Eugene Wilder   |
| Wilder     | Virginia   |       | 359 Otter River Rd. | Templeton | MA    | 01468    | Virginia Wilder |
| Sichonski  | HENRY      |       | 163 Leamy St        | Gardner   | MA    | 01440    | Henry Sichonski |
| LADYBY     | MIKE       |       | 41 KENDALL ST       | GARDNER   | MA    | 01440    | Mike Ladyby     |
| Jandrowski | John       |       | 162 Blackbird       | Gardner   | MA    | 01440    | John Jandrowski |
| ERICKSON   | Paula      |       | 183 Connors St      | Gardner   | MA    | 01440    | Paula Erickson  |
| DANING     | STEVE      |       | 202 Leamy St        | Gardner   | MA    | 01440    | Steve Daning    |
| DARLING    | LAURKA     |       | 202 Leamy St.       | GARDNER   | MA    | 01440    | Laurka Darling  |
| PERINCI    | Raymond    |       | POSEWID DRIVE       | GARDNER   | MA    | 01440    | Raymond Perinci |

Signed petitioners on this list will be inputted on this groups Change.org online petition

We support Gardner Clean Air

We request that Mayor Hawke and City Council Members halt plans to expand the Gardner Sludge Landfill and adopt sludge disposal alternatives.

| Last Name | First Name | Email                          | Street Address | City          | State | Zip Code | Signature       |
|-----------|------------|--------------------------------|----------------|---------------|-------|----------|-----------------|
| Belliveau | Julie      | jewellic0674@comcast.net       | 425 West St.   | Gardner       | MA    | 01440    | Julie Belliveau |
| Belliveau | Scott      | " "                            | " "            | Gardner       | MA    | 01440    | Jim Belliveau   |
| Goffman   | Aldric     | no email                       | 249 West St    |               |       |          | obvio. hysen    |
| Boroughs  | Linda      | We have it.                    | 475 West St    | Gardner       | Ma    | 01440    | Linda Boroughs  |
| PARVEY    | Malcolm    | MA2-PARVIEY@NET<br>VERIZON     | 491 WEST ST.   | GARDNER<br>MA | MA    | 01440    | Malcolm Parvey  |
| Ortiz     | Michael    | Michael B Orliz @ Live<br>.com | 549 West st    | Gardner       | MA    | 01440    | MJ              |
| Cullen    | Ana        | Ana M colon @ Live.<br>com     | 549 West st.   | Gardner       | MA    | 01440    | CA Cullen       |
| Azuno     | Becky      | Verjica Azuno @ Live.com       | 549 West st.   | Gardner       | MA    | 01440    | Becky Azuno     |
| Maillet   | JAMES      | JAM1635@hoptuil.com            | 575 West St    | Gardner       | MA    | 01440    | James Maillet   |
| Maxcil    | Jenmie     | tlaclandscaping@yahoo.com      | 647 West St    | Gardner       | Ma    | 01440    | Jenmie Maxcil   |
| LaDeane   | Richard    | no email                       | 570 West St.   | Gardner       | MA    | 01440    | Richard LaDeane |
| Newener   | Susan      | no email                       | 570 West St.   | Gardner       | Ma    | 01440    | Susan Newener   |
| Foisy     | Carleen    | no email                       | 552 West St.   | Gardner       | Ma.   | 01440    | Carleen Foisy   |
| RHEAULT   | ROBERT     | MARIE RHEAULT@YAHOO.COM        | 443 WEST ST    | GARDNER       | MA    | 01440    | Robert Rheault  |

Signed petitioners on this list will be inputted on this groups Change.org online petition

JP

We request that Mayor Hawke and City Council Members halt plans to expand the Gardner Sludge Landfill and adopt sludge disposal alternatives. We support Gardner Clean Air

| Last Name | First Name | Email                      | Street Address      | City    | State | Zip Code | Signature   |
|-----------|------------|----------------------------|---------------------|---------|-------|----------|-------------|
| St. Peter | Todd       | usms0002000@icloud.com     | 42 Watkins St       | Gardner | MA    | 01440    | [Signature] |
| Deveney   | John       | Jonathan.deveney@gmail.com | 21 Richardson St    | Gardner | MA    | 01440    | [Signature] |
| Gony      | Keith      | kgony@att.net              | Princeton           | Gardner | MA    | 01440    | [Signature] |
| Grady     | Michael    | no email address           | Princeton           | Gardner | MA    | 01440    | [Signature] |
| Boucher   | Debra      |                            | 115 Princeton St    | Gardner | MA    | 01440    | [Signature] |
| Girard    | Coney      |                            | 105 Princeton St    | Gardner | MA    | 01440    | [Signature] |
| Girard    | Thomas     |                            | 105 Princeton St    | Gardner | MA    | 01440    | [Signature] |
| Girard    | Andrew     |                            | 105 Princeton St    | Gardner | MA    | 01440    | [Signature] |
| Mara      | Gina       | already have email         | 93 Princeton St     | Gardner | MA    | 01440    | [Signature] |
| Richard   | Self       | mitsefe@msn.com            | 77 Princeton St     | Gardner | MA    | 01440    | [Signature] |
| Someare   | Yarettz    | 46 Princeton               | -                   | Gardner | MA    | 01440    | [Signature] |
| Martinski | Wlyka      | vmartinski@web.com         | 38 Princeton Street | Gardner | MA    | 01440    | [Signature] |
| Burgess   | Kon        | already have               | 79 Keys             | Gardner | MA    | 01440    | [Signature] |
| Burgess   | Breen      | already have               | 79 Keys             | Gardner | MA    | 01440    | [Signature] |

Signed petitioners on this list will be inputted on this groups Change.org online petition

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21

We support Gardner Clean Air  
 We request that Mayor Hawke and City Council Members halt plans to expand the Gardner Sludge Landfill and adopt sludge disposal alternatives.

| Last Name | First Name  | Email                  | Street Address | City    | State | Zip Code | Signature   |
|-----------|-------------|------------------------|----------------|---------|-------|----------|-------------|
| Lorson    | Doreen      | already have.          | 57 Keyes Rd    | Gardner | MA    | 01440    | [Signature] |
| Tracy     | Doreen      | already have           | 51 Keyes Rd    | Gardner | MA    | 01440    | [Signature] |
| Logan     | Doreen      | born-doreen@yahoo.com  | 51 Keyes Rd    | Gardner | MA    | 01440    | [Signature] |
| Mahoney   | Rebecca     | Beckums884@gmail.com   | 38 Keyes Rd    | Gardner | MA    | 01440    | [Signature] |
| Mahoney   | Christopher | hpstordtech@yahoo.com  | 38 Keyes Rd    | Gardner | MA    | 01440    | [Signature] |
| Hugh      | KATHY       | Kathymough60@gmail.com | 12 Rusby St.   | Gardner | MA    | 01440    | [Signature] |
| Mangano   | Amy         | alicesjost77@aol.com   | 30 Edgell Ave  | Gardner | MA    | 01440    | [Signature] |
|           |             |                        |                |         |       |          |             |
|           |             |                        |                |         |       |          |             |
|           |             |                        |                |         |       |          |             |
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|           |             |                        |                |         |       |          |             |

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Signed petitioners on this list will be inputted on this groups Change.org online petition

D

TRC

We support Gardner Clean Air  
 We request that Mayor Hawke and City Council Members halt plans to expand the Gardner Sludge Landfill and explore sludge disposal alternatives.

| Last Name | First Name | Email                       | Street Address      | City        | State | Zip Code | Signature |
|-----------|------------|-----------------------------|---------------------|-------------|-------|----------|-----------|
| Laporte   | Jeffrey    | Laporte.Jeff@Yahoo.com      | 417 State Rd        | Other River | MA    | 01436    |           |
| Wamel     | Amanda     | mandagirl2000@yahoo.com     | 411 Steteland       | Other River | MA    | 01436    |           |
| Boutotte  | Leah       | lboutotte@hotmail.com       | 403 State Rd        | Other River | MA    | 01436    |           |
| Martic    | Sarah      | martinsel29@gmail.com       | 399 State Rd        | Other River | MA    | 01436    |           |
| LAMBERT   | Billy      |                             | 282 LOSTER RIVER RD | Other River | MA    | 01440    |           |
| Dow       | John       | Dow John G @Gmail           | 383 State Rd        | Other River | MA    | 01436    |           |
| Dow       | Peggy      |                             | 383 State Rd        | Other River | MA    | 01436    |           |
| Dow       | Tomy       |                             | 383 State Rd        | Other River | MA    | 01436    |           |
| Rota      | Cheryl     | cherylr47@hotmail           | 372 State Rd        | Other River | MA    | 01436    |           |
| Dufuis    | Kenneth    | Kenneth.Dufuis26@yahoo.com  | 12 Pine St          | Other River | MA    | 01436    |           |
| Dufuis    | Laura      | Laura.Hoge@Prescriptive.com | 12 Pine St          | Other River | MA    | 01436    |           |
| MATUKAS   | PATTI      | CARE 530 COMCAST.NET        | 16 PINE DR          | Other River | MA    | 01436    |           |
| LEBLANC   | DONALD     |                             | PINE DR             | Other River | MA    | 01436    |           |
| Toutigny  | Sacrb      |                             | State Rd            | Other River | MA    | 01436    |           |

Signed petitioners on this list will be inputted on this groups Change.org online petition

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TR

We support Gardner Clean Air  
 We request that Mayor Hawke and City Council Members halt plans to expand the Gardner Sludge Landfill and adopt sludge disposal alternatives.

| Last Name | First Name  | Email | Street Address | City        | State | Zip Code | Signature           |
|-----------|-------------|-------|----------------|-------------|-------|----------|---------------------|
| Beaupre   | Nancy       |       | 415 State Rd   | Otter River | MA    | 01436    | N Beaupre           |
| Roden     | Gene        |       | Pine Dr        | "           | "     | 01436    | Gene Roden          |
| Willis    | Bryan       |       | 26 Pine Dr.    | "           | "     | 01436    | Bryan Willis        |
| Knowlton  | KEN         |       | 32 Pine Dr     | "           | "     | "        | Ken Knowlton        |
| Knowlton  | BETTY       |       | 32 Pine Dr     | "           | "     | "        | Betty Knowlton      |
| Barbara   | Zalneraitis |       | 8 Sand Rd.     | "           | "     | 01436    | Barbara Zalneraitis |
| 05600     | mylene      |       | 8 Sand rd      |             |       | 01436    | mylene              |
| Mailbox   | Shana       |       | 389 State Rd   | Bald        | MA    | 01436    | Shana               |
| Luksha    | Chris       |       | 389 State rd   | Bald        | MA    | 01436    | Chris Luksha        |
|           |             |       |                |             |       |          |                     |
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Signed petitionors on this list will be inputted on this groups Change.org online petition

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Jim K.

We request that Mayor Hawke and City Council Members halt plans to expand the Gardner Sludge Landfill and adopt sludge disposal alternatives. We support Gardner Clean Air

| Last Name | First Name | Email                | Street Address  | City    | State | Zip Code | Signature               |
|-----------|------------|----------------------|-----------------|---------|-------|----------|-------------------------|
| Smith     | Shirley    | shir193421@gmail.com | 376 State Rd    | O.R.    | MA    | 01436    | <i>Shirley A. Smith</i> |
| Duplessis | Janece     | JAD                  | 329 State Rd.   | O.R.    | MA    | 01436    | <i>Janece Duplessis</i> |
| Duplessis | Bartoway   | -                    | 369 State Rd    | O.R.    | MA    | 01436    | <i>Bart Duplessis</i>   |
| Duplessis | Drew M.    | -                    | 371 State Rd    | O.R.    | MA    | 01436    | <i>Drew Duplessis</i>   |
| FRISCH    | GALUT      | -                    | 363 STATE RD.   | O.R.    | MA    | 01436    | <i>Jacey A. Frisch</i>  |
| BLAKE     | LINDA      | -                    | 356 STATE RD    | O.R.    | MA    | 01436    | <i>Linda K. Blake</i>   |
| TELLO     | JARED      | -                    | 6 H. WIDE PLACE | OR      | MA    | 01436    | <i>Jared Tello</i>      |
| Wislochi  | Nicole     | -                    | 15 Pine Drive   | OR      | MA    | 01436    | <i>Nicole Wislochi</i>  |
| CUT       | TOBB       | -                    | 23 Pine Dr      | OR      | MA    | 01436    | <i>Todd Cut</i>         |
| Stewart   | Richard    | -                    | 31 Pine Dr      | OR      | MA    | 01436    | <i>Richard Stewart</i>  |
| HAMEL     | JOHN       | -                    | 14 SAND RD      | OR      | MA    | 01436    | <i>John Hamel</i>       |
| HAMEL     | Carolyn    | -                    | 14 Sand Rd      | Baldwin | MA    | 01436    | <i>Carolyn Hamel</i>    |
|           |            |                      |                 |         |       |          |                         |
|           |            |                      |                 |         |       |          |                         |

Signed petitioners on this list will be inputted on this groups Change.org online petition

Jim R.

We support Gardner Clean Air  
We request that Mayor Hawke and City Council Members halt plans to expand the Gardner Sludge Landfill and adopt sludge disposal alternatives.

| Last Name | First Name | Email | Street Address                       | City | State | Zip Code | Signature         |
|-----------|------------|-------|--------------------------------------|------|-------|----------|-------------------|
| Poirier   | Roy        |       | 414 State Rd<br>Otter River MA 01436 |      |       |          | Roy Poirier       |
| Perkas    | Tammy      |       | 3 Morse Ave                          |      |       |          | Tammy Perkas      |
| Richard   | DAN        |       | 6 MOOSE AVE<br>OTTER RIVER           |      | MA    | 01436    | Dan Richard       |
| Chris     | Coates     |       | 21 Morse Ave, Otter River            |      | MA    | 01436    | Chris Coates      |
| MASON     | Daniel     |       | 10 MORSE AVE                         |      | MA    | 01436    | Daniel Mason      |
| Hamel     | Eric       |       | 408 State Rd                         |      | MA    | 01436    | Eric Hamel        |
| Sillanpaa | Barbara    |       | 598 State Rd                         |      | MA    | 01436    | Barbara Sillanpaa |
|           |            |       |                                      |      |       |          |                   |
|           |            |       |                                      |      |       |          |                   |
|           |            |       |                                      |      |       |          |                   |
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|           |            |       |                                      |      |       |          |                   |

Signed petitioners on this list will be inputted on this groups Change.org online petition

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SK/mic

We request that Mayor Hawke and City Council Members halt plans to expand the Gardner Sludge Landfill and adopt sludge disposal alternatives. We support Gardner Clean Air

| Last Name                       | First Name | Email                     | Street Address      | City       | State | Zip Code | Signature                |
|---------------------------------|------------|---------------------------|---------------------|------------|-------|----------|--------------------------|
| Pellerin                        | Leo        |                           | 23 Ryan St          | Gardner    | MA    | 01440    | <i>Leo Pellerin</i>      |
| <del>Pellerin</del><br>Pellerin | Carmen     | carmenleo2013@verizon.net | 23 Ryan St          | Gardner    | Ma    | 01440    | <i>Carmen Pellerin</i>   |
| Oxford                          | Kyote      |                           | 95 Ryan St.         | Gardner    | Ma    | 01440    | <i>[Signature]</i>       |
| Godin                           | Michael    | m.r.godin286@gmail.com    | 244 Grove Ave.      | Wilmington | MA    | 01453    | <i>Michael Godin</i>     |
| Garrett                         | Keshon     |                           | 8 valley view way   | Ayer       | MA    | 01464    | <i>Keshon Garrett</i>    |
| Birrell                         | Anthony    |                           | 30 Cambridge Street | Ayer       | MA    | 01432    | <i>Anthony Birrell</i>   |
| Forgues                         | Zosh       |                           | 104 Glen St         | Gardner    | MA    | 01440    | <i>[Signature]</i>       |
| Richard                         | Clardette  | mmpaperb@yahoo.com        | 77 Glen Rd          | Gardner    | MA    | 01440    | <i>Clardette Richard</i> |
| Richard                         | Eric       |                           | 77 Glen Rd          | Gardner    | MA    | 01440    | <i>Eric Richard</i>      |
| O'Conrod                        | Daniel     |                           | 53 Glen Rd          | Gardner    | MA    | 01440    | <i>[Signature]</i>       |
| Raymond                         | Eliwood    |                           | 42 Glen Rd          | Gardner    | MA    | 01440    | <i>Eliwood Raymond</i>   |
| Brogan                          | Patrick    | Patrickbrogan25@gmail.com | 33 Glen RD          | Gardner    | MA    | 01440    | <i>Patrick Brogan</i>    |
| Brogan                          | Sheroni    |                           | 33 Glen RD          | Gardner    | MA    | 01440    | <i>Sheroni Brogan</i>    |
| Sullivan                        | Nancy      |                           | 63 Ryan St.         | Gardner    | MA    | 01440    | <i>Nancy Sullivan</i>    |

D

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VH

We support Gardner Clean Air

We request that Mayor Hawke and City Council Members halt plans to expand the Gardner Sludge Landfill and adopt sludge disposal alternatives.

| Last Name  | First Name | Email | Street Address      | City       | State | Zip Code | Signature                |
|------------|------------|-------|---------------------|------------|-------|----------|--------------------------|
| HURSEY III | VAN        |       | 499 PARKER ST       | Gardner    | MA    | 01440    | <i>Van M. Hursey III</i> |
| WATERS     | KAREN      |       | 53 Prospect St      | Gardner MA | MA    | 01440    | <i>Karen Waters</i>      |
| Polise     | Russ       |       | 194 Central St.     | Gardner MA | MA    | 01440    | <i>Russ Polise</i>       |
| ROBERGE    | TOM        |       | 192 CENTRAL ST.     | GARDNER MA | MA    | 01440    | <i>Thomas A. Roberge</i> |
| Roque      | Robert     |       | 111 Maple St        | Gardner MA | MA    | 01440    | <i>Robert Roque</i>      |
| Perla      | Anthony    |       | 62 Greenwood St     | Gardner MA | MA    | 01440    | <i>Anthony Perla</i>     |
| Reeirez    | RON        |       | 162 Bethel Av       | GARDNER MA | MA    | 01440    | <i>Ronald B. Reeirez</i> |
| Gallant    | James      |       | 210 Elm St          | Gardner MA | MA    | 01440    | <i>James Gallant</i>     |
| HURSEY JR  | VAN        |       | 499 PARKER          | Gardner MA | MA    | 01440    | <i>Van M. Hursey Jr</i>  |
| Trainque   | Kyle       |       | 123 Chestnut street | Gardner MA | MA    | 01440    | <i>Kyle Trainque</i>     |
| SENECAL    | PAUL       |       | 24 STORE ROAD       | GARDNER MA | MA    | 01440    | <i>Paul Senecal</i>      |
| Pelchat    | Shene      |       | 55 Carlson Lane     | " "        | " "   | " "      | <i>Shene Pelchat</i>     |
| LAROCQUE   | SHIRLEY    |       | 56 FIFTH ST GARDNER | " "        | " "   | 01440    | <i>Shirley Larocque</i>  |

Signed petitioners on this list will be inputted on this groups Change.org online petition





|    | A                                                                                                                                                    | B                                                       | C              | D               | E              | F                |
|----|------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------|----------------|-----------------|----------------|------------------|
| 1  | 10/14/2016                                                                                                                                           | <b>Gardner Clean Air Online Petition via Change.org</b> |                |                 |                |                  |
| 2  | <b>We request that Mayor Hawke and City Council Members halt plans to expand the Gardner Sludge Landfill and adopt sludge disposal alternatives.</b> |                                                         |                |                 |                |                  |
| 3  | <b>Name</b>                                                                                                                                          | <b>City</b>                                             | <b>State</b>   | <b>Zip Code</b> | <b>Country</b> | <b>Signed On</b> |
| 4  | Jen Parkhurst                                                                                                                                        | Hudson                                                  | New Hampshire  | 03051           | United States  | 6/25/2014        |
| 5  | john parkhurst                                                                                                                                       | Pelham                                                  | New Hampshire  | 03076           | United States  | 6/25/2014        |
| 6  | Susan Rousseau                                                                                                                                       | Gardner                                                 | Massachusetts  | 01440           | United States  | 6/25/2014        |
| 7  | Thomas Rousseau                                                                                                                                      | Gardner                                                 | Massachusetts  | 01440           | United States  | 7/5/2014         |
| 8  | Alan Rousseau                                                                                                                                        | Gardner                                                 | Massachusetts  | 01440           | United States  | 7/9/2014         |
| 9  | Scott Cordeiro                                                                                                                                       | Gardner                                                 | Massachusetts  | 01440           | United States  | 7/9/2014         |
| 10 | Steven Wilson                                                                                                                                        | Hubbardston                                             | Massachusetts  | 01452           | United States  | 7/10/2014        |
| 11 | Nicole Koupiaris                                                                                                                                     | Boonton                                                 | New Jersey     | 07005           | United States  | 7/10/2014        |
| 12 | Brenda Richard                                                                                                                                       | Gardner                                                 | Massachusetts  | 01440           | United States  | 7/10/2014        |
| 13 | Chris Garcia                                                                                                                                         | Fitchburg                                               | Massachusetts  | 01420           | United States  | 7/10/2014        |
| 14 | Chelsea Robichaud                                                                                                                                    | Gardner                                                 | Massachusetts  | 01440           | United States  | 7/10/2014        |
| 15 | Mike Reppucci                                                                                                                                        | Gardner                                                 | Massachusetts  | 01440           | United States  | 7/10/2014        |
| 16 | Michael Busack Jr.                                                                                                                                   | Roslindale                                              | Massachusetts  | 02131           | United States  | 7/10/2014        |
| 17 | Alan Arsenault                                                                                                                                       | Gardner                                                 | Massachusetts  | 01440           | United States  | 7/10/2014        |
| 18 | Kristen Kieffer                                                                                                                                      | Otter River                                             | Massachusetts  | 01436           | United States  | 7/10/2014        |
| 19 | Catherine Donovan                                                                                                                                    | Clayton                                                 | North Carolina | 27520           | United States  | 7/10/2014        |
| 20 | Lisa Anderson                                                                                                                                        | Hudson                                                  | New Hampshire  | 03051           | United States  | 7/10/2014        |
| 21 | Rebekah Lore                                                                                                                                         | Gardner                                                 | Massachusetts  | 01440           | United States  | 7/10/2014        |
| 22 | Angela Jalbert                                                                                                                                       | Gardner                                                 | Massachusetts  | 01440           | United States  | 7/10/2014        |
| 23 | Jason Johnson                                                                                                                                        | Gardner                                                 | Massachusetts  | 01440           | United States  | 7/10/2014        |
| 24 | Danielle Chaves                                                                                                                                      | Gardner                                                 | Massachusetts  | 01440           | United States  | 7/10/2014        |
| 25 | David Page                                                                                                                                           | Gardner                                                 | Massachusetts  | 01440           | United States  | 7/10/2014        |
| 26 | Debra LeBlanc                                                                                                                                        | Templeton                                               | Massachusetts  | 01436           | United States  | 7/10/2014        |
| 27 | Kathleen Roth                                                                                                                                        | Templeton                                               | Massachusetts  | 01468           | United States  | 7/10/2014        |
| 28 | Julie McDonald                                                                                                                                       | Gardner                                                 | Massachusetts  | 01440           | United States  | 7/10/2014        |
| 29 | Michael Martin                                                                                                                                       | Gardner                                                 | Massachusetts  | 01440           | United States  | 7/10/2014        |
| 30 | trevor toney                                                                                                                                         | baldwinville                                            | Massachusetts  | 01436           | United States  | 7/10/2014        |
| 31 | Mary Tierney                                                                                                                                         | Gardner                                                 | Massachusetts  | 01440           | United States  | 7/10/2014        |
| 32 | Patricia Flynn                                                                                                                                       | Gardner                                                 | Massachusetts  | 01440           | United States  | 7/10/2014        |
| 33 | Pete LaBelle                                                                                                                                         | Gardner                                                 | Massachusetts  | 01440           | United States  | 7/10/2014        |
| 34 | Jon Korhonen                                                                                                                                         | Gardner                                                 | Massachusetts  | 01440           | United States  | 7/10/2014        |
| 35 | Paul Grammont                                                                                                                                        | Gardner                                                 | Massachusetts  | 01440           | United States  | 7/10/2014        |
| 36 | Melissa Walter                                                                                                                                       | Gardner                                                 | Massachusetts  | 01440           | United States  | 7/10/2014        |
| 37 | JACOB NEWCOMB                                                                                                                                        | gardner                                                 | Massachusetts  | 01440           | United States  | 7/10/2014        |
| 38 | karyssa greenan                                                                                                                                      | winchendon                                              | Massachusetts  | 01475           | United States  | 7/10/2014        |
| 39 | Divine Santiago                                                                                                                                      | Stoughton                                               | Massachusetts  | 02072           | United States  | 7/10/2014        |
| 40 | Frances LeMieux                                                                                                                                      | Phillipston                                             | Massachusetts  | 01331-9381      | United States  | 7/10/2014        |
| 41 | Ethan Cook                                                                                                                                           | Fitchburg                                               | Massachusetts  | 01420           | United States  | 7/11/2014        |
| 42 | Lyndy Scott                                                                                                                                          | Gardner                                                 | Massachusetts  | 01440           | United States  | 7/11/2014        |
| 43 | Sherry Caissey                                                                                                                                       | gardner                                                 | Massachusetts  | 01440           | United States  | 7/11/2014        |

|    | A                   | B                | C             | D     | E             | F         |
|----|---------------------|------------------|---------------|-------|---------------|-----------|
| 44 | Debra Vaughan       | Gardner          | Massachusetts | 01440 | United States | 7/11/2014 |
| 45 | Nikos Jordan        | Tigard           | Oregon        | 97224 | United States | 7/11/2014 |
| 46 | Andy Langlois       | Waterbury Center | Vermont       | 05677 | United States | 7/11/2014 |
| 47 | Evan Huhtala        | Gardner          | Massachusetts | 01440 | United States | 7/11/2014 |
| 48 | Lorin Walter        | Gardner          | Massachusetts | 01440 | United States | 7/11/2014 |
| 49 | Bonnie O'Brien      | Gardner          | Massachusetts | 01440 | United States | 7/11/2014 |
| 50 | Brandi Roberts      | Winchendon       | Massachusetts | 01475 | United States | 7/11/2014 |
| 51 | Linda Page          | Gardner          | Massachusetts | 01440 | United States | 7/12/2014 |
| 52 | Richard D. LaLaJoie | Gardner          | Massachusetts | 01440 | United States | 7/14/2014 |
| 53 | Keith Greenlaw      | gardner          | Massachusetts | 01440 | United States | 7/14/2014 |
| 54 | Linda Gough         | Gardner          | Massachusetts | 01440 | United States | 7/14/2014 |
| 55 | Dennis Kaplan       | Mayfield Heights | Ohio          | 44124 | United States | 7/14/2014 |
| 56 | Gerard Biron        | Gardner          | Massachusetts | 01440 | United States | 7/14/2014 |
| 57 | Kristina Berner     | Gardner          | Massachusetts | 01440 | United States | 7/15/2014 |
| 58 | Wendy Weaver        | Angola           | Indiana       | 46703 | United States | 7/17/2014 |
| 59 | James Wallgren      | Gardner          | Massachusetts | 01440 | United States | 7/17/2014 |
| 60 | susan heglin        | gardner          | Massachusetts | 01440 | United States | 7/17/2014 |
| 61 | Adam Weber          | Hood River       | Oregon        | 97031 | United States | 7/19/2014 |
| 62 | Darlene Durkin      | Stuart           | Florida       | 34997 | United States | 7/22/2014 |
| 63 | Vicki Heidorn       | Gardner          | Massachusetts | 01440 | United States | 7/22/2014 |
| 64 | Tracie Petley       | Athol            | Massachusetts | 01331 | United States | 7/22/2014 |
| 65 | Frances Spano       | Gardner          | Massachusetts | 01440 | United States | 7/22/2014 |
| 66 | Brenda LeBlanc      | Gardner          | Massachusetts | 01440 | United States | 7/22/2014 |
| 67 | Ella Fleurant       | Gardner          | Massachusetts | 01440 | United States | 7/22/2014 |
| 68 | Stephen Donahue     | Arlington        | Virginia      | 22202 | United States | 7/23/2014 |
| 69 | Elinor DeMeo        | Gardner          | Massachusetts | 01440 | United States | 7/25/2014 |
| 70 | Fredericka Paddock  | Gardner          | Massachusetts | 01440 | United States | 7/26/2014 |
| 71 | Jean DeMeo          | Gardner          | Massachusetts | 01440 | United States | 7/27/2014 |
| 72 | Paul DeMeo          | Gardner          | Massachusetts | 01440 | United States | 7/27/2014 |
| 73 | Paul Spano          | Gardner          | Massachusetts | 01440 | United States | 7/28/2014 |
| 74 | Kristy OBrien       | Gardner          | Massachusetts | 01440 | United States | 7/28/2014 |
| 75 | Cheryl Brogna       | Leominster       | Massachusetts | 01453 | United States | 7/28/2014 |
| 76 | gilbert poirier     | baldwinville     | Massachusetts | 01436 | United States | 7/28/2014 |
| 77 | Colleen Kelly       | Gardner          | Massachusetts | 01440 | United States | 7/30/2014 |
| 78 | Ryan DeMeo          | Gardner          | Massachusetts | 01440 | United States | 7/30/2014 |
| 79 | Neil Quarles        | Austin           | Texas         | 78705 | United States | 8/2/2014  |
| 80 | Nancy Greenlaw      | Gardner          | Massachusetts | 01440 | United States | 8/4/2014  |
| 81 | mike chandler       | Winchendon       | Massachusetts | 01475 | United States | 8/4/2014  |
| 82 | Kirk Dembek         | Otter River      | Massachusetts | 01436 | United States | 8/4/2014  |
| 83 | Louise Pare         | Gardner          | Massachusetts | 01440 | United States | 8/5/2014  |
| 84 | R Hanks             | Gardner          | Massachusetts | 01440 | United States | 8/5/2014  |
| 85 | Tracy Pierce        | Gardner          | Massachusetts | 01440 | United States | 8/6/2014  |
| 86 | Lisa Dembek         | Baldwinville     | Massachusetts | 01436 | United States | 8/6/2014  |
| 87 | sarah ferragamo     | Templeton        | Massachusetts | 01468 | United States | 8/6/2014  |
| 88 | Anthony Lang        | Templeton        | Massachusetts | 01468 | United States | 8/7/2014  |
| 89 | Ernesto Guzman      | Gardner          | Massachusetts | 01440 | United States | 8/8/2014  |

|     | A               | B           | C             | D     | E             | F          |
|-----|-----------------|-------------|---------------|-------|---------------|------------|
| 90  | Marcela Guzman  | Gardner     | Massachusetts | 01440 | United States | 8/8/2014   |
| 91  | George Girard   | Winchendon  | Massachusetts | 01475 | United States | 8/8/2014   |
| 92  | Joel Finley     | Ogdensburg  | New York      | 13669 | United States | 8/9/2014   |
| 93  | Donna LaFleur   | Gardner     | Massachusetts | 01440 | United States | 8/11/2014  |
| 94  | Jessica Roche   | Gardner     | Massachusetts | 01440 | United States | 8/12/2014  |
| 95  | Lauren Stinnett | Gardner     | Massachusetts | 01440 | United States | 8/12/2014  |
| 96  | Susan Blain     | Gardner     | Massachusetts | 01440 | United States | 8/12/2014  |
| 97  | Jesse Marquardt | Gardner     | Massachusetts | 01440 | United States | 8/12/2014  |
| 98  | Caleb Laieski   | Alexandria  | Virginia      | 22303 | United States | 8/12/2014  |
| 99  | Pam Boland      | Grovetown   | Georgia       | 30813 | United States | 8/15/2014  |
| 100 | Sandra Hill     | Otter river | Massachusetts | 01436 | United States | 8/17/2014  |
| 101 | Clare Gambale   | Swampscott  | Massachusetts | 01907 | United States | 9/18/2014  |
| 102 | Diane Forte     | Gardner     | Massachusetts | 01440 | United States | 9/25/2014  |
| 103 | James Rousseau  | Templeton   | Massachusetts | 01468 | United States | 9/30/2014  |
| 104 | David Caswell   | Gardner     | Massachusetts | 01440 | United States | 10/3/2014  |
| 105 | Lisa Kane       | Templeton   | Massachusetts | 01468 | United States | 10/17/2014 |
| 106 | John LeBlanc    | Templeton   | Massachusetts | 01468 | United States | 10/18/2014 |
| 107 | Louis Fletcher  | Gardner     | Massachusetts | 01440 | United States | 10/22/2014 |
| 108 | Olivia Percy    | Cambridge   | Massachusetts |       | United States | 10/22/2014 |
| 109 | Denise Raisanen | Exeter      | New Hampshire | 03833 | United States | 10/25/2014 |
| 110 | Robert Shepard  | Gardner     | Massachusetts | 01440 | United States | 11/7/2014  |

**REGULAR MEETING OF OCTOBER 17, 2016**

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Regular Meeting of the City Council was held in the City Council Chamber, 2<sup>nd</sup> Floor, City Hall, on Monday evening, October 17, 2016.

**CALL TO ORDER**

President James Walsh called the meeting to order at 7:30 o'clock p.m.

**CALL OF THE ROLL**

City Clerk Alan Agnelli called the Roll of Members. Eleven (11) Councillors were present including President James Walsh and Councillors James Boone, Nathan Boudreau, Craig Cormier, Ronald Cormier, Scott Graves, Karen Hardern, James Johnson, Marc Morgan, Paul Tassone, and Matthew Vance.

**OPENING PRAYER**

President Walsh led the Council in reciting the Opening Prayer.

**PLEDGE OF ALLEGIANCE**

President Walsh led the Council in reciting the "Pledge of Allegiance".

**OPEN MEETING RECORDING & PUBLIC RECORDS ANNOUNCEMENT**

President Walsh announced to the assembly that the Open Meeting Recording and Public Records Announcement is posted at the entrance to the Chamber, and that any person planning to record the meeting by any means should identify themselves.

**ADDRESS BY THE MAYOR**

President Walsh recognized Mayor Mark Hawke, who asked to address the Council concerning Calendar No. 9686, A Resolution Endorsing the DPW Plan to Upgrade the Dewatering Equipment and Pursuit of a New/Expanded Sludge Landfill (Note: The Mayor did not have the opportunity to address the Council during the Public Hearing that preceded the Regular Meeting).

Mayor Hawke opened his remarks by stating that he submitted a Resolution and accompanying letter to the City Council on August 9, 2016, seeking the Council's support to expand the City's Sludge Landfill.

Referencing comments made by Mr. Lison during the Public Hearing, the Mayor said that Mr. Lison's statement relating to the cost of the new Police Station was incorrect, but that the actual cost was below \$14 million. He noted that no additional [property] taxes were required to be raised, since the City retired a significant amount of debt prior to borrowing for the new police facility.



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**REGULAR MEETING OF OCTOBER 17, 2016**

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Mayor Hawke cited Mr. Paul Spano's many years of employment with the Massachusetts Department of Environmental Protection. (Mr. Spano testified at the Public Hearing held earlier in the evening).

Referencing Mr. Tom Cook's remarks at the Hearing, the Mayor stated that the Smith-Rodecki property was purchased with approximately \$75,000 of City funds, in addition to various grants. The property, he said, added hundreds of acres of conservation and that over one-third of City of Gardner land "is protected open space."

With respect to earlier comments concerning water/sewer charges, the Mayor stated that the City must take into account water/sewer usage charges when it decides to proceed with any disposal option, since many residents are on fixed incomes.

The Mayor continued, noting that Robert Sims stated that "this is the least offensive alternative." "All these [options] are offensive," the Mayor stated. He said that he believed that expanding the sludge landfill is the best option, but that it might be possible to pursue a hybrid solution, "with some hauling and some landfill."

The Mayor continued, saying that the properties along Bridge Street are all served by private wells and septic systems. The landfill, he noted, is only half-lined and the sludge landfill is [fully] lined. He suggested that through the centrifuge process, "the cake is drier" and emits fewer odors.

With respect to earlier comments about Hubbardston's experience, unlike Hubbardston, Gardner will not be importing sludge from outside the City, but addressing its own waste.

The Mayor concluded his remarks by saying that the City would likely be seeking additional funding for a new school, subject to MSBA approval, and perhaps in the form of a "Proposition 2½ Debt Exclusion." He noted, however, that only users of the sewer system would pay for the cost of the sludge landfill.

**READING & ACCEPTANCE OF MINUTES**

On a motion by Councillor Ronald Cormier and seconded by Councillor James Johnson, it was voted viva voce, eleven (11) yeas, President James Walsh and Councillors James Boone, Nathan Boudreau, Craig Cormier, Ronald Cormier, Scott Graves, Karen Hardern, James Johnson, Marc Morgan, Paul Tassone, and Matthew Vance, to waive reading and to accept the Minutes of the October 3, 2016 Regular Meeting, as printed.



## REGULAR MEETING OF OCTOBER 17, 2016

COMMUNICATIONS FROM THE MAYORAPPOINTMENTS

#9697

On a motion by Councillor Ronald Cormier and seconded by Councillor Marc Morgan, on recommendation of the Finance Committee, it was voted viva voce, eleven (11) yeas, President James Walsh and Councillors James Boone, Nathan Boudreau, Craig Cormier, Ronald Cormier, Scott Graves, Karen Hardern, James Johnson, Marc Morgan, Paul Tassone, and Matthew Vance, to confirm the following Appointment received from the Mayor:

**CAROLE BAUBLIS** to the position of Member, Council on Aging, for term expiring September 29, 2019.

Worcester, ss.

October 20, 2016

Then personally appeared **CAROLE BAUBLIS** and made oath that she would faithfully and impartially perform the duties of Member, Council on Aging according to law and the best of her abilities.

Before me,  
/s/ Titi Siriphan, Assistant City Clerk

#9698

On a motion by Councillor Marc Morgan and seconded by Councillor James Boone, on recommendation of the Finance Committee, it was voted viva voce, eleven (11) yeas, President James Walsh and Councillors James Boone, Nathan Boudreau, Craig Cormier, Ronald Cormier, Scott Graves, Karen Hardern, James Johnson, Marc Morgan, Paul Tassone, and Matthew Vance, to confirm the following Appointment received from the Mayor:

**MARCELLE CORMIER** to the position of Member, Council on Aging, for term expiring September 29, 2019.

Worcester, ss.

October 18, 2016

Then personally appeared **MARCELLE CORMIER** and made oath that she would faithfully and impartially perform the duties of Member, Council on Aging according to law and the best of her abilities.

Before me,  
/s/ Alan L. Agnelli, City Clerk

#9699

On a motion by Councillor Ronald Cormier and seconded by Councillor Marc Morgan, on recommendation of the Finance Committee, it was voted viva voce, eleven (11) yeas, President James Walsh and Councillors James Boone, Nathan Boudreau, Craig Cormier, Ronald Cormier, Scott Graves, Karen Hardern, James Johnson, Marc Morgan, Paul Tassone, and Matthew Vance, to confirm the following Appointment received from the Mayor:



## REGULAR MEETING OF OCTOBER 17, 2016

**SOPHIE DEGRACE** to the position of Member, Council on Aging, for term expiring September 29, 2019.

**Worcester, ss.**

**October 17, 2016**

Then personally appeared **SOPHIE DEGRACE** and made oath that she would faithfully and impartially perform the duties of Member, Council on Aging according to law and the best of her abilities.

Before me,  
/s/ Alan L. Agnelli, City Clerk

**#9700**

On a motion by Councillor Ronald Cormier and seconded by Councillor Marc Morgan, on recommendation of the Finance Committee, it was voted viva voce, eleven (11) yeas, President James Walsh and Councillors James Boone, Nathan Boudreau, Craig Cormier, Ronald Cormier, Scott Graves, Karen Hardern, James Johnson, Marc Morgan, Paul Tassone, and Matthew Vance, to confirm the following Appointment received from the Mayor:

**JEFFREY NELSON** to the position of Member, Council on Aging, for term expiring September 29, 2019.

**Worcester, ss.**

**October 17, 2016**

Then personally appeared **JEFFREY NELSON** and made oath that he would faithfully and impartially perform the duties of Member, Council on Aging according to law and the best of his abilities.

Before me,  
/s/ Alan L. Agnelli, City Clerk

**#9701**

On a motion by Councillor Ronald Cormier and seconded by Councillor Marc Morgan, on recommendation of the Finance Committee, it was voted viva voce, eleven (11) yeas, President James Walsh and Councillors James Boone, Nathan Boudreau, Craig Cormier, Ronald Cormier, Scott Graves, Karen Hardern, James Johnson, Marc Morgan, Paul Tassone, and Matthew Vance, to confirm the Mayor's appointment of the following Election Officers for terms expiring September 1, 2017:

|                         |                         |         |
|-------------------------|-------------------------|---------|
| Anita Boudreau          | 8 Jackson Park          | Gardner |
| Stephanie S. Samsia-Nji | 317 Pleasant Street, #3 | Gardner |

**#9702**

On a motion by Councillor Ronald Cormier and seconded by Councillor Marc Morgan, on recommendation of the Finance Committee, it was voted viva voce, eleven (11) yeas, President James Walsh and Councillors James Boone, Nathan Boudreau, Craig Cormier, Ronald Cormier, Scott Graves, Karen Hardern, James Johnson, Marc Morgan, Paul Tassone,



## REGULAR MEETING OF OCTOBER 17, 2016

and Matthew Vance, to confirm the City's Clerks Appointment of Titi Siriphan to the position of Assistant City Clerk for the term expiring November 1, 2019.

Worcester, ss.

October 18, 2016

Then personally appeared **TITI SIRIPHAN** and made oath that she would faithfully and impartially perform the duties of Assistant City Clerk according to law and the best of her abilities.

Before me,  
/s/ Alan L. Agnelli, City Clerk

**REPORTS OF STANDING COMMITTEES**

**PUBLIC SAFETY COMMITTEE**

**#9688**

Councillor Paul Tassone, Chairman of the Public Safety Committee, reported that the Committee met with the Fire Chief and that he endorsed the License Application with conditions. The Committee then voted to recommend that the amended License application be granted.

On a motion by Councillor Paul Tassone and seconded by Councillor Karen Hardern, on recommendation of the Public Safety Committee, it was voted viva voce, eleven (11) yeas, President James Walsh and Councillors James Boone, Nathan Boudreau, Craig Cormier, Ronald Cormier, Scott Graves, Karen Hardern, James Johnson, Marc Morgan, Paul Tassone, and Matthew Vance, to approve the application of *Paul L. Roy, 55 Corey Hill Road, Ashburnham, for an Amended License to Store 200,000 Gallons of Petroleum Products in Aboveground Storage Tanks at 211 Colony Lane, Gardner.*

**#9691**

Councillor Paul Tassone, Chairman of the Public Safety Committee, reported that the Public Safety Committee met and voted to recommend that the Mayor's substitute version of the Ordinance, as received by the City Council on October 17, 2016, be ordered to First Printing.

Councillor Paul Tassone moved to Order to First Printing, as seconded by Councillor Karen Hardern, the following Ordinance:

AN ORDINANCE TO AMEND THE CODE OF THE CITY OF GARDNER, CODE 600-18-A, TWO HOUR PARKING METERS, AND CODE 600-19 THIRTY-MINUTE PARKING METERS.

Be it ordained by the City Council of the City of Gardner, as follows:

**Delete Code §600-19-A & B- Thirty minute parking meters.**




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 REGULAR MEETING OF OCTOBER 17, 2016
 

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A. No person shall park a vehicle for a period of time longer than 30 minutes between the hours of 9:00 a.m. and 6:00 p.m. at any metered location on the streets or portions thereof listed below. This restriction shall not apply on Sundays or during the hours of legal holidays during which business establishments are required by law to remain closed.

| <b>Name of Street</b> | <b>Location</b>                                                      |
|-----------------------|----------------------------------------------------------------------|
| City Hall Avenue      | Between Pleasant Street and Nichols Street, unless otherwise posted. |

B. The actual location of meters to be placed within the above locations shall be designated and may from time to time be changed by vote of the City Council Public Safety Committee.

AND

**Amend Code §600-18- Two-hour parking meters.**

No person shall park a vehicle for a period of time longer than two hours between the hours of 9:00a.m. and 6:00 p.m. at any metered location on the streets or portions thereof listed below. This restriction shall not apply on Sundays or during the hours of legal holidays during which business establishments are required by law to remain closed.

| <b>Name of Street</b> | <b>Location</b>                         |
|-----------------------|-----------------------------------------|
| Connors Street        | From Knowlton Street to Parker Street   |
| City Hall Avenue      | From Pleasant Street to Connors Street. |

**Delete:**

On Thursdays, the limited parking time shall be from 9:00 a.m. to 9:00 p.m.

This ordinance shall become effective upon passage and publication as required by law.

On the motion, Councillor Scott Graves stated opposition to any parking meters in the City.

Councillor Nathan Boudreau concurred, saying that the City should remove all Downtown parking meters.

Councillor James Johnson expressed support for changing the thirty-minute restriction to a two hour restriction, but that adding more parking meters does not make sense. He asked if the question could be divided and addressed separately.

President Walsh called to the floor for an amendment to the Ordinance, as moved.

Councillor James Boone noted that the substituted Ordinance was filed only a few hours earlier and that the Council has not had adequate time to study the proposal; ergo, he said that he would not support the motion.

REGULAR MEETING OF OCTOBER 17, 2016

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Councillor Ronald Cormier then moved to recommit the substituted Ordinance to the Public Safety Committee for further study and report. Councillor Marc Morgan seconded the motion.

President Walsh recognized Mayor Hawke, who wished to address the Council.

Citing the plan that accompanied the substitute Ordinance, Mayor Hawke informed the Council that areas highlighted in green represent existing metered parking, while yellow-highlighted areas represent existing 30-minute parking; however, those meters are programmed for up to two hours. The proposed change would then mirror the current practice. The Mayor added that the section of Connors Street from Parker Street to City Hall Avenue is metered, but not referenced in the City Code. The area highlighted in red behind City Hall would be designated non-metered parking for only Postal employees, he said.

The Mayor continued, stating that the City Council designates the parking metered zones and the Public Safety Committee designates the locations of the meters. He said that the purpose for parking meters is to create vehicle turnover, as discussed and recommended almost annually by Square Two. He added that the City seeks to upgrade all of its meters so that would each would accept both cash and credit/debit cards for payment.

The Mayor closed his remarks by saying that if the City eliminates parking meters, then it will have to seek other sources to replace the lost revenue from the meters. He said that parking meter revenues cover expenses associated with snow removal and improvements to the Downtown area.

On the motion to recommit the Ordinance to the Public Safety Committee, Councillor Matthew Vance expressed opposition to recommitting the measure, since the Committee already voted to recommend its adoption. He then offered that the question be divided, allowing separate votes on each part – one for Connors Street and the second for City Hall Avenue.

President Walsh informed the Council that the motion to recommit is a priority motion and must first be acted on.

On the motion, it was voted nine (9) yeas, President James Walsh and Councillors James Boone, Nathan Boudreau, Craig Cormier, Ronald Cormier, Scott Graves, James Johnson, Marc Morgan, and Paul Tassone; two (2) nays, Councillors Karen Hardern and Matthew Vance, to recommit the measure to the Safety Committee for further study and report.



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**REGULAR MEETING OF OCTOBER 17, 2016**

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**COMMITTEE OF THE WHOLE****#9234**

President Walsh informed the Council that he would schedule an Informal Meeting on November 21, 2016 to review the draft legislation that incorporates the various revisions to the Charter, as agreed upon by the Council. There being no objections, the Committee of the Whole was granted more time.

**#9686**

President Walsh stated that a several Councillors indicated that additional time would be necessary to study the matter, adding that the Conservation Commission submitted a letter containing four questions for the Consultant for a response. There being no objections, the Committee of the Whole was granted more time for study and report.

**NEW BUSINESS**

On a motion by Councillor Scott Graves and seconded by Councillor Nathan Boudreau, it was voted viva voce, eleven (11) yeas, President James Walsh and Councillors James Boone, Nathan Boudreau, Craig Cormier, Ronald Cormier, Scott Graves, Karen Hardern, James Johnson, Marc Morgan, Paul Tassone, and Matthew Vance, to consider New Business.

**ANNOUNCEMENTS**

Councillor Matthew Vance clarified comments that he made at the previous meeting, stating that the boxes to be regulated by the Board of Health include clothing and accessory donation boxes that are situated across the City. He also announced the Board of Health's Public Hearing concerning Flavored Tobacco Regulations would be held on October 24, 2016.

Councillor Paul Tassone expressed his appreciation to the public for their input on the sludge landfill expansion. He also wished his daughter, Abigail, a Happy 18<sup>th</sup> Birthday!

**#9703**

Councillor Scott Graves recognized the recent passing of Robin Strazdas, former Assistant City Clerk.

On a motion by Councillor Scott Graves and seconded by Councillor Paul Tassone, it was voted viva voce, eleven (11) yeas, President James Walsh and Councillors James Boone, Nathan Boudreau, Craig Cormier, Ronald Cormier, Scott Graves, Karen Hardern, James Johnson, Marc Morgan, Paul Tassone, and Matthew Vance, to send a letter of condolence to the family of Robin Strazdas.



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**REGULAR MEETING OF OCTOBER 17, 2016**

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Commenting on the proposed Sludge Landfill Expansion (#9686), Councillor Scott Graves remarked that at these times as a Councillor, it is difficult to be responsible to the people when it is the Council's job to try to save the taxpayer money. He added that the Council has to cost-out the various plans and to consider those residents that would be affected by an expansion.

Councillor James Boone concurred, saying that the decision focuses on the cost of the project versus the odors affecting the residents.

Councillor Marc Morgan remarked that residents need to contact their elected representatives whenever they have a concern about the landfill.

Councillor Ronald Cormier remarked that the hearing conducted earlier in the evening was refreshing, as the tone and manner was respectful.

President James Walsh commented that when the Mayor addressed the Council at the Public Hearing, he took a public position on the sludge landfill expansion issue and correctly did so when he transmitted the Resolution to the City Council. President Walsh suggested that when the Resolution comes before the Council for a final vote, that it be amended to add the words "on recommendation of the Mayor."

Councillor Graves informed the Council that he travelled to the Norman Rockwell Museum in Stockbridge where he observed the "Willie Gillis" painting.

Councillor Nathan Boudreau thanked the Governor and the State Representative for assistance in procuring funds for the demolition of the former Gardner Cinema on Parker Street.

**CLOSING PRAYER**

President Walsh led the Council in the Closing Prayer.

**ADJOURNMENT**

On a motion by Councillor Matthew Vance and seconded by Councillor Paul Tassone, it was voted viva voce, eleven (11) yeas, President James Walsh and Councillors James Boone, Nathan Boudreau, Craig Cormier, Ronald Cormier, Scott Graves, Karen Hardern, James Johnson, Marc Morgan, Paul Tassone, and Matthew Vance, to adjourn at 8:12 o'clock p.m.

**Accepted by the City Council:**

9704

**PRESIDENT**  
James M. Walsh, Esq.  
**COUNCILLORS AT LARGE**  
James S. Boone  
Craig R. Cormier  
Ronald F. Cormier  
Scott J. Graves, Esq.  
Marc Morgan  
Matthew C. J. Vance

**CITY OF GARDNER**  
**MASSACHUSETTS 01440-2630**

OFFICE OF THE  
CITY COUNCIL



2016 OCT 13 AM 11 25  
CITY OF GARDNER

**WARD 1 COUNCILLOR**  
James M. Walsh, Esq.  
**WARD 2 COUNCILLOR**  
Paul G. Tassone  
**WARD 3 COUNCILLOR**  
Nathan R. Boudreau  
**WARD 4 COUNCILLOR**  
Karen G. Hardern  
**WARD 5 COUNCILLOR**  
James D. Johnson

**CITY OF GARDNER**  
**NOTICE OF PUBLIC HEARING**  
**PROPERTY TAX CLASSIFICATION**

Pursuant to the provisions of M.G.L. c.40, §56, the Gardner City Council will conduct a Public Hearing on Monday, November 7, 2016 at 7:00 p.m. in the City Council Chamber, Room 219, City Hall, concerning the percentages of the local tax levy to be borne by each class of Real Estate and Personal Property within the City for the Fiscal Year 2017. Persons interested in this matter who desire to offer testimony are invited to attend or may submit their testimony in writing.

**ALAN L. AGNELLI**  
**CITY CLERK**

**LEGAL NOTICES**      **LEGAL NOTICES**

**CITY OF GARDNER**  
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**PROPERTY TAX CLASSIFICATION**

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**ALAN L. AGNELLI**  
**CITY CLERK**

oct28-11

ADOPTION OF FACTOR 1 FOR FISCAL YEAR 2017  
REAL ESTATE AND PERSONAL PROPERTY TAX RATE

*VOTE:* To adopt Factor 1 for each class of Real Estate and Personal Property Tax Rate for Fiscal Year 2017.

CITY OF GARDNER  
OFFICE OF THE BOARD OF ASSESSORS

95 Pleasant Street  
City Hall, Room 223, Gardner MA 01440-2688

Susan Byrne, MAA  
City Assessor



Tel: 978-630-4004  
Fax: 978 630-4080  
Email: [sbyrne@gardner-ma.gov](mailto:sbyrne@gardner-ma.gov)

October 31, 2016

Re: Classification Hearing

Dear Mayor and City Council,

FY2017 Values by Class and percentage of total value

|                   |                       |                  |
|-------------------|-----------------------|------------------|
| Residential       | \$949,314,346.        | - 79.2914%       |
| Commercial        | \$120,068,054.        | - 10.0287%       |
| Industrial        | \$ 60,033,000.        | - 5.0142%        |
| Personal Property | <u>\$ 67,832,212.</u> | <u>- 5.6657%</u> |
| Total             | \$1,197,247,612.      | - 100%           |

As in the past the Board of Assessors is recommending one tax rate across all classes.

Sincerely,

*Sae*

Susan Byrne, MAA  
City Assessor

**CLASSIFICATION TAX ALLOCATION**  
**Fiscal Year 2017**

1. The selected Residential Factor is 1.000000

If you desire each class to maintain 100% of its full values tax share, indicate a residential factor of "1" and go to question 3.

2. In computing your residential factor, was a discount granted to Open Space?

Yes  No

If Yes, what is the percentage discount? 0

3. Was a residential exemption adopted?

Yes  No

If Yes, please complete the following:

|                              |   |             |   |                           |   |                       |
|------------------------------|---|-------------|---|---------------------------|---|-----------------------|
| Class 1 Total Assessed Value | = | 949,314,346 | X | <u>0</u>                  | = | <u>0</u>              |
| Class 1 Total Parcel Count * |   | 0           |   | Selected Res. Exemption % |   | Residential Exemption |

\* Include all parcels with a Mixed-Use Residential designation

Applicable number of parcels to receive exemption 0

Net value to be exempted 0

4. Was a small commercial exemption adopted?

Yes  No

% Selected 0

If Yes, please complete the following:

|                            |          |
|----------------------------|----------|
| No. of parcels eligible    | <u>0</u> |
| Total value of parcels     | <u>0</u> |
| Total value to be exempted | <u>0</u> |

5. The following information was derived from the LA-7. Please indicate in column D percentages (accurate to 4 digits to the right of the decimal point) which result from your selected residential factor. (If a residential factor of "1" has been selected, you may leave Column D blank.)

| A<br>Class        | B<br>Certified Full and<br>Fair Cash Value<br>Assessments | C<br>Percentage Full Value<br>Shares of Total Tax Levy | D<br>New Percentage<br>Shares of Total Tax<br>Levy |
|-------------------|-----------------------------------------------------------|--------------------------------------------------------|----------------------------------------------------|
| Residential       | 949,314,346.00                                            | 79.2914%                                               | 79.2914%                                           |
| Open Space        | 0.00                                                      | 0.0000%                                                | 0.0000%                                            |
| Commercial        | 120,068,054.00                                            | 10.0287%                                               | 10.0287%                                           |
| Industrial        | 60,033,000.00                                             | 5.0142%                                                | 5.0142%                                            |
| Personal Property | 67,832,212.00                                             | 5.6657%                                                | 5.6657%                                            |
| <b>TOTALS</b>     | <b>1,197,247,612.00</b>                                   | <b>100.0000%</b>                                       | <b>100.0000%</b>                                   |

NOTE : The information is preliminary and is subject to change.

**CLASSIFICATION TAX ALLOCATION**  
**Fiscal Year 2017**

6. Notice was given to taxpayers on 10/28/2016 (date), 7:00PM (time), at City Council Chamber, City Hall (place), by The Gardner News Legal Notice (describe type of notice) that a public hearing on the issue of adopting the tax levy percentages for fiscal year 2017 would be held on 11/07/2016 (meeting date).

7. We hereby attest that on 11/07/2016 (date), 7:00PM (time), at City Council Chamber, City Hall (place) in a public hearing on the issue of adopting the percentages for fiscal year 2017, that the Board of Assessors presented information and data relevant to making such determination and the fiscal effect of the available alternatives, and that the percentages set forth above were duly adopted in public session on (date).

8. The LA-5 excess capacity for the current fiscal year is calculated as 262,040.90

The LA-5 excess capacity for the prior fiscal year is calculated as 212,681.56

For cities : City Councilors, Aldermen, Mayor

For towns : Board of Selectmen

For districts : Prudential Committee or Commissioners

**Signatures**

No signatures to display.

AUTHORIZING THE CITY CLERK TO ELECTRONICALLY  
SIGN THE ANNUAL TAX RATE RECAPITULATION  
ON BEHALF OF THE CITY COUNCIL

*VOTE:* To authorize the City Clerk to electronically sign the annual Tax Rate  
Recapitulation on behalf of the City Council.

AN ORDINANCE TO AMEND THE CODE OF THE CITY OF GARDNER, CODE 600-18-A TWO HOUR PARKING METERS AND CODE 600-19 THIRTY-MINUTE PARKING METERS.

Be it ordained by the City Council of the City of Gardner as follows:

**Delete Code §600-19-A & B – Thirty minute parking meters.**

A. No person shall park a vehicle for a period of time longer than 30 minutes between the hours of 9:00 a.m. and 6:00 p.m. at any metered location on the streets or portions thereof listed below. This restriction shall not apply on Sundays or during the hours of legal holidays during which business establishments are required by law to remain closed.

| <b>Name of Street</b> | <b>Location</b>                                                      |
|-----------------------|----------------------------------------------------------------------|
| City Hall Avenue      | Between Pleasant Street and Nichols Street, unless otherwise posted. |

B. The actual location of meters to be placed within the above locations shall be designated and may from time to time be changed by vote of the City Council Public Safety Committee.

**AND**

**Amend Code §600-18 – Two-hour parking meters.**

No person shall park a vehicle for a period of time longer than two hours between the hours of 9:00 a.m. and 6:00 p.m. at any metered location on the streets or portions thereof listed below. This restriction shall not apply on Sundays or during the hours of legal holidays during which business establishments are required by law to remain closed.

**Insert:**

| <b>Name of Street</b> | <b>Location</b>                         |
|-----------------------|-----------------------------------------|
| Connors Street        | From Knowlton Street to Parker Street.  |
| City Hall Avenue      | From Pleasant Street to Connors Street. |

**Delete:**

On Thursdays, the limited parking time shall be from 9:00 a.m. to 9:00 p.m.

This ordinance shall become effective upon passage and publication as required by law.

9691

# City of Gardner, *Executive Department*



Mark Hawke, Mayor

REC'D  
OCT 17 11 23  
CITY CLERK

October 14, 2016

James M. Walsh, President  
And City Councilors  
95 Pleasant Street  
Gardner, MA 01440

RE: Council Item #9691

Dear President Walsh and Councilors,

In reviewing the Council packet and City Code, we noticed that while the City Council sets the Parking Meter Area, Code 600-18 B allows the City Council's Public Safety Committee to designate the actual location of meters within the designated area.

In further reviewing the Code, we noted that the area of Connors Street between Parker Street and City Hall Avenue was not listed as being within the Parking Meter Area. Also, if we removed City Hall Avenue from Code 600-19; Thirty-minute parking meters, City Hall Avenue would also no longer be in the Parking Meter Area.

Therefore, in order to correct this oversight and streamline the entire Parking Meter Area to be two-hour parking, I request the Council consider adding Connors Street from Knowlton Street to Parker Street and City Hall Avenue from Pleasant Street to Connors Street to the two-hour Parking Meter Area. I have attached an updated ordinance to reflect this change.

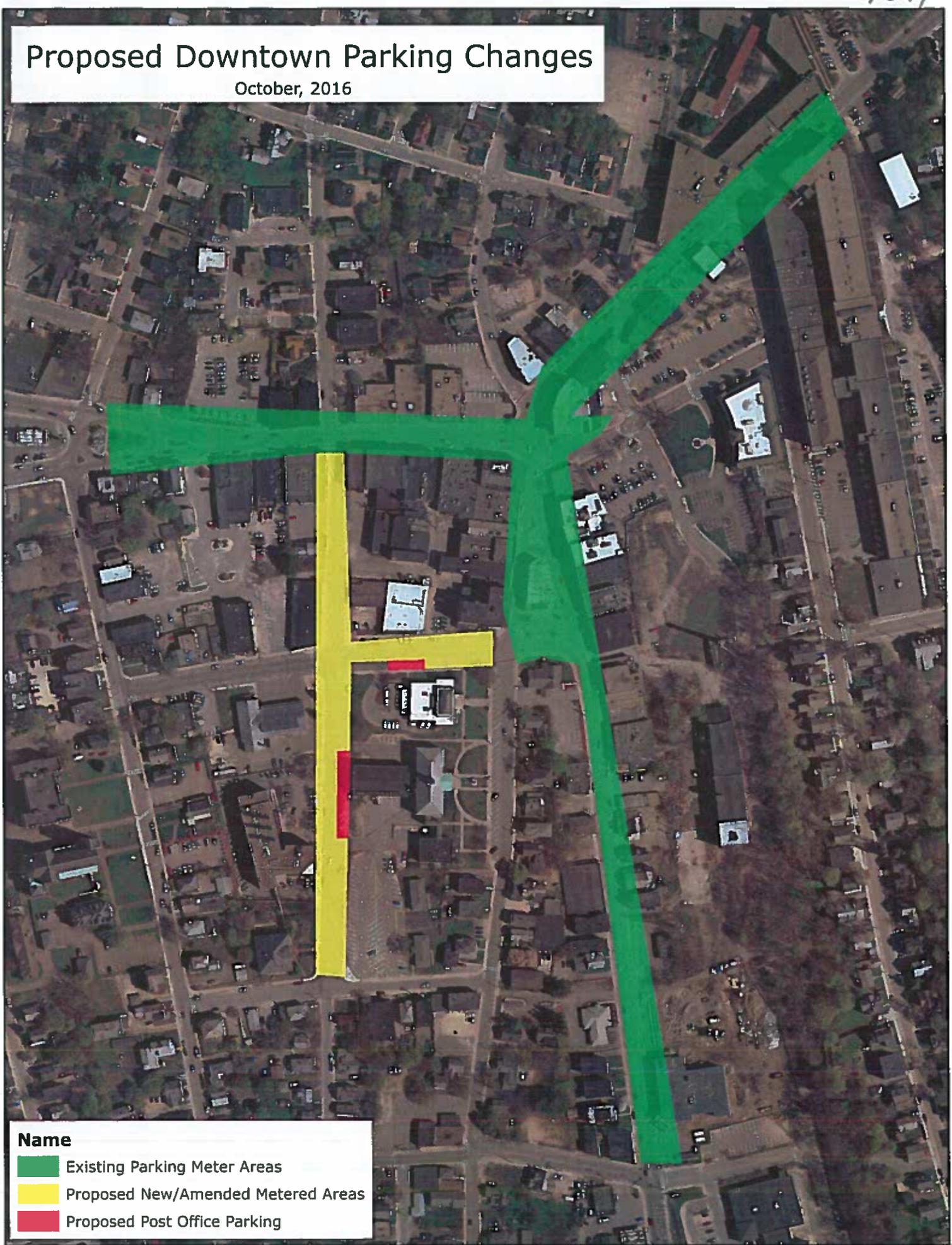
If the Council approves the amended Parking Meter Area, the intent will then be to seek approval from the Public Safety Committee to not meter eight (8) spaces along the southerly side of City Hall Ave adjacent to the Post Office and sign those spots as "Post Office Employee Parking Only". The same request would be made for the twelve (12) spaces on the easterly side of Connors Street directly behind the City Hall Auditorium. A map depicting the final plan is attached.

Respectfully,

Mark Hawke  
Mayor, City of Gardner

# Proposed Downtown Parking Changes

October, 2016



## Name

-  Existing Parking Meter Areas
-  Proposed New/Amended Metered Areas
-  Proposed Post Office Parking

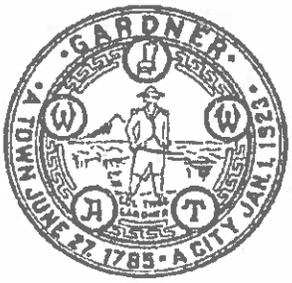
RESOLUTION  
ENDORISING THE DEPARTMENT OF PUBLIC WORKS PLAN  
TO UPGRADE THE DEWATERING EQUIPMENT  
AND PURSUIT OF A NEW/EXPANDED SLUDGE LANDFILL

The City Council of Gardner wishes to endorse the Department of Public Works Plan to upgrade the dewatering equipment and pursue a new/expanded sludge landfill.

The plan will include improving the technology, replacing the pumps, repairing the 30 year old facility, and pursuing a new/expanded sludge landfill. The City has performed a comprehensive study looking at several alternatives for the disposal of the City's sludge. These options included composting, anaerobic digestion, off-site disposal by a private hauler, and upgrading and continuing our current operations.

Based on the evaluations, the most cost effective long term solution was deemed to be upgrading the present dewatering equipment and disposing of the sludge at a City owned sludge landfill.

# CITY OF GARDNER Department of Public Works



Highway  
Water  
Sewer  
Forestry  
Parks/Playgrounds  
Cemeterics

Dane E. Arnold, Director  
416 West Broadway  
Gardner, MA 01440-2687  
Telephone (978) 632-7661  
Fax (978) 630-4029  
darnold@gardner-ma.gov

Mayor and City Council Members  
City Hall  
95 Pleasant Street  
Gardner, MA 01440

November 3, 2016

Dear Mayor and City Council Members:

I am writing in response to an email dated October 29, 2016 from Alan Rousseau. Below is a brief summary of our response. We will not make a habit of responding to every email, however some may still have questions and we want to try and answer as many as we can.

Expansion Cost

The email makes reference to a "rule of thumb" or industry standard that we used an estimate of \$185,000 to develop the landfill instead of the \$150,000 per acre. The email sounds as if we are trying to reduce the monetary impact. It's just the opposite; we estimated \$185,000 per acre, if we used the \$150,000 per acre to develop the site the \$7.5 million would be less. We also prorated the landfill for only 20 years; the life expectancy could be 35-40 years which will reduce the average cost per year for every year beyond 20 years.

Solids Content:

- Upton's bid criteria is for the disposal of **252,000 gallons/year** of liquid sludge with a solids content of **4%-6%**.
- Gardner's Estimate criteria is for the disposal of **8,986,153 gallons/year** of liquid sludge with a solids content of **3.1%** (Based on Projected 6,361 lbs/day). That is over **35 times** greater the amount of material being hauled.
- The difference in solids content between Upton and Gardner changes the dry tons/load conversion number. Which means, Upton is able to dispose of more solids per load than Gardner. Upton uses an average solids content of 5% in their calculations; Gardner will be approximately 3.1%.

Disposal Costs:

- Upton's WWSI bid price for disposal cost is \$315/dry ton. At 1.88 dry tons/load, equates to \$592.20 per load (Year 1/FY 2017) (Solids Content of 5%)
- Upton's Synagro Bid Price for disposal cost is \$420.00/dry ton. At 1.88 dry tons/load, equates to \$789.60 per load (Year 1/FY 2017) (Solids Content of 5%)

- Upton's Synagro Bid Price for disposal cost is \$420.00/dry ton. At 1.88 dry tons/load, equates to \$789.60 per load (Year 1/FY 2017) (Solids Content of 5%)
- Gardner's estimate for disposal cost is \$390/dry ton, with 1.16 dry tons/load, equates to \$452.40/load (Solids Content of 3.1%)

#### Transportation Costs

- Upton's WWSI Bid for Transportation at \$0.035/gallon x 9,000 gallons/load = \$315.00/load (Year 1/FY 2017). Upton One-way trip to Cranston is 40 Miles.
- Upton's Synagro Bid for Transportation at \$0.333/gallon x 9,000 gallons/load = \$299.70 (Year 1/FY 2017). Upton One-way trip to Woonsocket (Synagro) is 15 miles or 27 minutes.
- Gardner Estimate for transportation at \$0.047 gallon x 9,000 gallons/load = \$425/load. Gardner One-way trip to Woonsocket (Synagro) is 65 miles or 1 hour and 37 minutes; (84 miles to the Cranston WWTF). That is over 3 times longer travel time ONE WAY.

#### Total Cost per Load

- Upton's WWSI Bid = \$592.20/load + \$315/load = \$907.20/load (Year 1/FY 2017)
- Upton's Synagro Bid = 789.60/load + 299.70/load = \$1,089.30 (Year 1/FY 2017)
- Gardner Estimate = \$452.40/load + \$425/load = \$877.40/load

#### Total Cost per Year

- Upton WWSI Bid = \$907.20/load x 28 loads/year = \$25,401.60/year (Year 1/FY 2017)
- Upton's Synagro Bid = \$1,089.30/load x 28 loads/year = 30,500/year (Year 1/FY 2017)
- Gardner Estimate = \$877.40/load x 998 projected loads/year = \$875,645.20/year

#### Laboratory Costs

- Upton's Bid Analysis does not take in account the additional \$20,000/year of additional laboratory costs that will occur if the City elects to haul liquid sludge out-of-town for disposal.

#### Templeton's Zone II

Templeton's Zone II maps are attached and the Sludge Landfill is NOT within the Zone II limits.

#### Summary

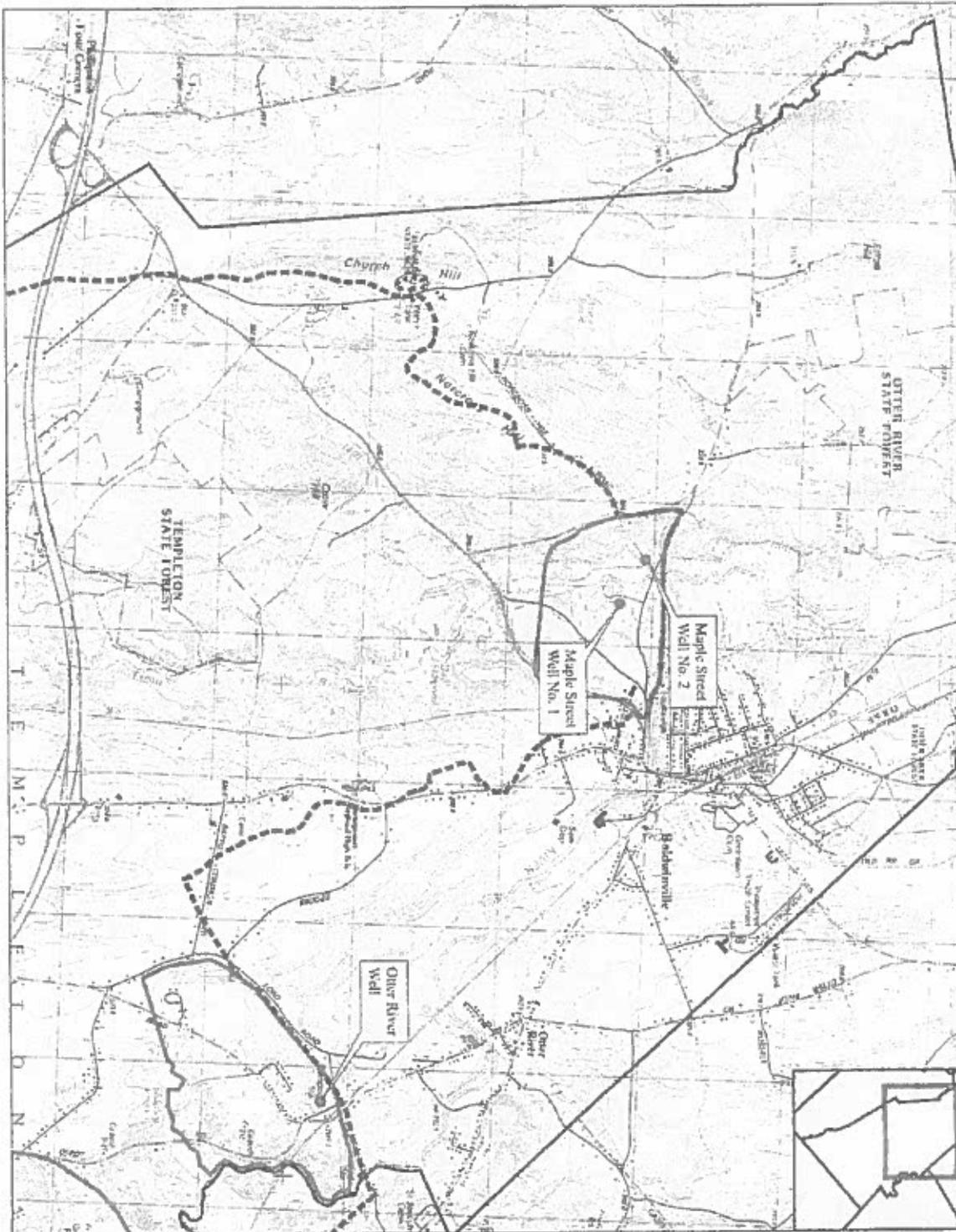
The disposal cost per load for the Gardner Estimate is actually lower than both the WWSI and Synagro Bid Prices for Upton. The market is very volatile and every 3 years the City will be at the mercy of the contractors.

Sincerely,



Dane E. Arnold, Director  
Department of Public Works

PC: Bob Hankinson, City Engineer  
Rob Sims, CDR Maguire  
Kevin Olsen, Wright Pierce  
Matt LaPointe, Suez



**Legend**

- Well
- Zone II
- Zone III

**TATA & HOWARD**  
CONSULTANTS

0 500 1,000 2,000 4,000 Feet  
Map Scale: 1:21,600

Municipality: Templeton, MA  
 PWS Identification #: 229100  
 Name of Water Supply: Maple Street Wells No. 1 and 2  
 Source ID: 229100-04G and 229400-05G  
 Water Purveyor: Templeton Municipal Light and Water Plant  
 Project Proponent: Templeton Municipal Light and Water Plant

Title of Study/Purpose of Delineation: Redefinition of Zone II  
 USGS Quadrangle Name: Templeton  
 Consultant: Tata & Howard, Inc.  
 Date of Study Submitted: December 2012  
 Latitude Longitude of Source: Well No. 1 42.604492, -72.089699  
 Well No. 2 42.600683, -72.093415.

**Signatures:**

|                             |                          |          |
|-----------------------------|--------------------------|----------|
| Water Purveyor              | <u>John M. Brown</u>     | 12-14-12 |
| Project Proponent           | <u>John M. Brown</u>     | 12-14-12 |
| Consultant                  | <u>Tata &amp; Howard</u> | 12/19/12 |
| Regional Water Supply Chief | <u>Andrew Lawrence</u>   | 12/25/12 |



**Legend**

- Well
- ▭ Zone II
- - - Zone III

N

**TATA & HOWARD**  
PLANNING AND DESIGN SERVICES

0 200 1,000 2,000 3,000 4,000 Feet

Map Scale: 1:25,000

Municipality: Templeton, MA  
 FWS Identification #: 229400  
 Name of Water Supply: Older River Well and Sawyer Street Well  
 Source ID: 229400-01G and 229400-02G  
 Water Purveyor: Templeton Municipal Light and Water Plant  
 Project Proponent: Templeton Municipal Light and Water Plant

**Signatures:**

**Water Purveyor** John M. Linn

**Project Proponent** John M. Linn

**Consultant** Paul B. Howard

**Regional Water Supply Chief** Andrew Lawrence

Title of Study/Purpose of Delineation: Redelineation of Zone II  
 USGS Quadrangle Names: Templeton  
 Consultant: Tata & Howard, Inc.  
 Date of Study Submittal: December 2012  
 Latitude-Longitude of Older River Well: 42.5854, -72.047409  
 Latitude-Longitude of Sawyer Street Well: 42.572186, -72.032013

**Date:**

12-19-12

12-19-12

2/15/12

12/20/12

## Dane Arnold

---

**From:** Mayor  
**Sent:** Monday, October 31, 2016 9:00 AM  
**To:** Dane Arnold; Robert Sims; Chris Coughlin; Robert Hankinson  
**Subject:** FW: Gardner Wastewater Sludge Disposal Options

FYI

**From:** Alan Rousseau [mailto:rousseau@verizon.net]  
**Sent:** Saturday, October 29, 2016 3:19 PM  
**To:** Mayor; Craig Cormier; Councillor J Johnson; James M. Walsh; James Boone; Councillor K Hardern; Councillor M Morgan; Councillor M Vance; Nathan R. Boudreau; Paul G. Tassone; Councillor R Cormier; Councillor S Graves  
**Cc:** Alan Agnelli  
**Subject:** Gardner Wastewater Sludge Disposal Options

Hello Mayor Hawke and Gardner City Councilors,

Since the City Council Public Hearing on October 17<sup>th</sup>, I have taken another look at the information that has been provided thus far by CDR Maguire and the City Public Works Department. Also, I have heard that Mayor Hawke is looking into hybrid solutions for sludge disposal and applaud that effort. I hope that he is looking at a full range of hybrid solutions that also include non-Landfill disposal options. Ultimately, I believe that we all want what is best for the City of Gardner and our neighbors in Templeton.

I offer my input here as assistance to all of you involved with making this important decision. The long term future of the quality-of-life for Gardner & Templeton residents, the environment of West Gardner, and the Templeton Zone II Wellhead Protection Area are all at stake in this decision. Before a decision is made, we must know more about the range of cost implications relative to Haul-Away & Landfill options.

1. **Haul-Away Options** – The projected costs for these options are provided by only one sludge disposal vendor, Synagro. The analysis has utilized Synagro's high-side cost ranges for both transportation and disposal. Data from only one vendor is not adequate draw proper conclusions. For the de-watering technology, CDR Maguire analyzed eight methods. We should be soliciting at least as many RFI's (Request for Information) from sludge disposal vendors in order to get a true picture of the Haul Away cost. Most organizations (public & private) utilize input from multiple vendors in major out-sourcing decisions. Sludge disposal is an industry with many vendors and we must utilize the benefits of the free market to understand the opportunities for the Haul-Away option.

As an example, I found a recent sludge disposal 3-year contract award (*see reference #1 below*) for Upton, MA. Upton is much smaller than Gardner with an annual sludge volume of 300K gallons. Upton received bids from Synagro and WWSI (Waste Water Services Inc. in Bridgewater MA). However, Synagro's bid was 20% higher than WWSI. If our 20 year \$12.5M or \$12.8 M Haul-Away estimations are 20% high, then our current Synagro cost would be overstated by \$2.5 M. Therefore, the projected \$5.0M savings would be cut in half. WWSI currently provides services to Athol and Winchendon. This is only one example but it does support the idea of getting RFI's from several other vendors.

One Haul-Away hybrid option that could result in additional cost relief is to provide the sludge transportation in-house. From the current analysis, transportation is roughly half the total Haul-Away option cost. The City in-house trucking scenario was included the Fitchburg Anaerobic Digestion option. This hybrid Haul-Away option would be a similar scenario where a City owned truck and City employed driver would be utilized to transport sludge to the

disposal site. Depending on the type of truck, it could also be utilized as needed & available for other City public works projects.

2. **Landfill Option** – The Landfill option cost is estimated using a rule-of-thumb. Initially, I had seen a \$150K/acre estimate was used and the October 14 DPW letter now indicates \$185K/acre. For 8.6 acres, the \$185 K/acre would total \$1.591 M. I have previously asked the question as to what specific line item costs are included in this rule of thumb and have not received an answer. One large Landfill cost item is the closure cost relative to capping and 30-year post closure maintenance / monitoring. I did find a MA DEP document (*see reference # 2 below*) indicating \$200K/acre for capping cost. Closure cost could add another \$1.7 M to the Landfill option. We must have information on exactly what is included in the Landfill option costs.

It is important to have sufficient information to properly evaluate the cost of the sludge disposal options. The \$5.3M 20-year cost difference projected between Haul-Away and Landfill options may look very appealing on the surface, but may in reality may be much lower (as low as \$1.0 M with the combination of the two scenarios presented here).

My goal here is to put forth ideas and options relative to the Gardner's future Wastewater Sludge Disposal solution decision. With 80% of Massachusetts Communities utilizing non-Landfill options, I am confident and optimistic that we can find an appropriate option for Gardner in the future. At a minimum, we need more data before making such a strategic long term decision. While we can't change the history of prior dumping operations and forest destruction in West Gardner, we now have the opportunity to do better in the future.

Please let me know if you have any questions.

My Best Regards,  
Alan

Alan N. Rousseau  
211 Betty Spring Road  
Gardner, MA 01440

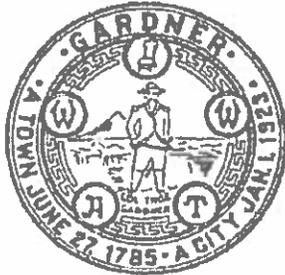
(H) 978-632-0618  
(C) 978-618-5755

**Reference Website links:**

1. Upton Contract: [http://www.uptonma.gov/sites/uptonma/files/mai/files/7.6\\_sludge\\_hauling\\_and\\_disposal\\_contract.pdf](http://www.uptonma.gov/sites/uptonma/files/mai/files/7.6_sludge_hauling_and_disposal_contract.pdf)
2. FAQ with Information on Capping Cost: <http://www.mass.gov/eea/docs/dep/about/region/offrfaq.pdf>

**CITY OF GARDNER**  
**Department of Public Works**

Highway  
 Water  
 Sewer  
 Forestry  
 Parks/Playgrounds  
 Cemeteries



Dane E. Arnold, Director  
 416 West Broadway  
 Gardner, MA 01440-2687  
 Telephone (978) 632-7661  
 Fax (978) 630-4029  
 darnold@gardner-ma.gov

Mayor and City Council Members  
 City Hall  
 95 Pleasant Street  
 Gardner, MA 01440

October 27, 2016

Dear Mayor and City Council Members:

Attached is a table that shows the average sewer bills for different family sizes and various businesses throughout the City. We wanted to show you what the differences in sewer increases would be for larger families and businesses in our community.

The top portion of the table shows Families of 3, 4, and 5. The average yearly bill will increase by approximately \$68 with the expansion of the sludge landfill, but \$115 if we choose to haul out of town. Following the table to the right you will see that is a \$47 a year increase in the difference of cost to haul out of town over and above the cost to expand the landfill. A family of 4 be paying \$62 more a year; a family of 5 will pay \$78 more.

Further down the table, you will see downtown stores, restaurants, and thriving companies. Priscilla Candy Shop will see an \$81 increase in sewer fees with the expansion of the landfill, but a \$137 if we choose to haul out of town; a difference of \$56 a year. Heywood Hospital will see a \$7,910 increase in sewer fees with the expansion of the landfill, but over \$13,000 if we choose to haul out of town. That is a \$5,438 difference to the Hospital. The School Department will pay almost \$1,800 and the City will pay more than \$670 a year more by hauling out of town versus expanding the landfill.

Disposing of our sludge is something we have to do and unfortunately whatever decision we make will not be a popular one. Please keep in mind the Hauling out of town costs will most likely only increase in the future. The Sludge Landfill will be under control of the City in-town. So when you are deciding what to do, we wanted you to see the yearly increase to the store owners, restaurants, businesses, and even the School Department and City.

Sincerely,

Dane E. Arnold, Director  
 Department of Public Works

PC Bob Hankinson, City Engineer  
 Rob Sims, CDR Maguire

**Family Impact**

|             | Average cubic feet | Current Bill \$ | Yearly Sewer Bill Increase Difference |          |            |
|-------------|--------------------|-----------------|---------------------------------------|----------|------------|
|             |                    |                 | Landfill                              | Hauling  | Difference |
| Family of 3 |                    | \$107           | \$68.48                               | \$115.56 | \$47.08    |
| Family of 4 |                    | \$142           | \$90.88                               | \$153.36 | \$62.48    |
| Family of 5 |                    | \$178           | \$113.92                              | \$192.24 | \$78.32    |

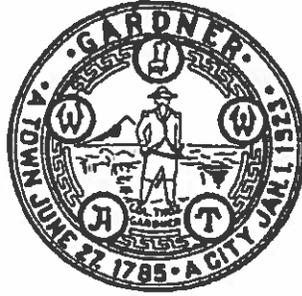
**Business Impact**

|                      | Average cubic feet | Current Bill \$ | Yearly Sewer Bill Increase Difference |             |             |
|----------------------|--------------------|-----------------|---------------------------------------|-------------|-------------|
|                      |                    |                 | Landfill                              | Hauling     | Difference  |
| ACT                  | 36,263             | \$1,726         | \$1,104.72                            | \$1,864.21  | \$759.49    |
| Blue Moon            | 3,475              | \$165           | \$105.86                              | \$178.64    | \$72.78     |
| City Hall/City       | 32,037             | \$1,525         | \$975.98                              | \$1,646.96  | \$670.98    |
| Colonial Hotel       | 54,271             | \$2,583         | \$1,653.31                            | \$2,789.96  | \$1,136.65  |
| Cruisers             | 13,100             | \$624           | \$399.08                              | \$673.44    | \$274.37    |
| Gardner Ale House    | 39,063             | \$1,859         | \$1,190.02                            | \$2,008.15  | \$818.14    |
| Heywood Hospital     | 259,675            | \$12,361        | \$7,910.74                            | \$13,349.37 | \$5,438.63  |
| Johns Sport Shop     | 4,500              | \$214           | \$137.09                              | \$231.34    | \$94.25     |
| N. E. Peptide        | 5,425              | \$258           | \$165.27                              | \$278.89    | \$113.62    |
| Priscilla Candy Shop | 2,675              | \$127           | \$81.49                               | \$137.52    | \$56.03     |
| NCCI Prison          | 1,706,786          | \$81,243        | \$51,995.53                           | \$87,742.45 | \$35,746.93 |
| School Department    | 85,395             | \$4,065         | \$2,601.47                            | \$4,389.99  | \$1,788.51  |
| South Gardner Hotel  | 9,913              | \$472           | \$301.99                              | \$509.61    | \$207.62    |
| Velvet Goose         | 3,100              | \$148           | \$94.44                               | \$159.36    | \$64.93     |

9686

**CITY OF GARDNER**  
**Department of Public Works**

Highway  
Water  
Sewer  
Forestry  
Parks/Playgrounds  
Cemeteries



Dane E. Arnold, Director  
416 West Broadway  
Gardner, MA 01440-2687  
Telephone (978) 632-7661  
Fax (978) 630-4029  
darnold@gardner-ma.gov

Gardner Conservation Commission  
City Hall  
95 Pleasant Street  
Gardner, MA 01440

October 26, 2016

RE: Sludge Landfill Response

Dear Conservation Commission Members:

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2016 OCT 26 PM 11 45  
CITY CLERK'S OFFICE  
GARDNER MA

I am writing in response to your concerns contained in a letter written by the Conservation Commission Chairman, Gregory Dumas, dated October 17, 2016 about the proposed Sludge Landfill expansion located adjacent to the Cummings Otter River Conservation Area. In several instances in the document, the Commission states their concern about the glacial esker and ridge trail that is located outside the Cummings Otter River Conservation Area and on the property under assignment for the sludge landfill since 1984. The trail and esker the Commission inquiries about, is not property under ownership or control of the Commission. The Cummings property will not be altered with the expansion of Sludge Landfill.

We understand that some of the property assigned in 1984 for the Sludge Landfill may be currently used to extend the trails of the Cummings Otter River Conservation Area, however in the event the land needs to be utilized for the expansion of the landfill, the trails will most likely be removed. Trails located on the Cummings property will not be impacted, however it is recommended that the Commission re-route the trails so that they would end at the property line of the Sludge Landfill and reconnect to the existing trails located on the Cummings property.

If the City decides to move in the direction of expanding the Sludge Landfill, the Sewer Department will submit design plans for the project to the Conservation Commission as required if we have a jurisdictional impact. All permits, Notice of Intent, Erosion Control Plans, Wildlife Natural Heritage and Endangered Species areas will be identified on our submittals. Meetings with the Conservation Commission will follow. At that time resource areas will be identified and appropriate best management practices will be utilized.

Sincerely,

A handwritten signature in black ink, appearing to read "Dane E. Arnold". The signature is fluid and cursive, with a large initial "D" and "A".

Dane E. Arnold, Director  
Department of Public Works

PC: Mark P. Hawke, Mayor  
City Council Members  
Bob Hankinson, City Engineer  
Matthew LaPointe, Suez  
Robert Sims, CDR Maguire

4686

# CITY OF GARDNER

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## CONSERVATION COMMISSION



Councillor James M. Walsh, Esq.  
City of Gardner, Council President  
95 Pleasant Street – Room 219  
Gardner, MA 01440

October 17, 2016

**Re: Proposed Sludge Landfill Expansion**

Dear Councillor Walsh:

At their meeting of September 12, 2016 the Conservation Commission briefly discussed the matter of a proposed sludge landfill expansion project located adjacent to and abutting the Cummings Otter River Conservation Area. The Commission members expressed several questions concerning this matter and I submit them on their behalf as follows:

- The Cummings Conservation Area was acquired by the City of Gardner in 2012 with state and Federal funds under the Drinking Water Supply Protection and Forest Legacy Programs, respectively, for the purposes of water supply protection and sustainable forest management. The Conservation Area provides public benefits for forest management, watershed protection, open space recreation (including hiking, hunting and fishing), and conservation and education. It was protected and is actively managed for those purposes. Will this potential project in any way prevent this area from providing these public benefits?
- A glacial esker and an associated trail along its winding ridgeline exist within the Cummings Conservation Area which travels into and through a portion of the sludge landfill parcel. Will this esker and the ridgeline trail be impacted by the proposed project?
- A recent Recreational Trails Grant received by the City of Gardner Conservation Commission will include improvements to the parking area and trails and the installation of signs, maps, and interpretive kiosks within the Cummings Conservation Area. Will the trails and trailheads located within the proposed sludge landfill expansion area still be publicly accessible under the proposed plan?
- Mass DEP regulated Priority Resources (e.g., Protected Open Space Land, Zone II Wellhead Protection Area, Potential Vernal Pool), Mass Fish and Wildlife Natural Heritage and Endangered Species Program designated Bio-map2 Core Habitat of rare species and a Critical Natural Landscape (e.g., Kettlehole Level Bog, Wetland Core Buffer), and several Mass DEP protected Wetland Resource Areas exist both within and nearby proximity of the parcel and proposed project area. Have potential environmental impacts with regard to these resource areas been taken into consideration and will they be affected by this proposed project?

Thank you for your time and careful consideration with regard to these concerns.

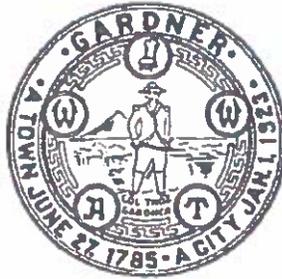
Sincerely,  
On behalf of the Conservation Commission,

Gregory P. Dumas  
Chairman, Conservation Commission

9686

# CITY OF GARDNER Department of Public Works

Highway  
Water  
Sewer  
Forestry  
Parks/Playgrounds  
Cemeteries



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Mayor and City Council Members  
City Hall  
95 Pleasant Street  
Gardner, MA 01440

October 14, 2016

RE: Back-up Info for Dewatering and Sludge Landfill Expansion

Dear Mayor and City Council Members:

At the Presentation to the City Council on September 19<sup>th</sup>, we were asked to provide back-up data for our cost analysis to compare the hauling of sludge out of town versus the expansion of the Sludge Landfill.

Attached are 4 spreadsheets:

**Table 4-10**

Compares all the different methods of dewatering and the cost to haul the finish product to the in-town Sludge Landfill. We looked at all the different factors of each type of dewatering system such as, structural improvements we may need to do to the existing building do to the weight and/or size of mechanism, power consumption, ease of operations, and reliability. We also visited Cities and towns that have these systems and spoke with the operators to see the pros and cons of each unit. Please note that this table was calculated prior to the City piloting any type of dewatering system.

The costs to haul in-town from these methods varied between \$6.9 Million - \$8.9 Million over 20 years. These costs included the construction costs, energy, chemicals needed, transportation costs, and even the amount of sand that would be needed to mix the sludge once it got to the landfill. At the time of this analysis, the cost to develop and construct the sludge landfill was not included in these calculations. You will see later, that a cost analysis for the design and construction of the sludge landfill was performed and included in an overall cost analysis once we determined the method we were going to use and piloted the unit.

After this analysis and speaking with operators, it was determined the Centrifuge system was the best method of dewatering for our facility. It was at that time, the City pursued a pilot test to be performed at the Wastewater Treatment Facility (WWTF).

#### **Table 4-11 and 4-12**

Takes a look at the same methods of dewatering as Table 4-10 and the costs associated with hauling either dewatered sludge or liquid sludge out of town. The costs to haul either liquid sludge or dewatered sludge out-of-town from these methods varied between \$12.7 Million - \$16.1 Million over 20 years. These costs included the construction costs, energy, chemicals needed, transportation costs, and disposal fees. The disposal fees are based on discussions with Synagro, which is an incineration plant in Woonsocket Rhode Island.

The costs to haul sludge out of town are already 40%-100% higher at today's cost than to haul in-town to the City's sludge landfill. By hauling in-town, the City is in control of transportation and disposal. If the City were to haul out of town, the market is very volatile and we would be at the mercy of trucking company, fuel prices, and the company that receives our sludge. These costs will only increase over time.

#### **Table 4-13**

Was developed after the City piloted the Centrifuge Unit at the WWTF in August of 2015. After piloting the unit, we learned the best chemical balance for our particular sludge. More importantly, we also learned that we can achieve a dryer sludge than earlier estimated. This is very important because the dryer the sludge, the less sand we will have to mix at the landfill and theoretically, less odors may occur when mixing and spreading at the landfill. In turn, the less material that we have to add at the landfill for mixing material, the longer the landfill's life will extend into the future.

We then went back after the pilot and recalculated the operational costs and added the cost to develop the Sludge Landfill (under the line item Landfill Development in Table 3). The cost to develop the Sludge Landfill is based on the experience of our design professionals at \$150,000 per acre. We actually used a little higher number of \$185,000 per acre to be conservative.

We used 20 years to compare costs of each method to be consistent, however, we anticipate the City's Sludge Landfill could have capacity for 30-40 years. If we can achieve that usage period, our costs savings would be even greater than what we are showing in this table.

Please note using the updated costs after the pilot, the out-of-town costs are still \$12.8 Million.

#### **Table 4-14**

Summarizes disposing in-town and hauling out of town with the two Centrifuge Units that were piloted at the WWTF. The disposal fees are based on discussions with Synagro. Again, this is based on today's estimated costs. It is almost guaranteed that these cost will increase in the future as fuel costs increase, trucking costs increase, and more importantly, sites become less and less available to receive our sludge. For example, we are using Woonsocket RI as our disposal site. However, if this site closes, we may have to pay a company more money to haul our sludge to Manheim, Pennsylvania or further. There is a lot of risk involved with this alternative and the Sewer Rates would no doubt be impacted every contract period.

The entire site, both currently used and proposed expansion areas, at the Sludge Landfill has already been approved to be used as a sludge landfill by the DEP back in 1984. All we really needed to do was design and submit expansion plans and work with the DEP to get the plans approved and then we could proceed with the expansion. However, we wanted scrutinize options and see if there was a more cost effective alternative. We also wanted the Mayors, City Councils, and publics input as we move forward.

The Department of Public Works and City Engineering Department has reviewed and scrutinized these estimates during the entire process. We did not just take what the engineers presented to us, we asked many questions and raised many concerns. We understand the sensitivity of expanding the Sludge Landfill and looked for the best alternative for the City and its sewer users as a whole. This decision is going to affect the City's sewer rate for the next 20-30 years so we wanted to be very open to any new concept or idea for a more cost effective method of sludge disposal. We feel confident at this point that we have come up with the best method with the least risk moving forward in the future.

Sincerely,

A handwritten signature in black ink, appearing to read "Dane E. Arnold". The signature is fluid and cursive, with a large initial "D" and "A".

Dane E. Arnold, Director  
Department of Public Works

PC: Bob Hankinson, City Engineer  
Robert Sims, CDR Maguire  
Kevin Olson, Wright Pierce  
Matt LaPointe, Suez

TABLE 4-10: LIFE CYCLE COST COMPARISON & DESIGN CONSIDERATIONS - HAULING DEWATERED SLUDGE TO GARDNER DEWATERED SLUDGE-ONLY LANDFILL

| TECHNOLOGY                                  | SCENARIO 2A - 64 HOURS/WEEK |                        |                       | SCENARIO 1A - 32 HOURS/WEEK        |                                   |                                         |
|---------------------------------------------|-----------------------------|------------------------|-----------------------|------------------------------------|-----------------------------------|-----------------------------------------|
|                                             | ENCLOSED SCREW PRESS        | HORIZONTAL SCREW PRESS | ROTARY PRESS          | ROTARY PRESS                       | CENTRIFUGE                        | BELT FILTER PRESS                       |
| MANUFACTURER                                | HUBER (2) Q800              | PKC (2) BIV-900x5000L  | FOURNIER (2) 4-900    | FOURNIER (2) 6-900 & (1) 4-900     | GEAWEST/ALFA (C-F-6000) (C-S21-4) | ALFA LAVAL (Windle Press HS 2.0) (HS-2) |
| Construction Cost                           | \$3,330,000                 | \$3,260,000            | \$3,160,000           | \$4,700,000                        | \$3,630,000                       | \$3,950,000                             |
| Annual Costs                                |                             |                        |                       |                                    |                                   |                                         |
| Assumed Calc %                              | 24%                         | 25%                    | 21%                   | 21%                                | 28%                               | 24%                                     |
| Debt payment                                | \$240,000                   | \$235,000              | \$228,000             | \$339,000                          | \$257,000                         | \$219,000                               |
| Energy                                      | \$1,200                     | \$2,300                | \$3,600               | \$4,200                            | \$5,900                           | \$2,200                                 |
| Transportation                              | \$84,600                    | \$81,200               | \$96,600              | \$96,600                           | \$72,500                          | \$85,600                                |
| Sand Amendment                              | \$129,400                   | \$124,200              | \$147,800             | \$147,800                          | \$110,900                         | \$131,000                               |
| Polymer                                     | \$53,000                    | \$53,000               | \$39,000              | \$39,000                           | \$28,000                          | \$19,000                                |
| O&M                                         | \$63,100                    | \$23,500               | \$19,800              | \$13,900                           | \$47,400                          | \$58,400                                |
| Total Annual                                | \$571,300                   | \$519,200              | \$534,800             | \$640,500                          | \$521,700                         | \$581,200                               |
| Present Worth                               | \$7,934,000                 | \$7,210,000            | \$7,424,000           | \$8,690,000                        | \$7,249,000                       | \$8,067,900                             |
| Operating Weight of Units (lb)              | (2) x 7,720 (15,440)        | (2) x 16,535 (33,070)  | (2) x 11,028 (22,056) | (2) x 14,380 (1) x 10,760 (39,520) | (2) x 12,430 (24,860)             | (2) x 14,200 (28,400)                   |
| Structural Concerns/Improvements Required   | YES                         | YES                    | YES                   | YES                                | YES                               | YES                                     |
| Require Access Platforms                    | YES                         | YES                    | NO                    | NO                                 | NO                                | YES                                     |
| Pilot Test Unit Available                   | YES                         | YES                    | YES                   | YES                                | YES                               | YES                                     |
| Technology Approved by Wright-Pierce        | YES                         | YES                    | WITH CAUTION          | WITH CAUTION                       | YES                               | YES                                     |
| Equipment Layout in Existing Space          | YES                         | YES                    | YES                   | YES                                | YES                               | YES                                     |
| Increase in Energy Consumption              | NO                          | NO                     | NO                    | NO                                 | YES                               | NO                                      |
| Wastewater Requirements                     | LOW                         | MODERATE               | LOW                   | LOW                                | LOW                               | HIGH                                    |
| Sensitive to Primary:Secondary Sludge Ratio | YES                         | YES                    | YES                   | YES                                | NO                                | YES                                     |
| Issues with Grit & Rags                     | NO                          | NO                     | YES                   | YES                                | YES                               | NO                                      |
| High Operator Oversight                     | NO                          | NO                     | NO                    | NO                                 | MODERATE                          | YES                                     |
| Can be used with Dry and Liquid Polymer     | NO (ONLY LIQUID)            | YES                    | YES                   | YES                                | YES                               | YES                                     |

Revision Notes:

1. Sand amendment ratio of 3:1 used for each technology.
2. Present worth is based on 20 years of annual payment with 3.75% interest.
3. Coar of Sand has been reduced from \$20/CY to \$7.50/CY.
4. Labor (hr/tp) has been increased from 1 hour to 4 hours for all technologies.

TABLE 4-11: LIFE CYCLE COST COMPARISON & DESIGN CONSIDERATIONS - HAULING DEWATERED SLUDGE OUT-OF-TOWN

| HOURS/WEEK                | SCENARIO 2A - 64 HOURS/WEEK |                        |              |                       | SCENARIO 1A - 32 HOURS/WEEK |              |                     |                   |
|---------------------------|-----------------------------|------------------------|--------------|-----------------------|-----------------------------|--------------|---------------------|-------------------|
|                           | INCLINED SCREW PRESS        | HORIZONTAL SCREW PRESS | ROTARY PRESS | ROTARY PRESS          | CENTRIFUGE                  | CENTRIFUGE   | BFLT FILTER PRESS   | BFLT FILTER PRESS |
| TECHNOLOGY                | HUBER                       | FKC                    | FOURNIER     | FOURNIER              | WESTALTA                    | CENTRIFUGE   | ALFA LAVA           | KOMLINE           |
| MODEL                     | (2) Q800                    | (2) BHN 900x5000L      | (2) 4-900    | (2) 6-900 & (1) 4-900 | CF-6000                     | CS21-4       | Winkle Press HS 2.0 | GRS 2             |
| Construction Cost         | \$3,330,000                 | \$3,260,000            | \$3,160,000  | \$4,700,000           | \$3,570,000                 | \$3,630,000  | \$3,950,000         | \$3,040,000       |
| Annual Costs              |                             |                        |              |                       |                             |              |                     |                   |
| Assumed Cake %            | 24%                         | 25%                    | 21%          | 21%                   | 28%                         | 28%          | 24%                 | 24%               |
| Deht payment              | \$240,000                   | \$235,000              | \$228,000    | \$339,000             | \$257,000                   | \$262,000    | \$285,000           | \$219,000         |
| Energy                    | \$1,200                     | \$2,300                | \$3,600      | \$4,200               | \$5,900                     | \$7,900      | \$2,200             | \$1,900           |
| Transportation & Disposal | \$674,000                   | \$647,000              | \$767,000    | \$767,000             | \$580,000                   | \$580,000    | \$682,000           | \$674,000         |
| Polymer                   | \$53,000                    | \$53,000               | \$39,000     | \$39,000              | \$28,000                    | \$28,000     | \$19,000            | \$19,000          |
| O&M                       | \$63,100                    | \$23,500               | \$19,800     | \$13,900              | \$47,400                    | \$49,400     | \$38,400            | \$45,200          |
| Total Annual              | \$1,031,300                 | \$960,800              | \$1,057,400  | \$1,163,100           | \$918,300                   | \$977,200    | \$1,046,600         | \$959,100         |
| Present Worth             | \$14,327,000                | \$13,346,000           | \$14,686,000 | \$16,152,000          | \$12,760,000                | \$12,874,000 | \$14,534,000        | \$13,375,000      |

Revision Notes:

1 Present worth is based on 20 years of annual payment with a 7.5% interest.

1 Dewatered Sludge Disposal Out-of-Town costs have been increased from \$93 to \$135/wet ton.

TABLE 4-12: ESTIMATED COST OF HAULING LIQUID SLUDGE OUT-OF-TOWN FOR DISPOSAL

| Description    | Cost (\$/year) |
|----------------|----------------|
| Disposal       | \$453,000      |
| Transportation | \$444,300      |
| Total Annual   | \$897,300      |
| Present Worth  | \$12,470,000   |

Base Notes:

Does not include any capital improvements for gravity thickeners, pumps, and a sludge fill station.

Revision Notes:

1 Present Worth costs have been added, based on City's bonding ratio of 3.75%.

TABLE 4-13: CENTRIFUGE LIFE CYCLE COST COMPARING % SOLIDS, SAND AMENDMENT RATIOS, AND DISPOSAL LOCATION

| HOURS/WEEK                                              | SCENARIO 1A - 32 HOURS/WEEK |              |              |              |
|---------------------------------------------------------|-----------------------------|--------------|--------------|--------------|
|                                                         | GEA WESTFALIA<br>CF 6000    |              | CENTRIFUGE   |              |
| TECHNOLOGY                                              | CENTRIFUGES                 |              |              |              |
| MANUFACTURER                                            | CENTRIFUGES                 |              |              |              |
| MODEL                                                   | CS21-4                      |              |              |              |
| % SOLIDS                                                | 28%                         | 30%          | 33%          | 33%          |
| POLYMER USE (active lb/dry ton)                         | 8                           | 15           | 20           | 20           |
| DEWATERING OPERATIONS INDEPENDENT OF DISPOSAL           |                             |              |              |              |
| Construction Cost                                       | \$3,570,000                 | \$3,570,000  | \$3,570,000  | \$3,630,000  |
| Annual Costs                                            |                             |              |              |              |
| Debit payment                                           | \$257,000                   | \$257,000    | \$257,000    | \$262,000    |
| Energy                                                  | \$5,900                     | \$5,900      | \$5,900      | \$7,900      |
| Polymer                                                 | \$28,000                    | \$63,000     | \$70,000     | \$53,000     |
| O&M                                                     | \$47,400                    | \$47,400     | \$47,400     | \$49,300     |
| DEWATERED SLUDGE HAULED TO GARDNER SLUDGE-ONLY LANDFILL |                             |              |              |              |
| Transportation                                          | \$72,500                    | \$37,100     | \$31,500     | \$37,100     |
| Sand Amendment Ratio                                    | 3:1                         | 2:1          | 2:1          | 2:1          |
| Sand Amendment                                          | \$110,900                   | \$73,900     | \$62,700     | \$73,900     |
| Landfill Development                                    | \$65,000                    | \$55,200     | \$55,200     | \$55,200     |
| Total Annual                                            | \$586,700                   | \$529,500    | \$529,700    | \$538,400    |
| Present Worth                                           | \$8,152,000                 | \$7,357,000  | \$7,360,000  | \$7,471,000  |
| DEWATERED SLUDGE DISPOSAL OUT-OF-TOWN                   |                             |              |              |              |
| Transportation & Disposal Costs                         | \$580,000                   | \$543,000    | \$495,000    | \$580,000    |
| Total Annual                                            | \$918,300                   | \$916,300    | \$875,300    | \$925,200    |
| Present Worth                                           | \$12,760,000                | \$13,107,000 | \$12,163,000 | \$13,222,000 |

Key:  - Indicates modifications from Tables 4-10 and 4-11 based on assumptions from centrifuge pilot study results and the addition of landfill development costs.

1. Cost of sand has been reduced from \$20/CY to \$7.50/CY.  
 2. Labor (hr/ton) has been reduced from 4 hours to 2 hours due to spreadability of dewatered sludge from centrifuges.  
 3. Polymer use (active lb/dry ton) has been increased to reflect pilot study performance.  
 4. Dewatered Sludge Disposal Out-of-Town cost has been increased from \$95 to \$135/wet ton based on updated information from Synagro.  
 5. Landfill development costs provided by CDR Maguire and have been included under disposal costs to the Gardner sludge-only landfill.

**TABLE 4-14  
TOTAL ESTIMATED ANNUAL AND PRESENT VALUE COSTS  
BASED ON DISPOSAL LOCATION**

| MANUFACTURER:                                                  | Dewatered Sludge |              | Liquid Sludge |
|----------------------------------------------------------------|------------------|--------------|---------------|
|                                                                | GEA Westfalia    | Centrysis    |               |
| MODEL:                                                         | CF 6000          | CS21-4       |               |
| <b>DEWATERED SLUDGE HAULED TO GARDNER SLUDGE-ONLY LANDFILL</b> |                  |              |               |
| Total Annual                                                   | \$532,100        | \$541,000    |               |
| Present Value over 20 Years                                    | \$7,393,000      | \$7,508,000  |               |
| <b>DEWATERED SLUDGE HAULED TO OUT-OF-TOWN LOCATION</b>         |                  |              |               |
| Total Annual                                                   | \$916,300        | \$925,200    |               |
| Present Value over 20 Years                                    | \$12,732,000     | \$12,846,000 |               |
| <b>LIQUID SLUDGE DISPOSAL OUT-OF-TOWN</b>                      |                  |              |               |
| Total Annual                                                   |                  |              | \$897,300     |
| Present Value over 20 Years                                    |                  |              | \$12,470,000  |

**Notes:**

1. City's Bonding Rate currently at 3.75%.
2. Assumed operating 32 hours/week.
2. Centrifuge operating performance 30% solids with polymer use of 18 active lbs/dry ton.
3. Dewatered Sludge Disposal Out-of-Town cost provided from Synagro.
4. Liquid Sludge Disposal Out-of-Town cost provided from Synagro.
5. Liquid Sludge disposal does not include any capital improvements for gravity thickeners, pumps, and a sludge fill station.
6. Landfill development costs provided by CDR Maguire.

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**CITY OF GARDNER**

**Department of Public Works**

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GARDNER, MA



- Highway
- Water
- Sewer
- Forestry
- Parks/Playgrounds
- Cemeteries

Dane E. Arnold, Director  
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 Gardner, MA 01440-2687  
 Telephone (978) 632-7661  
 Fax (978) 630-4029  
 darnold@gardner-ma.gov

Mayor and City Council  
 City Hall  
 95 Pleasant Street  
 Gardner, MA 01440

RE: Dewatering and Sludge Landfill

June 1, 2016

Dear Mayor and City Council:

I am writing you in regards to the on-going upgrade at the Wastewater Treatment Facility (WWTF). The upgrade not only includes improving the technology, replacing pumps, and repairing the 30 year old facility, but also includes determining the most cost effective method to dispose of our sludge for the next 25-30 years.

Over the past year we have completed a comprehensive study and looked into several alternatives for the disposal of the City's sludge. This evaluation was very in-depth and took into consideration future costs, fuel prices, electrical costs, trucking costs, odors, design costs, construction costs, and even contract negotiations with disposal sites, other municipalities, and trucking companies.

Options we considered for disposing of the City's Sludge:

1. Continue to dewater sludge at plant and haul to City Owned Sludge Landfill.
2. Composting Sludge at our Sludge Landfill
3. Anaerobic Digestion
  - a. Another Municipality
  - b. At our WWTF
4. Offsite Disposal by a Private Hauler
  - a. Haul liquid sludge to off-site Landfill
  - b. Haul sludge cake to off-site Landfill
  - c. Haul liquid sludge to an off-site Incinerator

Attached are detailed descriptions and cost analysis of each method.

**DEWATERING**

This study also included looking at many technologies to reduce the amount of moisture contained in the sludge. Again, many items were evaluated, such as design costs, construction costs, electrical costs, repair and replacement costs, and ease of operation.

After evaluating different technologies and visiting other facilities, it was determined that a centrifuge would be the best alternative for the dewatering the City's wastewater sludge. A pilot test of a centrifuge was conducted in August of 2015; which is basically a large cylinder that spins and uses centripetal force to dry the sludge and great results were achieved.

The importance for the correct dewatering technology is very important for several reasons. The dryer the sludge that can be achieved, the less amendment (sand) has to be added to aid in "working" the material at the landfill. Also, the dryer the sludge, the less odors are generated during the hauling and covering process at the landfill. For every cubic yard of sand we save, its money not spent. Over 25 years, this could add up to be millions of dollars. Also, for every cubic yard of amendment we don't use, is a cubic yard we can extend the capacity of the sludge landfill in the future. In other words if we can generate a sludge that uses 30% less additive, we will extend the life of our landfill by 30%.

We have determined that replacing the old Belt Filter Presses that exist at the WWTF with Centrifuges for the dewatering process and hauling the dewatered sludge cake to the City's Sludge Landfill is the most cost effective and best alternative for the disposal of the City's sludge.

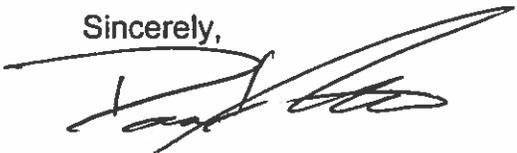
### **LANDFILL**

**The decision to move forward with the design and construction of Centrifuges would ultimately mean the expansion of the Sludge Landfill located off West Street.** The cost of expanding the Sludge Landfill was factored into the cost analysis of our recommended alternative. Even with the nearly million dollar construction costs of the sludge landfill factored into the annual costs, we still found it almost half the cost compared to hauling the sludge out of town. Supporting documentation is enclosed.

Currently the Sludge Landfill has capacity and Suez (formally Earth Tech) is on the hook for sludge disposal until 2018 when their contract expires. The City needs to prepare and submit design plans for a Horizontal Expansion (outward). It is very important to note that DEP has acknowledged the site is already permitted for such expansion. Once we have all design documents approved by DEP, we would be looking to have the expansion of the Landfill completed when Suez's contract expires in 2018.

If you have any questions or would like to discuss this matter as a whole, I would be glad to have a meeting.

Sincerely,



Dane E. Arnold, Director  
Department of Public Works

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PC: Bob Hankinson, City Engineering Department  
Matt LaPointe, Suez  
Jen Susan-Roy, Board of Health  
Rob Sims, Maguire  
Kevin Olsen, Wright Pierce



February 2, 2016

Mr. Dane E. Arnold  
Director  
Gardner DPW  
416 West Broadway  
Gardner, MA 01440

**Re: Gardner Wastewater Treatment Plant Upgrades  
Sludge Disposal Evaluation**

Dear Dane:

This letter provides a brief overview and summary of recent studies and evaluations that have been conducted to assess long term methods for disposing of the sludge from the City's Wastewater Treatment Plant (WWTP) on Plant Road in Templeton.

#### **EVALUATION BACKGROUND**

The City has conducted a Wastewater Facility Plan for upgrades to the WWTP. One facet of the facility plan evaluations was an assessment of the sludge processing and disposal alternatives for the WWTP.

The Facility Plan evaluated several technologies for dewatering sludge including Inclined Screw Press, Horizontal Screw Press, Rotary Press, Centrifuge and the current technology Belt Filter Press. Major factors considered in the alternative evaluation included capital cost, energy consumption, disposal costs, transportation, additives (sand), sampling and general operation and maintenance.

**Dewater and City Owned Landfill** – This alternative included upgrades to the dewatering process at the WWTP and disposal at the City owned landfill on West Street. Capital costs including dewatering equipment upgrades and expansion costs for the landfill are included.

**Dewater and Haul** – This alternative included modifications to the dewatering methods at the WWTP with private hauling of dewatered sludge for disposal. Although the use of the landfill is eliminated there are increased transportation and volatile disposal costs. Unknown variables exist for the alternative as the private hauler with likely have contract provisions for changes in regulations, fuel costs and the availability of their disposal site.

**Haul Liquid** – This alternative involved no modifications at the WWTP, but did include disposal costs. This alternative is the most volatile due to unknown contractual impacts for changes in regulation, fuel and available space at private disposal locations. Although not a responsibility of the City, because the volume of the sludge has not been reduced through dewatering, there will be an increase in truck traffic at the WWTP.

Based on the information gathered, the present worth cost for the 20-year planning period of the three alternatives is presented in the following table. To obtain the present worth value the annual operating & maintenance costs are amortized and added to the capital costs. For this evaluation we used a 20-year term and the City's current borrowing rate of 3.75%.

| Alternative                             | Dewater & City Owned<br>Landfill Disposal | Dewater & Private<br>Hauler | Haul Liquid              |
|-----------------------------------------|-------------------------------------------|-----------------------------|--------------------------|
| Capital Costs                           | \$4,183,200 <sup>(1)</sup>                | \$3,416,500 <sup>(2)</sup>  | \$0 <sup>(3)</sup>       |
| Annual Operation &<br>Maintenance Costs | \$221,200                                 | \$536,550 <sup>(4)</sup>    | \$897,300 <sup>(4)</sup> |
| Present Worth                           | \$7,435,000                               | \$12,789,000                | \$12,470,000             |

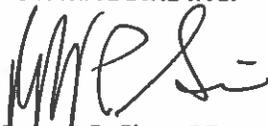
- (1) Includes \$3.4 million for dewatering upgrades and \$0.77 million for expansion costs at the current sludge landfill.
- (2) Includes \$3.4 million for dewatering upgrades
- (3) Does not include an amount for new sludge pumping equipment
- (4) Includes costs for additional sludge sampling

Based on the evaluations, it was determined that the most cost-effective long-term solution for the City's wastewater sludge processing is to upgrade the present dewatering equipment and continue to dispose of dewatered sludge at the City's sludge landfill by expanding the capacity of the landfill.

We are prepared to meet with you to discuss our recommendation. We look forward to continuing the progress on the upgrades.

Very truly yours,

CDR MAGUIRE INC.



Robert P. Sims, PE  
Project Manager

cc: Steve Landry (CDR Maguire)  
Bob Hankinson (Gardner)  
Matt LaPointe (United Water)  
Kevin Olson (Wright-Pierce)

References:

1. Wastewater Treatment Facility Plan for the City of Gardner by Wright-Pierce, November 2015
2. CDR Maguire Landfill Expansion Capacity memorandum, February 2016

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## Memorandum

**Date:** May 20, 2015  
**To:** Dane Arnold  
**From:** Robert Sims  
**Subject:** Gardner Sludge Disposal - Alternatives Analysis

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### BACKGROUND

The City of Gardner currently treats wastewater at a treatment facility located off of Parker Street in the Town of Templeton. The facility discharges into the Otter River. The facility is governed by the USEPA through a NPDES permit (Permit # MA0100994). This permit allows for a design flow of 5.0 million gallons per day of treated effluent to enter the Otter River. The discharge must meet limits of concentration and total loading mandated in the Permit.

As part of this process, sludge is removed during the primary and secondary phases of the treatment process. Once the sludge is removed it is stored in tanks and thickened by gravity. The thickened sludge (approximately 3% solids) is mixed with a polymer which hastens the removal of additional water and the mixture passes through a pair of belt filter presses. This process squeezes the water between two parallel permeable sheets and water is extruded. The extruded water is drained off and returned to the headwater of the plant. The solids content of the sludge is increased to about 22% and it is now referred to as sludge cake.

The cake falls off of the press and is deposited into a dump truck and hauled to the sludge landfill where it is mixed with approximately 3:1 ratio of amendment (sand, dirt and gravel) to further increase the solids content and make the material workable for spreading at the landfill. Once spread, it is covered with a daily cover to reduce odors.

The pressing and hauling currently occurs 4 days a week and 8 trucks of sludge are deposited and worked at the landfill. The average monthly total (as reported in annual reports) is approximately 400 cubic yards per month.

This evaluation is to perform a comparison of three additional alternatives for processing of the sludge. The driving factor in the analysis will be cost, but other factors such as land use and needed infrastructure improvements will be part of the discussion. Although much harder to define, but equally important are the impact of environmental changes and reliance on stable and predictable costs from private waste haulers.

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## ALTERNATIVES

As part of the alternatives analysis we investigated the cost and non-cost impacts for utilizing each alternative. The costs included the cost of land, infrastructure improvements, equipment purchase and operation and maintenance. The non-cost impacts included traffic and odors.

- Continue dewatering and landfilling
- Composting
- Anaerobic Digestion
- Offsite disposal

For the new options we considered the pros and cons of performing the activity at the treatment plant and at the landfill site.

## OPTIONS

Option 1 - Continue dewatering and landfilling. This option is a continuation of the current method of sludge disposal and would require little change. Sludge is thickened and dewatered at the plant and transported to the sludge landfill. Due to size restraints of the existing landfill, the current landfill would have to be expanded. The City currently owns the property for the expansion. In addition, the site has been assessed and approved by the regulatory agencies. This was completed prior to the original construction in the late 1980's.

The costs for this option will include development of the plans for the expansion, replacement of the existing dewatering equipment, site work, installation of a liner, an extension of the existing leachate collection system and mixing material. It is anticipated that a portion (if not all) of the in-situ material can be used for daily cover and final cover material for the closing of the existing landfill.

As stated above, the land has already been set aside for development as a sludge landfill. This was completed as part of the original approval.

Option 2 – Composting. This option would involve gravity thickening and dewatering of the sludge prior to conversion to compost. To convert to compost, the dewatered sludge will be mixed with an amendment (typically wood chips) and stored for decomposition. To facilitate a consistent process and finished product, the mixed piles of sludge and amendment are placed over a pumped air distribution system. The mixture can also be simply turned with mechanical equipment, but utilizing the supplemental air controls the process and ensures complete conversion of the material.

For composting it is best to have the process be performed under cover. This does not have to be an enclosed setting, but protection from rain is key. Simple structures are available to perform this process, but the process needs a place for construction. Besides needing space for the cover, air blowers, piping and wood chips would have to be purchased and stored. It's anticipated that approximately 3 acres of space would be needed for this process. It's expected that this would either occur at the existing treatment plant or at the sludge landfill.

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Each site has its limitation and would require some site work. The existing sand filter beds at the treatment plant were constructed to allow treated water to soak into the ground. This condition is not preferred for composting and would have to be modified with some sort of impenetrable covering, most likely concrete. The landfill site is suitable yet is currently wooded. Some clearing and site development would have to occur. Each option would require that a site specific design be performed.

A key component of the composting option is being able to dispose of the finished product. Testing of the sludge is being performed to determine the quality. Massachusetts environmental regulations (310 CMR 32.00) dictate the limits of the end use of compost based on the concentration of certain components of the sludge.

1. Type I Sludge – Distributed without further DEP approval
2. Type II Sludge – Distributed only with prior DEP approval
3. Type III Sludge – Not for food chain crops and applications are recorded for the property at the Registry of Deeds

The Type of material created greatly dictates the ability to dispose of the finished product. Whereas a Type I sludge can be sold or given to homeowners for lawn and garden supplement without any further input from the regulatory agencies, a Type III compost would have a very limited distribution and it is feasible that a cost would be incurred for final disposal. The Town of Pepperell has a small composting facility that has a Type I product and the Town is able to dispose of their product through uses by the DPW, homeowners and landscapers. Their sludge meets the DEP requirements.

Additionally, since composting occurs in an open air environment, the generation of odors and other vectors (birds and rats) are a distinct possibility.

Option 3 – Anaerobic Digestion. This process involves utilizing the gravity thickened (but not dewatered) sludge and introducing it into an anaerobic (no oxygen) environment that allows certain bacteria to grow that destroy the pathogens in the sludge. Food waste can also be added to enhance the process. Changes in food waste disposal regulations support the development of these kinds of operations. Depending on the characteristics of the sludge certain amounts of methane are produced that can be used for energy production (and cost recovery). One of the inherent downsides to this operation is that sludge is still produced requiring disposal. Disposal through the open market is possible, but quality limitations determine the approved end use.

The City of Fitchburg has recently begun an investigation to create an energy generation project by utilizing sludge from their in-City treatment plant, in-City paper mill waste, in-City food waste and wastewater sludge from surrounding communities. At a public hearing on March 31, 2015, the consulting engineer for the City held a public forum to present the idea and facilitate a discussion.

The Proposed Fitchburg proposal would generate 1.5 mega-watts of energy and require in addition to the six in-City truckloads of material, the delivery of 24 40-cubic yard dump trucks of wastewater sludge from surrounding communities. When asked why the proposal was for such a large complex and included the necessity for material from outside the community, the engineer stated that it needed to be that big to make the project viable by achieving the appropriate economy of scale. That being, that a smaller project would not be cost effective.

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Fitchburg is in a unique situation because many of the facilities necessary for the process are already built. Their West Treatment plant was recently decommissioned yet some of the existing structures could house some of the needed equipment. This significantly reduces the capital costs. The intent of the Fitchburg facility is to fund the construction and operation through tipping fees and energy credits. If Gardner was to proceed with participating in the Fitchburg process, the existing process of dewatering the thickened sludge could be discontinued. However, a new tanker vehicle would be needed to transport the liquid sludge to Fitchburg. Additional capital would be required for new vehicle and new personnel expenses would be encumbered for the transportation to Fitchburg. Based on current sludge production, it is anticipated that approximately 10 tanker trucks a week would be delivered to Fitchburg.

For new anaerobic digestion facilities in Gardner, new structures would be required including tanks for processing, mixing and storage. Siting the anaerobic digestion process is complicated. It would be most cost-effective to locate it at the treatment plant to reduce the hauling of the liquid to an off-site location (most likely the sludge landfill).

The anticipated mixing ratio of food waste to sludge is estimated to be 1:5. That is you need 1/5 of the amount of food waste for the process. The exact ratio would need to be verified before a detailed analysis could be completed. Based on a study by the Commonwealth, the City of Gardner has 17 viable sources of food waste. These are shown in Table X. As seen in Table X, the 17 establishments in the City generate an estimate 3.31 tons of food waste per day. Based on the estimated ratio and the average production of 13.3 tons per day of sludge, the new anaerobic digestion facility would require 2.9 tons of food waste per day. That amounts to 88% of the food waste generated in the City. This data was taken from the Massachusetts Department of Environmental Protection Website – Food Waste Generation.

Because of the multiple sources of food waste, the collection by the City will require additional staff. Another option is to require the delivery of the food waste. Either way, the City will need a person to either collect the material or oversee the disposal by the generator.

**TABLE 1**  
**SUMMARY OF FOOD WASTE GENERATORS IN GARDNER**

| Source                          | Location        | Amount (Tons/year)             |
|---------------------------------|-----------------|--------------------------------|
| Burger King                     | Crawford Street | 39.0                           |
| Legend Rehabilitation           | Eastwood        | 39.4                           |
| Dunkin Donuts                   | Main Street     | 30.0                           |
| D'Angelo's                      | Union Square    | 24.0                           |
| Friendly's                      | Pearson Blvd    | 90.0                           |
| Heywood Hospital                | Green Street    | 83.6                           |
| Heywood Transitional Care       | Green Street    | 6.2                            |
| McDonald's                      | Timpany Blvd    | 45.0                           |
| Mt. Wachusett Community College | Green Street    | 92.5                           |
| Papa Gino's                     | Timpany Blvd    | 21.0                           |
| Peter Ray's Pan                 | Ross Road       | 105.0                          |
| Stop-n-Shop                     | Timpany Blvd    | 165.0                          |
| Stop-n-Shop                     | Timpany Blvd    | 300.0                          |
| Taco Bell                       | Pearson Blvd    | 27.0                           |
| Wachusett Manor                 | Hospital Hill   | 31.5                           |
| Wendy's                         | Pearson Blvd    | 40.5                           |
| Williams Restaurant             | Pearson Blvd    | 67.5                           |
|                                 | <b>TOTAL</b>    | <b>1207.2 or 3.31 tons/day</b> |

There appears to be available space at the treatment plant for construction. The downside is that the plant is located in the Town of Templeton and the power grid is owned and operated by the Templeton Power Utility that does not have incentive programs for these kinds of arrangements. Not receiving an incentive would reduce the viability of this option.

Siting the anaerobic digestion at the landfill site is possible but would involve developing a portion of the available space, the construction of the infrastructure, and hauling of the liquid to the site. It would however allow for the return of the investment in energy recovery. It's expected that the anaerobic digestion process would return power to the grid as the sanitary landfill currently does.

A major impact to the anaerobic digestion process is the ability to receive consistent quality of material (food waste and sludge). A consistent material will assist in generating a consistent product (energy and waste sludge). To allow for the delivery of consistent amounts of material, it is anticipated that storage facilities will be required for both sludge and food waste.

As with the production of compost, the quality of the sludge will affect the ability to dispose of the treated sludge from the anaerobic digestion process. Testing of the sludge is being performed to determine the quality. Massachusetts environmental regulations (310 CMR 32.00) dictate the limits of the end use of compost based on the concentration of certain components of the sludge.

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The Type of material created greatly dictates the ability to dispose of the finished product. Whereas a Type I sludge can be sold or given to homeowners for lawn and garden supplement, a Type III compost would have a very limited distribution and it's feasible that a cost would be incurred for final disposal.

To date the sludge generated in Gardner has not been sufficiently tested and an expectation of the quality of the end product of the anaerobic digestion process is uncertain.

At this time, based on the contributing issues in Gardner and the downsides from the presentation by Fitchburg, we would not recommend the creation of an anaerobic digestion facility for sludge disposal. However, in light of the recommendation, we have included a cost estimate for this option.

In addition to our evaluation of anaerobic digestion, we have had conversation with solid waste regulator's at the MADEP in Worcester and their opinion is that the logistic of a consistent product, food waste and byproduct render, this not a viable option.

Option 4 – Offsite Disposal. This option involves no action by the City other than contracting with a sludge hauler. There are subcategories for this type of disposal including:

- Hauling of liquid sludge by a hauler to a offsite landfill
- Hauling of sludge cake by a hauler to offsite landfill
- Hauling and incineration of liquid sludge to an offsite incinerator

Each subcategory has inherent costs. Aside from the cost of hauling and disposal, the sludge cake option would require the replacement of the belt filter press while the hauling of liquid sludge would require a retrofit at the treatment plant to accommodate the disposal of liquid sludge which is not currently an option.

These options are all viable, and in some cases moderately cost competitive, there is the unknown impact of changes regulatory environment and unknown contract language impacts from a private hauler. Specific modifications to the planned cost are very difficult to include in the analysis, but pose a significant risk.

### COST

For the cost evaluation we converted the capital and operating costs to an annualized cost. The City of Gardner Sludge Alternative Cost Summary is included at the end of this memorandum as well as a simplified summary for each option. For this evaluation we made the assumptions listed below.

- The term of the borrowing for the evaluation would be 20 years.
  - The interest rate would be 4% (based on current borrowing).
  - We assumed that the plant will not expand and will produce sludge at a consistent rate for the life of the term.
  - We assumed that the gravity thickener produces sludge at a consistency of 3% solids.
  - The belt filter press generates sludge at a rate of 22% solids.
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- The current landfill accepts approximately 400 cubic yards of material every month (@22% solids). This calculates to approximately 1,500 dry tons per year.
- We assumed that the engineering, permitting and construction oversight for each alternative is 25%.
- To be slightly conservative in our approach and to allow for certain variability, we have also included a 25% contingency.
- For an option involving sludge cake, we assumed that the belt filter press would be replaced
- Operation & Maintenance of equipment is equal to 4% of the capital cost.
- Costs for Hauling liquid sludge, sludge cake and incineration were prorated to increase over the term of the evaluation at 4%.
- Power from anaerobic digestion valued at \$0.15 per Kilo-watt

### TRAFFIC

Another intangible that was not included as part of the cost evaluation is traffic. Currently the landfill option generates about 8 trips per week.

Composting would also include 8 trips per week of sludge cake to the landfill. The increase in traffic for hauling amendment would offset the hauling of amendment for the landfill option. Composting will not increase traffic.

The anaerobic digestion process involves the hauling of a liquid sludge. Since the dewatering reduces the overall volume, the number of truck trip would increase to approximately 10 trips per week of a 9,000 gallon truck.

A private hauler of sludge cake would likely reduce traffic as they would likely use a larger truck to maintain efficiency. A truck twice the size of the one currently used by the city would reduce the truck trips by 50% to approximately 4 a week. However, for hauling liquid sludge (disposal or incineration) would result in the same increase as hauling liquid to Fitchburg (8 to 10).

### ODORS

Odors are a part of sludge handling. Of the options investigated, the landfilling and compost have the highest incident of odor complaints. For anaerobic digestion and private hauling, it is expected that the odors would be limited to the treatment plant. Anaerobic digestion at the landfill site might have some odors, but they would be expected to be less than landfilling or composting.

As part of the vertical expansion of the existing landfill, the operator (United Water) is investigating the odors and is developing a plan for reducing the odors associated with the landfill operations.

### OTHER COSTS

A private hauler will also require that the material meet certain contaminant levels and require additional testing. From our discussion with a private waste hauler, some parameters are annually and

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some are quarterly. The hauler's estimate of additional sampling would be an annual amount of \$15,000 to \$20,000.

**SUMMARY**

Given the cost comparison and the intrinsic risk of utilizing a private waste hauler, we recommend continuing with the process of dewatering and landfilling of the current sludge generated at the wastewater plant. Given the reasonably close cost analysis it may be beneficial to consider the hauling of sludge cake as a backup alternative.

Both options do require the replacement of the sludge dewatering equipment at the treatment plant and we feel confident that the City can continue with those plans.

**CITY OF GARDNER  
SLUDGE DISPOSAL ANALYSIS  
COSTING OF ALTERNATIVES**

| OPTION | DESCRIPTION                     | ANNUAL<br>COST | Delta      | % inc. | VOLUME<br>(dt/yr) | COST<br>(\$/dt) |
|--------|---------------------------------|----------------|------------|--------|-------------------|-----------------|
| 1      | Landfill                        | \$ 360,960     | \$ -       | 0%     | 1,500             | \$ 240.64       |
| 2      | Compost                         | \$ 626,400     | \$ 265,440 | 74%    | 1,500             | \$ 417.60       |
| 3A     | Anaerobic Digestion - Fitchburg | \$ 623,780     | \$ 262,820 | 73%    | 1,500             | \$ 415.85       |
| 3B     | Anaerobic Digestion - Gardner   | \$ 676,160     | \$ 315,200 | 50%    | 1,500             | \$ 450.77       |
| 4A     | Haul Liquid                     | \$ 937,700     | \$ 576,740 | 160%   | 1,500             | \$ 625.13       |
| 4B     | Haul Sludge                     | \$ 435,600     | \$ 74,640  | 21%    | 1,500             | \$ 290.40       |
| 5      | Haul & Burn                     | \$ 1,237,700   | \$ 876,740 | 243%   | 1,500             | \$ 825.13       |

CITY OF GARDNER SLUDGE ALTERNATIVES

| OPTION 1 - LANDFILL |                     | A/P, 20,4%   |      |          |             |             |
|---------------------|---------------------|--------------|------|----------|-------------|-------------|
|                     |                     | Item         | term | interest | Cost Factor | Annual Cost |
| Capital             | BFP                 | \$ 1,500,000 | 20   | 0.04     | 0.0736      | \$ 110,400  |
|                     | Land @ 150k/acre    | \$ 900,000   | 20   | 0.04     | 0.0736      | \$ 66,240   |
| Subtotal            |                     | \$ 2,400,000 | 20   | 0.04     | 0.0736      | \$ 176,640  |
| Engineering (25%)   |                     | \$ 600,000   | 20   | 0.04     | 0.0736      | \$ 44,160   |
| Contingency (25%)   |                     | \$ 600,000   | 20   | 0.04     | 0.0736      | \$ 44,160   |
|                     |                     | \$ 3,600,000 | 20   | 0.04     | 0.0736      | \$ 264,960  |
| O&M                 | O&M (4% of capital) | \$ 96,000    |      |          |             | \$ 96,000   |
| Annualized cost     |                     |              |      |          |             | \$ 360,960  |

| OPTION 2-COMPOST  |                     | A/P, 20,4%   |      |          |             |             |
|-------------------|---------------------|--------------|------|----------|-------------|-------------|
|                   |                     | Item         | term | interest | Cost Factor | Annual Cost |
| Capital           | BFP                 | \$ 1,500,000 | 20   | 0.04     | 0.0736      | \$ 110,400  |
|                   | Composting Equip    | \$ 500,000   | 20   | 0.04     | 0.0736      | \$ 36,800   |
|                   | Land Development    | \$ 1,500,000 | 20   | 0.04     | 0.0736      | \$ 110,400  |
| Subtotal          |                     | \$ 3,500,000 | 20   | 0.04     | 0.0736      | \$ 257,600  |
| Engineering (25%) |                     | \$ 875,000   | 20   | 0.04     | 0.0736      | \$ 64,400   |
| Contingency (25%) |                     | \$ 875,000   | 20   | 0.04     | 0.0736      | \$ 64,400   |
|                   |                     | \$ 5,250,000 | 20   | 0.04     | 0.0736      | \$ 386,400  |
| O&M               | O&M (4% of capital) | \$ 140,000   |      |          |             | \$ 140,000  |
|                   | Manpower            | \$ 100,000   |      |          |             | \$ 100,000  |
| Annualized cost   |                     |              |      |          |             | \$ 626,400  |

| OPTION 3A ANAEROBIC DIGESTION - FITCHBURG |                     | A/P, 20,4%   |      |          |             |             |
|-------------------------------------------|---------------------|--------------|------|----------|-------------|-------------|
|                                           |                     | Item         | term | interest | Cost Factor | Annual Cost |
| Capital                                   | Tanker              | \$ 200,000   | 20   | 0.04     | 0.0736      | \$ 14,720   |
|                                           | Minor Improvements  | \$ 500,000   | 20   | 0.04     | 0.0736      | \$ 36,800   |
| Subtotal                                  |                     | \$ 700,000   | 20   | 0.04     | 0.0736      | \$ 51,520   |
| Engineering (25%)                         |                     | \$ 175,000   | 20   | 0.04     | 0.0736      | \$ 12,880   |
| Contingency (25%)                         |                     | \$ 175,000   | 20   | 0.04     | 0.0736      | \$ 12,880   |
|                                           |                     | \$ 1,050,000 | 20   | 0.04     | 0.0736      | \$ 77,280   |
| O&M                                       | O&M (4% of capital) | \$ 28,000    |      |          |             | \$ 28,000   |
|                                           | Personnel           | \$ 100,000   |      |          |             | \$ 100,000  |
|                                           | Tipping Fee         | \$ 279       | 1500 |          |             | \$ 418,500  |
| Annualized cost                           |                     |              |      |          |             | \$ 623,780  |

CITY OF GARDNER SLUDGE ALTERNATIVES

| OPTION 3B ANAEROBIC DIGESTION - GARDNER |                                |              |      |          |        | A/P, 20,4% |            |
|-----------------------------------------|--------------------------------|--------------|------|----------|--------|------------|------------|
|                                         |                                |              |      |          |        | Cost       | Annual     |
|                                         | Item                           |              | term | interest | Factor | Cost       | Cost       |
| Capital                                 | Tanker                         | \$ 200,000   |      | 20       | 0.04   | 0.0736     | \$ 14,720  |
|                                         | Site Improvement               | \$ 1,875,000 |      | 20       | 0.04   | 0.0736     | \$ 138,000 |
|                                         | Land Development               | \$ 450,000   |      | 20       | 0.04   | 0.0736     | \$ 33,120  |
|                                         | Subtotal                       | \$ 2,525,000 |      | 20       | 0.04   | 0.0736     | \$ 185,840 |
|                                         | Engineering (25%)              | \$ 631,250   |      | 20       | 0.04   | 0.0736     | \$ 46,460  |
|                                         | Contingency (25%)              | \$ 631,250   |      | 20       | 0.04   | 0.0736     | \$ 46,460  |
|                                         |                                | \$ 3,787,500 |      | 20       | 0.04   | 0.0736     | \$ 278,760 |
| O&M                                     | O&M (4% of capital)            | \$ 101,000   |      |          |        |            | \$ 101,000 |
|                                         | Personnel                      | \$ 100,000   |      | 3        |        |            | \$ 300,000 |
|                                         | Annual Energy Return (23.5 MW) | \$ (3,600)   |      |          |        |            | \$ (3,600) |
| Annualized cost                         |                                |              |      |          |        |            | \$ 676,160 |

| OPTION 4A-HAUL LIQUID |                     |            |      |          |        | A/P, 20,4% |            |
|-----------------------|---------------------|------------|------|----------|--------|------------|------------|
|                       |                     |            |      |          |        | Cost       | Annual     |
|                       | Item                |            | term | interest | Factor | Cost       | Cost       |
| Capital               | Retrofit at Plant   | \$ 500,000 |      | 20       | 0.04   | 0.0736     | \$ 36,800  |
|                       | Subtotal            | \$ 500,000 |      | 20       | 0.04   | 0.0736     | \$ 36,800  |
|                       | Engineering (25%)   | \$ 125,000 |      | 20       | 0.04   | 0.0736     | \$ 9,200   |
|                       | Contingency (25%)   | \$ 125,000 |      | 20       | 0.04   | 0.0736     | \$ 9,200   |
|                       |                     | \$ 750,000 |      | 20       | 0.04   | 0.0736     | \$ 55,200  |
| O&M                   | Hauling             | \$ 575     |      | 1500     |        |            | \$ 862,500 |
|                       | O&M (4% of capital) | \$ 20,000  |      |          |        |            | \$ 20,000  |
| Annualized cost       |                     |            |      |          |        |            | \$ 937,700 |

| OPTION 4B-HAUL CAKE |                     |              |      |          |        | A/P, 20,4% |            |
|---------------------|---------------------|--------------|------|----------|--------|------------|------------|
|                     |                     |              |      |          |        | Cost       | Annual     |
|                     | Item                |              | term | interest | Factor | Cost       | Cost       |
| Capital             | BFP                 | \$ 1,500,000 |      | 20       | 0.04   | 0.0736     | \$ 110,400 |
|                     | Subtotal            | \$ 1,500,000 |      | 20       | 0.04   | 0.0736     | \$ 110,400 |
|                     | Engineering (25%)   | \$ 375,000   |      | 20       | 0.04   | 0.0736     | \$ 27,600  |
|                     | Contingency (25%)   | \$ 375,000   |      | 20       | 0.04   | 0.0736     | \$ 27,600  |
|                     |                     | \$ 2,250,000 |      | 20       | 0.04   | 0.0736     | \$ 165,600 |
| O&M                 | Hauling             | \$ 140       |      | 1500     |        |            | \$ 210,000 |
|                     | O&M (4% of capital) | \$ 60,000    |      |          |        |            | \$ 60,000  |
| Annualized cost     |                     |              |      |          |        |            | \$ 435,600 |

CITY OF GARDNER SLUDGE ALTERNATIVES

| OPTION 5-INCINERATE |                   | A/P, 20,4% |      |          |             |              |
|---------------------|-------------------|------------|------|----------|-------------|--------------|
|                     |                   | Item       | term | interest | Cost Factor | Annual Cost  |
| Capital             | Retrofit at Plant | \$ 500,000 | 20   | 0.04     | 0.0736      | \$ 36,800    |
|                     | Tank Hauler       | \$ -       | 20   | 0.04     | 0.0736      | \$ -         |
|                     | Land Development  | \$ -       | 20   | 0.04     | 0.0736      | \$ -         |
| Subtotal            |                   | \$ 500,000 | 20   | 0.04     | 0.0736      | \$ 36,800    |
| Engineering (25%)   |                   | \$ 125,000 | 20   | 0.04     | 0.0736      | \$ 9,200     |
| Contingency (25%)   |                   | \$ 125,000 | 20   | 0.04     | 0.0736      | \$ 9,200     |
|                     |                   | \$ 750,000 | 20   | 0.04     | 0.0736      | \$ 55,200    |
| O&M                 | O&M (4% Capital)  | \$ 20,000  | 1    |          |             | \$ 20,000    |
|                     | Haul & Burn       | \$ 775     | 1500 |          |             | \$ 1,162,500 |
| Annualized cost     |                   |            |      |          |             | \$ 1,237,700 |

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# Memorandum

**Date:** February 2, 2016

**To:** Dane Arnold, Director (Gardner Water/Sewer Department)

**From:**  Robert Sims (CDR Maguire), Robin Dyer (CDR Maguire)

**Subject:** Landfill Expansion Capacity  
CDR/Maguire, Inc. Project No. 19474.01

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## SLUDGE DISPOSAL BACKGROUND

Since the mid 1980's the City of Gardner has been utilizing the sludge only landfill on West Street for disposal of sludge generated from the wastewater treatment plant (WWTP). The site was permitted to encompass the entire 37 acre parcel taken from multiple parties in 1919. The current landfill footprint only incorporates 11 acres. In addition to the landfill itself, this area includes the existing variable width (14' to 20' wide) perimeter access road and an existing building that houses equipment. Outside of the existing perimeter fence are drainage control including two retention ponds.

The site abuts the former municipal landfill. The former municipal landfill has a gas extraction and energy recovery component. It also has two small buildings, one for equipment and one that houses the sludge landfill leachate pumping station. The former municipal landfill does not have a leachate collection system while the sludge landfill does.

Approximately 400 cy of sludge are generated each month at the WWTP. The sludge is trucked to the site from the WWTP, mixed with amendment, spread and covered daily. The existing sludge landfill is approaching the capacity allowed by its current permit. A new application (WP 44) for vertical expansion of the landfill has been submitted to the Massachusetts Department of Environmental Protection (DEP) and is under review. For more information on the vertical expansion see "Vertical Expansion" below.

The current sludge is historically dewatered to an average solids content of 22%. This information was used to determine an approximate unit weight of the amended sludge to allow for the conversion to tonnage from volume. The sludge is dewatered at the WWTP with the use of two belt filter presses. The current amendment ratio is three (3) parts amendment to one (1) part sludge and yields the design unit weight is 75 pounds per cubic foot.

In addition to the expansion to the landfill, the City of Gardner has enlisted the services of an engineering firm to perform upgrades at the existing WWTP. The first design component is a new headworks facility. In addition to the upgrade of the headworks, the City is also evaluating an upgrade of the sludge processing equipment. The upgrades to the sludge processing equipment will allow for the reduction in the amendment ratio due to attaining a higher solids content in the sludge. The amendment is added to increase the workability; the drier the sludge, the less amendment that is

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required. Currently an amendment (sand) is mixed with the sludge at a 3:1 ratio. Through pilot testing, the new processing equipment is expected to produce a drier sludge (30% solids) and lower the ratio to 2:1. This change will result in significant savings and extend the life of the landfill.

#### **PREVIOUS WORK**

As part of the ongoing management of the landfill, we have reviewed the last few years of the Operations Reports generated by the contract operator (Suez North America) as well as performed a Sludge Recommendation study (2012) to analyze a horizontal expansion. An existing conditions survey was completed by DiPrete Engineering Associates, Inc. in 2012 to assist in the evaluation of the possible vertical expansion of the sludge landfill. CDR/Maguire, Inc. prepared a slope stability analysis in 2012 for the City of Gardner to confirm that the vertical expansion of the landfill was possible. Areas of concern included the area where washouts previously occurred. It was determined that a 3 ft horizontal to 1 ft vertical side slope was acceptable.

#### **VERTICAL EXPANSION**

In November of 2014, United Water submitted a plan for the vertical expansion of the landfill. This was to be a temporary solution until a horizontal expansion could be planned and executed. The vertical expansion would raise the top of the sludge landfill from its current cap elevation of 1020.0 to elevation 1046.0. This additional capacity would add 107,563 cubic yards (CY) which is equivalent to adding approximately six (6) years to the life of the existing landfill with the current 3:1 amendment ratio. The initial survey was completed in August 2012 for the site. The revised buildout elevation would be reached in the year 2018.

#### **WORK PERFORMED TO DATE**

Additional survey of the horizontal expansion area was completed by DiPrete Engineering Associates, Inc. in October and November, 2013. The boring program was completed in November, 2013. Seven 2-inch diameter groundwater monitoring wells were installed at the location of the seven borings. The monitoring wells include a 4-inch diameter steel sleeve and locking cap. The boring locations were staked in the field by DiPrete Engineering Associates, Inc. As drilled location were determined by tape and hand compass from the staked locations. In February, 2014 CDR/Maguire issued a report entitled, "Geotechnical Report Proposed Sludge Landfill Expansion Area Subsurface Characterization." This report covered the findings from the field and laboratory testing for the soils. Also, included were water table adjustments using the method described in "Probable High Ground-Water Levels in Massachusetts", issued by the U.S. Geological Survey in cooperation with the Commonwealth of Massachusetts Department of Environmental Quality Engineering, known as the "Frimpter Method".

#### **HORIZONTAL EXPANSION**

The current 3:1 amendment to sludge cake ratio and a potential 2:1 amendment to sludge ratio have been evaluated in the determination of the life expectancy for the expanded landfill. The decreased ratio is based on the new sludge dewatering process being more efficient than the current one. The current product averages 22% solids. The expectation of the new method is a final product of 30% solids (less water). The higher solids content allows for less amendment to make the product "workable" at the landfill.

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The volume of a proposed horizontal landfill expansion was estimated using the program AutoCAD Civil-3D. This was done utilizing the existing survey information collected by DiPrete Engineering Associates, Inc. and water table information gathered by our geotechnical engineer. This information was input into AutoCAD Civil 3D and representative surfaces were developed. A surface was created which represented the existing groundwater table with the input of water table data from the seven borings, supplemented with engineering assumptions about extrapolating beyond existing data points. Along the edge of the wetlands, a water table with a two foot depth was assumed. The existing site was then graded down to the elevation four feet above the ground water table, utilizing 3:1 side slopes. In areas which were already steeper than 3:1, the existing grading remained and the proposed grades were tied into those areas. No grading was to be done within one hundred feet of the wetlands or fifty (50) from the northeasterly property line. This resulted in the removal of 155,412 CY of existing material. A new surface was then developed with a merger of the existing grades, proposed vertical expansion and the new lowered grading. This was designated as the new existing condition to determine the volume of sludge which the site could accept. The site was then graded up to elevation 1060 and a new surface was developed to represent this condition. The proposed grading was also used to develop surfaces with cap elevations of 1020, 1030, 1040 and 1050. These surfaces were then compared to the new existing surface to determine storage capacities at the various elevations. The table below shows the additional volume as they relate to the elevations.

| Landfill Cap Elevation | Landfill Volume (CY) |
|------------------------|----------------------|
| 1030                   | 367,831              |
| 1030                   | 470,732              |
| 1040                   | 554,633              |
| 1046                   | 594,249              |
| 1050                   | 620,659              |
| 1060                   | 666,142              |

Horizontal expansion would increase the portion of the site utilized for the sludge land fill from 11 acres to approximately 19.5 acres of the 37 acres previously permitted. The proposed layout will maximize the available property. The remaining land is a buffer, wetland or functionally unusable.

#### LANDFILL LIFE

Using the geospatial data, an estimate of the volume of space available within the landfill property was calculated. This volume was divided by the annual volume of material generated annually. Based on this information, we determined the number of years the life of the landfill would be extended for each proposed elevation. This calculation was performed both the 2:1 and 3:1 amendment ratios. We have also included a conservative settlement factor of 30% for the sludge. The following table shows the results of these calculations, assuming the deposit of 400 CY of sludge within the landfill each month.

For the sake of the evaluation, we ran the calculations for a variety of cap elevations. Additional years of capacity can be attained by increasing the cap elevations. However, because of the pyramid shape, the extra elevation does not translate to significantly more volume. For example, the volume increases 15% when raising from 1030 to 1040, but only 7% when raising it from 1050 to 1060.

For the recommended analysis, we assumed that the cap of the horizontal expansion would match the current planned cap of the vertical expansion (1046.0 feet). Therefore, the new landfill will have a cap elevation of 1046.0 and the life would be 45.8 years at a 2:1 sludge to amendment ratio and 33.4 years for a 3:1 ratio.

| Final Landfill Cap Elevation | Available Volume (cy) | Years at 3:1 (current conditions) | Years at 2:1 (dewater upgrades) |
|------------------------------|-----------------------|-----------------------------------|---------------------------------|
| 1020                         | 367,831               | 20.7 yrs                          | 28.4 yrs                        |
| 1030                         | 470,732               | 26.5 yrs                          | 36.3 yrs                        |
| 1040                         | 554,633               | 31.2 yrs                          | 42.8 yrs                        |
| 1046                         | 594,249               | 33.4 yrs                          | 45.8 yrs                        |
| 1050                         | 620,659               | 34.9 yrs                          | 47.8 yrs                        |
| 1060                         | 666,142               | 37.5 yrs                          | 51.3 yrs                        |

### COSTS

Based on the cost estimate of developing the landfill site at \$150,000 per acre, we estimate that preparing the site to receive sludge will cost \$1,275,000 (\$150,000 for 8.5 acres).

Because the landfill will last longer than the 20-year planning period, we developed an annual cost for the life of the landfill and then amortized the cost of a 20-year period. For example – the \$1.275 million dollars to develop the landfill for the cap elevation of 1046 feet for the proposed conditions would spread over 45.8 years. The amortized cost of the landfill would calculate to be \$55,200 per year.

Calculating the present worth for the 20-year design period would result in a capital cost of the 20-year landfill of \$770,000. For the current amendment conditions (3:1), the same procedure is utilized except the original \$1,275,000 is spread out over 33 years. The resulting 20-year present worth cost would be \$903,000.

### CONCLUSION

The conclusion is based on the horizontal expansion being capped at the same elevation as the current landfill after vertical expansion approval. At a sludge to amendment mix of 2:1, the expanded landfill will have an estimated life of 45.8 years and project an annual cost of \$55,200. If the sludge to amendment ratio remains at 3:1, the life shortens to 33.4 years and the annualized cost increases to \$65,000. The 20-year present worth of the two options is \$770,000 and \$903,000 respectively.



**INFORMAL MEETING OF SEPTEMBER 19, 2016**

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Informal Meeting of the City Council was held in the City Council Chamber, Room 219, City Hall, on Monday evening, September 19, 2016.

**CALL TO ORDER**

Council President James Walsh called the informal meeting to order at 6:00 o'clock p.m.

**ATTENDANCE**

Eleven (11) Councillors were present, including President James Walsh and Councillors James Boone, Nathan Boudreau, Craig Cormier, Ronald Cormier, Scott Graves, Karen Hardern, James Johnson, Marc Morgan, Paul Tassone, and Matthew Vance.

Others in attendance were Robert P. Sims, P.E., CDR|Maguire and OPM for the City's Project; Kevin Olson, Project Designer, Wright-Pierce; Matt LaPointe, Suez Project Manager; Dane Arnold, DPW Director; and, Christopher Coughlin, Assistant City Engineer.

Robert Sims presented the following Power Point slides:

**History and Future of Sludge Disposal in the City of Gardner**

Robert P. Sims, P.E.  
*Project Manager*  
*CDR Maguire Inc.*  
September 19, 2016

**Background**

- First Collection System install about 1908
- Treatment consisted of screening and sand filter beds, sludge removed by hand raking and disposal with municipal waste at landfill
- Plant upgraded in 1948 with new screening
- Plant upgraded in 1968 with new screening, enhanced treatment and capacity expansion
- Plant updated in 1984 to include additional treatment processes and updated screening
- Sludge-only landfill constructed and utilized in 1984

INFORMAL MEETING OF SEPTEMBER 19, 2016

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Recent Activities

- Performed Detailed Facility Plan of Treatment Plant (3 Phase Plan)
- Facility Plan identified areas for improvement and evaluation of technologies
- Concurrently performed evaluation of sludge landfill
- Suez applied and received permission from DEP for vertical expansion. Permission included odor control analysis/modifications
- Implementation of Phase I of Facility Plan – New Screening Facility

Mr. Sims noted that the area of the parcel inside the fence is under the control of Suez, while the City controls the area outside the existing fence. He said that Suez has been addressing the odor emanating from the vertical landfill and has received only one complaint in the past 15 months. DEP has tentatively approved the expansion plan, he added.

Concerning the new Screening Facility, Mr. Sims noted that the phase is about 25% completed.

Phase II

- Upgraded the dewatering technology
- Determine sludge disposal plan

Dewatering

- Less water translates to less volume
- Less volume translates to less material to transport/dispose
- Less material to transport/dispose translates to savings

Mr. Sims stated that the current operation utilizes a belt filter press, after which the sludge is hauled to the sludge landfill.

Dewatering Technology Evaluation

- Belt Filter Press
- Rotary Drum
- Fournier Press
- Centrifuge

INFORMAL MEETING OF SEPTEMBER 19, 2016

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**Belt Filter Press**

- Current technology
- Produces sludge cake at 22% solids
- Building Improvements
- New chemical feed

Mr. Sims stated that the existing building would have to undergo structural improvements, and a new chemical feed comprising polymers.

**Inclined Screw**

- New technology for employees
- Produce cake at 22% to 26% solids
- Building improvements
- New chemical feed
- Delicate optimization

Mr. Sims stated that inclined screw technology is akin to a bucket with holes whereby the water drains from the container and is returned to the plant and the sludge is hauled away. He said that he and others conducted a site visit to a similar operation and noted that the operator "is required to spend a lot of time to make it work," including many adjustments.

**Fournier Press**

- New Technology for employees
- Produce sludge at 21% to 23% solids
- Building Improvements
- New chemical feed

Mr. Sims stated that the Fournier Press is similar to the inclined screw technology, except that "it goes around in a circle and comes out at the sides, after being squeezed out."

**Centrifuge**

- New technology for employees
- Produces cake at 28% to 32% solids
- Building improvements
- New chemical feed
- Computerized optimization



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**INFORMAL MEETING OF SEPTEMBER 19, 2016**

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Mr. Sims stated that the Centrifuge system creates much drier cakes, "spinning similar to a washing machine on spin cycle." He said that the system is computerized and can dictate the moisture content in the end product. At a site visit to a Centrifuge operation, he noticed that the vibration of the Centrifuge is minimal "and the operators loved it."

**Cost of Options for Dewatering**

- **Belt Filter Press - \$14,500,000**
- **Inclined Screw - \$14,300,000**
- **Fournier Press - \$16,000,000**
- **Centrifuge - \$12,800,000**

Mr. Sims stated that the cost of the various options includes additional electricity and building upgrades. He said that the team felt that the Centrifuge is the best option for dewatering the sludge.

President Walsh questioned whether there is a relationship between odor and the amount of water in the sludge.

Mr. Sims responded, saying "Yes, the bugs are going to use oxygen to generate the odor (oxygen sulfides), which the water provides. He added that odors at the landfill are caused mostly from aeration and is controlled by cover management.

Councillor Marc Morgan questioned whether the Centrifuge option included incineration.

Mr. Sims replied that no incineration is involved.

Councillor Morgan asked if the cost for an incinerator has been ascertained.

Mr. Sims stated that the cost for permitting an incinerator "would be outrageous."

Noting that the Centrifuge method is less costly than the other presented options, Councillor Boone questioned whether the Centrifuge process would cost more in the future.

Mr. Sims responded, saying that the additional electricity costs and the addition of polymers have been taken into account in the cost projections. He noted that electricity for the plant is purchased from Templeton Municipal Light and Water Plant.

Councillor Matthew Vance questioned the time frames that the estimates are based.

Mr. Sims responded, saying that they are 20-year estimates, adding that in strictly financial terms, the longer the loan, the more spread out the costs. The figures "are the present worth" spread over twenty years, he said.



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On questioning by Councillor Tassone, Mr. Sims stated that capital costs, operational costs, and maintenance costs are all included in the projections for all four options, the cost data having been provided by the manufacturers.

President Walsh confirmed with Mr. Sims that the cost projections provided by the consultant are for a twenty-year period.

Councillor Boone questioned the Centrifuge option and whether it is being utilized elsewhere in Massachusetts.

Kevin Olsen stated that Manchester, New Hampshire operates a Centrifuge system and that the City of Haverhill is operating two new Centrifuge systems, which "is tried and true" and what [the industry] considers "a higher speed technology."

Mr. Sims announced the four different options of disposing of the sludge, as follows:

**Composting**

- New building and infrastructure required
- Siting at sludge landfill
- Odors more likely and costly to control
- New equipment
- Training required
- Disposal concerns
- Additional testing

Mr. Sims stated that if the City decided not to expand the sludge landfill, then the land could be used for composting. He cited the Town of Pepperell's composting operation, as an example.

**Anaerobic Digestion**

- Significant Infrastructure
- Siting at the sludge landfill
- Training needed
- Collection and storage of food waste
- Energy discharged to Electric Grid
- Concerns with Viability
- Disposal of material not eliminated, byproduct created




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Mr. Sims stated that anaerobic digestion has been a popular option in the last few years, where food waste is mixed with sludge from treatment plants which produces a fair amount of methane, which can be run through a methane generator and sold back to the grid. The downside is that the economies of scale are very difficult to maintain.

**Private Hauling**

- Minor infrastructure
- Expensive
- Volatile Pricing
  - - Fuel Costs
  - - Regulation Changes
  - - Disposal Site Availability
  - - Term of Contract

**Sludge Landfill**

- Minor infrastructure (already exists)
- Entire site already permitted (in 1986) – DEP would only have to permit the design of the sludge landfill.
- New procedures have greatly reduced odors
- No new equipment
- Lifespan beyond 20-years (35-40 years with new technology)

**Cost of Sludge Disposal Options (20-years)**

- Private Hauler - \$12,800,000
- Landfill - \$7,500,000

**Customer Base**

- City Maintains 5,600 accounts
- Bills quarterly
- Sewer charge directly related to water use
- Average sewer bill is \$107 per quarter

**Cost Impact to Customer**

- Private hauler - \$29 per quarter (27%)
- Landfill - \$17 per quarter (16%)

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Summary

- Landfilling Saves \$5,300,000 versus hauling
- Equates to 10%-15% in savings for each customer versus hauling
- Stabilizes cost for the long run
- Odor concerns reduced
- Use of existing technology (no training)
- Recommend continue the disposal of sludge at the landfill based on cost, volatility and new odor control procedures.

President Walsh questioned whether there is an option to haul the sludge to an incinerator, one that would provide less expense and less volatility.

Mr. Sims stated that there are 6 to 8 incinerators in the state, but that none have been permitted in over 20 years. He noted that the cost for incineration is very expensive; however, he would provide the Council with incineration estimates based on 30% sludge cakes. He added that incineration leaves approximately 10% ash.

Councillor Marc Morgan asked that if sludge landfill is expanded, then would sludge from outside the City be transported to the landfill.

Dane Arnold responded, stating that only sludge from the Gardner WWTF would be hauled to the landfill.

Mr. Sims said that it was his belief that the DEP Permit allows only Gardner WWTF sludge.

Councillor Scott Graves questioned whether odor-control measures included only covering.

Mr. Sims responded, saying that tests were conducted "with sludge and the sun." When sludge is deposited, covered with daily cover, sits for a weekend, then "turned" on Monday, odors are then generated, he said. He noted that the landfill is being treated with excess cover when weather conditions warrant additional cover and that DEP is pleased with the efforts.

Councillor Paul Tassone questioned the options that the City might have available for dealing with the sludge after 35 years.

Dane Arnold expressed hope that new technology would become available to deal with the sludge in the future.

Mr. Tassone followed up, asking what effect, if any, an expansion would have on the abutting properties and what barriers are in place.

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Citing the "Gardner Sludge Landfill Expansion Area, Drawing No. 2," Mr. Sims said that the areas highlighted in green are identified as wetlands and that the portion of the land in between is not an option, since expansion in this area wouldn't make sense. He said that the plan proposes to expand the landfill easterly of the existing sludge landfill and noted that there is a 50' buffer between the landfill and the solar array, which is northerly of the proposed expansion area. He added that there would remain a significant buffer zone in the southern portion of the parcel (the area between the defined wetland areas). Mr. Sims stated that the 37-acre section has already been permitted for a sludge landfill and that the proposed expansion is within the permitted area.

Councillor Nathan Boudreau suggested that should new technology not achieve the desired effect in 35 to 45 years, "will Gardner anticipate rolling hills of sludge landfills for the next generation?"

Mr. Sims responded, saying that the proposed landfill will be at the same elevation as the existing [sludge] landfill, which is about 60 feet lower than the City's closed landfill. He added that he cannot predict the City's sludge situation in 35 to 45 years.

Citing the anaerobic digestion option, Councillor Vance questioned whether Gardner has sufficient food waste to make the option financially viable.

Mr. Sims suggested that the amount of food waste that could be generated and hauled to a facility likely would not be sufficient to make it financially feasible.

Mr. Arnold noted that when the sludge landfill is full in 35 to 45 years, perhaps an anaerobic digestion facility could be an option. He added that siting an incinerator in Gardner on State-owned land (i.e. NCCI), if allowed by the DEP in the future, both sludge and the City's solid waste could be handled there.

Councillor Karen Hardern questioned the makeup of the materials that are used for the daily cover in order to reduce odor, asking whether certain agents or chemicals are added.

Mr. Sims responded, saying that the cover is made up of mostly sand and gravel.

Councillor Scott Graves asked if the DEP Permit for the unused portion of the property for use as a sludge landfill is still in effect, even though 30 years has passed since its issuance.

Mr. Sims responded, saying that DEP, formerly known as DEQE, issued the Permit in 1986 and it is still valid.

Councillor Paul Tassone requested clarification of the number of Massachusetts communities that operate sludge landfills.



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Mr. Sims responded, stating that 20% of the communities operate sludge landfills.

Councillor James Boone questioned whether [sludge] incinerator technology "is completely dead" or has improved to a point whereby Gardner could stop storing sludge at a landfill and begin incinerating it in the future.

Mr. Sims responded, saying that "we're looking at 40 years out, so anything is possible."

Dane Arnold noted that there is a moratorium on incinerator siting in Massachusetts.

The meeting was adjourned at 7:03 p.m.

Accepted by the City Council: *October 3, 2016*



# Gardner Sludge Landfill Site - One Mile Radius

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## *Gardner City Council Public Hearing 10/17/16*

This document was prepared by Gardner Clean Air for the Gardner City Council Public Hearing on October 17, 2016.

Gardner Clean Air is a local concerned citizens group that supports clean and sustainable solutions for sludge waste management and requests that Mayor Hawke and Gardner City Council Members halt plans to further expand the Gardner Sludge Landfill and a adopt sludge disposal alternative. For questions on this document, contact Alan & Sue Rousseau at [rousseaua@verizon.net](mailto:rousseaua@verizon.net) or 978-632-0618.

Visit the Gardner Clean Air Facebook page at: <https://www.facebook.com/GardnerCleanAir/timeline>

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| Templeton Zone II Wellhead Protection Area .....                                                  | 17 |

## Summary

The purpose of the document is to provide information on the one mile radius surrounding the existing Sludge Landfill and proposed Sludge Landfill Expansion site. It includes data on the number of residences, businesses, religious organizations, and social organizations of both Gardner and Templeton. The one mile radius was chosen as prior concerns, of odors and risk of potential private well contamination, that have been raised by residents within this distance. However, prior odors have been observed beyond the one mile radius.

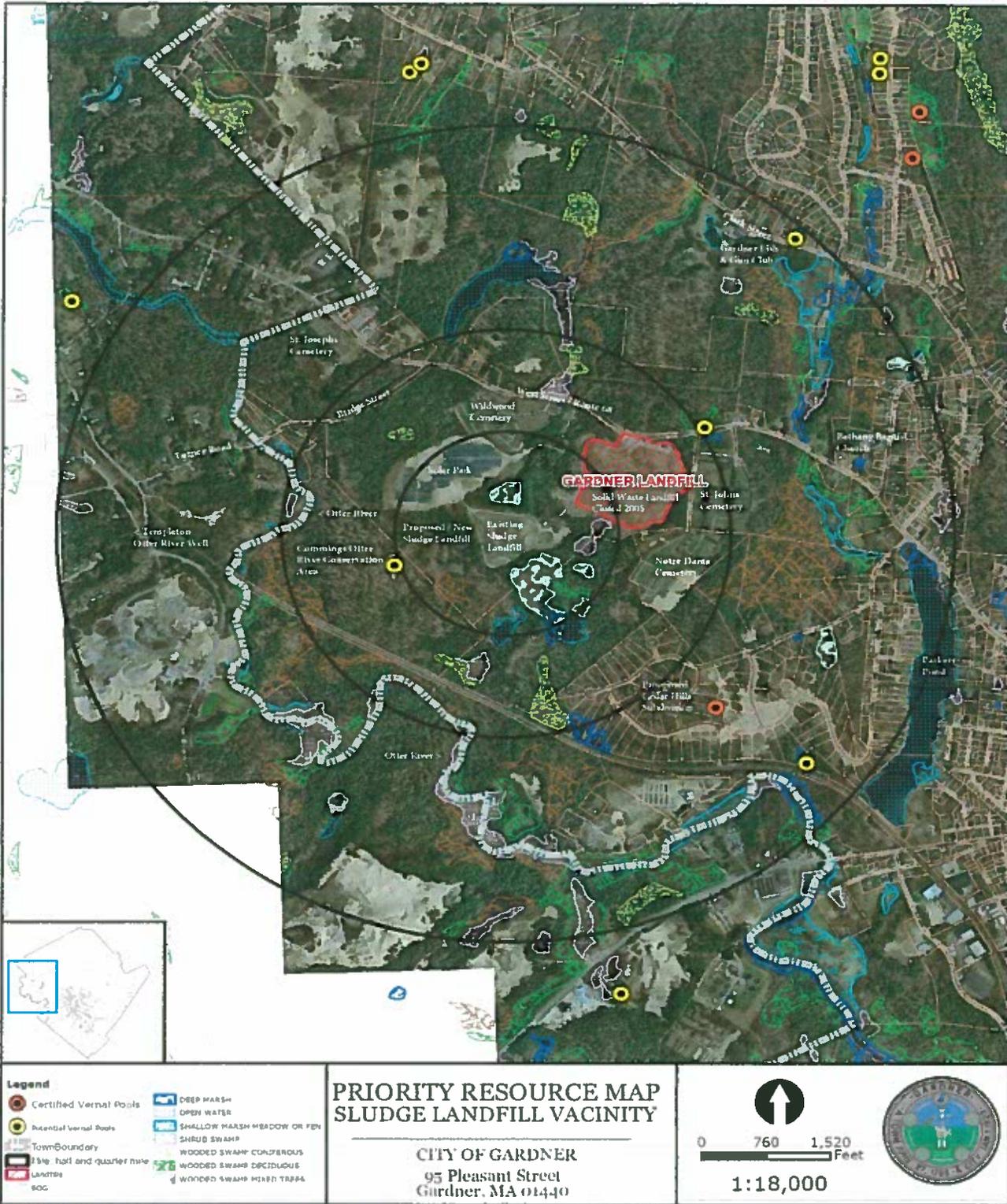
This document includes information on the Cummings Otter River Conservation Area and the Wildwood Cemetery Forest which are important environmental resources for Gardner. Information on these environmental resources is reflected in a 2012 Gardner News Article on the Cummings Otter River Conservation Area, the 2015 Gardner Open Space Plan, and the 2012 Forest Management Plan for the Wildwood Cemetery Forest.

This site is located in a Zone II Wellhead Protection Area for Templeton's wells which provide drinking water for the Town of Templeton. The Templeton Otter River Well and Sawyer Street Well are identified on a map on page 18 of this document.

# Wildwood Vicinity Map



# One Mile Radius Vicinity Map



## One Mile Radius Residents, Business, Religious Organizations, & Social Organizations Summary

| One Mile Radius                         | Residents | %    | Homes | %    |
|-----------------------------------------|-----------|------|-------|------|
| Total Gardner Residents                 | 348       | 60%  | 170   | 60%  |
| Total Templeton Residents               | 215       | 37%  | 102   | 36%  |
| Sub-Total                               | 563       | 97%  | 272   | 96%  |
| Business / Religious Org. / Social Org. | 19        | 3%   | 12    | 4%   |
| Total                                   | 582       | 100% | 284   | 100% |

Note: Residents data obtained through use of the Gardner & Templeton Street Lists.

### Businesses / Religious Organizations / Social Organizations (within 1 mile of site)

#### Businesses

Family Memorials - West Street Gardner  
 Extreme Hair & Nail Design - Keys Road, Gardner  
 Klever Kids Pre-School - West Street Gardner  
 All Steamed Up - State Road, Templeton  
 Dean Page Welding - State Road, Templeton  
 Peoples Fuel - State Road Templeton  
 Auto-River Repair & Towing - Turner Road, Templeton  
 W.J. Graves Construction Co. - Depot Road, Templeton  
 Riverside Auto Recycle - Riverside Road, Gardner  
 Riverside Small Engine Repair - Riverside Road, Gardner  
 Valley Florist - Parker Street, Templeton  
 Raborne Electric Co. - Parker Street, Gardner  
 Randy's Garage - Parker Street, Gardner

#### Religious Organizations

Bethany Baptist Church - Ryan Street Gardner  
 Jehovah's Witnesses Kingdom Hall - West Street Gardner  
 Annunciation Parish 3 Cemeteries - West Street, Gardner

#### Social Organizations

Gardner Fish & Gun Club- Clark Street Gardner  
 Club Twenty Five - Watkins Road, Gardner  
 Gardner Trout Club - Watkins Road, Gardner

## Cemeteries Abutting or Near the Sludge Landfill Site

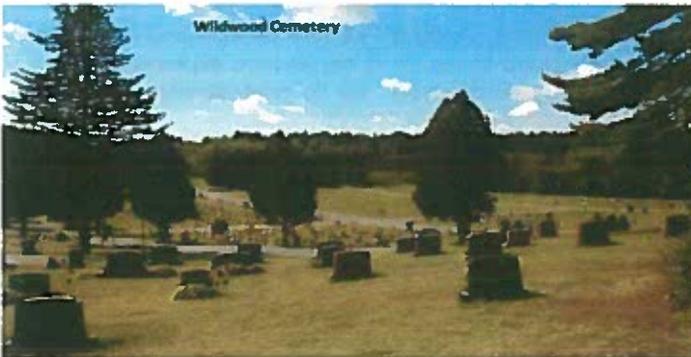
St. Johns Cemetery



Notre Dame Cemetery



Wildwood Cemetery



St. Josephs Cemetery



## Cummings Otter River Conservation Area

### Gardner News Article

6/27/2012 6:39:00 AM

#### **Purchase of 140 acres of conservation land finalized**

***No cost to city; officials say preservation project will benefit residents of Gardner, Templeton***

Sam Bonacci  
News Staff Writer

GARDNER — The city has finalized the purchase of 140 acres of land off Bridge Street for **conservation** purposes at no cost to the community.

“There’s no imminent plans to do anything with it, but it permanently protects a large piece of land,” said Mayor Mark Hawke of the property, which the **Conservation** Commission will oversee.

The purchase was made using a \$197,625 Drinking Water Supply Protection Grant, along with a Northwestern Area Forest Legacy Project grant awarded to the North County Land Trust. The city served as a conduit for these funds, and for the effort to secure the property.

Mayor Hawke said the land has approximately 2,500 feet of frontage on the Otter River and feeds into Templeton’s drinking water supply.

Robert Hubbard, the city’s director of community development and planning, has said the purchase will provide multiple benefits for residents of both Gardner and Templeton.

The land contains some of the last remaining intact gravel eskers in an area that has been heavily mined. Concerns had been raised during the discussion of the purchase regarding whether the area would become the site of a gravel operation if not protected.

The final purchase price of the property is \$420,000. The landowners, sisters Patricia Smith and Mary Jane Rodecki, agreed to sell the land at 75 percent of the appraised value to allow it to go into **conservation** through reimbursement by the Forest Legacy program, which only reimburses up to that amount for property purchases.

City officials said the North County Land Trust was instrumental in the purchase of the property. The land will be managed by the Water Department and **Conservation** Commission due to the funding structure used by the city.

## Gardner Open Space Plan 2015 (Page 4-9)

The following is an excerpt of page 4-9 of the 2015 Gardner Open Space Plan. This is a description of the Gardner Esker located on both the Cummings Otter River Conservation Area and the Wildwood Cemetery Forest (proposed Sludge Landfill expansion site). On the next page is Map 8 which identifies the approximate location of the esker.

### Major Characteristic or Unusual Geologic Features

In addition to NHESP and BioMap2 features, Map 8 Unique Features in Appendix A identifies two types of land areas that offer unique features. The first area of uniqueness is the Gardner Esker, partially located on land owned by the City. The esker is remote with no formal access. The recent acquisition of the Cummings Conservation Area presents an opportunity to provide a walking trail to access a portion of the esker. Unfortunately, the east/west trunk line of the Pan Am Railways dissects the esker.

The following is a Wikipedia definition of an Esker:

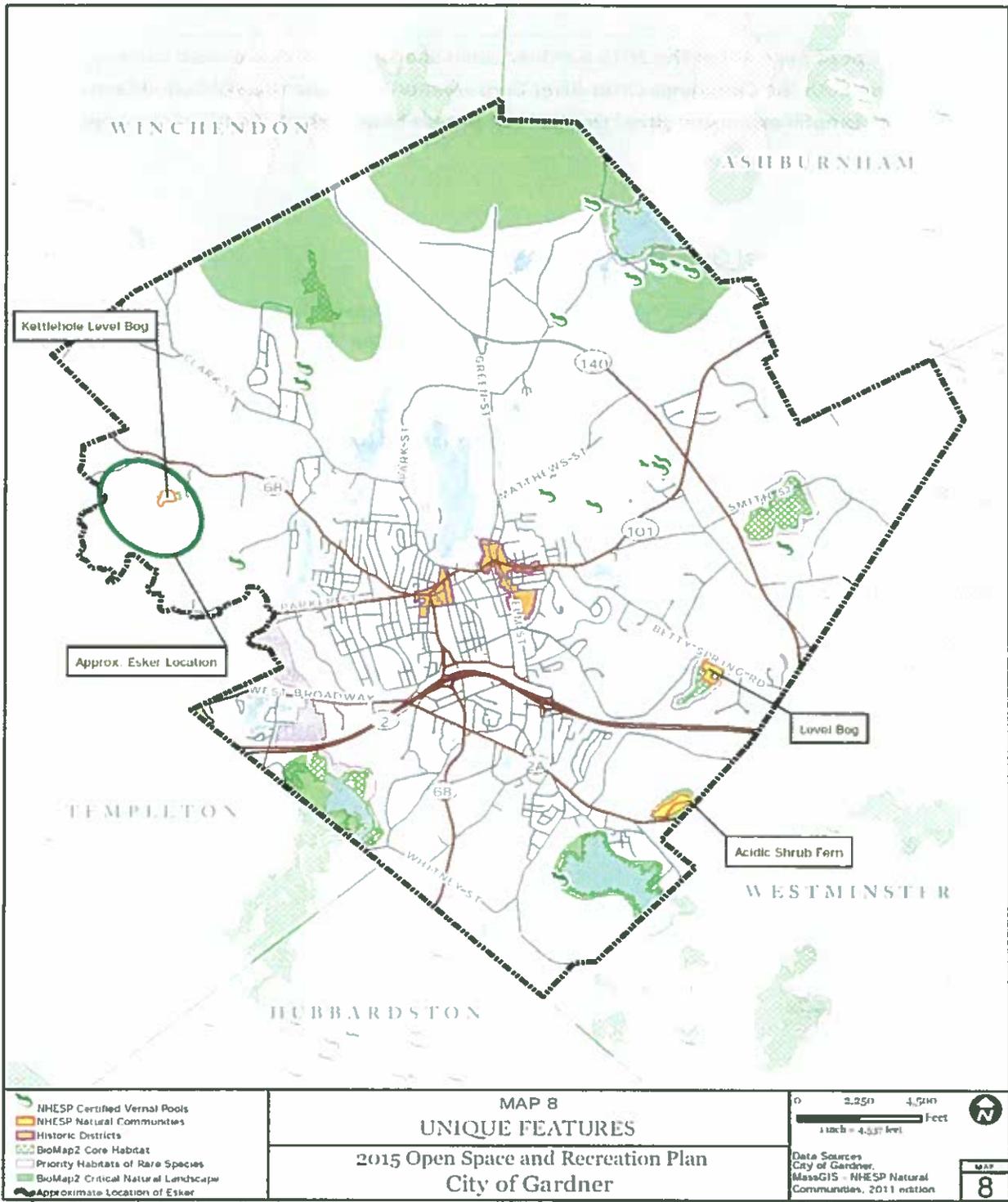
#### Esker

From Wikipedia, the free encyclopedia

An **esker**, **eskar**, **eschar**, or **os**, sometimes called an *asar*, *osar*, or *serpent kame*,<sup>[1][2]</sup> is a long, winding **ridge** of **stratified sand** and **gravel**, examples of which occur in **glaciated** and formerly glaciated regions of Europe and North America. Eskers are frequently several kilometres long and, because of their peculiar uniform shape, are somewhat like **railway embankments**.<sup>[3]</sup>



# Map 8 Unique Features



G:\Projects\OpenSpacePlan\maps\Figures\UniqueFeatures.mxd

## Wildwood Cemetery Forest Management Plan (Page 3-5 & 20-21)

In 2012, the City of Gardner funded a Forest Management Plan for all city forests including the 128 Acre +/- Wildwood Cemetery Forest. The proposed Sludge Landfill expansion site is within the Wildwood Cemetery Forest. The following are excerpts of the Forest Management Plan.

1. In your own words please describe your goals for the property:

*The City of Gardner would like to improve and protect the forest resources on the Wildwood Cemetery property for the benefit of the residents of Gardner. Protecting water quality is a high priority. Maintaining and improving aesthetics near the Wildwood Cemetery is extremely important as well. These goals will be accomplished by periodically harvesting timber resources, enhancing wildlife habitat and educating the public on forest stewardship matters.*



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## Property Overview, Regional Significance, and Management Summary

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The 128+ -acre Wildwood Cemetery Forest is located on the west side of Gardner on the south side of Route 68 near Otter River and the Templeton town line. The Gardner Municipal Cemetery (Wildwood Cemetery) and the Gardner Transfer Station are both located on the property. The property has been used for trash handling since the 1950's. A landfill was created in the 1970's, capped in the 1990's and eventually completed in 2006.

A Forest Management Plan was prepared in 1982 by the New England Forestry Foundation, Inc. for this property and over 2,200-acres of land belonging to the City of Gardner. Other nearby lands with long term protection that are owned by the City of Gardner includes Crystal Lake Reservoir (606-acres), Cowee Pond Reservoir (795-acres) and the Perley Brook Reservoir (774-acres).

The property lies in the Miller's River Watershed. Water that passes through the western sections of the property flow west into Otter River approximately 1,175 feet from the property. Water flowing on the eastern and southern sections of the property flow south into Otter River approximately 1,000 feet from the property.

The forest stewardship land is diverse and consists of mature white pine and oak woodlands (66%), hemlock forests (11%), forested and open wetland resource areas (7%) and early successional and young forest habitats (16%). White pine, mixed oaks and hemlock are the dominant tree species in the upland forest areas. Forested wetlands consist of primarily red maple. The timber quality ranges from poor to good throughout the forest. Invasive and non-native vegetation on the property include barberry, buckthorn, and honeysuckle.

Upland forest soils on the property include well drained gravelly loamy sand (Colton), moderately drained fine sandy loam (Berkshire-Marlow) and well drained stony soils (Peru-Marlow). The low lying drainage areas consist of poorly drained soils (Pillsbury-Peacham-Lyman) and the open wetlands consist of very poorly drained muck (Bucksport-Wonsqueak).

Wildlife habitat is diverse throughout the property. Mature woodlands, early successional and young forest areas, and open shrub wetlands provide habitat for numerous native wildlife. The developing saplings in Stand #3 provide the early successional habitat necessary for the roughed grouse, American woodcock, cotton-tail rabbit, and a variety of song birds.

Access to the forest can be sought through the Wildwood cemetery or along Bridge Street, although there is limited parking space along Bridge Street. Hiking trails meander throughout the forested areas. The trails have not been marked by the City. ATV's have used many of these trails over the years.

A Forest Management Plan has also been prepared for the Gardner's Cowee Pond Reservoir, the Perley Brook Reservoir and the Crystal Lake Reservoir properties. This Plan will reflect many of the same goals and objectives as stated in the Cowee Pond and Perley Brook Reservoir Forest Management Plans.

The City of Gardner established the Gardner Forest Stewardship Committee in 2010. The Forest Stewardship Committee has developed the following goals for the Wildwood Cemetery property:

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Owner(s) City of Gardner - Wildwood Cemetery Lot Town(s) Gardner

Page 3 of 23



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## Property Overview, Regional Significance, and Management Summary

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Management will focus on promoting a healthy forest environment for the safety and enjoyment of the residents of Gardner and others who will visit the property. The City would like to specifically accomplish the following on this property:

- Enhance both the quality and quantity of future timber products;
- Conduct timber harvests and biomass operations to improve regeneration and aesthetics;
- Enhance wildlife habitat by diversifying tree age and species, creating and maintaining successional "pockets", and protecting heritage trees.
- Discourage unauthorized ATV access and use on the property.
- Protect water quality.
- Improve hiking trails for public recreational use.
- Maintain high aesthetics near Wildwood Cemetery and along Route 68 and Bridge Street.

Timber resource management will be aimed at enhancing the quality of timber resources into the future while improving wildlife habitats and aesthetics throughout the property. Commercial sales of timber may require whole-tree chipping of low quality trees and portions of trees that do not have firewood or sawtimber products primarily for aesthetic and fire protection purposes.

One of the primary management objectives of the Wildwood Cemetery property will be to preserve, maintain and improve water quality. Although there are no public drinking water supplies directly associated with this property, the City will manage the property to protect and improve water quality in the local area as a good forestland steward. The Gardner Forest Stewardship Committee has reviewed the Quabbin Reservoir Watershed System Land Management Plan, 2007-2017. The Quabbin Forest Management Objectives can be found on page 144 of the Plan. The Forest Stewardship Committee would like to pursue management of the Wildwood Cemetery property as stated in the first paragraph under the "Primary Objectives" (5.2.3.1). *"The primary objective of forest management of the Quabbin (Wildwood Cemetery) forest is to create and maintain a complex forest structure, which forms a protective forest cover and a biological filter on the watershed land. This watershed protection forest is designed to be vigorous, diverse in species and age, actively accumulating biomass, conserving ecological and economic values, actively regenerating, and most importantly maintaining a predictable flow of high quality water from the land"*.

The Gardner Forest Stewardship Committee will use the Quabbin Plan as a guide when managing the Wildwood Cemetery watershed lands.

Management on the property will be approached by using the "*Subwatershed Administration of Forest Management*". The Quabbin Plan defines a subwatershed on page 145 (5.2.3.2.1). *"A subwatershed is defined in most cases as the land area that drains to a perennial tributary of the reservoir."* The Quabbin Plan defines this management theory on page 146 (5.2.3.2.2). *"The general theory behind the use of subwatershed-based planning is to control the proportion of a drainage area that is disturbed by management activities (e.g., logging or road work) during the management period in order to reduce the chances of water quality impacts. This approach is partly based on research on experimental watersheds throughout the eastern US that indicate that until approximately 25-30% of the watershed*

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Owner(s) City of Gardner – Wildwood Cemetery Lot Town(s) Gardner

Page 4 of 23



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## Property Overview, Regional Significance, and Management Summary

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*overstory stocking is harvested (assuming nearly 100% forest cover type), there is no detectable increase in water yield (Hornbeck and Kochenderfer, 2004; Hornbeck et al., 1993). As increases in transport of sediments and nutrients to tributaries and the reservoir are directly related to increases in water yield, it follows that the 25-30% threshold also applies to water quality changes (so long as Conservation Management Practices are in place, the greatest concern is with the movement of nutrients rather than sediments). The same research also demonstrated that water yield generally returns to pre-harvest conditions as the harvested area regenerates – usually within 5-10 years.”*

Wildlife habitats will be enhanced through the timber harvesting practices. Creating multiple age classes within the forest will benefit a variety of wildlife species. Artificial nest boxes for wood ducks will be installed in the open water resource areas with emergent vegetation. Patch cutting within the very poor quality white pine stands will be done to create young forest habitat for wildlife. Identifying large “Legacy Trees” will be done to promote “Old Growth” characteristics within the forest where these trees exist and where this practice is applicable. Beaver activities will also be monitored as they may have an impact on water quality.

All forest management activities will be sensitive to protecting water quality, soils, cultural resources, wildlife habitats, rare and endangered species and their habitats, aesthetics and recreational values. When harvesting timber resources on the property a Chapter 132 Cutting Plan will be filed with the Department of Conservation and Recreation. The Division of Fisheries and Wildlife’s Natural Heritage & Endangered Species Program (NHESP) will make recommendations to protect any special vegetation or wildlife and their habitats should they exist on the property.

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Owner(s) City of Gardner – Wildwood Cemetery Lot

Town(s) Gardner

Page 5 of 23



**New England  
Forestry Consultants, Inc.**

Prepared By:  
Gary H. Gouldrup  
Consulting Forester  
72 Townsend Street  
Pepperell, MA 01463  
978-433-8780  
2/13/2012

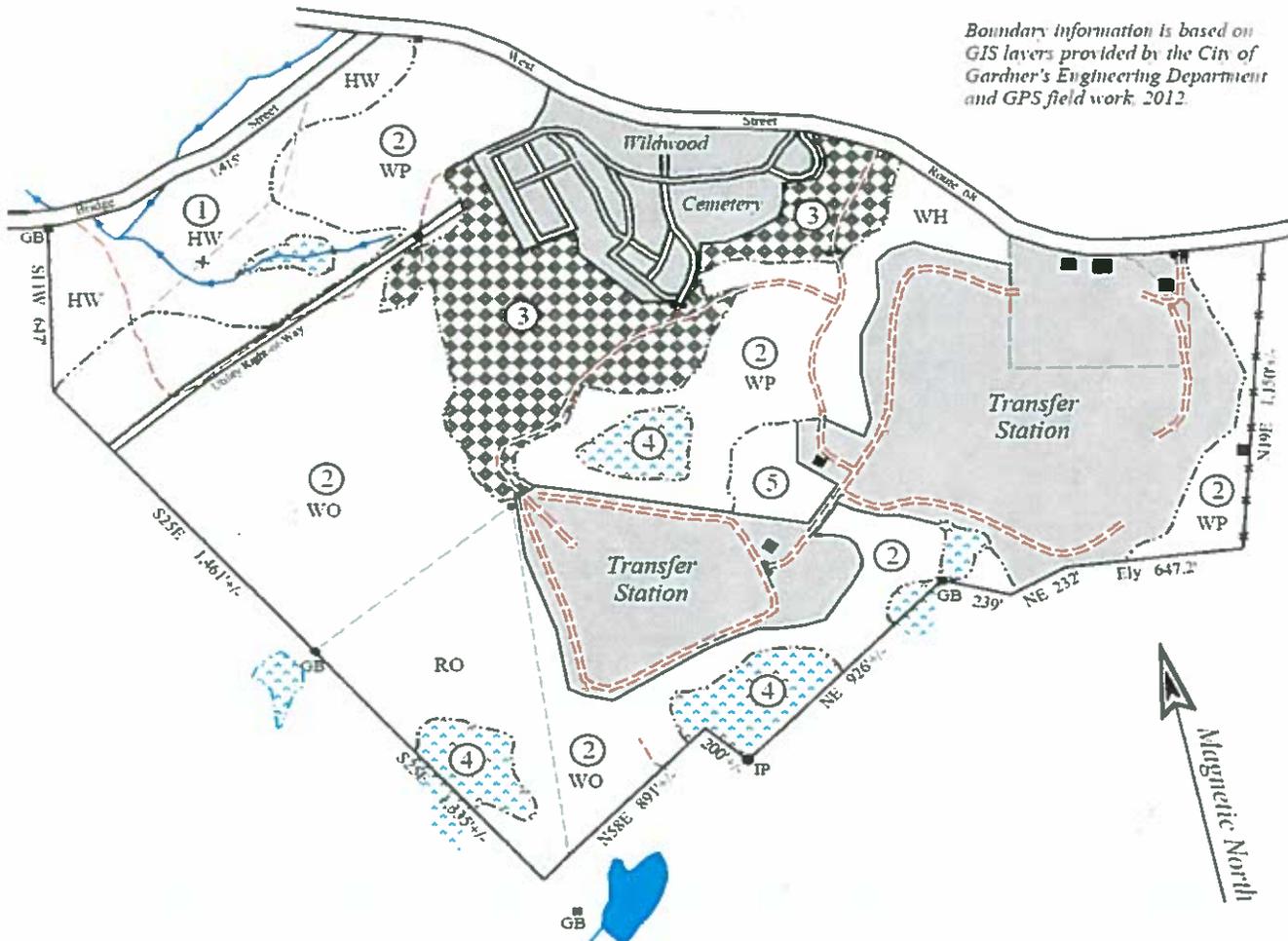
**COMPARTMENT #11**  
188.99 Acres

**BOUNDARY & STAND TYPE MAP**

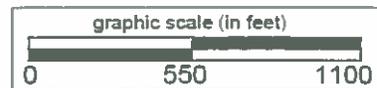
Land in Gardner, MA  
Wildwood Cemetery Lot  
Compartment #11

Owned By:  
City of Gardner

*Boundary information is based on  
GIS layers provided by the City of  
Gardner's Engineering Department  
and GPS field work, 2012.*



|                       |    |                    |      |
|-----------------------|----|--------------------|------|
| Wetland               |    | Open Wetland/Marsh | MD   |
| Stream                |    | Hemlock White Pine | HT   |
| Stone Wall            |    | Red Maple          | RM   |
| Stand Type            | ①  | Stand Type Line    | ---  |
| Trails                |    | Granite Bound      | GB ■ |
| Excluded - Non-Forest |    | Stone Bound        | SB ● |
| White Pine Hardwood   | WH | Drill Hole         | DH ● |
| White Pine            | WP | Iron Pipe          | IP ● |
| Red Oak               | RO | Building           | ■    |
| Oak-Hardwoods         | OH | Parking            | P    |



City of Gardner  
Wildwood Cemetery Lot  
Gardner, MA  
2005 Aerial Photo



Prepared by  
New England Forestry Consultants, Inc  
Sherman R. Small, Consulting Forester  
Maine License # LF655  
New Hampshire License # 409  
February 20, 2012

Sketch map for management and planning purposes only, NOT A LEGAL SURVEY  
Data obtained from MASS GIS, & New England Forestry Consultants, Inc.

## Templeton Zone II Wellhead Protection Area

The current Sludge Landfill and proposed new/expanded Sludge Landfill is located in the Templeton Zone II Wellhead Protection Area. Both the Otter River Well and the Sawyer Street Well are in close proximity to the proposed Sludge Landfill Expansion. The Templeton Zone II Wellhead Protection Area Map is on the next page.

The following Water Supply Protection Area Definitions are from the MA DEP website:

### Water Supply Protection Area Definitions

Public Water Supply Protection Areas are defined in the Drinking Water Regulations at 310 CMR 22.02. The regulatory wording is also provided below.

#### Groundwater Protection Areas:

##### Zone I

The protective radius required around a public water supply well or wellfield. For public water system wells with approved yields of 100,000 gpd or greater, the protective radius is 400 feet. Tubular wellfields require a 250 foot protective radius. Protective radii for all other public water system wells are determined by the following equation: Zone I radius in feet =  $(150 \times \log \text{ of pumping rate in gpd}) - 350$ . This equation is equivalent to the chart in the Guidelines and Policies for Public Water Systems. A default Zone I radius or a Zone I radius otherwise computed and determined by the Department shall be applied to transient non-community (TNC) and non-transient non-community (NTNC) wells when there is no metered rate of withdrawal or no approved pumping rate. In no case shall the Zone I radius be less than 100 feet.

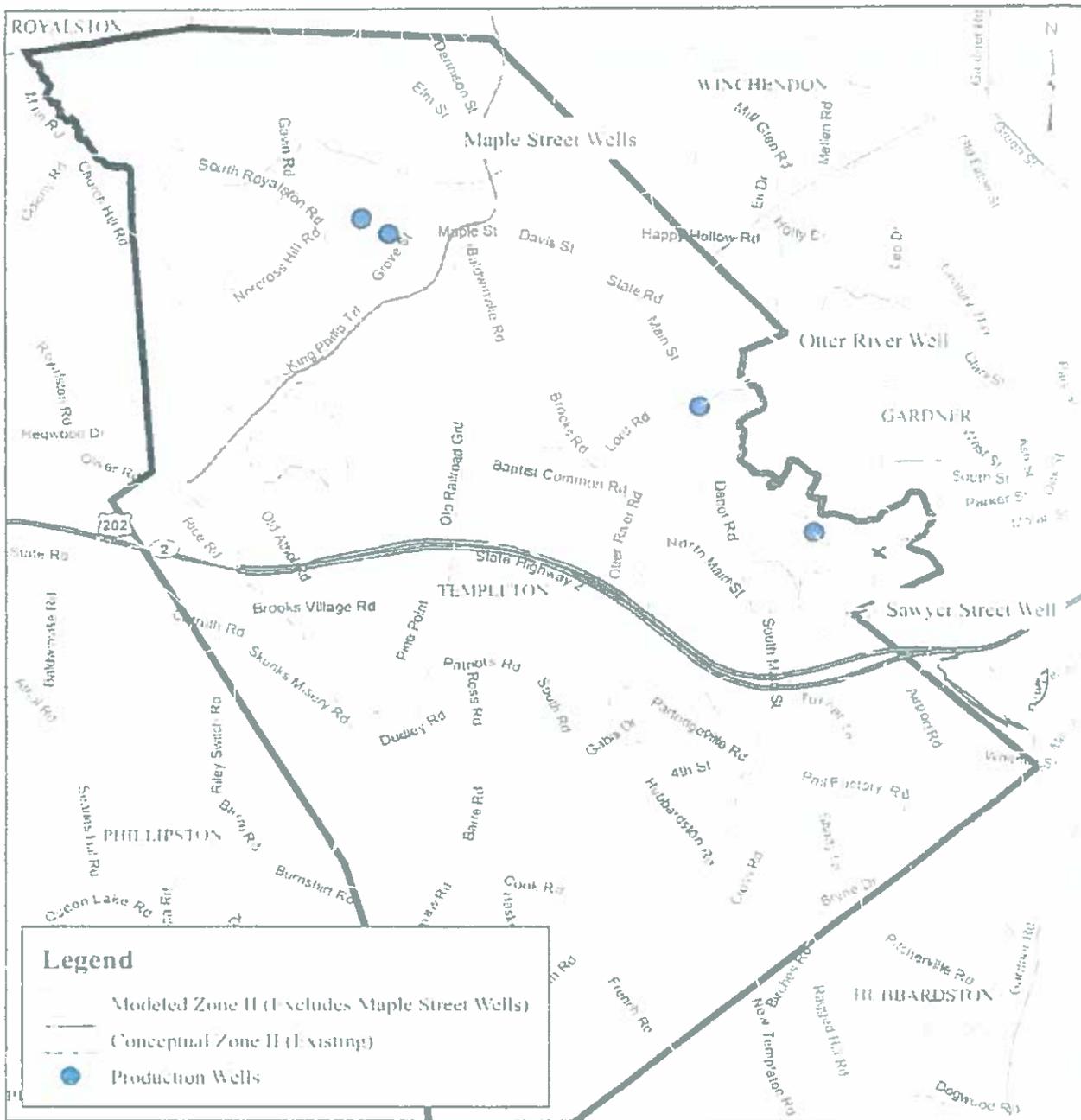
##### Zone II

That area of an aquifer which contributes water to a well under the most severe pumping and recharge conditions that can be realistically anticipated (180 days of pumping at approved yield, with no recharge from precipitation). It is bounded by the groundwater divides which result from pumping the well and by the contact of the aquifer with less permeable materials such as till or bedrock. In some cases, streams or lakes may act as recharge boundaries. In all cases, Zone II shall extend upgradient to its point of intersection with prevailing hydrogeologic boundaries (a groundwater flow divide, a contact with till or bedrock, or a recharge boundary).

##### Zone III

The land area beyond the area of Zone II from which surface water and groundwater drain into Zone II. The surface drainage area as determined by topography is commonly coincident with the groundwater drainage area and will be used to delineate Zone III. In some locations, where surface and groundwater drainage are not coincident, Zone III shall consist of both the surface drainage and the groundwater drainage areas.

# Templeton Zone II Wellhead Protection Area



**Legend**

- Modeled Zone II (Excludes Maple Street Wells)
- - - Conceptual Zone II (Existing)
- Production Wells

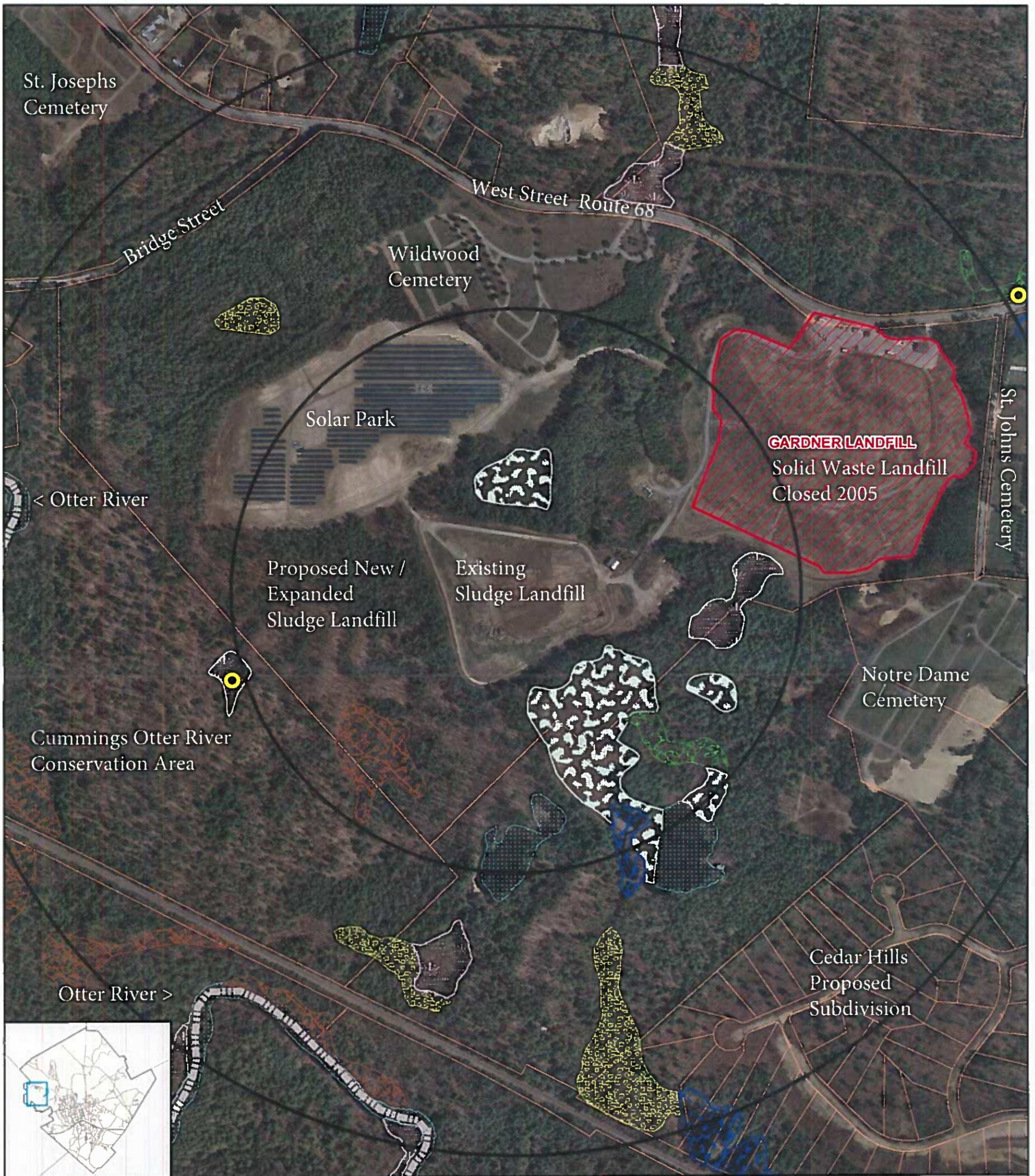
Tata & Howard, Inc.  
Westborough, MA

Approx Scale 1" = 5,000 feet

Comparison of Current and  
Re-Delineated Zone II Boundaries  
Extended Pump Test  
Templeton, Massachusetts

Figure No.

6-7



| Legend |                                       |
|--------|---------------------------------------|
|        | Potential Vernal Pools                |
|        | Town Boundary                         |
|        | Mile, half and quarter mile Landfills |
|        | BOG                                   |
|        | DEEP MARSH                            |
|        | OPEN WATER                            |
|        | SHALLOW MARSH MEADOW OR FEN           |
|        | SHRUB SWAMP                           |
|        | WOODED SWAMP CONIFEROUS               |
|        | WOODED SWAMP DECIDUOUS                |
|        | WOODED SWAMP MIXED TREES              |

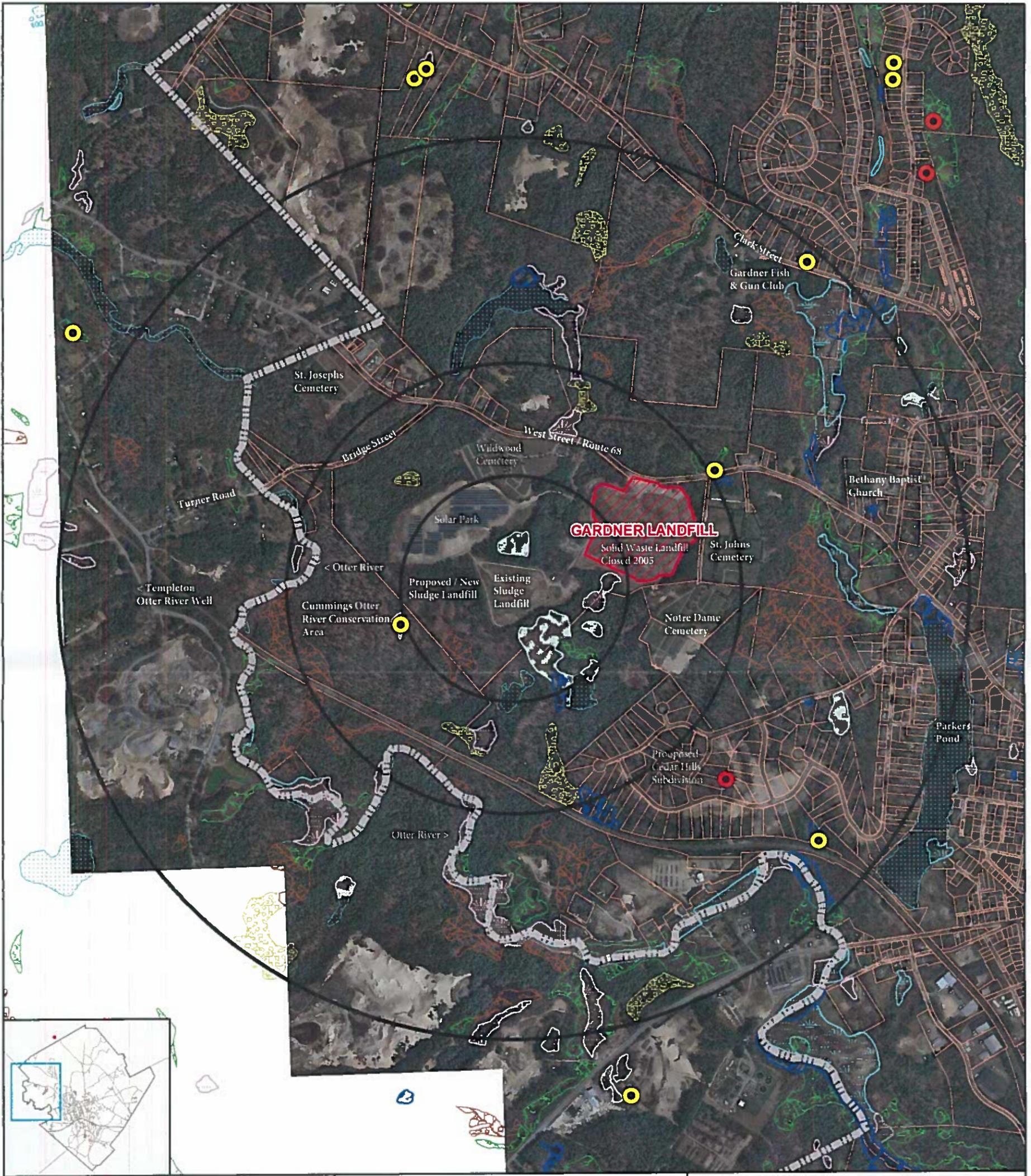
**PRIORITY RESOURCE MAP  
SLUDGE LANDFILL VACINITY**

CITY OF GARDNER  
95 Pleasant Street  
Gardner, MA 01440

0 300 600 Feet

1:7,200



| Legend |                             |
|--------|-----------------------------|
|        | Certified Vernal Pools      |
|        | Potential Vernal Pools      |
|        | Town Boundary               |
|        | Mile, half and quarter mile |
|        | Landfills                   |
|        | BOG                         |
|        | DEEP MARSH                  |
|        | OPEN WATER                  |
|        | SHALLOW MARSH MEADOW OR FEN |
|        | SHRUB SWAMP                 |
|        | WOODED SWAMP CONIFEROUS     |
|        | WOODED SWAMP DECIDUOUS      |
|        | WOODED SWAMP MIXED TREES    |

**PRIORITY RESOURCE MAP  
SLUDGE LANDFILL VACINITY**

CITY OF GARDNER  
95 Pleasant Street  
Gardner, MA 01440





0 760 1,520 Feet



**1:18,000**