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February 27, 2015

H. David Gold
WilmerHale
60 State Street
Boston, MA 02109

Dear Mr. Gold:

I am a Professor of Agronomy at the University of Massachusetts, Stockbridge School of Agriculture. My two page curriculum vitae is attached to this letter.

I have reviewed the February 2017 report prepared by Apex Companies, LLC (Apex) entitled, "Detailed Soil Survey to Evaluate Agricultural Lands Suitability Criteria: Application for Site Suitability Report – Southbridge Landfill." Apex indicates that certified soil scientists have mapped a small area of land (approximately 801 square feet) in Charlton, MA as "Woodbridge fine sandy loam, 3 to 8 percent slopes (310B)." The 801-square-foot area is on a parcel called "Parcel 5."

Apex also indicates the presence of wetlands on the undeveloped portion Parcel 5, making the 800-square foot area difficult to access.

The report states that soil type 310B may be an indicator of "Prime Farmland" under 7 CFR 657.5(a)(1). (<https://www.gpo.gov/fdsys/pkg/CFR-2012-title7-vol6/pdf/CFR-2012-title7-vol6-part657.pdf> on page 596.) I have copied below the language from this report and have underlined a relevant section:

"§ 657.5 Identification of important farmlands.

(a) Prime farmlands —(1)

General.

Prime farmland is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops, **and is also available for these uses** (the land could be cropland, pastureland, rangeland, forest land, or other land, but not urban built-up land or water). It has the soil quality, growing season, and moisture supply needed to economically produce sustained high yields of crops when treated and managed, including water management, according to acceptable farming methods. In general, prime farmlands have an adequate and dependable water supply from precipitation or irrigation, a favorable temperature and growing season, acceptable acidity or alkalinity, acceptable salt and sodium content, and few or no rocks. They are permeable to water and air. Prime farmlands are not excessively erodible or saturated with water for a long period of time, and they either do not flood frequently or are protected from flooding. "

To fall within the federal definition (7 CFR 657.5(a)(1)) of "Prime Farmland," land must not only have certain soil characteristics, it must be "available" for producing "food, feed, forage, fiber, and oilseed crops". Thus, to meet these criteria it must be able to economically produce sustained high yields of crops when treated and managed according to acceptable farming methods.

Based on my experience as an agronomist, my review of Apex's report, particularly Figure 4 in the Apex report, and aerial photos of the surrounding area (provided in Attachment A), the 801 square-foot area mapped by Apex would be insufficiently accessible, and too fragmented and not of sufficient dimensions to economically produce crops in Massachusetts.

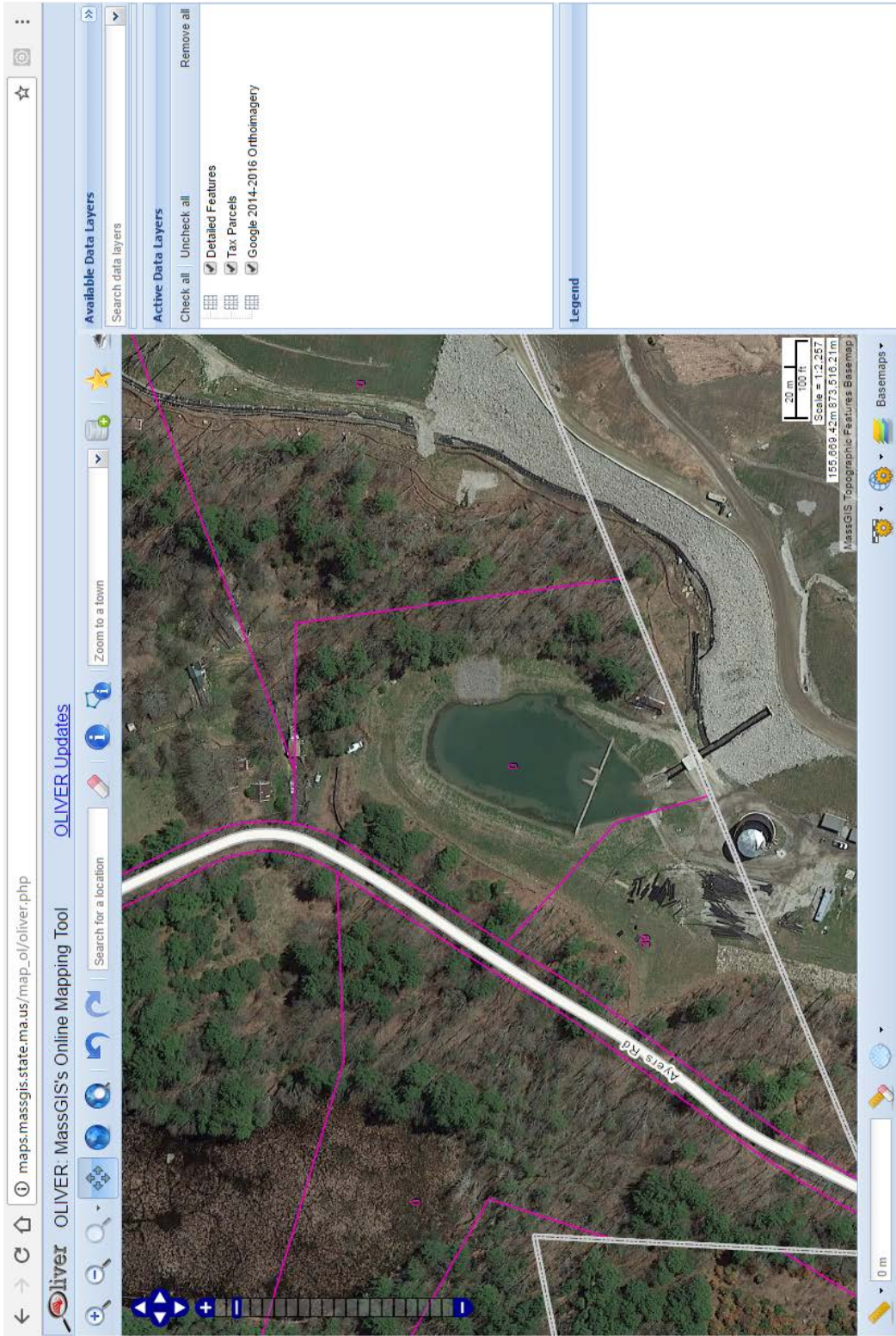
The area cannot practicably be considered to be available for the purpose of farming under the definition, and therefore does not fall within the Federal definition of "Prime Farmland".

Sincerely,

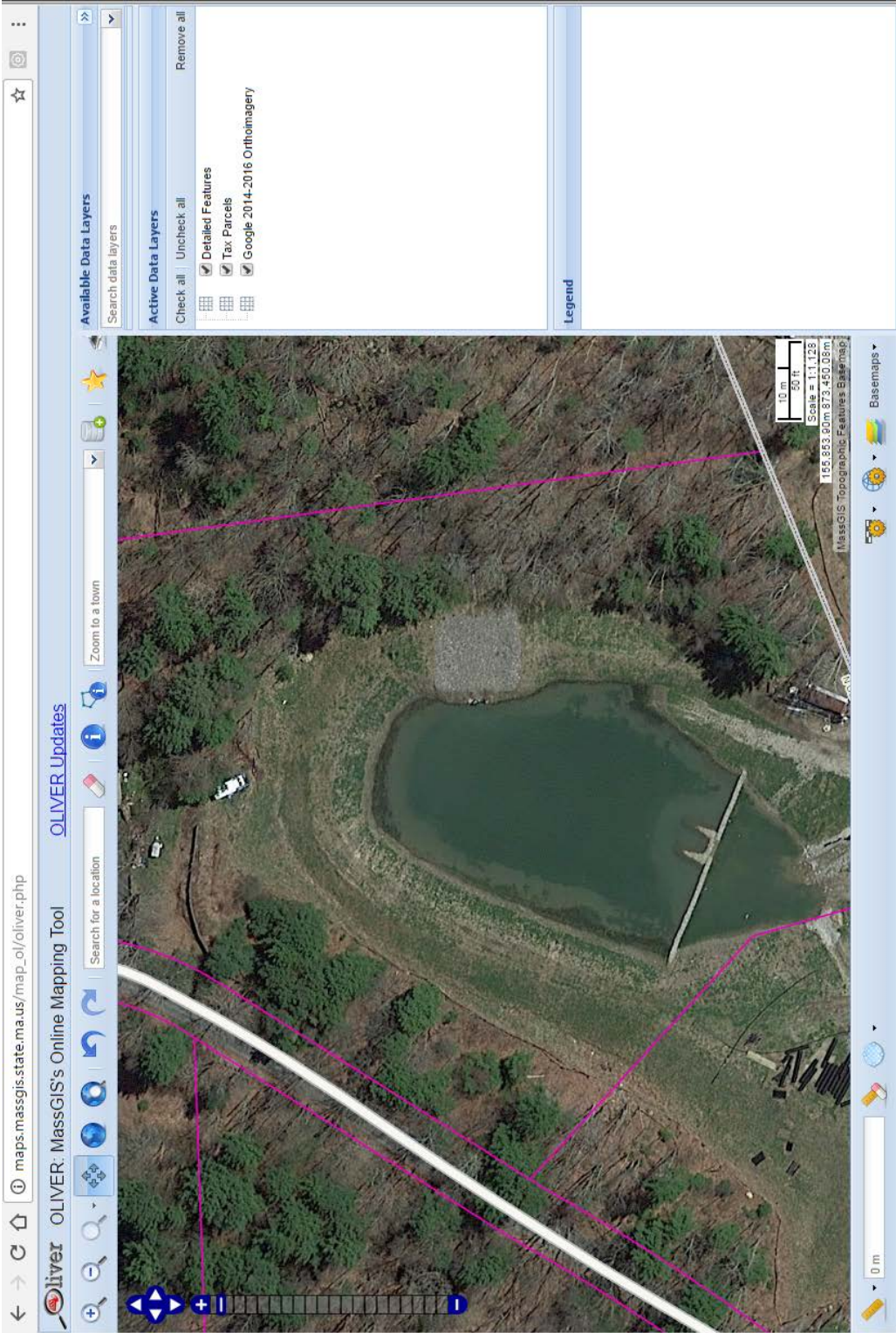
A handwritten signature in cursive script that reads "Stephen J. Herbert". The signature is written in black ink and is positioned above the printed name.

Stephen J. Herbert

ATTACHMENT A AERIAL PHOTOGRAPHY OF PARCEL 5



ATTACHMENT A (continued)
AERIAL PHOTOGRAPHY OF PARCEL 5



STEPHEN J. HERBERT – RESUME

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Education:

Dip.Sci.Tchg. Avondale College, N.S.W., Australia 1972
B.Agr.Sc. University of Canterbury, New Zealand 1974
Ph.D.(Agron.) University of Canterbury, New Zealand 1977
Post Doc. Texas Tech University, USA 1978

Employment and Experience:

1968-72 44 weeks on-farm training requirement for the B.Agr.Sc. degree.
1973 Agricultural Science Teacher, Carmel College, Perth, Western Australia.
1975-77 Research Assoc. Agronomy; Instructor in Agronomy and Statistics, Univ. of Canterbury, N.Z.
1978-79 Post-doc. Dept. of Plant & Soil Sci., Texas Tech Univ., Lubbock, Tx.
1979-84 Assistant Professor/Extension Agronomist, Univ. of Massachusetts.
1984-90 Associate Professor/Extension Agronomist, Univ. of Massachusetts.
1990- Professor/Extension Agronomist, Univ. of Massachusetts.
2009-2013 Associate Dean, Agricultural Research and Outreach
2009-2013 Director, Center for Agriculture (including UMass Farms)
2009-2013 Director, Massachusetts Agricultural Experiment Station
2011-2013 Director, UMass Extension

Honors, Awards and Service:

Farmers Award Central Mass. Dairy Producers Assoc. 1988.
Extension-Industry Award in Agronomy NE Branch Am. Soc. Agron. 1987.
President NE Branch Am. Soc. Agron. (1992-93)
Board of Directors NE Branch Am. Soc. Agron. (1998-01)
Board of Directors, Am. Soc. Agron. (1998-01)
A201 Organization Policy and Bylaws Com., Am. Soc. Agron. (1997-99)
Outstanding Service/Outreach Award, College of Natural Resources (2003)
Outstanding Research Award, College of Natural Resources (2008)
Coordinator Massachusetts Extension Crops Dairy Livestock Team (-2009)
Coordinator University of Massachusetts Agronomy Research Farm (-2009)
Editor, Massachusetts Crop, Dairy, Livestock News (-2009)
Editor, Massachusetts Agronomy Research Report (-2009)
N.E. Regional Sustainable Agriculture State Representative (-2009)
Northeast Extension Directors Service Award, (2013)

Teaching: (2004-2017)

Courses: SSA 350 Crop Science; SSA 370 Tropical Agriculture ; SSA 520 Crop Physiology; SSA 491/691 Climate, Energy, Biochar, Agriculture; SSA 791A Seminar Methods; Graduate Students – Committee chair 4 Ph.D. and 7 M.S. candidates; and served on 6 other committees. More than 150 teaching talks/presentations made (2004-2017).

Summary of Publications: Research Articles 98 Journal Articles since 2004, total number published more than 160. Non-refereed Research Reports more than 280 published. Extension Articles more than 300 published.

Research: Activities and Adaptive Studies

Food Security and Urban Agriculture – product testing, growing media and other systems
Herb Crops – nectar for honey bees and alternative pollinators, medicinal and dried flowers
Dual use of agricultural land for solar photovoltaic electricity generation and agriculture
Cover Crops – N contribution and weed control (clovers, hairy vetch, oat, rape, rye)
Corn – hybrid evaluation, fertilization, population modeling, tillage, IPM
Alfalfa – interaction fall management, Fusarium and Sitona, and manure application
Water Quality – nitrate leaching, manure management
Soybean – cultivar evaluation, cultural management, physiology of seed yield
Intercropping – corn and legumes for silage

Extension:

Previously Director of UMass Extension and previous Coordinator and State contact for Agronomy, Crops, Dairy, Livestock and equine, Sustainable Agriculture, and Agriculture and Natural Resources in Massachusetts.

Research Articles: (2004-2016)

- Yu, Z.H., Y.S. Li, G. Wang, J.J. Liu, J.D. Liu, X.B. Liu, S.J. Herbert, J. Jin. 2016. Effectiveness of elevated CO₂ mediating bacterial communities in the soybean rhizosphere depends on genotypes. *Agriculture, Ecosystems and Environment*. 231:229-232
- Kravchenko, Y. S., Q. Chen, X. Liu, S. J. Herbert, and X. Zhang. 2016. Conservation Practices and Management in Ukrainian Mollisols. *J. Agr. Sci. Tech*. 18: 845-854
- Li, Y. S., X. B. Liu, G. H. Wang, Z. H. Yu, U. Mathesius, J. D. Liu, S. J. Herbert and J. Jin. 2016. Shift in origin of plant nitrogen alters carbon and nitrogen assimilation during reproductive stages of soybean grown in a Mollisol. *Crop & Pasture Science*. 67:872-880
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- Sadeghpour A., M. Hashemi, M. DaCosta, E. Jahanzad, S.J. Herbert. 2014. Switchgrass establishment influenced by cover crop, tillage systems and weed control. *Bioenergy Research*. 7:1402-1410. doi: 10.1007/s12155-014-9485-x.
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- Zhou, K.Q., G.D. Wang, Y.H. Li, X.B. Liu, S. J. Herbert, M. Hashemi. 2014. Assessing variety mixture of continuous spring wheat (*Triticum aestivum* L.) on grain yield and flour quality in Northeast China. *International Journal of Plant Production*. 8(1): 91-106.
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