U.S. Department of Transportation
Pipeline and Hazardous Materials Safety Administration

Natural Gas Distribution Infrastructure Safety and Modernization Grant Program
Wakefield MA Tier 2 Site Specific Environmental Assessment
NGDISM-FY22-EA-2023-08

PHMSA Approval:

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Overview:

The purpose of this Tier 2 Site Specific Environmental Assessment (Tier 2) is to (1) document the proposed action (the Project) and the need for the action (2) identify existing conditions; (3) assess the social, economic, and environmental effects using appropriate tools and agency coordination to comply with local, state, and federal environmental laws, regulations, and ordinances; to (4) document applicable mitigation commitments that would avoid, minimize, or mitigate potential effects; and (5) seek comments from the public. This Tier 2 analysis informs PHMSA's assessment as to whether the Project is consistent with the impacts described in the Tier 1 Nationwide Environmental Assessment for the Natural Gas Distribution Infrastructure Safety and Modernization Grant Program.[1]

As part of this Tier 2, PHMSA is soliciting public comments through a public comment period. This Tier 2 is available on PHMSA's website where comments can be submitted to the contact noted below. PHMSA will accept public comments for 30 days on this Tier 2. PHMSA will consider comments received and incorporate them in the decision-making process. Consultation with appropriate agencies on related processes, regulations, and permits is ongoing. Please submit all comments to: PHMSABILGrantNEPAComments@dot.gov and reference NGDISM-FY22-EA-2023-08 in your response.

At the conclusion of the EA process, PHMSA will either issue a "Finding of No Significant Impact," further supplement this EA with additional analysis, mitigation measures, or prepare an Environmental Impact Statement.

I. Project Description/Proposed Action

Project Title	Wakefield Municipal Gas and Light Department (WMGLD)
Project Location	Wakefield, Massachusetts

Project Description/Proposed Action:

The Proposed Action would replace 1.37 miles of low-pressure mains in various locations within Wakefield, Massachusetts. See Appendix A, Project Map. The existing mains in the project area consist of 1.07 miles of bare steel, 0.15 miles of cast iron, and 0.15 miles of coated steel, which are outdated materials that would be replaced with plastic polyethylene (PE) mains.

A high number of commercial customers are located on Water Street and nearby downtown on Main Street, and dense residential areas on the side streets. Cyrus Street and a portion of Water Street currently have two mains on them to feed the demand with adequate pressures. As part of this replacement project, Wakefield is proposing to extend the intermediate pressure system to be able to take some load off the low-pressure system while there are open trenches on the streets. WMGLD would install two mains (low and intermediate pressure) on Crescent Street, Otis Street and Water Street. WMGLD would install new PE pipeline, within 1.5 feet (ft) of the existing pipeline and abandon the existing pipeline in place. The construction methods include trenching. The Tier 1 EA described that the majority of site-specific projects would utilize the insertion method of pipe replacement. As described in this document, the WMGLD would utilize an open trench method, which

[1] https://www.federalregister.gov/documents/2022/11/09/2022-24378/pipeline-safety-notice-of-availability-of-the-tier-1-nationwide-environmental-assessment-for-the

generally involves greater soil disturbance and use of heavy equipment and related impacts than the insertion method.

Abandonment of the existing pipeline (versus excavation and removal) would minimize ground disturbance and facilitate the replacement process in a more efficient manner. PHMSA has specific requirements for gas and hazardous liquid pipeline abandonment, found in 49 CRF 192.727 and 195.402(c)(10). These requirements include disconnecting pipelines from all sources and supplies of gas, purging all combustibles and sealing the facilities left in place. By complying with PHMSA requirements for purging and sealing abandoned pipelines WMGLD would ensure that the abandoned pipelines pose no risk to safety in their abandoned state.

No Action:

The No Action alternative, as required under NEPA, serves as a baseline, and is used to compare impacts resulting from the Proposed Action. Under the No Action alternative, PHMSA would not fund this pipeline replacement project. Additionally, PHMSA would not be able to reduce the inventory of methane leaks and reduce safety risks by replacing pipe prone to leakage. Under this alternative, WMGLD would continue to use legacy cast iron, bare steel, and other leak prone pipeline material, and conduct repairs or replacements in the future using non-federal sources of funding, and potentially on an emergency basis, when a pipeline fails. Impacts and benefits associated with replacing the leak prone pipeline within Wakefield with updated material would not be undertaken or would be undertaken or would be undertaken at a later, uncertain date. The safety risks and methane leaks would persist. Impacts and benefits associated with replacement of leak prone pipe would not be seen in the near term. Even if pipe replacement were to happen at some point in the future, environmental mitigation actions during such a replacement would be unknown. Furthermore, existing economic losses, and increased risk associated with prolonged gas leaks would continue.

Need for the Project:

In the past five years, WMGLD has repaired nine leaks within the project area. This project is necessary to reduce leaks within the system. Cast iron is known to be unpredictable in temperatures below freezing which Wakefield regularly experiences due to the geographical location of the project. Most of the steel in the project area is unprotected bare steel installed in the 1930s and 1940s. This replacement is in alignment with the recommendation in WMGLD's Distribution Integrity Management Program which directs the replacement program to have a priority to replacing bare steel and cast iron mains and bare steel services. Overall, this project would increase the overall safety of the community. The overall needs addressed by this project would include (1) improving upon the safe delivery of energy by reducing the likelihood of incidents, as well as methane leaks; (2) avoiding economic losses caused by pipeline failures; and (3) protecting our environment and reducing climate impacts by remediating aged and failing pipelines and pipe prone to leakage.

Description of the Environmental Setting of the Project Area:

The proposed project takes place within an urban environment with a mix of residential housing and commercial businesses. Adjacent to the project area is a public park and the Mill River. The pipeline infrastructure and location of the new pipe is located directly under paved city owned streets and all would take place within the existing right-of-way (ROW). All land would be returned to its original condition and land use would not change because of the project.

II. Resource Review

Air Quality and Greenhouse Gases (GHG)	
Question	**Information and Justification**
Is the project located in an area designated by the EPA as non-attainment or maintenance status for one or more of the National Ambient Air Quality Standards (NAAQS)?	No, based on review of the EPA Greenbook.[2]
Will the construction activities produce emissions that exceed de minimis thresholds (tons per year)?	NA
Will mitigation measures be used to capture blowdown[3]?	No
Does the system have the capability to reduce pressure on the segments to be replaced? If yes, what is the lowest psi your system can reach prior to venting?	No
Will project proponent commit to reducing pressure on the line to this psi prior to venting? Please calculate venting emissions based on this commitment and also provide comparison figure of venting emissions volume without pressure reduction/drawdown using calculation methods identified in the initial Tier 2 EA worksheet.	No, the existing system operates at 0.54 pounds per square in (PSI). Based on the size of the existing pipe which ranges from 2 to 4 inches (in), 0.56 thousand cubic ft (MCF) or 17 kg/yr of methane would be vented during construction.
Estimate the current leak rate per mile based on the type of pipeline material. Based on mileage of replacement and new pipeline material, estimate the total reduction of methane.	The existing leak rate is 2,068 kg/year. Replacement would result in a leak rate of 150 kg/year or a reduction of 1,917 kg/year. [4]

Conclusion:

The project area is in Middlesex County which is designated by the EPA as in attainment for all National Ambient Air Quality Standards (NAAQS). The existing mains within the project area consist of leak prone legacy bare steel and cast iron that were installed between 1934-1942 with two small sections being installed in 1974.

No Action:

Under the No Action alternative, existing and planned pipeline activities, including construction and maintenance activities, would continue unchanged. The project proponent would continue to use legacy cast iron, bare steel, and other leak prone pipe material. The total methane emissions for the pipelines within the project area were extrapolated over 20 years to represent the continuation of methane release under the No Action alternative. Under the No Action alternative, PHMSA estimates that 2,068 kg of methane would be released each year from the existing pipelines within the project area. This amounts to 41,360 kg of methane over a 20-year time frame. See Appendix B, Methane Calculations, for the methane leak rate calculations.

[2] https://www.epa.gov/green-book/green-book-national-area-and-county-level-multi-pollutant-information

[3] Blowdown refers to the venting of natural gas in current facilities, in order to begin rehabilitation, repair, or replacement activities.

[4] Leak rates are based on Pre-1990 Installation emission factors found in *Table 1 Average methane emission factors for natural gas pipelines (adopted from EPA GHG Inventory, Annex 3.6, Table 3.62)* in the November 9, 2022, PHMSA: Natural Gas Distribution Infrastructure Safety and Modernization Grant Program Programmatic Environmental Assessment, Tier 1 Nationwide Environmental Analysis.

Proposed Action:

The Proposed Action alternative would result in minor air quality impacts associated with construction activities, including the intentional venting of methane contained in the existing pipelines prior to replacement. Pipeline blowdowns are typically necessary to ensure that construction and maintenance work can be conducted safely on depressurized natural gas facilities and pipelines. Venting methane is required when service is switched from the existing line to the newly constructed line, but the volume of vented gas can depend on the ability to reduce pressure on the pipe segment or other mitigation actions. Therefore, some methane would be vented into the atmosphere during construction. Based on an operating pressure of 0.54 pound per square inch (PSI) and an average inside pipe diameter that varies from 2 to 4 in, PHMSA estimates 0.56 MCF of methane (or 17 kg) would be vented into the atmosphere during construction. See Appendix B, Methane Calculations.

As described in the Tier 1 EA, methane leaks from natural gas distribution pipelines increase with age and are considerably higher for cast iron and steel pipelines, as compared with plastic. Replacing leak prone pipe with newer, more durable materials would reduce leaks and methane emissions. Based on the current leak rate of the existing pipe within the project area, this project would reduce overall emissions by 1,900 kg in the first year (when considering the methane that would be released from blowdown during construction) and would reduce 1,917 kg of methane per year thereafter. This amounts to a reduction of 40,257 kg of methane over a 20-year time frame. See Appendix B, Methane Calculations. Therefore, it is PHMSA's assessment that the proposed project would provide a net benefit to air quality and from the overall reduction of greenhouse gas emissions and that no indirect or cumulative impacts would result from the Proposed Action.

Mitigation Measures:

WMGLD shall implement the following mitigation measures:

- Efficient use of on-road and non-road vehicles, by minimizing speeds and vehicles
- Minimizing excavation to the greatest extent practical
- Use of cleaner, newer, non-road equipment as practicable
- Minimizing all vehicle idling and at minimum, conforming with local idling regulations
- Ensuring that all vehicles and equipment are in proper operating condition
- On-road and non-road engines must meet EPA exhaust emission standards (40 CFR Parts 85, 86, and 89)
- Covering open-bodied trucks while transporting materials
- Watering, or use of other approved dust suppressants, at construction sites and on unpaved roadways, as necessary
- Minimizing the area of soil disturbance to those necessary for construction
- Minimizing construction site traffic by the use of offsite parking and shuttle buses, as necessary

Water Resources	
Question	**Information and Justification**
Are there water resources within the project area, such as wetlands, streams, rivers, or floodplains? If so, would the project temporarily or permanently impact wetlands or waterways?	No, according to USFWS National Wetland Inventory (NWI), Federal Emergency Management Agency (FEMA) National Flood Hazard Layer FIRMette maps and National Resource Conservation Service (NRCS) soils survey.
Under the Clean Water Act, is a Section 401 State certification potentially required? If yes, describe	No

anticipated permit and how project proponent will ensure permit compliance.	
Under the Clean Water Act, is a USACE Section 404 Permit required for the discharge of dredge and fill material? If yes, describe anticipated permit and how project proponent will ensure permit compliance.	No
Under the Clean Water Act, is an EPA or State Section 402 permit required for the discharge of pollutants into the waters of the United States? Is a Stormwater Pollution Prevention Plan (SWPPP) required?	Yes, construction activities are anticipated to exceed soil disturbance thresholds and a 402 permit may be required prior to construction.
Will work activities take place within a FEMA designated floodplain? If so, describe any permanent or temporary impacts and the required coordination efforts with state or local floodplain regulatory agencies.	No, based on review of FEMA National Flood Hazard Layer FIRMette map.
Will the proposed project activities potentially occur within a coastal zone or affect any coastal use or natural resource of the coastal zone, requiring a Consistency Determination and Certification?	No, project is not located within a coastal area.

Conclusion:

PHMSA reviewed NWI maps, as well as the FEMA National Flood Hazard Layer FIRMette map. There were no wetlands, ponds, streams, lakes or other water resources identified on the NWI maps within the project area. FEMA's FIRMette map indicated the project area is located in a FEMA Zone X, which is outside of any designated special flood hazard areas and corresponds to the one percent annual chance of flooding. Additionally, PHMSA reviewed the NRCS soils survey which designated the majority of the project area as urban land. Other soils contained within the project area include Paxton-Urban land complex, Charlton-Urban land-Hollis complex and a very minor amount of Udorthents. None of these soils are rated as hydric soils, which supports the conclusion that there are no regulated water resources within the project area. See Appendix C, Water Resources.

No Action:

Under the No Action alternative, the existing pipeline would remain in the current location and normal maintenance activities would continue without any impact anticipated to water resources. Because there are no water resources identified, there would be no beneficial or adverse impacts to water resources.

Proposed Action:

PHMSA has not identified any water resources within the project area where the installation of the 1.37 miles of plastic pipe would replace the existing cast iron and steel pipes. The new pipeline placement and abandonment of the existing pipeline is not anticipated to cause any reasonably foreseeable indirect effects or cumulative effects to water resources as none have been identified in the area. Therefore, it is PHMSA's assessment that there would be no adverse impacts to water resources.

Mitigation Measures:

WMGLD shall implement the following mitigation measures:

- Avoidance of staging and laydown areas in wetland or floodplain

- Reseeding of if disturbance is required
- Restore to pre-construction contours
- Adherence to additional mitigation measures in accordance with applicable permits

Groundwater and Hazardous Materials/Waste	
Question	**Information and Justification**
Does the project have potential to encounter and impact groundwater? If yes, describe potential impacts from construction activities.	No, based on review of USGS Groundwater Data for the Nation[5] and NRCS soils survey report.
Will the project require boring or directional drilling that may require pits containing mud and inadvertent return fluids? If yes, describe measures that will be taken during construction activities to prevent impacts to groundwater resources.	No
Will the project potentially involve a site(s) contaminated by hazardous waste? Is there any indication that the pipeline was ever used to convey coal gas? If yes, PHMSA will work with the project proponent for required studies.	No, based on review of reviewed EPA's EnviroAtlas site.[6]
Does the project have the potential to encounter or disturb lead pipes or asbestos?	No

Conclusion:

The project area consists of a 300 ft wide project corridor along 1.37 miles of existing distribution mains in Wakefield on the following streets: Water Street, Crescent Street, Otis Street, Rockland Street, Columbia Road, Cyrus Street, and Bancroft Avenue. PHMSA reviewed EPA's EnviroAtlas[7] to identify any brownfield properties, hazardous waste sites, Resource Conservation and Recovery Act (RCRA) sites, and superfund sites. There are numerous RCRA sites identified in the project area which include businesses that are identified as handlers of generators, or other combustible materials but no brownfield properties or superfund sites were identified that could potentially impacted by the project.

PHMSA obtained a custom soil report for the project area from the USDA, NRCS's web soil survey which indicates that the project area is comprised of soils classified as Urban Land, Paxton-Urban Land complex, Charlton-Urban land-Hollis complex, and Udorthents.[8] The soil report provides an estimated depth to groundwater for most all classified soils but because the parent material of urban land is mostly fill material from other sources, there is no estimated depth to groundwater. The Paxton-Urban land complex contains well-drained soil where the depth to the water table is estimated to be between 18-37 in. The Charlton-Urban land-Hollis complex and Udorthents are also well drained with a depth to the water table found somewhere greater than 80 in. According to USGS Groundwater Data for the Nation[9] and the National Water Information System,

[5,6,7] https://enviroatlas.epa.gov/enviroatlas/interactivemap/

[8] https://websoilsurvey.nrcs.usda.gov/app/HomePage.htm
[9] https://waterdata.usgs.gov/nwis/gw

Map View, a groundwater monitoring well is located 75 ft north of State Highway 128 and 0.4 mi southeast of Saugus River in Wakefield where the depth to water level from January 2023-July 2023 ranged from approximately 4.5 to 6.5 ft below the land surface. This location is approximately 1.25 miles northeast of the project location.

No Action:
Under the No Action alternative, the cast iron and steel pipes would remain in their current location and ongoing and routine maintenance activities would occur. While there are no adverse impacts to groundwater anticipated by the No Action alternative, increased methane emissions are likely to occur if cast iron and steel pipes remain (EPA, PRO Fact Sheet No. 402[10]) and risks of failure is higher among these type pipes. Therefore, PHMSA anticipates an increased risk for the release of methane both as leaks and during a pipeline failure, which could result in greater impacts to soils and ground water, under the No Action alternative.

Proposed Action:
WMGLD is replacing 1.37 miles of existing distribution mains in the heart of Wakefield, Massachusetts, just east of the Main Street area of downtown. The streets included in this project include Water Street, Crescent Street, Otis Street, Rockland Street, Columbia Road, Cyrus Street, and Bancroft Ave. All work would occur within existing ROW. The pipeline would be installed approximately 36 in deep and therefore, it is not anticipated to intercept groundwater. The existing pipeline would be abandoned, and new, plastic pipeline would be installed within 1.5 ft of the existing pipeline, via trenching. All excavated trench materials would be hauled out and the trench would be backfilled with sand, clean soils, and gravel and the streets would be repaved. PHMSA's assessment is that there would be no adverse impacts to groundwater associated with the project as the trenching would not be deep enough to intercept groundwater. Additionally, PHMSA has not identified any indirect or cumulative effects to groundwater or hazardous materials.

Mitigation Measures:

WMGLD shall implement the following mitigation measures:

- In the event of a release of hazardous materials/waste into the environment during construction, WMGLD shall notify the appropriate emergency response agencies, potentially impacted residents, and regulatory agencies of the release or exposure.
- WMGLD shall utilize a Stormwater Pollution Prevention Plan which will identify appropriate construction and restoration activities to minimize the potential impacts to groundwater. All impacted areas would be restored to pre-construction conditions.

Soils	
Will all bare soils be stabilized using methods using methods identified in the initial Tier 2 EA worksheet? Will additional measures be required?	Yes
Will the project require unique impacts related to soils?	No

Conclusion:

PHMSA obtained a custom soil report for the project area from the USDA, NRCS's web soil survey which

[10] Insert Gas Main Flexible Liners at https://www.epa.gov/sites/default/files/2016-06/documents/insertgasmainflexibleliners.pdf#:~:text=Methane%20emissions%20reductions%20come%20from%20lower%20leakage%20rates,pipe%20and%20external%20corrosion%20in%20unprotected%20steel%20piping.

indicates that the project area is comprised of approximately 47% Urban Land, 28% Paxton-Urban Land complex, and 25% Charlton-Urban land-Hollis complex.[11] Additionally, a very small amount of Udorthents (<1%) potentially exist within the project area. Because the parent material of urban land is mostly fill material from other sources, there is no estimated depth to groundwater. The Paxton-Urban land complex contains well-drained soil where the depth to the water table is estimated to be between 18 to 37 in. The Charlton-Urban land-Hollis complex and Udorthents are also well drained with a depth to the water table found somewhere greater than 80 in.

No Action:
Under the No Action alternative, the cast iron and steel pipes would remain in their current location and soils would remain in their current state and condition. Normal maintenance activities would occur. Some soil disturbance would occur during maintenance activities, but WMGLD utilizes 100% haul out of excavated trench materials. The impacted areas would be backfilled with sand, clean soils, and gravel and paved daily. Under either scenario, no adverse impacts to soils would be anticipated under the No Action alternative.

Proposed Action:
WMGLD is replacing 1.37 miles of existing distribution mains within existing right-of-way. The pipeline would be installed approximately 36 inches deep and therefore, it is not anticipated to intercept groundwater. WMGLD utilizes 100% haul out of excavated trench materials. The trench would be backfilled with sand, clean soils, and gravel and paved daily. Therefore, PHMSA's assessment is that there would be no adverse impacts associated with soils resulting from the Proposed Action alternative. Additionally, there are no indirect or cumulative impacts anticipated as WMGLD will restore all areas to pre-construction conditions.

Mitigation Measures:

WMGLD shall implement the following mitigation measures:

- WMGLD shall utilize best management practices, as appropriate, to control sediment and erosion during construction which may include silt fencing, check dams, and promptly covering all bare areas. All impacted areas shall be restored to pre-construction conditions.

Biological Resources	
Question	**Information and Justification**
Based on review of IPaC and NOAA Fisheries database, are there any federally threatened or endangered species and/or critical habitat within the project area?[12] If no, no further analysis is required.	Yes, based on review of the USFWS's Information for Planning and Consultation (IPaC). Additionally, MA state resources were inventoried to identify state listed species.[13]
Will the project impact any areas in or adjacent to habitat for Federally, listed threatened or endangered species or their critical habitat? If no, provide justification and avoidance measures. If yes, PHMSA will work with the project proponent to conduct necessary consultation with resource agencies.	No

[11] https://websoilsurvey.nrcs.usda.gov/app/HomePage.htm
[12] https://ipac.ecosphere.fws.gov/
[13] https://www.mass.gov/info-details/list-of-endangered-threatened-and-special-concern-species#summary-of-the-mesa-list-

Conclusion:

The project would take place in Wakefield, Massachusetts, just east of the busy Main Street area of downtown within the current ROW, mainly consisting of paved streets. The project area is built out and is comprised of both commercial and residential areas. The only areas that contain vegetation and pervious surfaces are located in residential backyards or vegetated buffer areas along the streets. PHMSA requested an official species list through the USFWS's IPaC website. See Appendix D, Biological Resources, for the IPaC species list. There was one endangered species identified, the Northern Long-eared Bat (NLEB), (*Myotis septentrionalis)* that could potentially occur within the project geographical range of the project. Additionally, the candidate species, Monarch Butterfly (*Danaus plexippus)* was identified as a species that could potentially occur in the project area. However, no habitat for either of these species is present within the project area. There was no critical habitat identified within the project area. Several state listed species also occur within the geographical range, however based on the disturbed nature of the project area, no habitat is present for these species.

No Action:

Under the No Action alternative, existing conditions would remain, and normal maintenance activities would occur. The project area is in an urbanized environment and therefore has very limited biological resources present. Additionally, the project area does not contain suitable habitat for either the NLEB or the Monarch Butterfly or other state listed species, and therefore, no impacts to biological resources would occur under the No Action alternative.

Proposed Action:

The project area is in an urbanized environment where the areas of disturbance would be mainly within/under existing paved streets. Because these areas are within ROW that has been previously impacted (pipeline laid in the ground in close proximity to the location where new pipes would be laid and subsequently paved), the immediate project area has very limited biological resources present. Additionally, the project area does not contain suitable habitat for either the NLEB or the Monarch Butterfly. Therefore, in accordance with Section 7 of the Endangered Species Act[14] PHMSA's assessment is that the project would have no effect to federally threatened or endangered species. No adverse impacts to state listed species or other biological resources would result from the proposed project. There are no indirect or cumulative impacts anticipated as no impacts to habitat or species would occur.

Mitigation Measures:

There are no biological resources identified in the project area and therefore, no mitigative measures are necessary.

Cultural Resources	
Question	**Information and Justification**
Does the project include any ground disturbing activities, modifications to buildings or structures, or construction or installation of any new aboveground components?	Yes, the Project would include ground disturbing activities. No modifications to buildings or structures or new aboveground components are required.
Is the project located within a previously identified local, state, or National Register historic district or adjacent to any locally or nationally recognized historic	Yes, according to the National Register of Historic Districts, the Common Historic District is within the project area.

[14] 50 CFR § 402.02

properties? This information can be gathered from the local government and/or State Historic Preservation Office.[15]	
Does the project or any part of the project take place on tribal lands or land where a tribal cultural interest may exist?[16]	The project does not take place near any noted tribal lands, however per the Tribal Directory Assessment Tool, three tribes with interests in Middlesex County were identified: the Mashpee Wampanoag Tribe, Narragansett Indian Tribe, and the Wampanoag Tribe of Gay Head (Aquinnah).
Are there any nearby properties or resources that either appear to be or are documented to have been constructed more than 45 years ago?[17] Does there appear to be a group of properties of similar age, design, or method of construction? Any designed landscapes such as a park or cemetery? Please provide photographs to show the context of the project area and adjacent properties.	Yes, most of the properties within the project area were built in the late 1800's to the early 1900's.
Has the entire area and depth of construction for the project been previously disturbed by the original installation or other activities? If so, provide any documentation of prior ground disturbances.	The existing gas infrastructure was installed in the mid-1930's through the early 1940's with two small sections being installed in 1974. Other underground utility lines are within the vicinity.
Will project implementation require removal or disturbance of any stone or brick sidewalk, roadway, or landscape materials or other old or unique features? Please provide photos of the project area that include the roadway and sidewalk materials in the project and staging areas.	No, the project area does not contain stone or brick sidewalk, roadway, or other unique or old features that are within the project area.

Conclusion:

PHMSA must consider the impact of projects for which they provide funding on historic and archeological properties[18] in accordance with Section 106 of the National Historic Preservation Act (Section 106). Pursuant to 36 CFR 800.4(a)(1), the Area of Potential Effects (APE) is defined as the geographic area(s) within which the Undertaking may directly or indirectly affect historic resources. Based on the proposed scope of work, PHMSA has delineated the APE for this project to encompass the existing ROW, which includes the limits of disturbance and any staging or access areas. See Appendix E, Cultural Resources, for the APE.

No Action:

Under the No Action alternative, existing conditions would remain, and normal maintenance activities would

[15] Many SHPOs have an online system at https://www.nps.gov/subjects/nationalregister/state-historic-preservation-offices.htm that can tell you previously identified historic properties in your project area. The National Register list at https://www.nps.gov/subjects/nationalregister/database-research.htm can also be accessed online.

[16] The SHPO may have information on areas of tribal interest, or a good source is the HUD TDAT website at https://egis.hud.gov/TDAT/.

[17] Local tax and property records or historic maps may indicate dates of construction.

[18] Historic property means any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places (National Register) maintained by the Secretary of the Interior. This term includes artifacts, records, and remains that are related to and located within such properties. The term includes properties of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization and that meet the National Register criteria.

occur. These activities could result in ground disturbance that might affect historic resources. However, no federal funding would be applied and therefore Section 106 would not be required.

Proposed Action:

U.S. DOT staff identified properties based on available information on previously identified historic properties in the APE, including the National Register of Historic Places (NRHP) database and data received from the Massachusetts Historic Commission. U.S. DOT staff also conducted research to determine if there are any previously unidentified properties within the APE that are 45 years of age or older and may be eligible for the NRHP. The Common Historic District is the only NRHP-listed historic property located within the APE. There are no known archaeological sites in the APE and based on the evaluation, there is low potential for intact significant resources in the APE and no additional survey is needed. See Appendix E, Cultural Resources, for additional information about the APE and the properties identified.

PHMSA has determined that there is one historic property as defined in 36 CFR 800.16(l) within the APE. While the Common Historic District is located in the APE, the proposed project would not alter any of the characteristics or contributing features of the district that qualify it for inclusion in the NRHP. Project work is limited to the existing ROW and is expected to mainly take place under paved surfaces, and no character-defining historic materials or features would be removed or disturbed because of the proposed project. Project work is limited to the replacement of existing pipelines in areas that demonstrate a low probability for intact significant archaeological resources. Therefore, in accordance with 36 CFR Part 800.5, PHMSA's assessment is that the proposed project would have No Adverse Effect on historic properties.

A letter was sent on November 7, 2023, to the Massachusetts State Historic Preservation Officer (SHPO), federally recognized tribes with a potential interest in the project area, and all consulting parties outlining the Section 106 process, including a description of the undertaking, delineation and justification of the APE, identification of historic properties and an evaluation and proposed finding of No Adverse Effect. PHMSA has requested comments on the Section 106 process, identification of historic properties, and proposed finding within 30 days of receipt of the letter. See Appendix E, Cultural Resources, for additional information.

Mitigation Measures:

Wakefield shall notify PHMSA immediately of any changes to the scope of work that may change the impacts to historic properties or the areas that may be impacted, including location of work, depth of construction, or change in construction methods.

If, during project implementation, and features or human remains are discovered or effects to historic properties occur that were not anticipated during the Section 106 process, PHMSA must be immediately notified and all construction in the area of the discovery must halt until further direction is provided.

Section 4(f)	
Question	**Information and Justification**
Are there Section 4(f) properties within or immediately adjacent to the project area? If yes, provide a list of properties or as an attachment.	Yes, the Nasella Playground is located within 250 ft of the project area. The project also occurs within the Common Historic District.
Will any construction activities occur within the property boundaries of a Section 4(f) property? If so, please detail	No

these activities and indicate if these are temporary or permanent uses of the Section 4(f) property. Further coordination with PHMSA is required for all projects that might impact a Section 4(f) property.	

Conclusion:

Section 4(f) of the US Department of Transportation (USDOT) Act of 1966 as amended (Section 4(f)) (49 U.S.C. § 303(c)); is a federal law that applies to transportation projects that require funding or other approvals by the USDOT. Section 4(f) prohibits the Secretary of Transportation from approving any program or project which requires the use of any publicly owned land from a public park, recreation area, or wildlife and waterfowl refuge of national, state, or local significance, or any land from an historic site of national, state, or local significance unless:

- There is no feasible and prudent alternative to the use of the land;
- The program or project includes all possible planning to minimize harm to such park, recreational area; wildlife and waterfowl refuge, or historic site, resulting from such use.

PHMSA conducted a review of properties that are located within the Project Area to identify properties that qualify as Section 4(f). The Nasella Playground, a Section 4(f) property, is located approximately 250 ft from the project area. The Common Historic District is also a Section 4(f) property.

No Action:

Under the No Action alternative, there would be no change to existing pipeline infrastructure pursuant to federal funding or approval authorized by the Program. Therefore, there would be no use of Section 4(f) property under the No Action alternative.

Proposed Action:

Under the Proposed Action alternative, construction activities would occur within approximately 250 ft of the Nasella playground, however, no work would take place within the boundary of the park. Access to the facility would remain throughout the duration of construction and no physical use of the park would occur. As described in the Cultural Resources section of this EA, no alterations to the characteristics or contributing features of the Common Historic District would occur as a result of the project. In addition, as described in the Noise section of this EA, no adverse impacts associated with construction noise have been identified that could affect the use of these properties. Therefore, there would be no use of Section 4(f) resources.

Mitigation Measures:

WMGLD shall implement the following mitigation measures:

- WMGLD shall ensure public access to Nasella Playground (park) is maintained for the duration of construction.
- WMGLD shall coordinate with park officials when implementing a traffic management plan prior to construction.

Land Use and Transportation	
Question	**Information and Justification**

Will the full extent of the project boundaries remain within the existing right-of-way or easements? If no, please describe any right-of-way acquisitions or additional easements needed.	Yes, all work on mains would take place within the existing ROW.
Will the project result in detours, transportation restrictions, or other impacts to normal traffic flow or to existing transportation facilities during construction? Will there be any permanent change to existing transportation facilities? If so, what are the changes, and how would changes affect the public?	Yes, minor traffic interruptions are anticipated. No permanent changes to transportation facilities would occur.
Will the project interrupt or impede emergency response services from fire, police, ambulance or any other emergency or safety response providers? If so, describe any coordination that will occur with emergency response providers?	No, the project would not interrupt or impede emergency response services.

Conclusion:

The project is located in Wakefield, Massachusetts, an urbanized area comprised of both commercial and residential areas. The only areas containing natural habitat are located in residential backyards or vegetated buffer areas along the streets.

No Action:

Under the No Action alternative, the cast iron and steel pipes would remain in their current location and no changes to land use would occur. Normal maintenance activities would occur, and pipes would be replaced under failed circumstances.

Proposed Action:

The pipeline would be installed within 1.5 ft of the existing infrastructure and all work would occur under paved roadways. WMGLD utilizes 100% haul out of excavated trench materials. The trench would be backfilled with sand, clean soils, and gravel and paved daily. Therefore, PHMSA's assessment is that there would be no permanent change to land use. The project is replacing/upgrading the existing pipe and would not include new pipeline to serve any additional areas. Additionally, there are no indirect impacts anticipated as land use remains the same.

During construction, there may be short-term impacts to adjacent residences, businesses and normal traffic patterns. Potential impacts include an increase in noise, dust, and transportation accessibility, as a result of construction and construction staging. Local and state regulations guide the transport of machinery, equipment, and automobiles around the construction areas. Temporary traffic impacts may occur on the local road network and adjacent pedestrian routes. WMGLD would utilize police details to create some one-lane traffic areas and assist with other traffic adjustments. The project may result in detours. Where possible WMGLD would maintain regular flow of traffic. Consideration of emergency response vehicles, travel restrictions, and other impacts to local transportation are anticipated to be temporary and would only last for the duration of construction. Minor disruptions to on street parking may occur, but access to existing residences and businesses is not anticipated. WMGLD would coordinate with the appropriate local and state agencies regarding interruptions to traffic and detours and would use police details where traffic would be temporarily diverted to one-lane. WMGLD would notify emergency services of the scheduled work and traffic implications of the work that would be conducted.

Additionally, WMGLD would use various methods of communication to notify any potentially impacted residents, business owners, and the general public when work could potentially impact normal traffic patterns. Therefore, because the work consists of the replacement of existing pipeline, would not convert any new areas into a different use and impacts would only occur during construction, PHMSA's assessment is that impacts related to land use are considered minor and temporary.

PHMSA considered the cumulative effects of this action with ongoing and planned transportation related construction projects that could cumulatively impact land use and transportation. The Town of Wakefield currently has several paving, drainage improvement, and water main related projects on going within or near the project area. All municipalities and businesses must abide by the same requirements and coordinate with state and local agencies on any disruptions to normal traffic patterns. Through this coordination, the overall cumulative effects of multiple projects occurring would be minimized by planning and scheduling efforts with responsible agency oversight. Land use changes are not anticipated as the projects are occurring in an urbanized area that is built out and therefore would not change the existing residential or commercial use.

Mitigation Measures:

WMGLD shall implement the following mitigation measures:

- WMGLD shall maintain traffic flows to the extent possible and utilize police details and/or flag bearers to assist traffic negotiating through construction areas, as needed.
- WMGLD shall coordinate with state and local agencies regarding detours and/or routing adjustments during construction and will notify any potentially impacted residents and/or business owners.
- WMGLD shall have a traffic control plan in place, prior to construction, and coordinate with the appropriate agency well in advance of any impacted emergency services or essential agency functions.

Noise and Vibration	
Question	**Information and Justification**
Will the project construction occur for longer than a month at a single project location?	No
Will the project location be in proximity (less than 50-ft.) to noise sensitive receivers (residences, schools, houses of worship, etc.)? If so, what measures will be taken to reduce noise and vibration impacts to sensitive receptors?	Yes, WMGLD would adhere to Wakefield sound ordinance as well as Massachusetts State Ordinances. Yes, MGL 111 Section 142 A-M (Massachusetts State Noise Policy) would be followed. Additionally, WMGLD would only operate during normal business hours, 7am-5pm.
Will the project require high-noise and vibration inducing construction methods? If so, please specify.	No, high-noise and vibration inducing construction methods are not anticipated. However, if excavation hits unexpected ledge, noise may increase due to additional rock removal methods.
Will the project comply with state and local ordinances? If so, identify applicable ordinances and limitations on noise/vibration times or sound levels.	Yes, MGL 111 Section 142 A-M (Massachusetts State Noise Policy) would be followed.

Will construction activities require large bulldozers, hoe ram, or other vibratory equipment within 20 ft of a structure?	If ledge is encountered, a hoe ram would be required.

Conclusion:

The project is located in the urban area of downtown Wakefield. The ambient noise consists of a combination of environmental noise from road traffic, construction, industry, the built environment, population density and other sources.

No Action:

Under the No Action, the project would not move forward and the pipelines along the designated streets in the project area would not be replaced at this time, and likely would not be replaced all at once. It is likely that these pipelines would be repaired or replaced due to a leak under emergency conditions only in the immediately affected areas. If replacement or repairs occur under emergency conditions, noise from construction equipment would add to that of the current ambient noise and would be of a shorter duration.

Proposed Action:

The pipeline replacement project would result in temporary construction noise impacts; however, no vibration impact should occur. Excavators, dump trucks, skid steers, rollers, pavers, and other similar construction equipment would be used to excavate a trench, lay pipe, compact soils and re-pave the affected areas. The use of construction equipment would result in temporary noise impacts. Construction for the project is anticipated to last 6-12 months. The State of Massachusetts enforces an exterior noise ordinance that states any noise source that 1) Increases the broadband sound level by more than 10dB(A) above ambient, or 2) Produces a "puretone" condition (when any octave band center frequency sound pressure level exceeds the two adjacent center frequency sound pressure levels by 3 decibels or more), is considered to be in violation of the ordinance (M.G.L. Chapter 111, Section 142A-M). Additionally, Wakefield DPW Right-of-Way & Utility Systems Permit limits hours of construction to 7am-5pm and 9am-3:30pm for major roads, unless Permitting Authority approves modification. There are numerous sensitive noise receptors (residences, schools, houses of worship, etc.) located adjacent to the streets where work would occur. These receptors are likely to experience temporary noise impacts while outdoors in the vicinity of the work; however, noise is not anticipated to be 10db higher than ambient noise, due to state and local regulations. WMGLD has committed to complying with applicable local town and state noise policies/ordinances, which limit both sound levels and hours of construction. Therefore, the level of noise during construction is considered minor and would not result in vibration impacts.

While not anticipated, if WMGLD encounters an unexpected ledge, a hoe ram would be needed to clear the trench to continue pipeline placement. This type of equipment is much louder and if within 20' of a structure, could result in vibration impacts, depending on the level of noise, duration of work, and resulting vibrations caused by the equipment. Therefore, PHMSA is adding a requirement that should WMGLD encounter the need to utilize a hoe ram (or equivalent vibratory equipment) within 20 ft of a structure, they must develop a vibration monitoring and mitigation strategy and coordinate with PHMSA, prior to use of vibratory equipment. With the inclusion of this condition, PHMSA's assessment is that there would be temporary, minor noise impacts and no adverse vibration impacts resulting from the proposed work.

PHMSA considered the cumulative effects of this action with ongoing and planned transportation related

construction projects that could cumulatively have an impact on the noise and vibration impacts within the Town of Wakefield. There are several paving, drainage improvement, and water main related projects on going within or near the project area which all contribute to increased noise. These other construction and maintenance projects may occur at the same time as the Proposed Action alternative and cause minor cumulative effects to noise during construction. However, adhering to state and local noise ordinances should ensure the project does not cause cumulatively adverse noise or vibration impacts.

Mitigation Measures:

WMGLD shall implement the following mitigation measures:

- WMGLD must adhere to all state and local noise and vibration ordinances.
- If WMGLD encounters the need to utilize a hoe ram, or equivalent vibratory equipment within 20 ft of a structure, WMGLD must develop a vibration monitoring and mitigation strategy and coordinate with PHMSA, prior to the use of vibratory equipment.

Environmental Justice	
Question	**Information and Justification**
Using the EPA EJScreen or census data[19], is the project located in an area of minority and/or low-income individuals as defined by USDOT Order 5610.2(c)? If so, provide demographic data for minority and/or low-income individuals within ½ mile from the project area as a percentage of the total population.	Based on review of socioeconomic data using the EPAs EJScreen, the population residing within the general project area contains 12% low income and 10% minority populations.
Will the project displace existing residents or workers from their homes and communities? If so, what is the expected duration?	No
Will the project require service disruptions to homes and communities? If so, what is the expected communication and outreach plan to the residents and the duration of the outages?	Yes, outages are only expected on the day a natural gas service is tied over to a new natural gas main. The disruption to each resident would last between 30 minutes to an hour.
Are there populations with Limited English Proficiency located in the project area? If so, what measures will be taken to provide communications in other languages?	No

Conclusion:

Executive Order (E.O.) 14096—"Revitalizing Our Nation's Commitment to Environmental Justice for All" was enacted on April 21, 2023. E.O. 14096 on environmental justice does not rescind E.O. 12898 – "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations," which has been in effect since February 11, 1994 and is currently implemented through DOT Order 5610.2C. This implementation will continue until further guidance is provided regarding the implementation of the new E.O. 14096 on environmental justice.

PHMSA reviewed socioeconomic data using the EPAs EJScreen and found the population residing within the project area of Wakefield MA contains 12% low income and 10% minority populations. The percentage of these populations is below the Middlesex County average. See Appendix F, Environmental Justice, for socioeconomic

[19] https://www.census.gov/quickfacts/fact/table/US/PST045222

data.

No Action:

Under the No Action alternative, existing and planned pipeline activities, including construction and maintenance activities, would continue unchanged. The project proponent would continue to use leak prone pipe material that could lead to safety incidents and service disruptions. Additionally, if a pipeline segment is not repaired or replaced prior to failure, it is likely to be associated with even more emissions under the No Action alternative. Thus, emissions benefits to the community associated with repairing or replacing existing pipelines with updated material would not be achieved and the incident risks and leaks would remain. There may be some degree of air pollution associated with construction activity for maintenance and repairs of existing pipelines under the No Action alternative, either through planned repair or replacement efforts or unplanned, emergency repairs or replacements.

Proposed Action:

The Proposed Action alternative would result in an overall reduction in GHG emissions. Construction activities would result in minor temporary air quality impacts, including the intentional venting of existing distribution lines prior to replacement. Noise impacts associated with construction are anticipated to be minor. Traffic impacts would be temporary and only minor disruptions or delays would occur lasting less than 1 day. However, removal of leak prone pipe would reduce leaks and the potential for incidents, resulting in an increase in pipeline safety across the system while also improving operation and reliability. Therefore, consistent with Executive Order 12898 and DOT Order 5610.2(c), PHMSA's assessment is that the project would not result in disproportionately high and adverse effects on minority or low-income populations, or other underserved and disadvantaged communities. The project would have an overall beneficial effect on environmental justice populations and would not result in indirect or cumulative impacts.

Mitigation Measures:

WMGLD shall implement the following mitigation measures:

- WMGLD will provide advanced notification of service disruptions and construction schedule to all affected parties including resident and businesses adjacent to the project area.

Safety	
Question	**Information and Justification**
Has a risk profile been developed to describe the condition of the current infrastructure and potential safety concerns?	Yes, as described in the Distribution Integrity Management Program (DIMP).
Has a public awareness program been developed and implemented that follows the guidance provided by the American Petroleum Institute (API) Recommended Practice (RP) 1162?	Yes, A public awareness program would be implemented according to the API recommended practice 1162.
Does the project area include pipes prone to leakage?	Yes
Will construction safety methods and procedures to protect human health and prevent/minimize hazardous materials releases during construction, including personal protection, workplace monitoring and site-specific health and safety plans, be utilized? If yes, document measures and reference appropriate safety plans.	Yes
Has an assessment of the project been performed to analyze the risk and benefits of implementation?	Yes

Conclusion:

The existing pipeline that would be replaced consists of 1.07 miles of bare steel pipe, 0.15 mile of cast iron pipe, and 0.15 mile of coated steel pipe. Pipelines that are known to leak based on the material include cast iron, bare steel, wrought iron, and historic plastics with known issues (PIPES Act of 2020). PHMSA establishes safety regulations for all pipelines (49 CFR Parts 190-199). In 2011, following major natural gas pipeline incidents, DOT and PHMSA issued a Call to Action to accelerate the repair, rehabilitation, and replacement of the highest-risk pipeline infrastructure. Among other factors, pipeline age and material are significant risk indicators. Pipelines constructed of cast and wrought iron, as well as bare steel, are among the pipelines that pose the highest risk. PHMSA continues to encourage legacy pipeline repair or replacement to increase the safety of these segments of the gas distribution systems. Pipeline incidents can result in death, injury, property damage, and environmental damage.

No Action:

Under the No Action alternative, the cast iron and steel pipes would remain in their current location state and condition. Normal maintenance activities would occur, and pipes would be replaced under failed circumstances. Safety risks resulting from existing leak prone pipes remaining in place would persist until the existing cast iron and steel pipes are replaced.

Proposed Action:

In the past five years, WMGLD has repaired nine leaks within the project extents, including three grade 1 leaks and 6 grade 2 leaks.[20] The proposed project is necessary to replace the cast iron steel pipes, currently in

[20] The Gas Piping and Technology Committee defines a Grade 1 leak as a leak that represents an existing or probable hazard to persons or property, and

WMGLD's system. Cast iron is known to be unpredictable in temperatures below freezing which Wakefield reports as being a regular occurrence, due to the geographical location. The majority of the steel that would be replaced by the completion of the project is unprotected bare steel that was installed in the 1930s and 1940s. This replacement is in alignment with the recommendation generated in WMGLD's Distribution Integrity Management Program which directs the replacement program to have a priority to replacing bare steel and cast-iron mains and bare steel pipelines. The project would replace over a mile of leak prone pipe in Wakefield's Distribution System and would increase the overall safety of the community.

The project would reduce the risk profile of existing pipeline systems prone to methane leakage and would also benefit disadvantaged rural and urban communities with the safe provision of natural gas. The project responds to the need to address the potentially unsafe condition of the natural gas distribution system of pipelines. The repair, rehabilitation, or replacement of pipelines would be constructed in accordance with industry best practices and would comply with all local, state, and federal regulations, including those for safety.

The abandonment of the existing pipeline would be conducted in accordance with PHMSA requirements found in 49 CRF 192.727 and 195.402(c)(10). These requirements include disconnecting pipelines from all sources and supplies of gas, purging all combustibles and sealing the facilities left in place. These requirements for purging and sealing abandoned pipelines would ensure that the abandoned pipelines are properly purged and cleaned and pose no risk to safety in their abandoned state. Therefore, PHMSA's assessment is that this replacement project would improve the overall safety of Wakefield's infrastructure.

Mitigation Measures:

WMGLD shall implement the following mitigation measures:

- WMGLD will ensure their DIMP procedures are updated as necessary, the work is constructed in accordance with industry best practices and the project will comply with all local, state, and federal regulations, including those for safety.

requires immediate repair or continuous action until the conditions are no longer hazardous. A Grade 2 leak is a leak that is recognized as being non-hazardous at the time of detection, but justifies scheduled repair based on probable future hazard.

III. Public Involvement

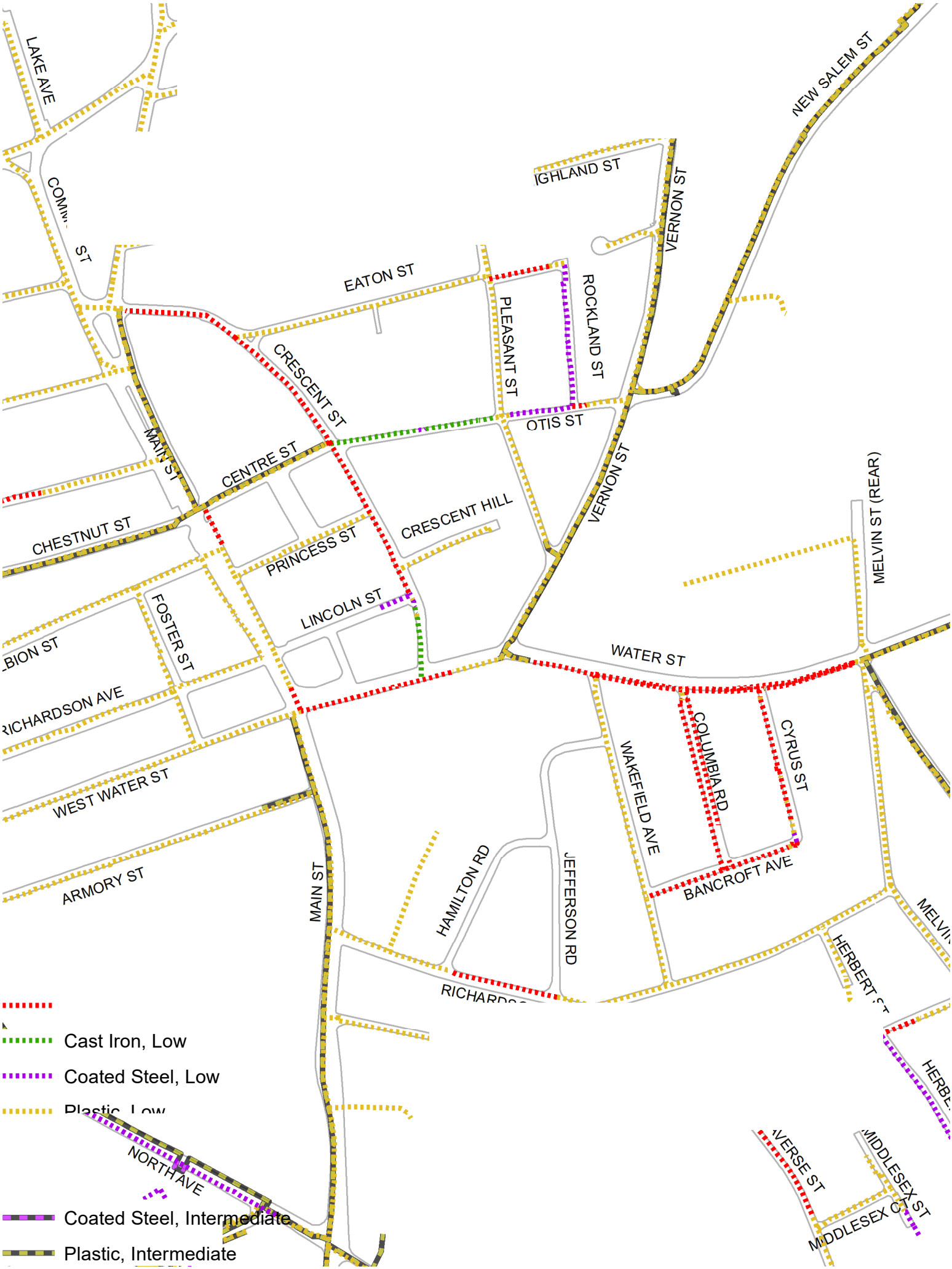
On November 9, 2022, PHMSA published a Federal Register notice (87 FR 67748) with a 30-day comment period soliciting comments on the "Tier 1 Nationwide Environmental Assessment for the Natural Gas Distribution Infrastructure Safety and Modernization Grant Program." During the 30-day comment period, PHMSA received one comment letter from the APGA on various aspects of the program and air quality related analysis in the EA on December 9, 2022. This APGA letter is available for public review at the Docket No: PHMSA-2022-0123.[21] PHMSA reviewed the comment letter and determined the comments were not substantial and did not warrant further analysis. One comment provided by the APGA indicated that the majority of construction methods used for pipe replacements would be replacement by open trenching and that some may want to abandon the existing pipe rather than removing it for replacement. Any departures from methods described in the Tier 1 EA will require additional documentation from the project proponent, as reflected in this Tier 2 EA.

As part of this Tier 2 EA, PHMSA is soliciting public comments through a public comment period. This Tier 2 EA is available on PHMSA's website where comments can be submitted to the contact noted below. PHMSA will accept public comments for 30 days on this Tier 2 EA. PHMSA will consider comments received and incorporate them in the decision-making process. Consultation with appropriate agencies on related processes, regulations, and permits is ongoing. Please submit all comments to: PHMSABILGrantNEPAComments@dot.gov and reference NGDISM-FY22-EA-2023-08 in your response.

[21] https://www.regulations.gov/document/PHMSA-2022-0123-0002/comment

Appendix A

Project Map


LAKE AVE
COMM ST
EATON ST
CRESCENT ST
MAIN ST
CENTRE ST
CHESTNUT ST
PLEASANT ST
ROCKLAND ST
OTIS ST
VERNON ST
NEW SALEM ST
IGHLAND ST
CRESCENT HILL
PRINCESS ST
LINCOLN ST
FOSTER ST
BION ST
RICHARDSON AVE
WEST WATER ST
ARMORY ST
MAIN ST
WATER ST
MELVIN ST (REAR)
WAKEFIELD AVE
COLUMBIA RD
CYRUS ST
BANCROFT AVE
HAMILTON RD
JEFFERSON RD
HERBERT ST
NORTH AVE
VERSE ST
MIDDLESEX ST
MIDDLESEX CT
Cast Iron, Low
Coated Steel, Low
Plastic, Low
Coated Steel, Intermediate
Plastic, Intermediate

Appendix B

Methane Calculations

Table 1 Average methane emission factors for natural gas pipelines (adapted from EPA GHG Inventory, Annex 3.6, Table 3.6-2)

Pipeline Material	Pre-1990 Installation (kg/mile)	1990-2020 Installation (kg/mile)	Average Rate (kg/mile/year)
Cast Iron	4,597.40	1,157.30	2,877.35
Unprotected steel	2,122.30	861.3	1,491.80
Protected steel	59.1	96.7	77.90
Plastic	190.9	28.8	109.85

Table 2 No Action Leak Rate

Pipeline Material Type	Average Rate (kg/mile/year)	Miles	Current Methane Leak Rate (kg/year)
Cast Iron	4,597.40	0.15	690
Unprotected steel	2,122.30	1.09	2313
Protected steel	59.1	0.13	8
Plastic	190.9	0	0
Total Annual Methane Leak Rate			3011
20-year Methane Emissions			60212

Table 3 Proposed Action Leak Rate

Pipeline Material Type	Average Rate (kg/mile/year)	Miles	New Methane Leak Rate (kg/year)
Plastic	28.8	1.37	39
Year 1 Methane Reduction			2954
Annual Methane Reduction			2971
20-year Methane Reduction			59423

Equation 1 was used to estimate blowdown emissions in MCF, assuming a pipeline diameter (d) and pressure (P) described in Table 3.

$$E_{blowdown} = V \times \frac{P_{pipe} + P_{atm}}{P_{atm}} \qquad (1)$$

Where the pipeline volume (V) is calculated by multiplying the cross-sectional area of the pipe by the length of pipeline (L):

$$V = \pi \times \frac{d^2}{4} \times L \qquad (2)$$

Table 4 Proposed Action - Methane Blowdown

Inputs	Pipe Section		
Diameter (inches)	2	3	4
Blowdown Pressure	0.54	0.54	0.54
Length of Blowdown (feet)	900	830	5504
Blowdown (MCF)	0.02	0.04	0.50
Blowdown (kg)	17		

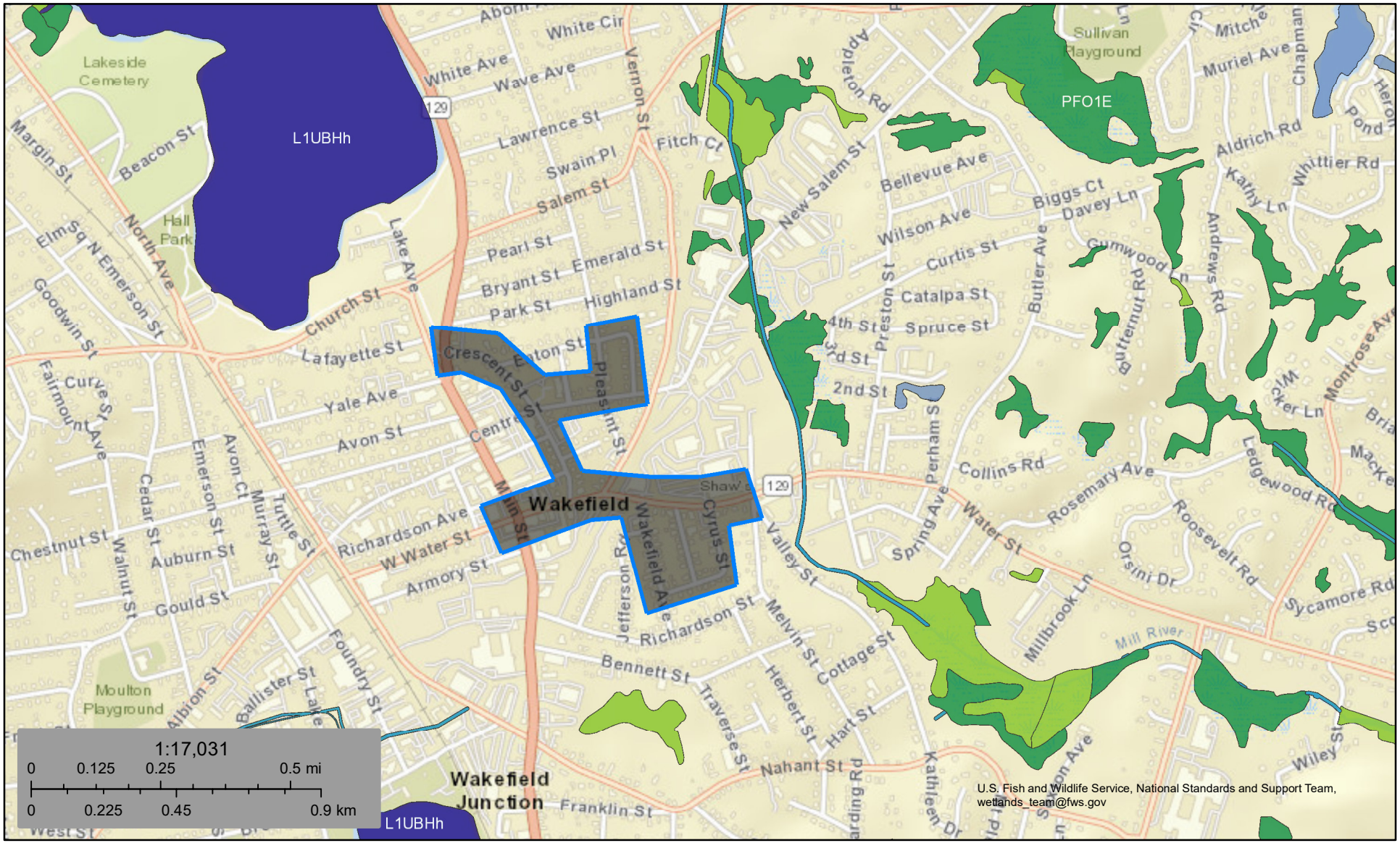
Appendix C

Water Resources

U.S. Fish and Wildlife Service

National Wetlands Inventory

Wakefield Municipal Gas & Light Dept



July 25, 2023

Wetlands

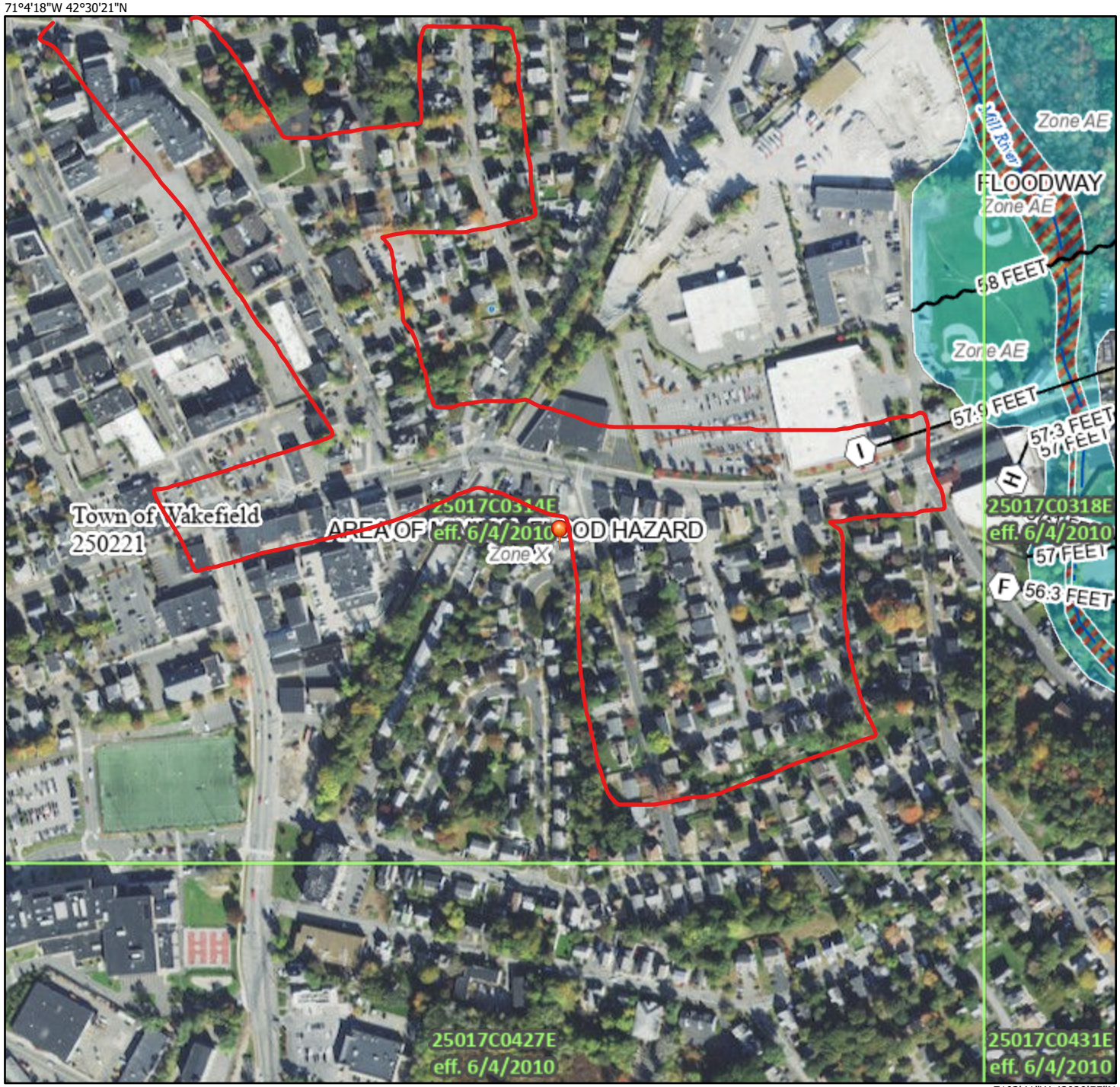
- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

National Flood Hazard Layer FIRMette

FEMA

71°4'18"W 42°30'21"N



71°3'41"W 42°29'55"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- Coastal Transect
- 513 Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 7/25/2023 at 4:43 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

Custom Soil Resource Report
Soil Map

Map Scale: 1:5,550 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 50 100 200 300

Feet: 0 250 500 1000 1500

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:25,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Middlesex County, Massachusetts
Survey Area Data: Version 22, Sep 9, 2022

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: May 22, 2022—Jun 5, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
602	Urban land	15.3	47.0%
622C	Paxton-Urban land complex, 3 to 15 percent slopes	8.9	27.5%
631C	Charlton-Urban land-Hollis complex, 3 to 15 percent slopes, rocky	8.2	25.1%
654	Udorthents, loamy	0.1	0.4%
Totals for Area of Interest		**32.5**	**100.0%**

Appendix D

Biological Resources

United States Department of the Interior

FISH AND WILDLIFE SERVICE
New England Ecological Services Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5094
Phone: (603) 223-2541 Fax: (603) 223-0104

In Reply Refer To: July 28, 2023
Project Code: 2023-0110369
Project Name: Wakefield Municipal Gas & Light Department, NGDISM Grant Pipeline Replacement Project

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

Updated 4/12/2023 - Please review this letter each time you request an Official Species List, we will continue to update it with additional information and links to websites may change.

About Official Species Lists

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Federal and non-Federal project proponents have responsibilities under the Act to consider effects on listed species.

The enclosed species list identifies threatened, endangered, proposed, and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested by returning to an existing project's page in IPaC.

Endangered Species Act Project Review

Please visit the "**New England Field Office Endangered Species Project Review and**

Consultation" website for step-by-step instructions on how to consider effects on listed species and prepare and submit a project review package if necessary:

https://www.fws.gov/office/new-england-ecological-services/endangered-species-project-review

NOTE Please do not use the **Consultation Package Builder** tool in IPaC except in specific situations following coordination with our office. Please follow the project review guidance on our website instead and reference your **Project Code** in all correspondence.

Northern Long-eared Bat - (**Updated 4/12/2023**) The Service published a final rule to reclassify the northern long-eared bat (NLEB) as endangered on November 30, 2022. The final rule went into effect on March 31, 2023. You may utilize the **Northern Long-eared Bat Rangewide Determination Key** available in IPaC. More information about this Determination Key and the Interim Consultation Framework are available on the northern long-eared bat species page:

https://www.fws.gov/species/northern-long-eared-bat-myotis-septentrionalis

For projects that previously utilized the 4(d) Determination Key, the change in the species' status may trigger the need to re-initiate consultation for any actions that are not completed and for which the Federal action agency retains discretion once the new listing determination becomes effective. If your project was not completed by March 31, 2023, and may result in incidental take of NLEB, please reach out to our office at newengland@fws.gov to see if reinitiation is necessary.

Additional Info About Section 7 of the Act
Under section 7(a)(2) of the Act and its implementing regulations (50 CFR 402 et seq.), Federal agencies are required to determine whether projects may affect threatened and endangered species and/or designated critical habitat. If a Federal agency, or its non-Federal representative, determines that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Federal agency also may need to consider proposed species and proposed critical habitat in the consultation. 50 CFR 402.14(c)(1) specifies the information required for consultation under the Act regardless of the format of the evaluation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

https://www.fws.gov/service/section-7-consultations

In addition to consultation requirements under Section 7(a)(2) of the ESA, please note that under sections 7(a)(1) of the Act and its implementing regulations (50 CFR 402 et seq.), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species. Please contact NEFO if you would like more information.

Candidate species that appear on the enclosed species list have no current protections under the

ESA. The species' occurrence on an official species list does not convey a requirement to consider impacts to this species as you would a proposed, threatened, or endangered species. The ESA does not provide for interagency consultations on candidate species under section 7, however, the Service recommends that all project proponents incorporate measures into projects to benefit candidate species and their habitats wherever possible.

Migratory Birds

In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts see:

https://www.fws.gov/program/migratory-bird-permit

https://www.fws.gov/library/collections/bald-and-golden-eagle-management

Please feel free to contact us at **newengland@fws.gov** with your **Project Code** in the subject line if you need more information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat.

Attachment(s): Official Species List

Attachment(s):

- Official Species List

OFFICIAL SPECIES LIST

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

New England Ecological Services Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5094
(603) 223-2541

PROJECT SUMMARY

Project Code: 2023-0110369

Project Name: Wakefield Municipal Gas & Light Department, NGDISM Grant Pipeline Replacement Project

Project Type: Pipeline - Onshore - Maintenance / Modification - Below Ground

Project Description: The project consists of replacing 1.37 miles of existing distribution mains in Wakefield, MA. The existing cast iron pipes will be replaced with plastic pipes within 1.5 of the existing infrastructure under streets that have residential and commercial buildings. The existing cast iron pipes will be abandoned in place.

Project Location:

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@42.50350625,-71.06841015739094,14z

Counties: Middlesex County, Massachusetts

ENDANGERED SPECIES ACT SPECIES

There is a total of 2 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

MAMMALS

NAME	STATUS
Northern Long-eared Bat *Myotis septentrionalis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045	Endangered

INSECTS

NAME	STATUS
Monarch Butterfly *Danaus plexippus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9743	Candidate

CRITICAL HABITATS

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

YOU ARE STILL REQUIRED TO DETERMINE IF YOUR PROJECT(S) MAY HAVE EFFECTS ON ALL ABOVE LISTED SPECIES.

IPAC USER CONTACT INFORMATION

Agency: Department of Transportation
Name: Elizabeth Williams
Address: 55 Broadway
City: Cambridge
State: MA
Zip: 02142
Email elizabeth.williams1@dot.gov
Phone: 8572599218

Appendix E

Cultural Resources

APPENDIX A

MASSACHUSETTS HISTORICAL COMMISSION
220 MORRISSEY BOULEVARD
BOSTON, MASS. 02125
617-727-8470, FAX: 617-727-5128

PROJECT NOTIFICATION FORM

Project Name: PHMSA Pipeline Replacement Project in the Town of Wakefield, Massachusetts

Location / Address: Water Street, Crescent Street, Otis Street, Rockland Street, Columbia Road, Cyrus Street, and Bancroft Avenue
City / Town: Wakefield, MA
Project Proponent: Pipeline and Hazardous Materials Safety Administration (PHMSA)
Name: Kathering Giraldo
Address: 220 Binney Street
City/Town/Zip/Telephone: Cambridge, 02142 857-320-1359
Agency license or funding for the project (list all licenses, permits, approvals, grants or other entitlements being sought from state and federal agencies): PHMSA Natural Gas Distribution Infrastructure Safety and Modernization Grant Program

Agency Name	Type of License or funding (specify)
Pipeline and Hazardous Materials Safety Administration	Natural Gas Distribution Infrastructure Safety and Modernization Grant Program

Project Description (narrative):
Undertaking will replace 1.36 miles of pipeline (1.07 miles of bare steel pipes, 0.15 miles of cast iron pipes and 0.15 miles of coated steel pipes) with polyethylene piping by means of cut and cover (trenching). All work will take place within the existing right-of-way.

Does the project include demolition? If so, specify nature of demolition and describe the building(s) which are proposed for demolition.
No

Does the project include rehabilitation of any existing buildings? If so, specify nature of rehabilitation and describe the building(s) which are proposed for rehabilitation.
No

Does the project include new construction? If so, describe (attach plans and elevations if necessary).
The existing pipelines being replaced are between 2 to 4 inches in diameter and will be replaced with equivalent diameters. At most locations, the replacement gas lines will be located within 1.5 feet of the existing pipeline.

APPENDIX A (continued)

To the best of your knowledge, are any historic or archaeological properties known to exist within the project's area of potential impact? If so, specify.
Common Historic District (MHC ID WAK.B) is the only National Register Listed historic property within the APE. One archaeological site is within 1/4 mile of the APE (MHC #439).

What is the total acreage of the project area?

Woodland	acres	Productive Resources:	
Wetland	acres	Agriculture	acres
Floodplain	acres	Forestry	acres
Open space	acres	Mining/Extraction	acres
Developed 9.75	acres	Total Project Acreage	acres

What is the acreage of the proposed new construction? N/A acres

What is the present land use of the project area?
Urban Land - paved roads, parking lots, buildings

Please attach a copy of the section of the USGS quadrangle map which clearly marks the project location.
See Attachment A

This Project Notification Form has been submitted to the MHC in compliance with 950 CMR 71.00.

Signature of Person submitting this form: _____ Date: 11/7/2023

Name: Kathering Giraldo

Address: 220 Binney Street

City/Town/Zip: Cambridge, MA 02142

Telephone: 857-320-1359

REGULATORY AUTHORITY

950 CMR 71.00: M.G.L. c. 9, §§ 26-27C as amended by St. 1988, c. 254.

U.S. Department
of Transportation
**Pipeline and Hazardous
Materials Safety
Administration**

1200 New Jersey Avenue, SE
Washington, DC 20590

November 7, 2023

Ms. Brona Simon
Executive Director & State Historic Preservation Officer
Massachusetts Historical Commission
Mass. Archives Bldg.
220 Morrissey Blvd.
Boston MA 02125

Section 106 Consultation: PHMSA Pipeline Replacement Project in the Town of Wakefield, Massachusetts
Grant Recipient: Wakefield Municipal Gas and Light Department
Project Location: Town of Wakefield, Massachusetts

Dear Ms. Brona Simon:

The Pipeline and Hazardous Materials Safety Administration (PHMSA) provides funds authorized under the Natural Gas Distribution Infrastructure Safety and Modernization Grant Program. PHMSA proposes to provide funds to the Wakefield Municipal Gas and Light Department (Grant Recipient) for the replacement of pipeline (Undertaking). PHMSA is initiating consultation for the above referenced Undertaking in accordance with Section 106 of the National Historic Preservation Act of 1966, as amended, and the associated implementing regulations, 36 CFR Part 800 (Section 106).

Project Description/Background

For over 125 years Wakefield Municipal Gas and Light Department (WMGLD) has operated the natural gas distribution system for businesses and residents of the Town of Wakefield. The materials for much of the existing infrastructure of this project are from the mid-1900s and need to be replaced to maintain their safe operation. The existing mains within the project area consist of leak prone, legacy bare steel and cast-iron pipelines that were installed between 1934-1942 with two small sections being installed in 1974. The WMGLD is proposing to replace 1.36 miles of existing aging and failing bare steel, cast iron, and coated steel distribution mains, which will enhance safety and reduce emissions within the community.

The Undertaking will replace 1.37 miles of pipeline (1.07 miles of bare steel pipes, 0.15 miles of cast iron pipes and 0.15 miles of coated steel pipes) with polyethylene piping by means of cut and cover (trenching). The Undertaking will take place along Water Street, Crescent Street, Otis Street, Rockland Street, Columbia Road, Cyrus Street, and Bancroft Avenue. All work will take place within the existing right-of-way (ROW) and all main installations are to be installed under paved surfaces. The staging areas for the project will include the WMGLD's construction yard on Sexton Avenue in Wakefield, MA, which is an unpaved lot. The Sexton Avenue construction yard is surrounded by a waste site. Project location maps are enclosed in **Attachment A**. Photographs showing the overall character of the project areas are included in **Attachment B**.

The existing pipelines being replaced are between 2 to 4 inches in diameter and will be replaced with equivalent diameters. At most locations, the replacement gas lines will be located within 1.5 feet of the existing pipeline. However, depending on the limitations in the area and the location of other utilities, the replacement gas line may need to be installed on the opposite side of the street. The existing pipelines will be abandoned in place. Abandonment of the existing pipeline (versus excavation and removal) will minimize ground disturbance and facilitate the replacement process in a more efficient manner. The replacement gas lines will be installed at a depth of 36 inches below grade unless another utility is crossed. If another utility is crossed and WMGLD cannot go over it while maintaining 24 inches minimum cover, the installation may be made deeper to cross under in that localized area.

Area of Potential Effects (APE)

Pursuant to 36 CFR 800.4(a)(1), the Area of Potential Effects (APE) is defined as the geographic area(s) within which the Undertaking may directly or indirectly affect historic resources. Due to the scale and nature of the Undertaking, which is limited to the replacement of pipelines within existing ROW, PHMSA has delineated the APE for this Undertaking to encompass the existing ROW and the construction yard on Sexton Ave in Wakefield, MA, which include the limits of disturbance, staging and access areas, and the limits of any potential vibration effects. The APE extends to the depth of proposed ground disturbance of up to 36 inches below grade. The Undertaking does not have the potential to cause visual or audible effects after the completion of construction. The existing ROW encompasses various roads, signage, sidewalks, and grassy areas throughout the Town of Wakefield. The APE is shown on the maps in **Attachment A**.

Identification and Evaluation

To identify historic properties in the APE, U.S. Department of Transportation (U.S. DOT) staff who meet the Secretary of the Interior's (SOI) Professional Qualification Standards reviewed available information on previously identified historic properties in the APE, including the National Register of Historic Places (NRHP) database and data gathered at the Massachusetts Historical Commission (MHC). U.S. DOT staff also conducted research to determine if there are any previously unidentified properties within the APE that are 45 years of age or older and may be eligible for the NRHP.

Historic Architecture

The Common Historic District (MHC ID WAK.B) is the only NRHP-listed historic property located within the APE. The 25-acre district encompasses the main civic center of the Town of Wakefield and includes the buildings that line the communal spaces on Common Street and Main Street. The district contains the town hall, public library, YMCA, post office, and several churches; the district's varying architectural styles include Tudor Revival, Romanesque Revival, Italianate, Neo-Colonial, Neo-Renaissance, and Federal style buildings. The Common Historic District retains integrity of location, design, setting, materials, workmanship, feeling and association, and meets Criterion C of the NRHP at the local level. The location of the NRHP-listed Common Historic District is shown on the APE map in **Attachment A**.

Due to the scale and nature of the Undertaking, which is limited to the replacement of pipelines within existing ROW, the identification effort for previously unidentified above-ground historic properties focused on identifying properties that are susceptible to the vibration effects of pipeline replacement and could experience diminished integrity as a result of the Undertaking. A review of the APE found no additional above-ground resources that have the potential to be affected by the Undertaking.

Archaeology

There are no known archaeological sites within the APE. One unevaluated archaeological site is located within ¼ mile of the APE. The site located in proximity to the APE is identified as MHC ID #439 and it is an early to late archaic site. A 2005 intensive archaeological survey noted that while the area around MHC ID #439 has the potential to contain buried deposits related to pre-contact period Native American

occupation, no pre-contact period cultural resources were identified during the machine-assisted testing conducted during the intensive archaeological survey. Furthermore, no historic period deposits with the potential to yield new information of this area were identified. No further archaeological investigations were recommended around the area where MHC ID #439 is located (Intensive Locational Archaeological Survey Shaw's Supermarket at Wakefield by Jennifer Bonner and Suzanne Cherau).

The soil types within the APE include 47% Urban Land, 28% Paxton-Urban Land complex, and 25% Charlton-Urban land-Hollis complex. Additionally, a very small amount of Udorthents (<1%) potentially exist within the APE. Soils within the APE are classified as urban land, which consists of areas where the soil has been altered or obscured by buildings, industrial areas, paved parking lots, sidewalks, roads, and railroad yards.

The Town of Wakefield is primarily within the Saugus River watershed, which has its origins in Quannapowitt Lake. Quannapowitt Lake and Crystal Lake are the Town's two natural lakes. Parts of the APE are located on the original banks of the Mill River, a tributary of the Saugus River that flows out of Crystal Lake. Upland areas in the region are drained primarily by small streams originating in ponds and wetlands. These stream drainages are bounded by rocky hillsides and slopes with scattered bedrock outcrops.

The APE is limited to the existing ROW, some of which has been previously disturbed up to the proposed ground disturbance depth of 36 inches due to prior pipeline installation as shown in the as-built drawings in **Attachment C**. Furthermore, all work will take place under paved, or filled areas, including the staging area which is composed of Charlton-Urban land-Hollis and Udorthents soils. Due to the lack of significant archaeological sites in the vicinity of the APE and the previous ground disturbance that has occurred, there is low probability for intact significant archaeological resources to be present in the APE, and no archaeological survey is recommended at this time.

Determination of Effect

Based on the aforementioned identification and evaluation, PHMSA has determined that there is one historic property as defined in 36 CFR 800.16(l) within the APE: the NRHP-listed Common Historic District.

While the Common Historic District is located in the APE, the Undertaking will not alter any of the characteristics or contributing features of the district that qualify it for inclusion in the NRHP under Criterion C in a manner that would diminish its integrity. Project work is limited to the existing ROW and is expected to mainly take place under paved surfaces, and no character-defining historic materials or features will be removed or disturbed because of the Undertaking. Project work is limited to the replacement of existing pipelines in areas that demonstrate a low probability for intact significant archaeological resources. The Undertaking will not result in lasting physical, visual, or audible effects to NRHP-listed historic properties. The Undertaking also does not include land acquisition, nor would it limit access to or change the use of any of the historic properties identified above.

In accordance with 36 CFR Part 800.5, PHMSA has determined the Undertaking will have No Adverse Effect on historic properties.

Consulting Party Outreach

PHMSA identified parties that may be interested in the Project and its effects on historic properties. PHMSA invites the individuals/organizations copied on this letter to participate as Section 106 consulting parties. Invited parties should indicate their willingness to participate as a consulting party and provide comments on the enclosed form (**Attachment D**) within 30 calendar days from the date on this letter. Note that a non-response is considered to be a declination to participate; however, interested parties can request to join

consultation at any time in the process. If any invited party expresses concern about the Project's potential effects to historic properties, PHMSA will consult with the party to resolve those concerns prior to project implementation.

PHMSA will also invite the following federally recognized tribes to participate in consultation by separate letter:

- Mashpee Wampanoag Tribe
- Narragansett Indian Tribe
- Wampanoag Tribe of Gay Head (Aquinnah)

Request for Section 106 Concurrence

Based on the information presented above, PHMSA has determined that the Undertaking will result in No Adverse Effect to properties that are either in, or eligible for inclusion in, the NRHP. PHMSA is submitting this Undertaking to your office for your review and comment. PHMSA requests your concurrence with this determination of effect within 30 calendar days of the date of this letter. Should you need additional information please contact Kat Giraldo, Section 106 specialist, at PHMSASection106@dot.gov or 857-320-1359.

Sincerely,

Matt Fuller
Senior Environmental Protection Specialist

MF/kg

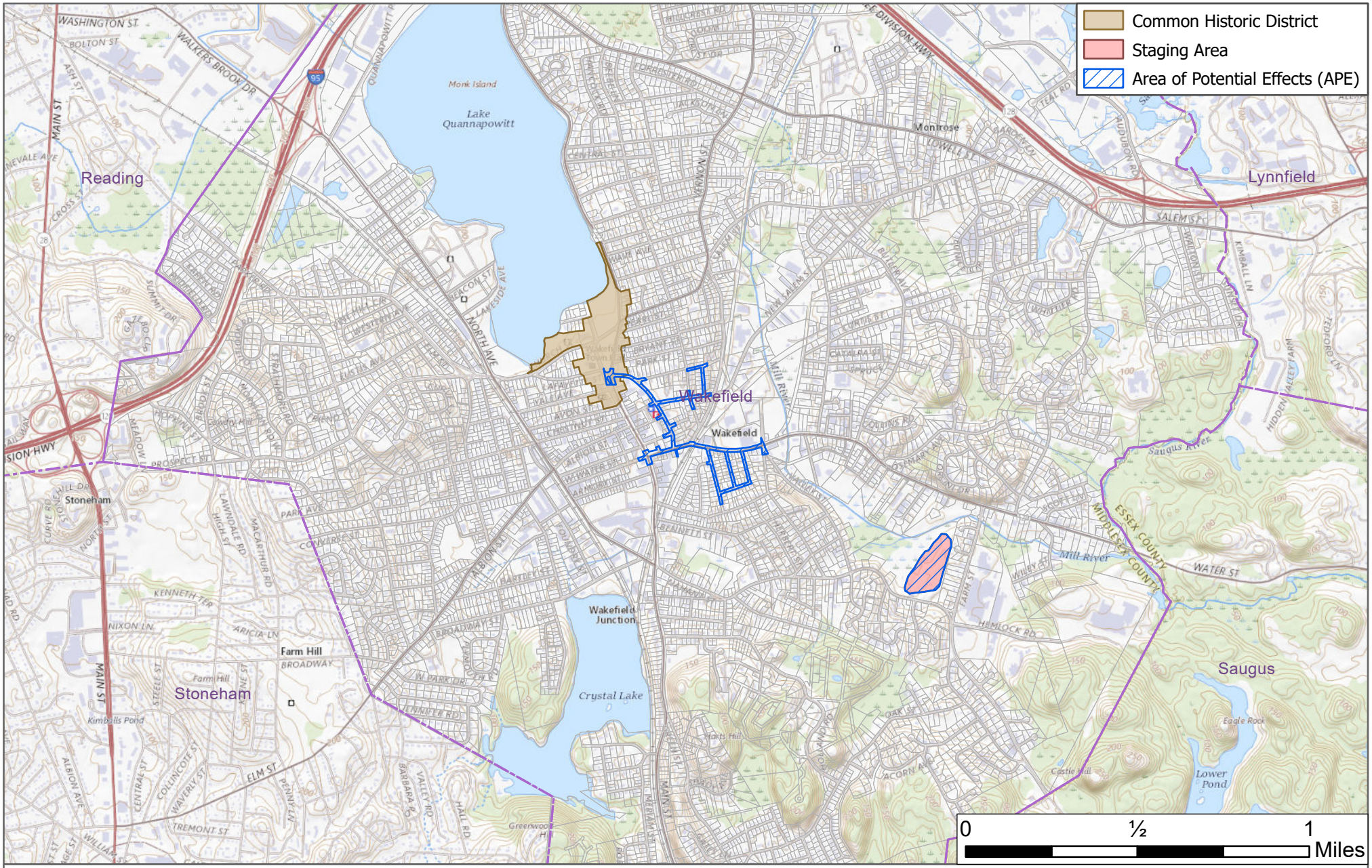
cc: Elizabeth Williams, Environmental Protection Specialist, USDOT Volpe Center
Renee Taylor, PHMSA Grant Specialist
Raven Fournier, Wakefield Municipal Gas and Light Department
Wakefield Historical Society
Wakefield Historical Commission

Enclosures:
Attachment A: Project Location and APE Maps
Attachment B: Project Area Photographs
Attachment C: Project As-built Drawings
Attachment D: Consulting Party Response Form

ATTACHMENT A

Project Location and APE Maps

Area of Potential Effects Map



Name: Wakefield Massachusetts Gas Line Replacement
Scale: 24,000
Total Acreage: 9.75
USGS Basemap: Reading
Wakefield, MA, Middlesex County

N

Service Layer Credits: USGS The National Map: National Boundaries Dataset, 3DEP Elevation Program, Geographic Names Information System, National Hydrography Dataset, National Land Cover Database, National Structures Dataset, and National Transportation Dataset; USGS Global Ecosystems; U.S. Census Bureau TIGER/Line data; USFS Road Data; Natural Earth Data; U.S. Department of State Humanitarian Information Unit; and NOAA National Centers for Environmental Information, U.S. Coastal Relief Model. Data refreshed April, 2023.

Area of Potential Effects Map

Name: Wakefield Massachusetts Gas Line Replacement
Scale: 4,250
Total Acreage: 9.75
Wakefield, MA, Middlesex County

N

Area of Potential Effects Staging Area Map

Name: Wakefield Massachusetts Gas Line Replacement
Scale: 1,300
Total Acreage: 9.75
Wakefield, MA, Middlesex County

N

ATTACHMENT B

Project Area Photographs

Staging Area

Wakefield Municipal Gas & Light Department Yard

Location: 6 Sexton Ave, Wakefield, MA

Water Street

Wakefield, MA

Project Scope: From Main Street to Melvin Street

Photo documentation moves east to west; Main Street to Melvin Street

Intersection of Water Street & Main Street – looking west

Near 13 Water Street – looking east toward intersection of Water Street & Crescent Street

Intersection of Water Street & Crescent Street – looking west

Intersection of Water Street & Vernon Street – looking east

Intersection of Water Street & Vernon Street – looking west

Near Intersection of Water Street and Vernon Street – looking east

Near Intersection of Columbia Road and Water Street – looking west

Near Intersection of Columbia Road and Water Street – looking east

Intersection of Water Street and Cyrus Street – looking west

Intersection of Water Street and Cyrus Street – looking east

Looking West from Intersection of Water Street and Melvin Street

Intersection of Water Street and Melvin Street

End of Project Scope on Water Street

Crescent Street

Wakefield, MA

Project Scope: From Main Street to Water Street

Photo documentation moves north to south; Main Street to Water Street

Intersection of Crescent Street and Water Street – from Crescent Street

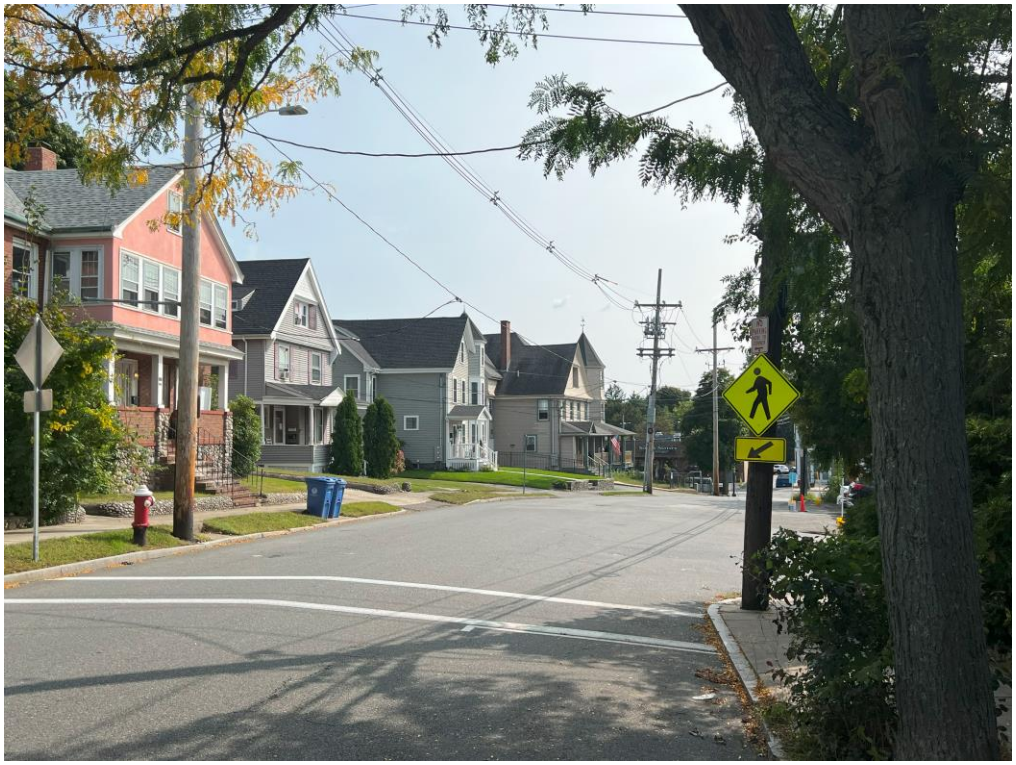
Near 10A Crescent Street – looking toward Main Street

Near 21 Crescent Street – looking north toward Main Street

Intersesction of Cresecnt Street and Otis Street – taken from Otis St. looking west

Near 41 Crescent Street – Looking north

Intersection of Crescent Street and Lincoln Street – looking south



Intersection of Crescent Street and Water Street – looking south

Otis Street

Wakefield, MA

Project Scope: From Crescent Street to Rockland Street

Photo documentation moves east to west; Crescent Street to Rockland Street

Intersesction of Cresecnt Street and Otis Street – taken from Otis St. looking west

Near 6 Otis Street – Looking east

Near 10 Otis Street – looking east

Intersection of Otis Street and Pleasant Street – looking east

Intersection of Otis Street and Rockland Street – taken from Rockland Street

Rockland Street

Wakefield, MA

Project Scope: From Otis Street to Eaton Street

Photo documentation moves south to north; Otis Street to Eaton Street

Intersection of Otis Street and Rockland Street – taken from Rockland Street

Near 4 Rockland Street – looking north

Intersection of Rockland Street and Eaton Street

Columbia Road

Wakefield, MA

Project Scope: From Water Street to Bancroft Avenue

Photo documentation moves north to south; Water Street to Bancroft Avenue

Columbia Road near Water Street – looking south

Near 11 Columbia Road – looking south

Intersection of Columbia Road and Bancroft Ave – looking south

Cyrus Street

Wakefield, MA

Project Scope: From Water Street to Bancroft Avenue

Photo documentation moves north to south; Water Street to Bancroft Avenue

Intersection of Cyrus Street and Water Street – looking north

Near Water Street – looking south

Intersection of Cyrus Street and Bancroft Avenue – looking south

Bancroft Avenue

Wakefield, MA

Project Scope: From Wakefield Avenue to Cyrus Street

Photo documentation moves west to east; Wakefield Avenue to Cyrus Street

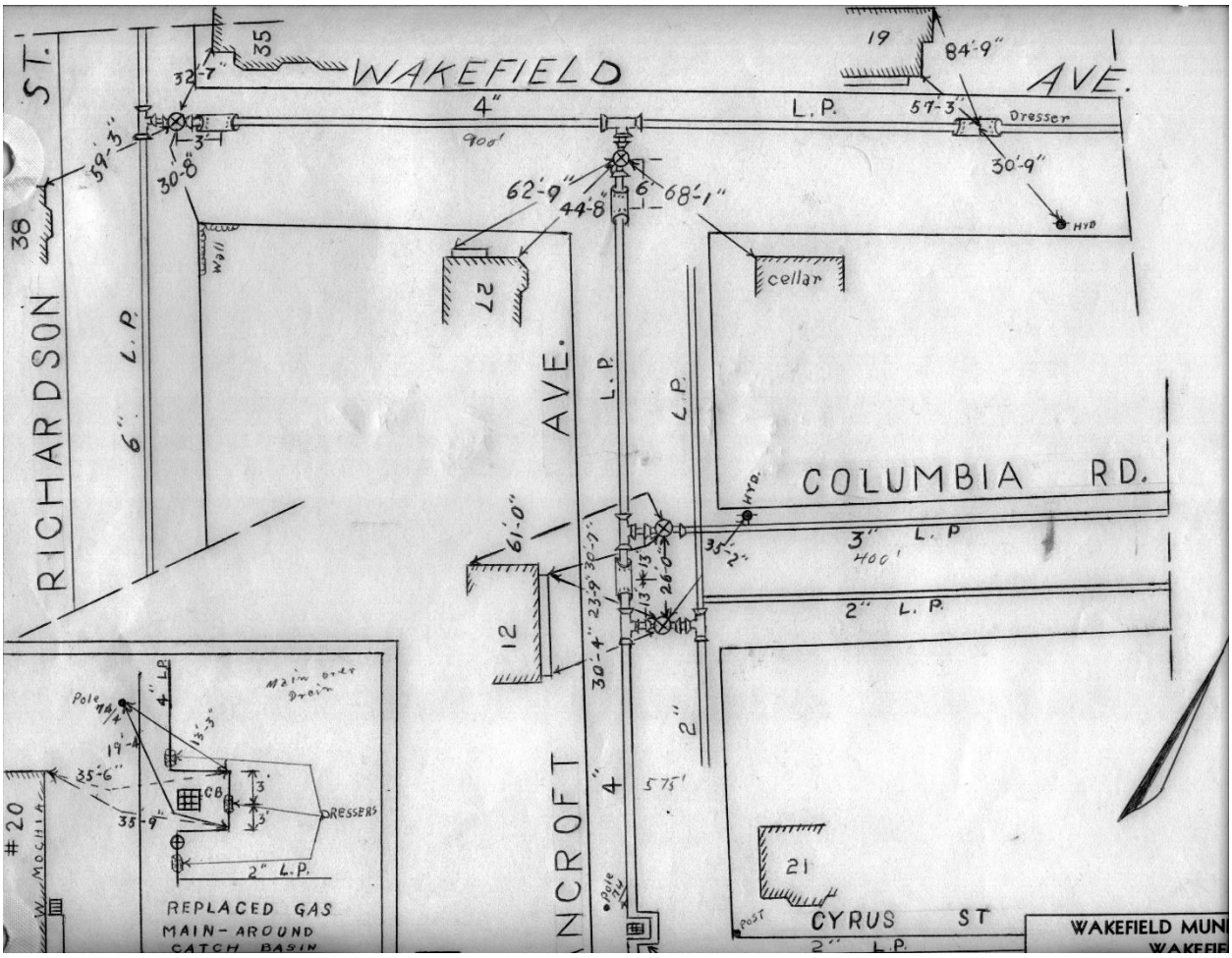
Intersection of Bancroft Avenue and Wakefield Avenue – looking west

Intersection of Bancroft Avenue and Columbia Road – looking west

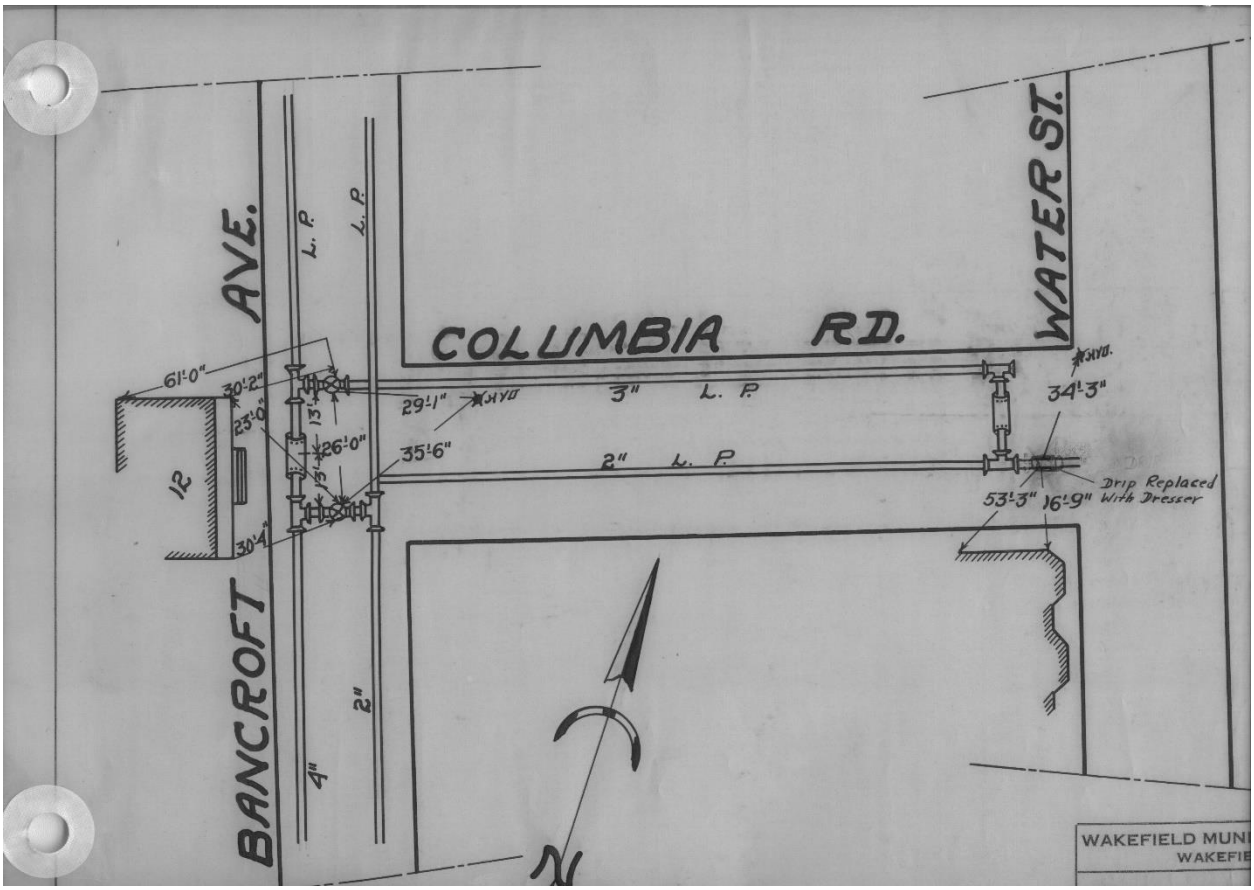
Intersection of Bancroft Avenue and Cyrus Street – looking east

ATTACHMENT C
Project As-built Drawings

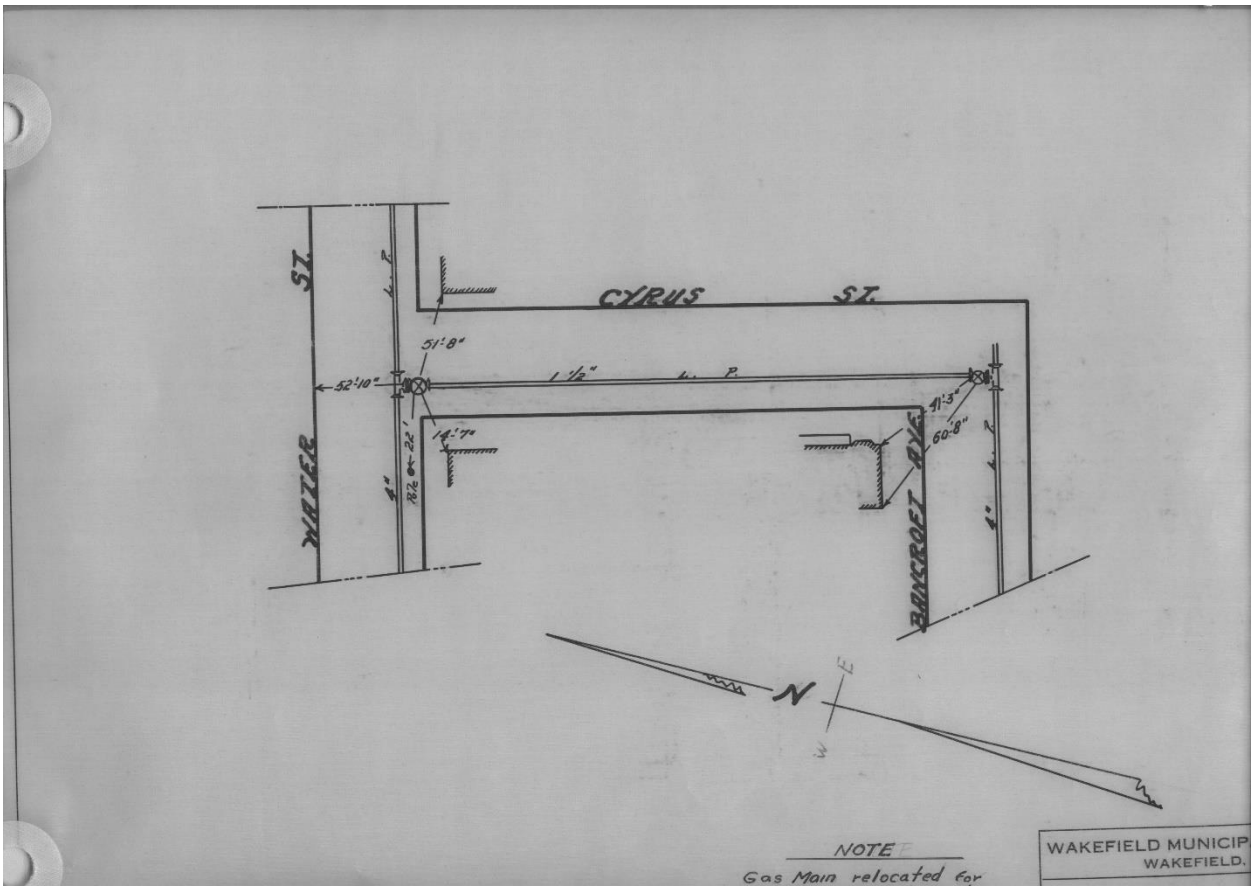
Bancroft Avenue – Original Install Records (1939)



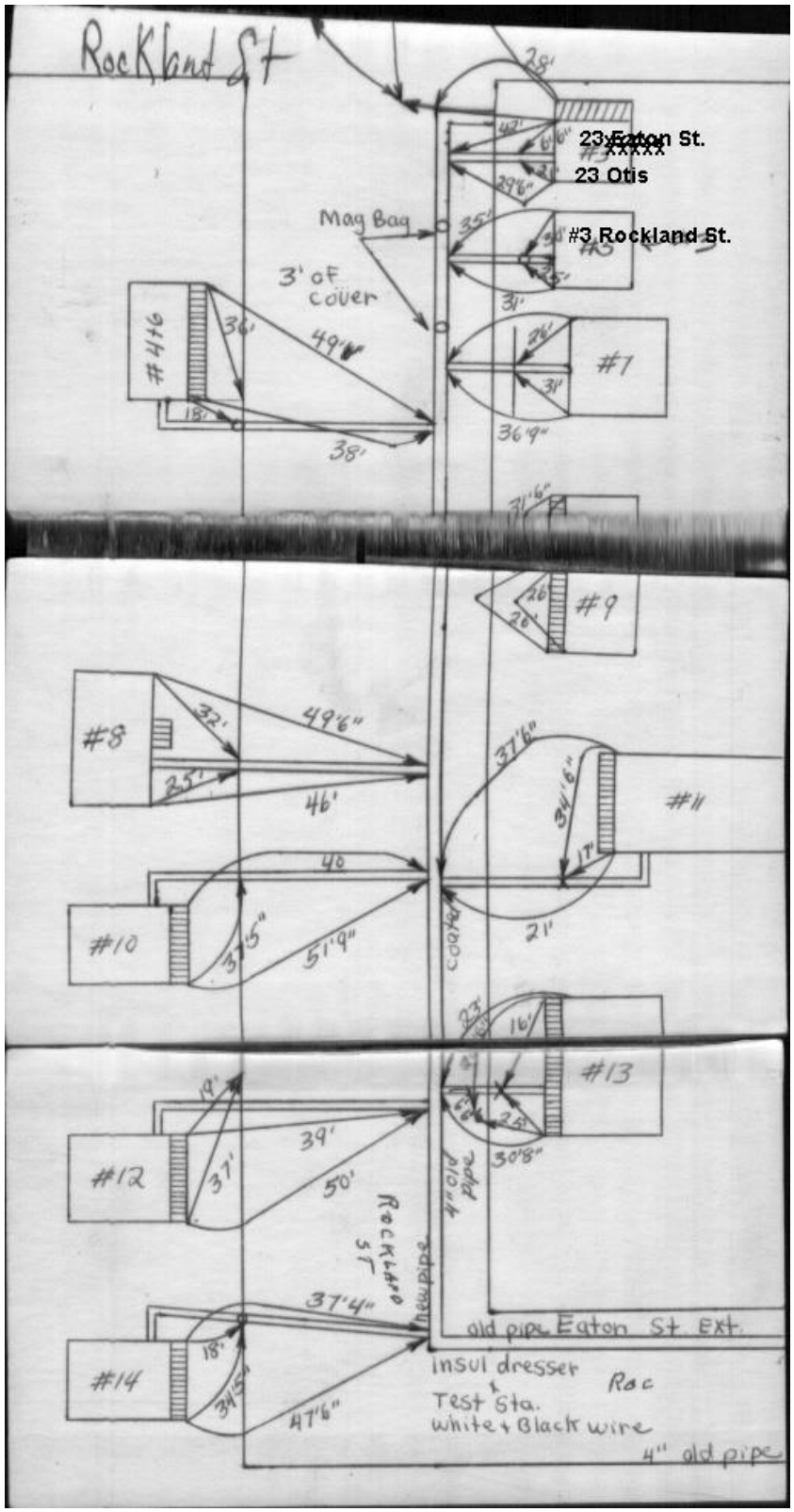
Columbia Road – Original Install Records (1935)



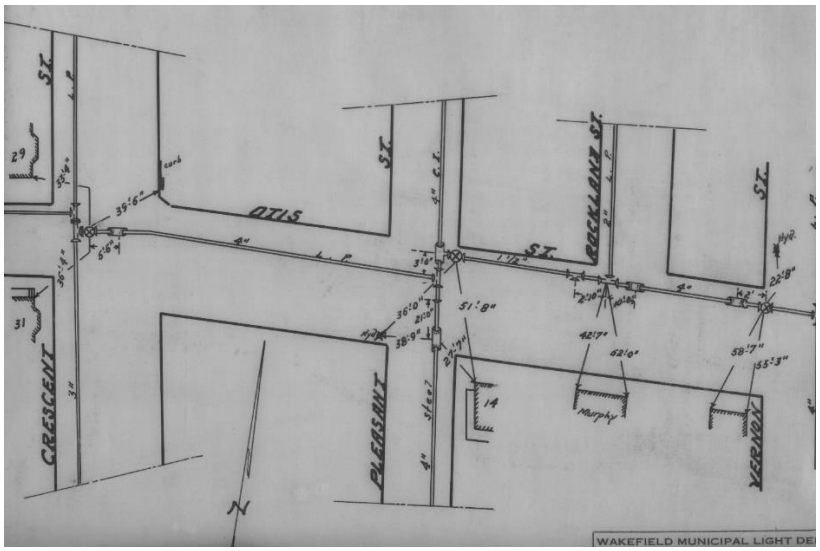
Cyrus Street – Original Install Records (1935)

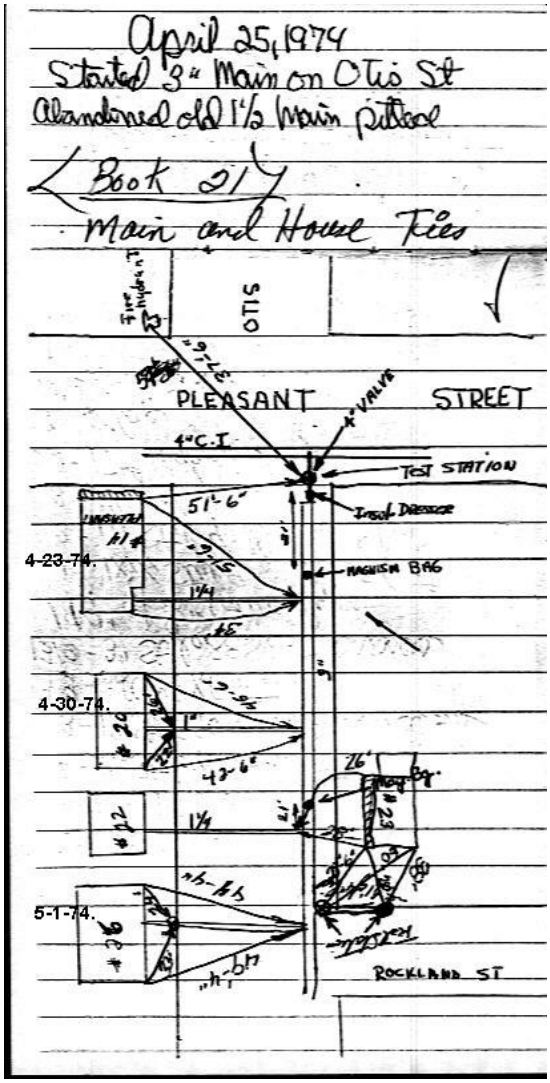


Rockland Street – Original Install Records (1974)

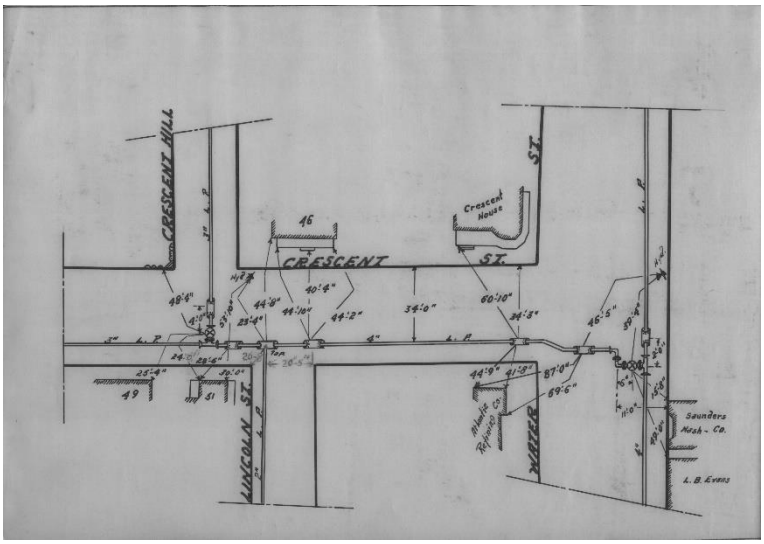


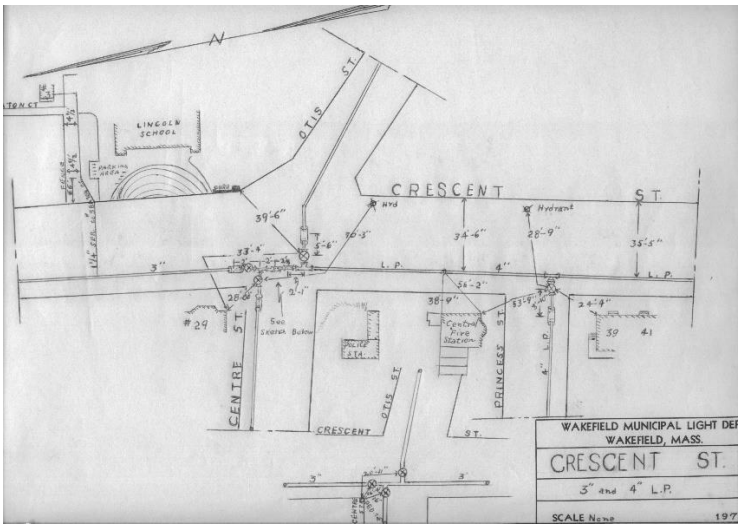
Otis Street – Original Install Records (1939)

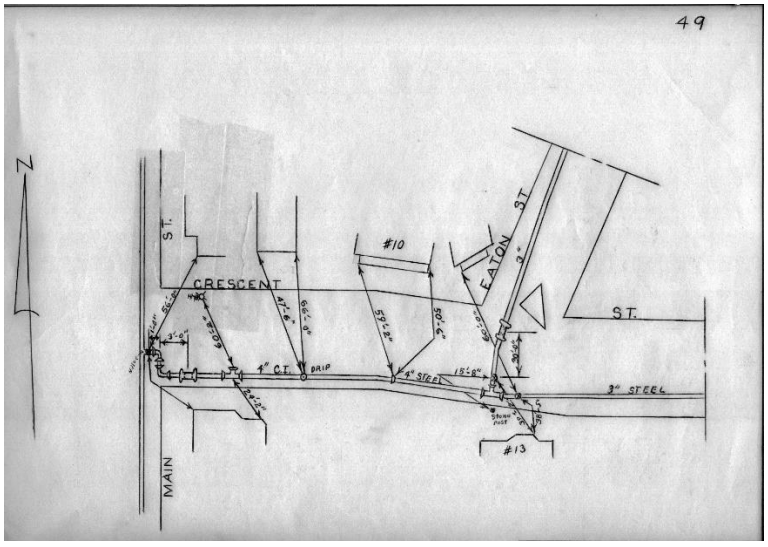




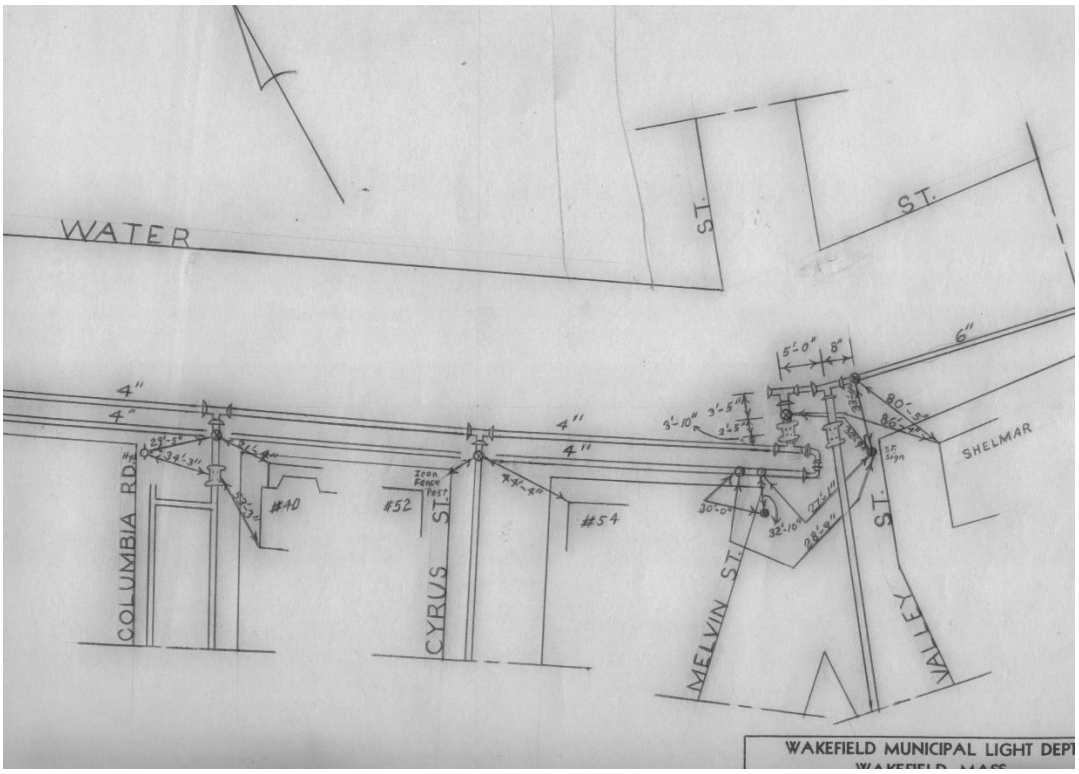
Crescent Street – Original Install Records (1934)

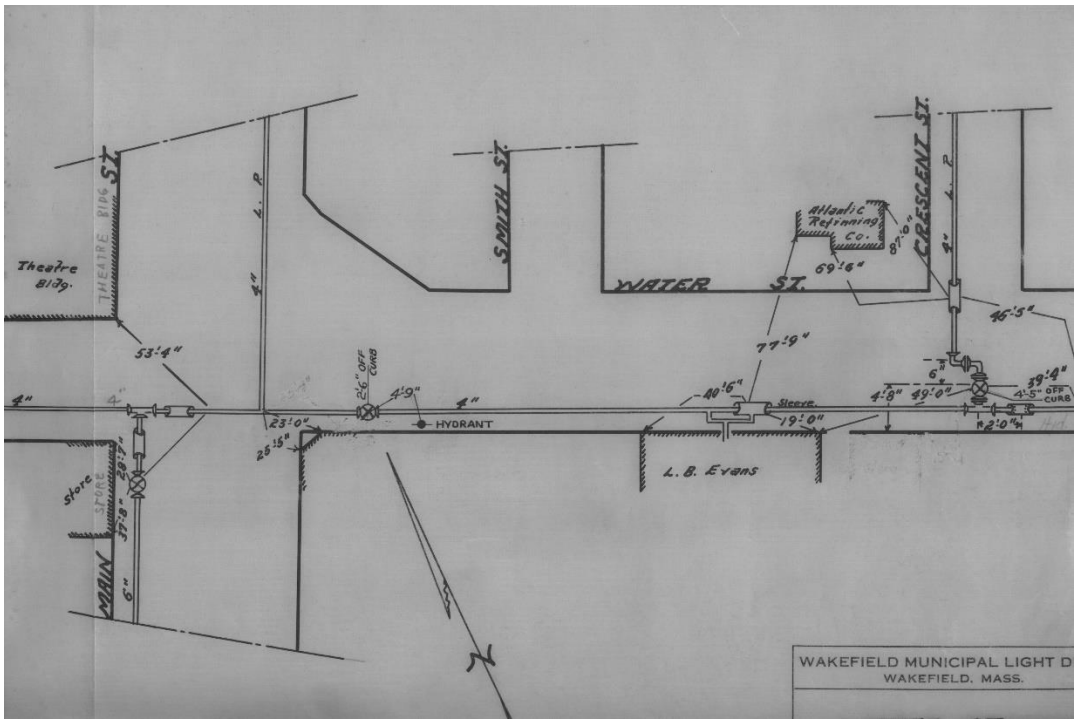






Water Street – Original Install Records (1934-1942)





ATTACHMENT D
Consulting Party Response Form

Section 106 Consulting Party Response Form

Pipeline and Hazardous Materials Safety Administration (PHMSA)

Natural Gas Distribution Infrastructure Safety and Modernization Grant Program

Project Name/Location:

Date: _____

Organization: _____

Name: _____

Affiliation: _____

Address: _____

_____

_____

Phone Number: _____

E-mail: _____

Please check one of the following:

○ **Yes,** I, or my organization, would like to participate in consultation on the project's potential effects to historic properties. I, or my organization, has a legal or economic relation to the project or affected properties or have a concern with the project's effects on historic properties.

○ **No,** I, or my organization, do(es) not wish to participate as a consulting party for the project.

Do you know of any other potential consulting parties that should be contacted? If so, please list the name, email, or other contact information below.

_____

_____

_____

Comments: _____

_____

_____

_____

Please return by:

Please return to: Kathering Giraldo
USDOT Volpe Center
55 Broadway Cambridge, MA
E-mail: PHMSASection106@dot.gov

Appendix F

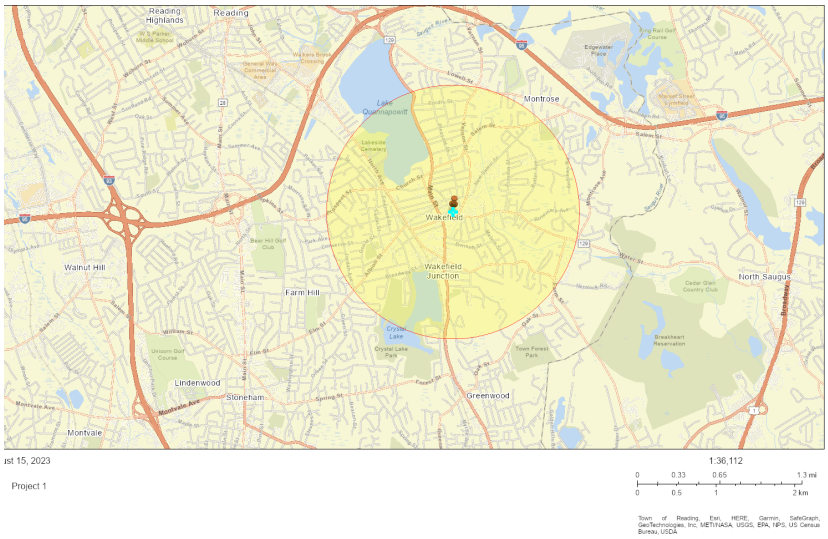
Environmental Justice

EJScreen Community Report

This report provides environmental and socioeconomic information for user defined areas, and combines that data into environmental justice and supplemental indexes.

Wakefield, MA

1 mile Ring Centered at 42.503174, 71.067982
Population: 14,827
Area in square miles: 3.14



ust 15, 2023
Project 1

Town of Reading, Esri, HERE, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA

LANGUAGES SPOKEN AT HOME

LANGUAGE	PERCENT
English	90%
Spanish	2%
Russian, Polish, or Other Slavic	2%
Other Indo-European	2%
Chinese (including Mandarin, Cantonese)	1%
Vietnamese	1%
Arabic	1%
Other and Unspeci ed	1%
Total Non-English	10%

COMMUNITY INFORMATION

- Low income: 12 percent
- People of color: 10 percent
- Less than high school education: 3 percent
- Limited English households: 1 percent
- Unemployment: 3 percent
- Persons with disabilities: 12 percent
- Male: 50 percent
- Female: 50 percent
- 80 years — Average life expectancy
- $57,860 — Per capita income
- Number of households: 6,308
- Owner occupied: 69 percent

BREAKDOWN BY RACE

- White: 93%
- Black: 1%
- Asian: 3%
- Hispanic: 3%
- American Indian: 0%
- Hawaiian/Pacific Islander: 0%
- Other race: 1%
- Two or more races: 2%

BREAKDOWN BY AGE

From Ages 1 to 4	5%
From Ages 1 to 18	20%
From Ages 18 and up	80%
From Ages 65 and up	17%

LIMITED ENGLISH SPEAKING BREAKDOWN

Speak Spanish	14%
Speak Other Indo-European Languages	28%
Speak Asian-Paci c Island Languages	17%
Speak Other Languages	41%

Notes: Numbers may not sum to totals due to rounding. Hispanic popultion can be of any race.
Source: U.S. Census Bureau, American Community Survey (ACS) 2017 -2021. Life expectancy data comes from the Centers for Disease Control.

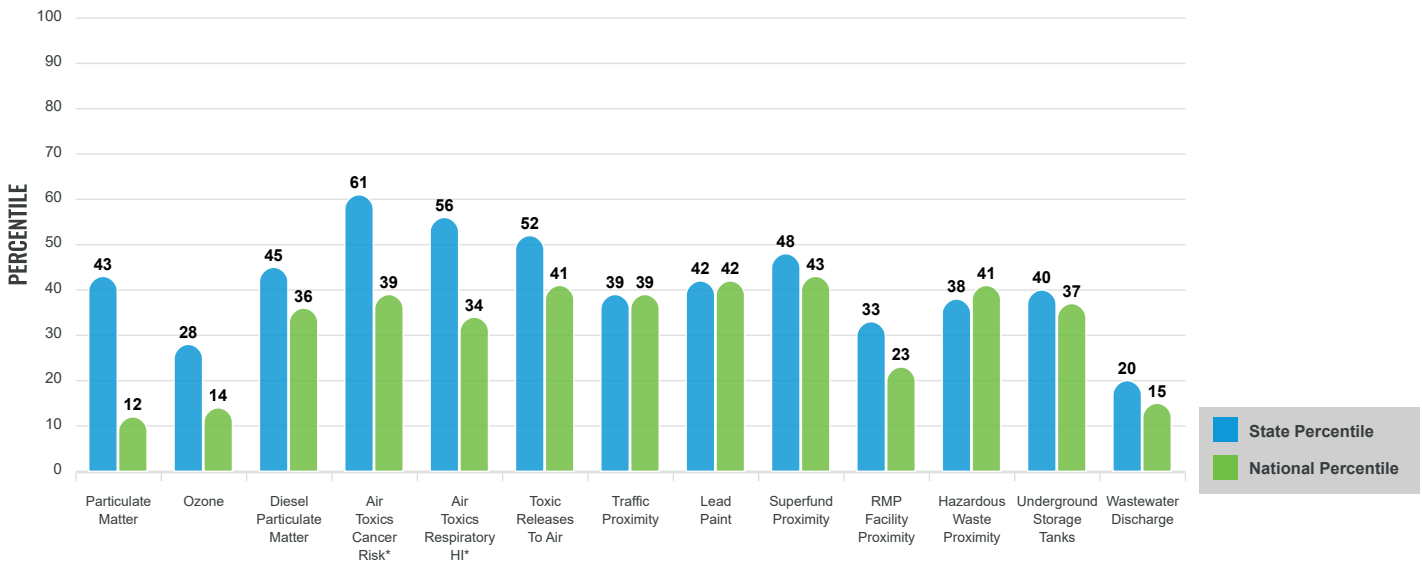
Environmental Justice & Supplemental Indexes

The environmental justice and supplemental indexes are a combination of environmental and socioeconomic information. There are thirteen EJ indexes and supplemental indexes in EJScreen re ecting the 13 environmental indicators. The indexes for a selected area are compared to those for all other locations in the state or nation. For more information and calculation details on the EJ and supplemental indexes, please visit the EJScreen website.

EJ INDEXES

The EJ indexes help users screen for potential EJ concerns. To do this, the EJ index combines data on low income and people of color populations with a single environmental indicator.

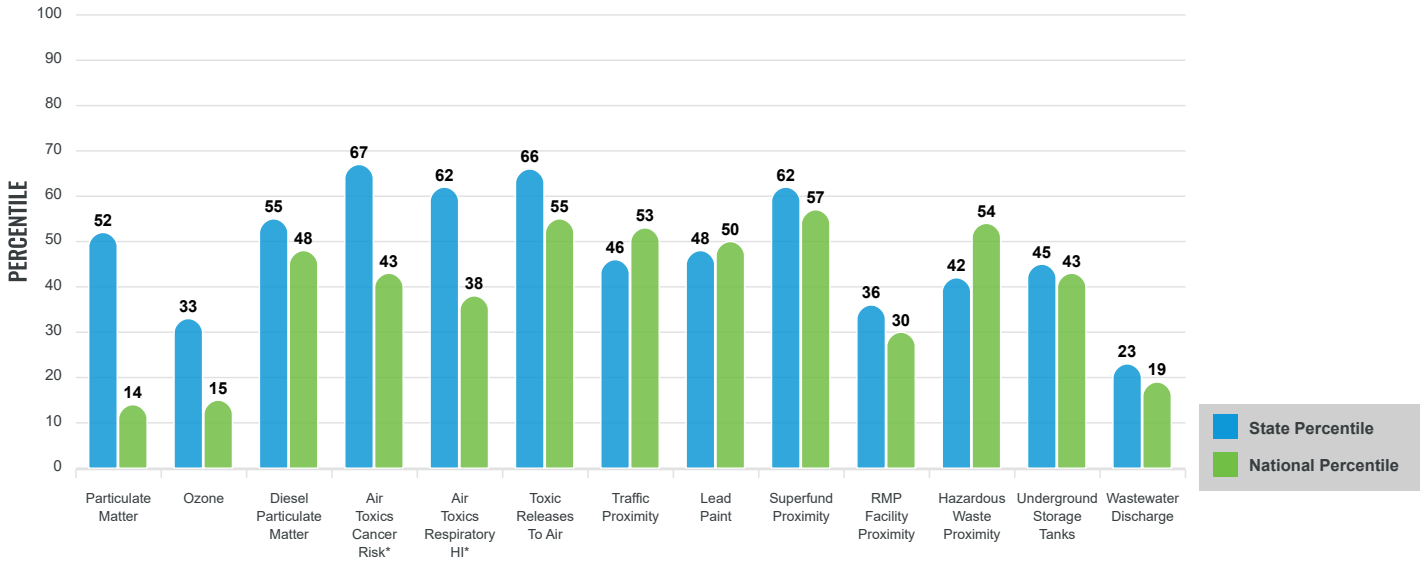
EJ INDEXES FOR THE SELECTED LOCATION



SUPPLEMENTAL INDEXES

The supplemental indexes offer a different perspective on community level vulnerability. They combine data on percent low income, percent linguistically isolated, percent less than high school education, percent unemployed, and low life expectancy with a single environmental indicator.

SUPPLEMENTAL INDEXES FOR THE SELECTED LOCATION



These percentiles provide perspective on how the selected block group or buffer area compares to the entire state or nation.

Report for 1 mile Ring Centered at 42.503174,-71.067982

www.epa.gov/ejscreen

EJScreen Environmental and Socioeconomic Indicators Data

SELECTED VARIABLES	VALUE	STATE AVERAGE	PERCENTILE IN STATE	USA AVERAGE	PERCENTILE IN USA
POLLUTION AND SOURCES					
Particulate Matter (µg/m^3)	6.91	6.62	61	8.08	18
Ozone (ppb)	57.7	58.3	34	61.6	21
Diesel Particulate Matter (µg/m^3)	0.289	0.253	68	0.261	66
Air Toxics Cancer Risk* (lifetime risk per million)	30	24	55	28	35
Air Toxics Respiratory HI*	0.3	0.26	49	0.31	31
Toxic Releases to Air	4,300	2,800	85	4,600	84
Tra c Proximity (daily tra c count/distance to road)	400	630	61	210	87
Lead Paint (% Pre-1960 Housing)	0.6	0.51	57	0.3	80
Superfund Proximity (site count/km distance)	0.21	0.18	80	0.13	86
RMP Facility Proximity (facility count/km distance)	0.13	0.36	41	0.43	40
Hazardous Waste Proximity (facility count/km distance)	3	6.7	48	1.9	81
Underground Storage Tanks (count/km^2)	2.5	3.4	56	3.9	63
Wastewater Discharge (toxicity-weighted concentration/m distance)	7.1E-05	0.2	24	22	28
SOCIOECONOMIC INDICATORS					
Demographic Index	11%	26%	23	35%	11
Supplemental Demographic Index	7%	12%	31	14%	18
People of Color	10%	30%	25	39%	22
Low Income	12%	22%	37	31%	21
Unemployment Rate	3%	5%	41	6%	42
Limited English Speaking Households	1%	6%	48	5%	60
Less Than High School Education	3%	9%	36	12%	25
Under Age 5	5%	5%	60	6%	54
Over Age 64	17%	17%	56	17%	56
Low Life Expectancy	17%	17%	50	20%	30

*Diesel particulate matter, air toxics cancer risk, and air toxics respiratory hazard index are from the EPA's Air Toxics Data Update, which is the Agency's ongoing, comprehensive evaluation of air toxics in the United States. This effort aims to prioritize air toxics, emission sources, and locations of interest for further study. It is important to remember that the air toxics data presented here provide broad estimates of health risks over geographic areas of the country, not definitive risks to specific individuals or locations. Cancer risks and hazard indices from the Air Toxics Data Update are reported to one significant figure and any additional significant figures here are due to rounding. More information on the Air Toxics Data Update can be found at: https://www.epa.gov/haps/air-toxics-data-update.

Sites reporting to EPA within defined area:

Superfund 0
Hazardous Waste, Treatment, Storage, and Disposal Facilities 1
Water Dischargers 8
Air Pollution 6
Brown elds 0
Toxic Release Inventory 3

Other community features within defined area:

Schools 4
Hospitals 0
Places of Worship 5

Other environmental data:

Air Non-attainment ..... Yes
Impaired Waters ..... Yes

Selected location contains American Indian Reservation Lands* ..... No
Selected location contains a "Justice40 (CEJST)" disadvantaged community ..... No
Selected location contains an EPA IRA disadvantaged community ..... No

Report for 1 mile Ring Centered at 42.503174,-71.067982

EJScreen Environmental and Socioeconomic Indicators Data

HEALTH INDICATORS

INDICATOR	HEALTH VALUE	STATE AVERAGE	STATE PERCENTILE	US AVERAGE	US PERCENTILE
Low Life Expectancy	17%	17%	50	20%	30
Heart Disease	4.9	5.4	33	6.1	26
Asthma	9.9	10.8	20	10	49
Cancer	7.2	6.6	64	6.1	74
Persons with Disabilities	11.5%	11.9%	54	13.4%	42

CLIMATE INDICATORS

INDICATOR	HEALTH VALUE	STATE AVERAGE	STATE PERCENTILE	US AVERAGE	US PERCENTILE
Flood Risk	7%	12%	44	12%	53
Wild re Risk	0%	0%	0	14%	0

CRITICAL SERVICE GAPS

INDICATOR	HEALTH VALUE	STATE AVERAGE	STATE PERCENTILE	US AVERAGE	US PERCENTILE
Broadband Internet	8%	10%	52	14%	40
Lack of Health Insurance	3%	3%	62	9%	19
Housing Burden	No	N/A	N/A	N/A	N/A
Transportation Access	No	N/A	N/A	N/A	N/A
Food Desert	No	N/A	N/A	N/A	N/A

Footnotes

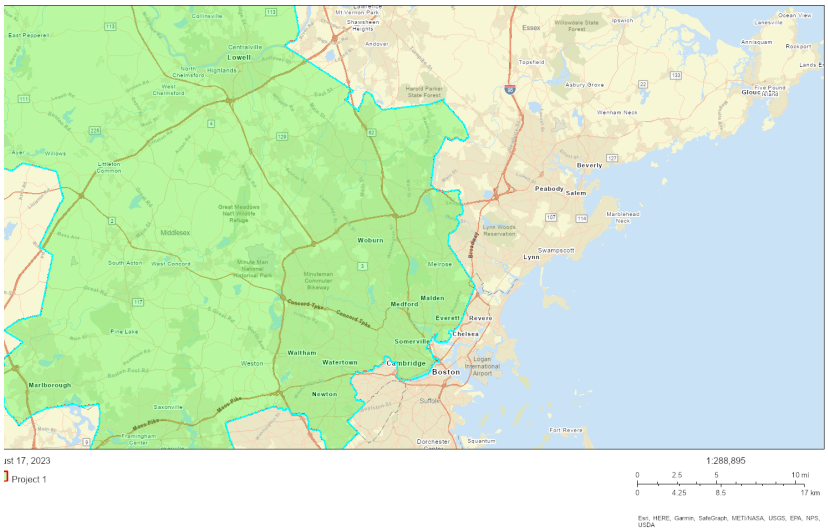
Report for 1 mile Ring Centered at 42.503174,-71.067982

EJScreen Community Report

This report provides environmental and socioeconomic information for user defined areas, and combines that data into environmental justice and supplemental indexes.

XX

County: Middlesex
Population: 1,623,411
Area in square miles: 0.00



COMMUNITY INFORMATION

- Low income: 16 percent
- People of color: 31 percent
- Less than high school education: 6 percent
- Limited English households: 6 percent
- Unemployment: 5 percent
- Persons with disabilities: 10 percent
- Male: 49 percent
- Female: 51 percent
- 81 years — Average life expectancy
- $58,399 — Per capita income
- Number of households: 624,335
- Owner occupied: 62 percent

BREAKDOWN BY RACE

- White: 73%
- Black: 5%
- Asian: 13%
- Hispanic: 8%
- American Indian: 0%
- Hawaiian/Pacific Islander: 0%
- Other race: 3%
- Two or more races: 6%

BREAKDOWN BY AGE

From Ages 1 to 4	5%
From Ages 1 to 18	20%
From Ages 18 and up	80%
From Ages 65 and up	15%

LIMITED ENGLISH SPEAKING BREAKDOWN

Speak Spanish	23%
Speak Other Indo-European Languages	41%
Speak Asian-Paci c Island Languages	31%
Speak Other Languages	4%

Notes: Numbers may not sum to totals due to rounding. Hispanic popultion can be of any race.
Source: U.S. Census Bureau, American Community Survey (ACS) 2017 -2021. Life expectancy data comes from the Centers for Disease Control.

LANGUAGES SPOKEN AT HOME

LANGUAGE	PERCENT
English	73%
Spanish	6%
French, Haitian, or Cajun	2%
Russian, Polish, or Other Slavic	1%
Other Indo-European	8%
Korean	1%
Chinese (including Mandarin, Cantonese)	4%
Vietnamese	1%
Other Asian and Paci c Island	3%
Arabic	1%
Other and Unspeci ed	1%
Total Non-English	27%

Environmental Justice & Supplemental Indexes

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EJ INDEXES

The EJ indexes help users screen for potential EJ concerns. To do this, the EJ index combines data on low income and people of color populations with a single environmental indicator.

SUPPLEMENTAL INDEXES

The supplemental indexes offer a different perspective on community level vulnerability. They combine data on percent low income, percent linguistically isolated, percent less than high school education, percent unemployed, and low life expectancy with a single environmental indicator.

These percentiles provide perspective on how the selected block group or buffer area compares to the entire state or nation.

Report for County: Middlesex

EJScreen Environmental and Socioeconomic Indicators Data

SELECTED VARIABLES	VALUE	STATE AVERAGE	PERCENTILE IN STATE	USA AVERAGE	PERCENTILE IN USA
POLLUTION AND SOURCES					
Particulate Matter (µg/m^3)	XX	XX	XX	XX	XX
Ozone (ppb)	XX	XX	XX	XX	XX
Diesel Particulate Matter (µg/m^3)	XX	XX	XX	XX	XX
Air Toxics Cancer Risk* (lifetime risk per million)	XX	XX	XX	XX	XX
Air Toxics Respiratory HI*	XX	XX	XX	XX	XX
Toxic Releases to Air	XX	XX	XX	XX	XX
Tra c Proximity (daily tra c count/distance to road)	XX	XX	XX	XX	XX
Lead Paint (% Pre-1960 Housing)	XX	XX	XX	XX	XX
Superfund Proximity (site count/km distance)	XX	XX	XX	XX	XX
RMP Facility Proximity (facility count/km distance)	XX	XX	XX	XX	XX
Hazardous Waste Proximity (facility count/km distance)	XX	XX	XX	XX	XX
Underground Storage Tanks (count/km^2)	XX	XX	XX	XX	XX
Wastewater Discharge (toxicity-weighted concentration/m distance)	XX	XX	XX	XX	XX
SOCIOECONOMIC INDICATORS					
Demographic Index	XX%	XX%	XX	XX%	XX
Supplemental Demographic Index	XX%	XX%	XX	XX%	XX
People of Color	XX%	XX%	XX	XX%	XX
Low Income	XX%	XX%	XX	XX%	XX
Unemployment Rate	XX%	XX%	XX	XX%	XX
Limited English Speaking Households	XX%	XX%	XX	XX%	XX
Less Than High School Education	XX%	XX%	XX	XX%	XX
Under Age 5	XX%	XX%	XX	XX%	XX
Over Age 64	XX%	XX%	XX	XX%	XX
Low Life Expectancy	XX%	XX%	XX	XX%	XX

*Diesel particulate matter, air toxics cancer risk, and air toxics respiratory hazard index are from the EPA's Air Toxics Data Update, which is the Agency's ongoing, comprehensive evaluation of air toxics in the United States. This effort aims to prioritize air toxics, emission sources, and locations of interest for further study. It is important to remember that the air toxics data presented here provide broad estimates of health risks over geographic areas of the country, not definitive risks to specific individuals or locations. Cancer risks and hazard indices from the Air Toxics Data Update are reported to one significant figure and any additional significant figures here are due to rounding. More information on the Air Toxics Data Update can be found at: https://www.epa.gov/haps/air-toxics-data-update.

Sites reporting to EPA within defined area:

Superfund XX
Hazardous Waste, Treatment, Storage, and Disposal Facilities XX
Water Dischargers XX
Air Pollution XX
Brown elds XX
Toxic Release Inventory XX

Other community features within defined area:

Schools XX
Hospitals XX
Places of Worship XX

Other environmental data:

Air Non-attainment XX
Impaired Waters XX

Selected location contains American Indian Reservation Lands* XX
Selected location contains a "Justice40 (CEJST)" disadvantaged community XX
Selected location contains an EPA IRA disadvantaged community XX

Report for County: Middlesex

EJScreen Environmental and Socioeconomic Indicators Data

HEALTH INDICATORS

INDICATOR	HEALTH VALUE	STATE AVERAGE	STATE PERCENTILE	US AVERAGE	US PERCENTILE
Low Life Expectancy	16%	17%	23	20%	14
Heart Disease	4.6	5.4	23	6.1	21
Asthma	9.9	10.8	20	10	49
Cancer	6.5	6.6	40	6.1	54
Persons with Disabilities	9.3%	11.9%	35	13.4%	27

CLIMATE INDICATORS

INDICATOR	HEALTH VALUE	STATE AVERAGE	STATE PERCENTILE	US AVERAGE	US PERCENTILE
Flood Risk	12%	12%	67	12%	72
Wild re Risk	0%	0%	0	14%	78

CRITICAL SERVICE GAPS

INDICATOR	HEALTH VALUE	STATE AVERAGE	STATE PERCENTILE	US AVERAGE	US PERCENTILE
Broadband Internet	8%	10%	49	14%	37
Lack of Health Insurance	3%	3%	58	9%	17
Housing Burden	XX	N/A	N/A	N/A	N/A
Transportation Access	XX	N/A	N/A	N/A	N/A
Food Desert	XX	N/A	N/A	N/A	N/A

Footnotes

Report for County: Middlesex